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ABSTRACT

THE FLOW OF AGRICULTURAL INFORMATION IN OKINAWA

by Daniel D. Whitney

This thesis presents an analysis of the flow of agricultural information from national agencies in Okinawa to individual farmers. It seeks answers to two questions: How is information from national agencies disseminated to farmers?; and, How effective is the existing system of information dissemination? The flow of agricultural information was chosen because of agriculture's importance in the Okinawan economy, and, because it is an ongoing process which crosscuts the entire society, being limited neither to particular structures nor to interrelationships between and among structures.

The study selects and applies elements from communications and systems theory which can be of use to anthropologists. It therefore has implications for the study of culture change, intracultural diffusion, applied anthropology, and, more generally, social organization. The process of information transfer occurs in a relatively stable, patterned manner which can be conceptually isolated as a system. An hueristic model to analyze this system is constructed from the central elements of source, message, channel and receiver. Messages are initiated by a source and transmitted through various channels to farmer/receivers. Source and receiver are viewed as social roles and channel is broadened to include the social situation in which communication takes place.

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The main source of agricultural information is the Agricultural Experiment Station. It has no budget and is not responsible for disseminating research results, but relies upon the Ryukyuan Government. Research results constitute a pool of information from which an agricultural Liaison Committee draws in making decisions concerning agricultural improvements. The various researching institutions and the Liaison Committee constitute the information source.

Messages transmitted relate to research activities and are primarily directed at improving existing cultivation techniques and intoducing new seedling varieties with the ultimate aim of increasing yields. Agricultural diversification is another important message, but a difficult one to transmit due to existing rural conditions. Farmers are more willing to make minor changes in farm operation than radically change farm administration.

Information originating with national agencies is disseminated through various channels, including: agricultural extension; farm management advisors; township and village administration; formal associations, such as the Women's Association and Youth Association; agricultural cooperatives; mass media; educational system; interpersonal, face-to-face contact; and group meetings. The differential degree to which various channels function in the dissemination of agricultural information is related to local conditions, especially subsistence base and proximity to urban areas or military bases.

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Effectiveness of the information flow system suffers from a lack of feedback from receiver to source. Research activities are not in line with receiver needs, there being too much emphasis upon new seedlings and techniques to increase production of existing crops, prices of which are declining. Farmers are producing more now than before, but are receiving less for their labors. Message encoding does not adequately involve mass media use, and, the lack of agricultural subjects in school curricula aggravates existing problems. Other problems such as overlapping membership in township organizations, overlapping duties of extension agents and farm advisors and a general lack of training on the part of receivers to utilize information are part of a system which demands farmers seek out new information. Those with little interest do not do so.

Fieldwork was carried out in three rural townships, ranging in population from 4,355 to 9,780. Townships were chosen after a broad survey focusing on three main ecological criteria: subsistence patterns; physical location, e.g., proximity to an urban area or U.S. military base; and population size. Methodology included a combination of participant-observation, intensive interviewing, especially of key informants, and a questionnaire. The period in the field was from July 1964 to September 1965.

THE FLOW OF AGRICULTURAL INFORMATION IN OKINAWA

By

Daniel D. Whitney

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Anthropology

1968

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ACKNOWLEDGEMENTS

Many ways have been found to express gratitude for assistance and encouragement, but I am convinced that none is wholly adequate from the point of view of the recipient of such encouragement and assistance. A simple "thank you," and its many synonyms, seems miserably insufficient to express my feelings for the years of encouragement, assistance and criticism given me by Professor Iwao Ishino of Michigan State University. Had it not been for his faith in me, I should not have undertaken this study, nor, for that matter, embarked on graduate work in anthropology.

He and Dr. John D. Donoghue, also of Michigan State, brought me into anthropology and gave me the benefit of their knowledge of the field and, in particular, their experiences in Japan. Dr. Ishino was in Okinawa during most of my fieldwork and guided me there. He served as chairman of my graduate study committee and both he and Dr. Donoghue assisted me in the preparation of this thesis. To both of them, "thank you."

Others at Michigan State University to whom I would like to express my thanks include: members of my thesis committee, Professors Charles Hughes and Moreau Maxwell; Professor William T. Ross, director of the Asian Studies Center; and Mr. Miller O. Perry, Center for International Programs, who provided logistic support as well as encouragement. The Mid-West Universities Consortium for International Activities

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supported me while in the field through a grant from the Ford Foundation. Mr. Perry was instrumental in securing my appointment as research associate with the Michigan State University Advisory Group to the University of the Ryukyus.

Those Okinawans whom I would like to single out for special thanks include my field assistant, Yafuso, Takashi; Koja, Zuiko, of the University of the Ryukyus; and Nakamura, Jinsei, of the MSU Advisory Group office. The mayors and residents of the three townships in which research was conducted are to be thanked for accepting me and making my research an enjoyable event. Members of the United States Civil Administration of the Ryukyu Islands, especially, Mrs. Jean Fink, were also kind and cooperative.

To my wife, Hiroko, and my two daughters, Teri and Wendi, my warmest thanks for enduring hardships experienced while in the field, and especially, for enduring the more difficult period that followed when they were often left husbandless and fatherless because of the necessity to complete this study. Finally, I would like to thank Miss Yumiko Tsuneyoshi, anthropology department, San Diego State College, for finding time to type various drafts of this thesis.

TABLE OF CONTENTS

TABLE

LIST OF TABLES

VIP

1. Okinaw

2. Townsh

3. Kochin

4. Kitana

5. Yabu T

LIST OF MAPS

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CHAPTER ONE

INTRODUCTION

The success or failure of agriculture in Okinawa depends to a large extent upon the receipt of technical and other relevant information by the farmer. This thesis is an attempt to assess the present system of informing farmers of modern agricultural practices and to suggest whether this flow of information can be improved so that the farmers might more fully benefit from whatever information is available to them. More specifically, it is to analyze the flow of agricultural information from national agencies to individual Okinawan farmers.

I have chosen to limit my analysis to the flow of agricultural information because of agriculture's importance to the social system in question. In 1965, approximately 14 per cent of the Okinawan national income resulted from agricultural activities, more than any other single industry, except wholesale and retail trade. Thirty-eight per cent (152,000 persons) of the total labor force is engaged in agricultural production. No other endeavor occupies the time of half so many persons as does agriculture.

Both in terms of the number of persons employed in its production and its value as an export commodity, sugar cane is the most important single item produced in the Ryukyu

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Islands. It is cultivated by 63,000 farmers utilizing 64 per cent of all planted land (ca. 35,860 hectares). These farmers do not labor directly for food to put on their table, but expend their energies upon a crop which must be sold to markets outside their country, providing them with cash for the purchase of food and other essentials in the marketplace. This links them, usually in a dependency position, with sugar cane mills outside their villages, with their government, the government of Japan, and, ultimately with the world sugar cane market in London or New York where the price of sugar cane is set annually. Most cane growers also raise vegetables and sweet potatoes for home consumption, but their economic well-being is primarily tied up with the sale of their cane.

This dependence upon a single crop, sugar cane, is perhaps the biggest problem facing Okinawan agriculture today. High prices a few years ago stimulated many farmers to shift exclusively to sugar cane production. Sweet potato fields and rice paddy of a few years ago are now almost wholly planted in rows of sugar cane. As more and more cane was produced, the price dropped, working an economic hardship on many small farmers. Farmers are now dependent upon the government for setting the price of cane, and, upon the Agricultural Cooperative for marketing it.

Other problems aggravate the situation. Okinawa, like Japan, is generally characterized, and rightly so, as a land of too many people for the amount of arable land.

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What arable land there is tends to be of poor soil quality, perhaps best suited for the cultivation of sugar cane and little else. Farm plots are small and highly fragmented, a condition not conducive to mechanized cultivation if it were possible. The threat of typhoons during the growing season further compounds existing problems. Young men are leaving the farms. A commonly stated problem in rural Okinawa is how to stop young men from going to the city, abandoning the farms they were raised on. Youths view farming as a laborious task from which there is little reward. Even graduates of agricultural high schools tend to seek employment away from the farm, usually winding up in private industry or government work.

Realizing the importance of agriculture and taking cognizance of the problems outlined above, both the Government of the Ryukyu Islands (G.R.I.) and the United States Civil Administration of the Ryukyus (U.S.C.A.R.) expend large amounts of money to encourage, entice and persuade Okinawan agriculturalists to expand their productivity and improve their general living conditions. I would roughly estimate that over the past five years, approximately 75 to 100 specialists in agriculture and related specialities from Hawaii, Japan, Taiwan, the Philippines and the continental United States have spent time on the island advising, teaching and consulting with local agricultural leaders on a wide variety of agriculturally related topics. These visiting experts varied in specialization from agronomy, irrigation,

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animal husbandry and home economics to particular crops such as pineapple, passion fruit and sugar cane. Representatives from Okinawa have been sent under various kinds of educational and training programs to all the countries mentioned above to obtain new knowledge and information about agriculture in hopes of ultimately benefiting the Okinawan cultivator.

Mindful that visiting experts to Okinawa and educational trips abroad by Okinawans do not necessarily guarantee the dissemination of new knowledge and information within the Island's boundaries, the G.R.I. and U.S.C.A.R. have cooperated to provide the means for the intracultural dissemination of this information. In addition to the Agricultural Extension System, the Farm Management Advisors of the Federation of Agricultural Cooperatives and the usual publications, radio and an occasional television program, the University of the Ryukyus has sent men to Japan, Taiwan and the United States to learn more about agricultural extension services and methods.

The government is attacking Okinawa's agricultural problem in two ways. First, through attempts to diversify agriculture, especially by the introduction of new crops, such as pineapple and vegetables, as well as the encouragement of animal husbandry, especially cows and hogs. Second, a concerted effort is being made to cut the costs of sugar cane production to make Okinawan cane competitive with Amami O'Shima, Hawaii and Taiwan. Results thus far have not been encouraging.

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Township officials agree with the national government that something must be done, but there is considerable diversity in the stress put upon particular programs as they are interpreted by township officials. The administrative linkages exist, but local problems take precedence in the minds of township officials and programs are not always implemented as national governmental officials envisioned them. Some townships encourage farmers to diversify through greater cultivation of pineapple, some vegetables, some encourage horse raising (see Yabu township below) instead of hogs and cows, others do little by way of changing conditions. Township officials argue that each area has its own special problems which cannot be solved from the national government. What is good for Okinawa as a whole may not be good for a particular township, they argue.

The problem can be reformulated as one concerned with the dissemination of information from national agencies to the local cultivator. The national agencies are in the process of working out solutions to the various agricultural problems facing Okinawa today. To be successful, these solutions must be communicated to thefarmers, who then can take the necessary action. The flow of information is crucial, since action cannot be taken until the proposed solutions have been received by the farmer. The receipt of new information increases the alternatives available to the farmer, he can either accept the proposed solutions, reject them, or modify them. The important questions for this study, then,

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are: How is information from the national agencies disseminated to the farmer?; and, How effective is the present system of information dissemination?

The reader might reasonably ask at this point why such a practical problem is being investigated in a dissertation in the academic discipline of anthropology. There are two basic answers. First is my own concern for the relevance of anthropological approaches to the study of human problems. Preliminary research pointed up the importance of the flow of agricultural information in present-day Okinawa. The subfield of applied or action anthropology has been a respected field of specialization within the discipline since the Bureau of American Ethnology was founded in 1879 to study problems of the American Indian. Since then applied anthropologists have worked in every continent and particularly since World War II, in many countries of the Third World.

The second reason for selecting the present topic for an anthropological thesis is an avowed theoretical concern. Anthropologists have long been concerned with the idea of cultural change. The process of change has thus far eluded adequate conceptualization and the present available technical tools for the analysis of change are meagre, mainly centered around the study of diffusion, assimilation, acculturation, and so forth. This thesis is an attempt to use a model borrowed from another field, a model which has served as an heuristic in communications analysis. More specifically, it is an attempt to apply an information flow model to the study

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The Flow of Information as a System

The flow of information was chosen for study primarily because it is a flow, a process which occurs. As such, it crosscuts the entire society and its study is not limited to particular structures nor to the interrelationships between and among structures. In carrying out fieldwork, I was able to study the transfer of information as an ongoing series of events, a process. The value of studying a process is that it allows a researcher to free himself from a set of preconceived institutions or structures and the research is guided in large measure by the path of the flows being studied.

In the instance of my own study, I found that the process (the flow of agricultural information) occurred in a relatively stable, patterned manner. It was at this point that I began to see the flow of information as constituting a system. I found that by conceptually isolating the various processes involved in the flow of information, and viewing them as comprising a system, the analysis was greatly enhanced. A system, according to Walter Buckley, is:

> A complex of elements or components directly or indirectly related in a causal network, such that each component is related to at least some others in a more or less stable way within a particular period of time (1967:41).

The flow of agricultural information in Okinawa as a system is composed of a number of elements, i.e., established pat t e rn s

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of behaviour and institutionalized structures. It is a causal network because the goal toward which it is directed is the dissemination of agricultural information from the national government to the farmers of Okinawa. The patterns are related in a stable way in that it was found in research that behavioural patterns were repeated over and over again. Thus, the flow of agricultural information qualifies, I submit, as a system which can be isolated for purposes of analysis.

To study the flow of information, then, is to research the dissemination and transfer of information as a series of ongoing events, a process, and, to then organize the raw data into a patterned set of events, a system, focusing particularly on the parts of the system and their interrelationships. It is basically the characteristics of the system which I present in this thesis, recognizing, however, that the system is a conceptualization of a series of processes.

Any system exists only as a cognitive entity within others, a system's environment. A system interacts with its environment (other systems) and those aspects of other systems which are relevant must also be brought under study whenever possible and necessary. The information flow system is merely a conceptual device, with no concrete referent; an heuristic device for analytical purposes.

It is not the system itself which is of greatest importance, but rather the process of information transfer throughout the entire society. Analysis of the process will

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not be bound to the arbitrarily established limits of the system, but will follow the flow of information within and without the system as required. The system is not limited to a particular structural shape, but is rather, composed of a number of patterned relationships, the nature and boundaries of which change in relation to the process being studied:

> The structure of the system becomes more and more 'fluid' as it merges with process -- the communication process which is its predominant feature (Buckley, 1967:48).

The idea of an information flow system is in part analogous to the "field" concept found in recent studies in social anthropology, especially political anthropology, such as in Swartz, Turner and Tuden (1966). The field, they say, is composed of:

> . . .the groups within which the processes occur. . . . politics is the study of certain kinds of processes, it is essential to center our attention on these processes rather than on the groups or fields within which they occur (Swartz, et al., 1966:8).

The same is true of an information flow system, i.e., it is not the system which warrants attention, but the process of information transfer within the system. The system is only of conceptual significance, whereas, the process of information flow is of value in both research and understanding.

The Information Flow Model

The overall information flow process can be discerned to have a number of necessary elements (Meier, 1962:8 calls them "requirements"). The four most often cited are: 1) a source (also called a sender); 2) a message; 3) a channel;

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and 4) a receiver. Meier includes such "requirements" as a common language, time for the process to occur, attention by the receiver and a purpose or purposes that are served. The necessary elements mentioned above are embodied in the now classic definition of the communication process by Smith, Lasswell and Casey:

> Who says what, through what channels (media) of communication, to whom and with what results (Smith, et al., 1946:121, emphasis in original).

The "who" is the source; the "what" the message; the "channel" is channel; and the "whom" is receiver.

Some subprocesses discernible are encoding, decoding, and feedback. Encoding is an activity of the source and involves the translation of a message into symbols shared with the receiver(s). Decoding involves the internalization of the message by the receiver. Feedback is the process of transmitting information to the source by the receiver to indicate the effects of message on receiver. Other aspects of the model, such as information overload, channel overload and redundancy will be explained as they arise in the discussion. A full explication of source, message, channel and receiver is, however, necessary at this point.

Source.-- The communication process begins when a source initiates a message. A source may be viewed as either an individual or a collectivity of individuals. For example, messages can originate within a governmental agency, and, in such an instance, it is the governmental agency which will be identified as the source of the message. It is more advanta-

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geous to view source as a role in the communication process rather than as a personality. Westley and MacLean (1957) define source as "advocacy roles":

> This is what is usually meant by 'the communicator' -- a personality or social system engaged in selecting and transmitting messages purposively (p. 38).

This makes it possible to identify not only the individual as a source, such as in face-to-face communication, but also a newspaper, radio station or national agency is a source in more institutionalized communication. As Meier (1962) explains:

> In a modern city almost everyone is a sender [source] at some time, but in many instances the role has become professionalized (p. 8, emphasis in original).

It is the professionalized sources, such as the Agricultural Experiment Station, agricultural improvement section of the Government of the Ryukyu Islands and the agricultural cooperative that will receive greatest attention in this study.

Message.-- The message is that which is transmitted from source to receiver. Messages are constructed in terms (encoded) that are understandable to both source and receiver(s). A language common to both is required for this encoding process. The parameters of message are difficult to state in non-mathematical terms. For example, suppose research at the Agricultural Experiment Station reveals Okinawan soil to be well suited to vegetable cultivation, and furthermore, that vegetables would be a good alternative to sugar cane growing. This information is then disseminated to farmers, indicating to them the techniques of vegetable cultivation and its advantages in the diversification of agriculture. Is the

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message to be construed as diversification of agriculture, the advantages of planting vegetables vis-a-vis sugar cane, or the techniques of vegetable cultivation? Or, is the message all three?

Definitions of message employed by those in the field of communication theory are of little direct aid in resolving this question. Cherry, for example, defines message as:

> An ordered selection from an agreed set of signs (alphabet) intended to communicate information (1957:305).

This is quite similar to a word, or perhaps, a morpheme in linguistics. The example above would, by this definition, contain within it a great number of messages. Westley and MacLean (1957) define message as:

> The totality of objects and events 'out there.' . . . Objects and events as abstracted into transmissible form (p. 38).

Richard Meier (1965) discusses message as follows:

> A communication system is constructed to transmit messages. Whatever else may flow over a communication channel, and is not understood, should be regarded as noise. Messages contain terms that are understandable to both sender and receiver(s). . . . a term may be a word or group of words representing an image. A term may also be a pattern incorporated into a picture. Terms are built up from symbols, which have no meaning (i.e., concrete referent) of their own, but can be manipulated readily for tests and operations carried out by the receiver (p. 80, emphasis in original).

A useful approach for this study is found in the work of DeFleur and Larsen (1958):

> Information will refer to discriminatory stimuli in the form of particular symbols initiated by a communicator who has the intent of transmitting some meaning to an audience. The term 'message' can be regarded as synonymous with information (p. 5).

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In following their approach, I shall also regard message as synonymous with information and take from McKay (1950) the definition of information "in the most general sense as that which adds to a representation" (p. 12). A representation, which is very similar to what Meier above called "image," is defined by McKay as:

> Any structure (pattern, picture, model) whether abstract or concrete, of which the features purport to symbolize or correspond in some sense with those of some other structure (p. 10).

In the example outlined above, the message, the information, involves the diversification of Okinawan agriculture, the advantages of planting vegetables, as well as the techniques of vegetable cultivation. All three add to existing representations. It is not important for this study to determine whether one is dealing with three distinct messages or with one more general message, since all three are parts of the meaning intended by the source and all three will, most certainly, add to the representations (images) of the farmer.

It is not claimed that the preceding discussion solves the problem of setting forth explicity a definition for information or message. This is a problem that has plagued social scientists interested in utilizing the information theory approach as evidenced by the following passage from DeFleur and Larsen (1958):

> We may point out at the outset that one difficulty in presenting the basic concepts of information theory lies in the fact that there is by no means wide agreement on exactly how such matters as "information' should be defined, although, fortunately, those who have proposed alternative definitions have stated their notions in mathematical and operational terms (p. 259).

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Since this study is not aimed at exploring the basic concepts of information theory, but in analyzing the flow of information in a particular social system, it is unnecessary to dwell further on the difficulty of defining information or message, except to state that it is the agricultural information emanating from the sources discussed in Chapter Three which flows through the channels discussed in Chapters Four through Seven and adds to the images of the receivers discussed in Chapter Eight.

Channel.-- Channel is generally defined as the medium, the carrier of messages (Berlo, 1964). The definition of the communication process by Smith, Lasswell and Casey (1946, quoted above) equates channel and media. This, I feel, limits the usefulness of the concept as it relates to language, writing and certain visual stimuli. Channel is best viewed, I think, as that which links source and receiver and through which messages are transmitted. This aspect of channel is emphasized by DeFleur and Larsen (1958) in their definition:

> Between the source and the destination there must be some link that spans the intervening space or time, and this link is called channel (p. 8, emphasis in original).

Such a view of channel as a link between source and receiver extends the usefullness of channel to include not only the obvious "media" such as newspapers and broadcasting stations, but also the social situation in which the communication occurs. For example, an Okinawan township Women's Association meeting

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can in this way be conceived of as channel. It is the meeting which functions to link the source and receiver(s).

Restated, then, channel includes not only the medium through which information flows, but also the social situation in which communication takes place. From the receiver's point of view, communication always takes place at a particular place and at a particular time. Channel is both a function of media and social organization. Such a view is implicit in the writings of Levi-Strauss (1953):

> a society consists of individuals and groups which communicate with one another (p. 536).

The social structure of a society can be viewed as a large complex channel in the dissemination of information. This will be explained more fully in Chapter Four. Some of the channels to be discussed in detail in this study include the Agricultural Extension and Home Demonstration System, the Farm Management Advisor System, Women's Association, Youth Association, township administration, village administration, education and the mass media. These all function to link the national government (source) and the individual (receiver) informationally.

Receiver.-- Receivers are those to whom messages are directed by the source. In the present study, the Okinawan farmer is the primary receiver of agricultural messages. Receiver, like source, is a role in the communication system. Westley and MacLean (1957) provide a more technical definition of receiver, which they call "behavioral system role":

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> This is what is usually meant by 'the receiver,' 'the public,' etc. -- a personality or social system requiring and using communication about the condition of its environment for the satisfaction of its needs and solutions to its problems (p. 38).

It is, perhaps, a debatable point whether or not the communication need be used by the personality or social system for that role to qualify as a receiver. A more general definition of receiver, one to be employed in this study, is "the destination of messages."

Focusing on roles rather than individuals allows for more productive analysis. A particular individual may at one time or another be a source, channel or receiver. He may depending upon the frame of reference, be both a source and channel simultaneously. For example, an agricultural extension agent is a source of information when talking with a farmer or group of farmers. If, however, we are concerned with the flow of information from the central office to the farmer, the agent functions in the role of channel. Of course, at the time he was first given the information to be disseminated, he was a receiver, getting his information from the central office. A particular role in the communication process should not be seen as always being filled by particular individuals. It is the role which requires attention, not the individual acting out the role.

In the pages that follow, it will be necessary to deal with a number of ongoing processes which may be occurring at the same time. Though the flow of any particular bit of information proceeds from source to receiver in a definite

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spatial and temporal sequence, the overall process includes many simultaneously occurring processes. Many concurrent activities are involved. As agricultural information is being disseminated over the radio, the same information may be read in a magazine or newspaper, or a meeting discussing it may be in progress. Therefore, it is necessary to focus on a particular sequence of events in the discussion as if it were occurring independently of others.

These various processes can then be reintegrated, but in writing about them, there is some loss of the feeling of active flow. The overall process, then, will be divided into phases which are temporally concurrent. Discussion will first center on the information sources (Chapter Three), followed by a discussion of various channels (Chapters Four through Seven) and receivers (Chapter Eight). Chapter Nine will present conclusions drawn from the analysis. Before turning to Chapter Two, which is a discussion of some of the general characteristics of Okinawa and the townships selected for study, limitations of this study, criteria for selection of datum townships and the methodology employed in the research will be outlined.

Limitations of the Study

As mentioned at the outset, this study is limited to the analysis of the flow of agricultural information. Reasons for selecting agricultural information were given above. This is not to imply that the flow of information of a non-agricultural nature will exhibit the same characteristics as does

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the flow of agricultural information. As will be seen a number of governmental agencies have as their primary purpose the dissemination of agricultural information. The process exhibits sufficient idiosyncratic characteristics to be conceptually isolated as a system from other information flows occurring in Okinawan society.

A second limitation is that it is the flow of information which is central to this study, not the uses to which information is put by receivers. This is not to say that the uses of information are unimportant, but only that the analysis of this study is directed at the process of information transfer. Information must reach the receiver before it can be put to any use, and this, I feel, is sufficient rationale for focusing upon the dissemination process. The use of information by receivers will receive attention in this study only as it relates to the feedback loop of the entire process.

This study focuses upon the flow of information as it occurs in a rather patterned, or recurrent manner, excluding the face-to-face interchanges between particular individuals. Such face-to-face transfer of information may occur in a patterned fashion, but time and resources in the field would not permit a thorough examination. I am concerned with the way in which information emanating from national agencies reaches the individual, and not the exchange of information between and among individuals in the local setting. Certainly information is exchanged in such dyadic relationships, but time limitations made it virtually impossible to fully explore

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such exchanges while at the same time doing justice to the main research concern.

Given the considerations outlined above, I was faced with the problem of selecting a universe of study, i.e., the locale best suited for the study of information flow. Initially, it seemed a matter of deciding whether to study one village (buraku); a single township (son); or a number of different townships and villages. To describe and analyze a single township or village would necessitate neglecting other townships or villages and include the underlying assumption that such a microcosm would in some way be representative of other microcosms throughout the Island. At the other extreme, the study of a number of such units would of necessity be superficial due to limitations of time and personnel. Precedent for the former approach is readily available in the anthropological literature on East Asia, (see particularly Beardsley, et al. 1959; Maretzki, 1963; and Embree, 1939).

In light of the problem chosen for focus, however, neither alternative seemed entirely satisfactory. I felt that a detailed analysis of a particular microcosm over the entire research period would not elicit a broad enough range of information flow patterns, even assuming I made a number of visits outside the village or township chosen. Differences from village to village and township to township might be easily missed. I was fairly certain that processes within an isolated village or township in northern Okinawa would be at variance from those of one on the outskirts of Naha city. Thus, I arrived at a compromise solution, the one outlined below.

Selection of Datum Townships

I began my research by interviewing the mayors of more than 25 of 42 townships on the Island of Okinawa. Those in the original survey ranged in population from less than 4,000 to more than 10,000; divided about equally among the three districts of the Island, north, central and south. In the original survey, I sought answers to questions related to the situation of agriculture; changes since the war; problems of agriculture, administration and daily life; types of organizations and associations, both formal and informal; relations with nearby townships, towns and cities; historical information; occupational structure; and other information of a related nature. The initial survey took approximately one month to complete. Careful evaluation of the initial survey material confirmed my earlier feeling that there existed important differences among townships and villages, especially with regard to subsistence, physical location and population size.

Subsistence.-- The main crop grown by Okinawan farmers is sugar cane, a cash crop in all rural areas. Secondary crops include pineapple, sweet potato, rice, vegetables and fruits. In selecting datum communities, I wanted to be certain to include at least three types: one in which production was primarily focused upon sugar cane; one in which pineapple was of some importance; and a third in which vegetable growing was important. Rice as a crop was found to be relatively

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unimportant in most communities, but I also wanted, if possible, to include in my sample a community which manifested a fair number of rice-growing households. Sweet potato was planted by nearly every household for home consumption and as food for hogs and, therefore, of little consequence in this context.

Sugar cane was found to be the main crop of all communities included in the original survey. Four townships in the sample were in large part dependent upon pineapple and in three others vegetable growing was of some importance. The others originally surveyed focused almost exclusively upon sugar cane production, with sweet potato, rice, vegetables and fruits grown mainly for home consumption. Thus, I was able initially to formulate three categories on the basis of subsistence activity: exclusively sugar cane; sugar cane and pineapple; and sugar cane and vegetable.

Physical Location.-- Okinawa is usually divided into three main districts, north, central and south. These districts are not administratively recognized, but date back in history to the period when Okinawa was ruled by three chiefdoms, hokuzan (northern), chuzan (central) and nanzan (southern). The districts vary according to generalized geographical differences. Northern Okinawa is predominantly mountainous and much more heavily forested than the rest of the island. Central Okinawa is characterized by rolling hills, valleys and more flatland than in the north. Southern Okinawa is

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mainly flat plains, broken up by three important low mountains. The richest soils are a mixture of alluvial clay and organic matter mainly in the central and southern parts of the Island. Another major part of southern Okinawa is composed of uplands which have a shallow and crumbly clay soil over bedrock. Much of the remainder of the Island is characterized by hard, compact limestone and acid soils. No district has minerals in any quantity.

Sugar cane is grown extensively in all areas. Pineapple is limited almost exclusively to northern Okinawa. Vegetables are found primarily in the central and southern areas. Much of the land is suitable for rice cultivation, but rice is grown mainly in the southern parts of the northern district, though scattered paddy rice is found throughout the Island. In attempting to study the widest range of township types, I felt it necessary to select a township in each of the three districts, north, central and south. As might be expected, some degree of correlation existed between subsistence activity and location, i.e., the three pineapple raising townships were located in northern Okinawa; two of the three vegetable raising communities were in central Okinawa; and the predominantly sugar cane raising communities were in central and southern Okinawa.

A further criterion specified in my search for datum communities was degree of proximity to an urban area and/or a military base. I was looking for three townships; one near a major urban center, one near a military base, or a complex

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of bases, and finally, one in relative isolation. I found in my initial survey that occupational and family structure varied in nearness to urban centers and military bases. Generally, it appeared that those communities closest to cities and bases were characterized by a more diversified occupational structure, i.e., a number of persons worked at jobs in the city or on the base. In many instances, it was the younger family members who worked outside, though not infrequently the head of a household worked outside the home, leaving farming chores to his wife and younger children, he, himself becoming a weekend and spare-time farmer. It also seemed, initially, that family composition varied with proximity to city or base. Many young adults in the more isolated communities, it seemed, had moved away from their natal home and established themselves in the city, or in an apartment closer to their work. In communities closer to city and base, young adults worked outside, but lived in their natal household.

Physical location, then, further reduced the number of alternative communities. I more or less arbitrarily decided that since Naha is the major urban center that one township should be in close proximity to it, thus leaving three southern townships as possibilities: Kochinda-son; Tomigushiku-son; and Haebaru-son. Urasoe-son, with a population of more than 24,000 was deemed much too large. Proximity to a military base was not so much a limiting factor, though most of the larger bases are located in central and

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southern Okinawa. At least five or six possibilities remained. Most northern townships could be classified as relatively isolated, and this did not limit possibilities in that area to any great extent.

Population Size.-- Thirty-three of the 50 Okinawan municipalities have populations falling within a range from 2,700 to just over 10,000. Thus, I felt my datum communities should be spread, as broadly as possible, over this entire range. Initially, I had hoped to study townships of approximately 3,000; 6,000; and 9,000 population.

Townships of all three sizes are found in all parts of the Island, though a preponderance of smaller townships is located in the northern district. The smaller municipalities in the southern district are for the most part island municipalities, thus, not considered in the selection process. Central Okinawa contains the greatest number of larger townships, the smallest being more than 8,000, and only three less than 10,000 population. This criterion alone limited alternatives to three central villages and narrowed possibilities to one in southern Okinawa, as Tomigushiku-son had a population of more than 11,000. Northern Okinawa still presented the greatest problem, with many possibilities still open.

Other Considerations.-- Two other considerations ultimately entered into the selection process. These were: anticipated cooperation on the part of local elected officials

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and the availability of living quarters. These are admittedly not of theoretical import, but all other things being equal, must be considered. Kochinda-son had been chosen on the basis of the other criteria outlined above: it was in close proximity to Naha; it was just under 10,000 in population; agriculture was centered principally on sugar cane, with some rice; and it was in southern Okinawa.

Of the three alternatives in central Okinawa, only Kitanakagushiku met all criteria outlined: it was near military bases; population was approximately 8,000; and most importantly, it contained a number of vegetable raising households and a vegetable raising cooperative.

Yabu-son was chosen in northern Okinawa from a number of communities that met all desired criteria. Further discussion with the mayors of some northern municipalities was required. These discussions led me to pick Yabu-son, primarily due to the cooperative attitude of the mayor and others in his office, and secondarily because of the immediate and continuing availability of a dwelling for me and my field assistant. Yabu-son had a population of just more than 4,000; was far from any city or military base, though near the small town of Nago; and contained a number of households engaged in pineapple growing as well as sugar cane and some rice cultivation.

An underlying assumption in the selection of datum communities is that certain ecological considerations would be manifested by differential adaptation of communities. I

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focused upon subsistence, physical location and population because these were the primary data available to me from the initial, superficial survey. I had no detailed knowledge at the time of social structural differences. I proceeded on the assumption that it was possible to see Okinawan culture as being somewhat uniform throughout the Island, and that the more obvious differences would be as noted above.

In deciding to study three communities in different parts of Okinawa I was influenced by the writings of both Eggan (1954) and Geertz (1959). Okinawa seemed to be an ideal situation in which to apply Eggan's "method of controlled comparison," i.e., to compare the process of information flow within a small region such as Okinawa and attempt to see what differences and similarities might be found.

Geertz's study of Balinese village structure (1959) pointed up the problem of the "lowest common denominator" approach and the "representative unit" approach. I wanted to be careful not to fall into either "trap." In this study differences as well as similarities will be diligently pointed out and explained.

Methodology Employed

Once the datum townships had been selected, the mayors were informed that their villages had been selected for more intensive study and their cooperation was solicited. In all instances, such cooperation was readily offered. Each of the three townships were studied for approximately three months'

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duration. Kochinda-son, being near Naha and my familial residence, was chosen for first attention. I did not establish residence in Kochinda-son, but visited there daily, arriving early in the morning and returning long after nightfall.

Yabu-son, being more than two-hours' drive from Naha, presented a different problem. I established residence in Yabu-son, usually for one week at a time, over the entire field study period. In this way, I was able to observe events at different times throughout the year. A further reason for this method was that the room I rented was not available for an entire three-month stay. There were no hostels in Yabu-son, though on occasion I stayed in the nearby town of Nago and visited Yabu-son daily. Kitanakagushiku-son was studied in much the same manner as Kochinda-son, though I did stay in hostels nearby on different occasions.

The method employed consisted mainly of three parts: participant-observation; intensive interviewing of a large number of selected key informants; and a questionnaire. Observations focused for the most part on attendance of various association meetings and the work of selected administrators and change agents, especially agricultural extension and home demonstration agents. Observations were found most valuable in two related ways: first in stimulating questions to be asked in interviewing; and secondly, in supplementing and checking interview data.

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Primary reliance for data was placed upon the intensive interviewing of selected key informants. In each of the three communities I was able to interview persons of comparable position so as to gain comparable data. In each township, I began with the administrative head of government and initially made contacts through him. Each informant was requested to provide the names of others who might agree or disagree with what had been told to me. In this way, I was able to expand the original list of informants. Those initially interviewed included such persons as the head of the township Women's Association, township Youth Association, township cooperative, administrative officials, village (buraku) heads, agricultural and home demonstration agents, religious leaders, village level association heads and others.

I also interviewed a number of persons who did not appear on any list, those who might be classified as "average" persons and those who for one reason or another drew my attention. I consciously attempted to gain access to farmers who were classified by others as wealthy or poor, progressive or traditional. In this way, I was able to get a fairly representative cross section of images. Of the total number interviewed, most attention was given to leaders, as I soon found interviews with "average" farmers and housewives increasingly redundant.

An average interview lasted two hours. Following an introduction of myself and my purpose, I continued according to a prearranged line of questioning for the first half of

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the interview. This was then followed by a more open-ended, give-and-take between me and the informant, topics ranging from attitudes toward Americans and politics to the detailed technology of sugar cane, pineapple or rice cultivation. Notes were taken openly during interviews with no noticeable effect on the informants.

Initially, I utilized a tape recorder, but found this somewhat a hindrance to open, free conversation on the part of the informant. I also experimented by not taking notes during the interview and writing up the data in private, but responses on the part of informants in both note-taking and non-note-taking situations appeared identical. On more controversial issues, such as reversion, I generally put away my note pad and pencil and wrote down the conversation at a later time, usually as soon as I left the informant. This seemed to bring about a somewhat freer conversation of these more controversial issues.

I also spent some time interviewing national agricultural leaders and others in government and business outside the community. Okinawa, though a complex society, presents the researcher with a fortuitous situation in the easy accessibility of national leaders. On more than one occasion I was able to interview a national or governmental agricultural leader in the morning and be in the township with a farmer that afternoon and evening.

This made it possible for me to more fully cross-check information obtained at either the national or individual

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level. I could check in a single day whether or not a particular program was known to the farmer at whom it was directed. In many ways, Okinawa is a nearly ideal site for the study of village-nation communication due to its small size and ease of transportation.

Interviews and observations were further supplemented by a questionnaire including such items as family composition, land holdings, amounts of land devoted to the basic crops over a 10-year period, shopping patterns, visiting patterns, television viewing and magazine, newspaper, and government publications readership.

The questionnaires, 1,386 in all, were distributed in each of the three datum townships through elementary and junior high schools because of the time it would have taken to distribute and collect them personally. This, of course, biased my sample in that I obtained no data from families without children in school. Children were asked to take them home for their parents to fill out. The return rate was well over 95 per cent, though in some instances questionnaires were returned with very little information.

The questionnaires were not as biased as might first be expected since nearly every household in all three townships had at least one child in either the elementary or junior high school. Results from the questionnaire will be reported throughout this study, and will be explicitly reported as results from the questionnaire. Questionnaires were coded upon return from the field and I.B.M. computer

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punch cards were used. Data were then obtained from the computer.

Field notes were retyped on Japanese keysort cards (nankodo), similar to the McBee keysort cards, and coded for some 228 discrete items. I began with approximately 100 pre-assigned categories and expanded the system to its present size while in the field. The original format was one employed by Donoghue and Ishino (1962) for the study of Japanese communities. The keysort method allows for fairly rapid and comprehensive retrieval of information about specific subjects, as well as cross-referencing.

The preceding discussion has been presented in hopes of making more explicit some of the underlying assumptions and operations of this study. I make no claim to complete representativeness of sample, but have striven for a broad coverage of alternative types of Okinawan communities. I have conscientiously attempted to at least cover a wide range of community types, especially with regard to the ecological characteristics outlined above. Okinawa is a complex society and it is beyond the scope of such a focused study as this to deal with the entire societal complexity.

Fieldwork was carried out on Okinawa Island from July 1964 through August 1965. During that time, I was assigned as a research associate with the Michigan State Advisory Group to the University of the Ryukyus, sponsored by the Ford Foundation, through the Mid-West Universities Consortium for International Activities, Michigan State University.

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CHAPTER TWO

THE ISLAND OF OKINAWA

Present-day Okinawa is a complex society, composed of a wide variety of dissimilar parts. Naha, the capital city of nearly 260,000 inhabitants, contrasts sharply from Higashi-son in northern Okinawa with a population of barely more than 3,000. Imports and exports are exchanged with countries such as Japan, the United States, Taiwan and the United Kingdom. Within Okinawan borders are found occupations of all kinds, from farmer and forester to financier and foreign investor. Among the various nationalities represented are Filipino, Chinese, Canadian, Indian, American and Australian. Social groups based on differential wealth, education and occupation are discernible. These, and the other parts, are integrated to form a whole which is qualitatively distinct from the parts that constitute it.

An understanding of no one segment of Okinawan society is sufficient for comprehension of Okinawa as a total cultural system. Knowledge gained from careful analysis of rural Okinawa contributes toward an understanding of what Okinawa is, but alone does not suffice to characterize this complex society. In the few pages to follow, are presented those characteristics of modern Okinawa which bear most directly upon the problem under study.

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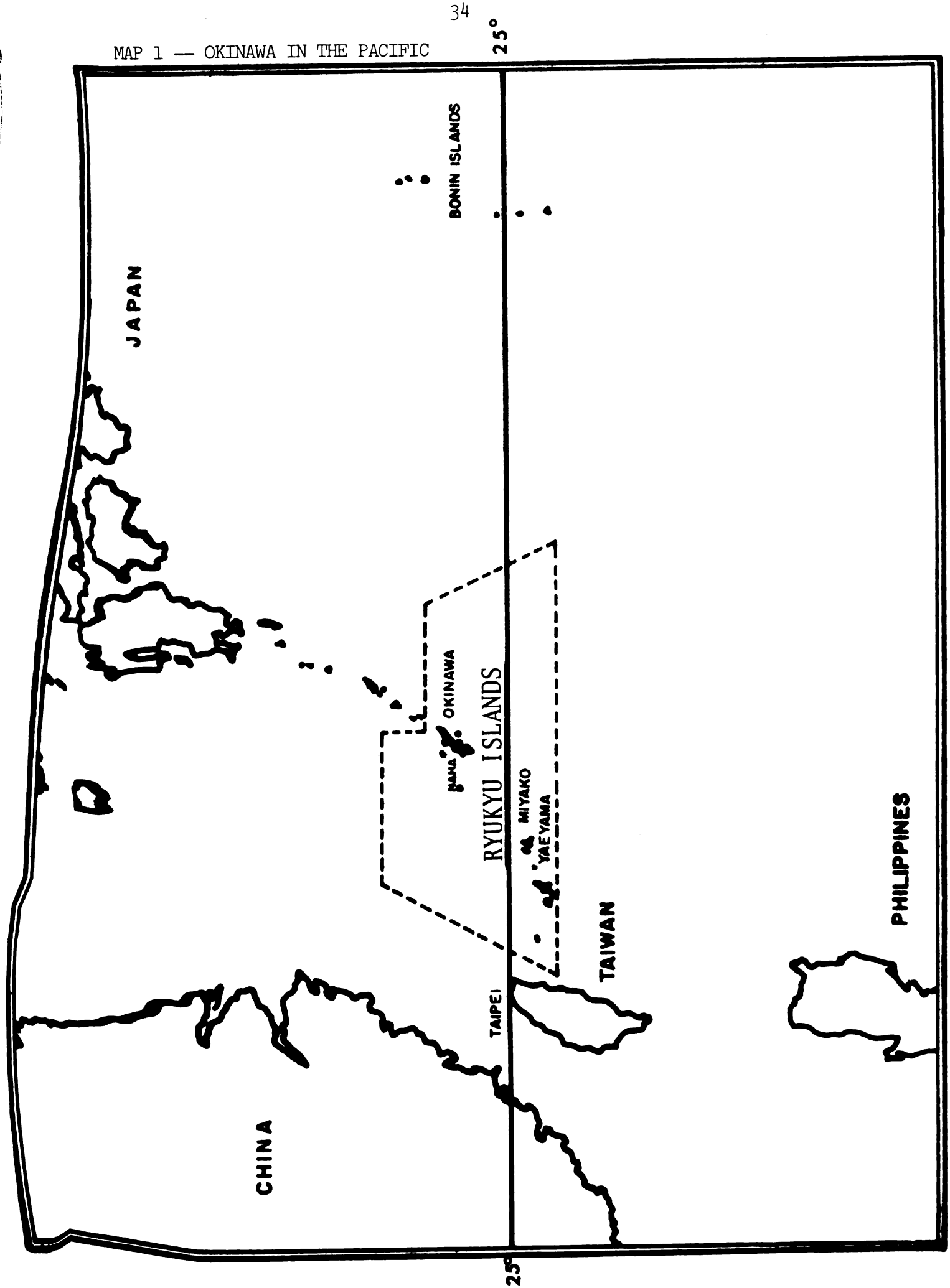
Okinawa Today

Okinawa is the largest island of the Ryukyu chain, covering an area of 454 square miles, more than half of the entire chain. The islands stretch from the southern tip of Kyushu, Japan's southernmost main island, to 40 miles north of Taiwan, a distance of about 800 statute miles (see Map 1). The main island of Okinawa is located approximately equidistant between Tokyo, Japan and Manila in the Philippines, about 900 to 1,000 air miles from each.

The Ryukyu Islands as an administrative unit is smaller than the area mentioned above. In 1953, the Amami O'Shima group, those islands to the north of Okinawa, were returned to the administrative control of Japan. The remaining islands of the Ryukyu chain, consisting of three island groups (gunto), are administered jointly by the Government of the Ryukyu Islands and the United States Civil Administration of the Ryukyu Islands. The three gunto, from north to south, are Okinawa, Miyako, and Yaeyama. The Ryukyu chain consists of 83 islands, 48 of which support human life. They are the peaks of submerged mountain ranges, which have been built up through the slow, but constant process of coral formation.

Much of Okinawa is hilly, though not mountainous, with a number of fertile valleys and relatively flat areas. The mountains become increasingly higher as one travels north from Naha, the capital city. The highest peak is Yonaha-dake, 1,650 feet, in the northern-most township of Kunigami. Central

MAP 1 -- OKINAWA IN THE PACIFIC



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and southern Okinawa are relatively flat, though dotted with rolling, rocky hills. The Island is picturesque, especially in the northern areas where one can stand atop heavily forested hills and watch the surf breaking on coral reefs far below. The Island is approximately 65 miles long, and varies from 2 to 17 miles in width. The ocean can be reached from nearly any point on the Island in just a few hours walk, or at most a 30-minute drive or bus ride.

There are fewer trees in the central and southern areas since this is where most of the World War II fighting occurred. The sight of a lone, bent, wind-swept pine silhouetted against the sky and ocean is a rare and beautiful sight. A quiet mountain village in northern Okinawa is just a few hours bus ride from the bustling, traffic-congested city of Naha, a city which had to be completely rebuilt following the war. Visible scars of the war are few today, though one can find bullet-pocked walls upon close scrutiny. Unexploded shells are still found in remote areas, but it is increasingly more difficult to determine whether it was left from World War II, or a present-day U.S. military maneuver. Perhaps the most noticeable scar, other than the ever-present American troops and equipment, is the dearth of mature trees in the central and southern parts of the Island. It is no longer common, as reported by earlier observers, to see Okinawans wearing ill-fitting army fatigues, though the practice has not entirely disappeared.

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Okinawa Island, with nearly 760,000 persons in 1965, is the largest and most populous in the Ryukyus. Deducting land area occupied by the U.S. Military Forces stationed on Okinawa, the population density averages more than 2,300 persons per square mile, making it one of the most densely populated areas in the world. U.S. Forces are currently using approximately 30 per cent of the total land area of the Island, much of it arable, potential farm land in central and southern Okinawa.

Eight of the ten most populous cities of the Ryukyu Islands are located on Okinawa. The two largest, Naha and Koza, had estimated populations of 257,177 and 55,923 respectively at the end of 1965. The other five are located in central Okinawa, and one, Itoman is in the south. The largest town in northern Okinawa is Nago, estimated at about 20,000 population in 1965.

Okinawa was, until the end of World War II, a part of the Japanese Empire, having been established as Okinawa Prefecture (ken) in 1879. Since the close of the war, Okinawa has been under the administrative jurisdiction of the United States. Japanese is the official language in Okinawa today, but Okinawan dialect (hogen) continues as the language spoken at home by many. Okinawan dialect is distinctive from Japanese and those individuals speaking both would be classified as bi-lingual.

At the time of my research, Okinawan dialect was still spoken in the rural areas by those of all ages, but

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most markedly by old women and young children. Japanese is taught in the school, and has been for more than a century. Research was facilitated by the fact that my field assistant was especially proficient in Okinawan dialect, and, therefore, our acceptance in central and northern Okinawa was considerably augmented. My feeling is that a knowledge of Okinawan dialect on the part of a young man or woman considerably enhances his or her position with peers. A case in point is a young man I knew who conducted his radio program entirely in Okinawan dialect. He was very popular with youth in Naha, as well as in the rural areas. Local television stations have regular presentations in Okinawan dialect and these appear to be very popular among viewers. Folk-theatre and religious observances are also invariably conducted in Okinawan dialect.

The total impact of television on Okinawans is difficult to estimate at this point. Establishment of a microwave system in 1964 brought live television programs to Okinawa from Japan for the first time. It presented Okinawans with an opportunity to see the manner and style of life of the "average" Japanese family as portrayed on television. One program which was particularly popular centered on the problems of a family of 11 persons and presented a detailed look into the home life of this one Japanese family. Other similar programs also gave Okinawans a chance to see how their "other half" lived. Japanese wrestling (sumo) was also very popular, and virtually every activity ceased during the live

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telecast of the 1964 Olympiad from Tokyo. On more than one occasion during the Olympic Games, I found township and village leaders unaccessible.

All major newspapers are printed in Japanese and carry a high percentage of news from Japan. Magazines from Japan are also quite popular among rural Okinawans. In the sample referred to above, nearly 20 per cent of the households sampled read Ie No Hikari (Light of Household), a popular women's magazine in Japan. Approximately eight per cent read other Japanese magazines. It is difficult to fully assess the impact of mass media from Japan on Okinawa. The process of Japanization has been going on for decades. A fuller discussion of the role of mass media in the information flow process will be presented below.

Okinawa today is a better place to live than at any other time in history. In questioning informants about the major changes since World War II, nearly all first mentioned the improved standard of living. This was especially true among older informants who made ready comparisons with prewar days. Okinawans today are better clothed, better fed, better housed, have more entertainment and seem to enjoy their life more than ever before.

This cannot, however, be attributed entirely to the American presence. Farm production is higher, prices for farm crops are higher and employment opportunities are greater than before. Economic aid from both Japan and the United States has greatly influenced the expansion of the Okinawan

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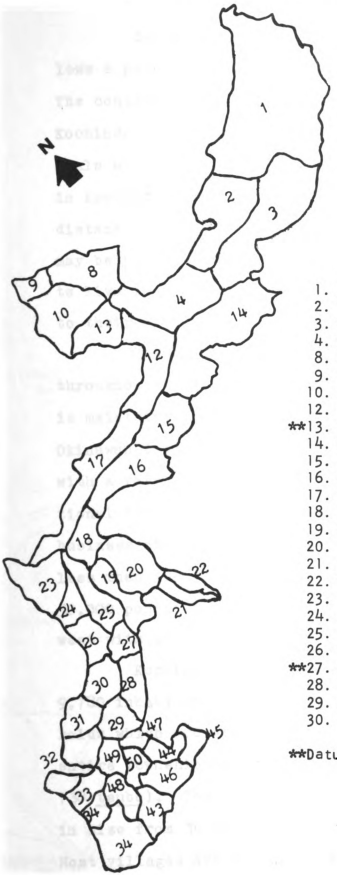
economy. Okinawa is being pulled into the 20th Century in the wake of Japan's rapid economic development and pushed into it by American influence.

The Sample Townships

Criteria employed in the selection of datum townships were presented in Chapter One. The following general descriptions of the townships serve to set the scene. Furthermore, since agricultural information is directed at the rural farmer, it is important to know something about the conditions in which such farmers live. General living conditions, ecological characteristics and the agricultural composition of the three townships will receive greatest attention in the pages to follow. A more detailed discussion of particular farmers and their situations will be given in Chapter Eight. Throughout the remainder of the study, the ethnographic present shall be employed in writing, i.e., materials will be presented as if it were July 1964 to August 1965, the period during which research was conducted.

Kochinda Township.-- Kochinda lies about seven or eight kilometers southeast from Naha City (see Map 2). It is situated in the center of southern Okinawa and is one of four townships on the Island with no coastline. Administrative offices of the township can be reached from Naha via two routes. The shorter route traverses a countryside covered with sugar cane fields and is about 20 minutes by car along a dusty, bumpy road which can accomodate two lanes of traffic.

MAP 2 -- TOWNSHIPS ON THE ISLAND OF OKINAWA



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3. Higashi-son
4. Haneji-son
8. Nakijin-son
9. Kamimotobu-son
10. Motobu-cho
12. Nago-cho
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14. Kushi-son
15. Ginoza-son
16. Kin-son
17. Onna-son
18. Ishikawa-shi
19. Misato-son
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21. Katsuren-son
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23. Yomitan-son
24. Kadena-son
25. Koza-shi
26. Chatan-son
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28. Nakagushiku
29. Nishihara-son
30. Ginowan-shi
31. Urasoe-son
32. Naha-shi
33. Tomigushiku-son
34. Itoman-cho
39. Nakazato-son
43. Gushichan-son
44. Sashiki-son
45. Chinen-son
46. Tamagushiku-son
47. Yonabaru-cho
**48. Kochinda-son
49. Haebaru-son
50. Ozato-son

**Datum Townships

Source: Ryukyu Islands Facts Book, 1963 Edition, United States Civil Administration of the Ryukyu Islands.

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The longer route, which takes about 30 minutes, follows a paved road leading to a missile site south of Kochinda. The contrast between busy, bustling Naha and the much quieter Kochinda is seen as a possible future asset by township officials who visualize a kind of suburban development occurring in Kochinda. There is hope that some day in the not too far distant future the shorter route linking Kochinda with Naha may be paved thereby attracting city dwellers who might want to live in a quieter surrounding and still have easy access to their city jobs.

Buses run from Kochinda to Naha every ten minutes throughout the day. In addition, a taxi stand of five cars is maintained about 200 yards from the township office. Okinawan taxis are reputed to be the cheapest in the world with a rate of 15¢ for the first mile and 4¢ for each additional 850 meters. The cost from Kochinda to the central business district of Naha is about 51¢ or 55¢. Bus fare is less than 10¢ to the city. Itoman, a town of more than 30,000 population, is about eight kilometers to the southwest with bus service every 30 minutes.

Kochinda is the largest of the datum townships. Its 9,780 inhabitants (September 1, 1964) live in 1,748 households which are grouped into 13 villages (buraku). The entire township covers approximately five square miles (3,899,738 tsubo). The 13 villages that make up the township vary in size from 34 households to 438 households (see Map 3). Most villages are composed of a single settlement area, how-

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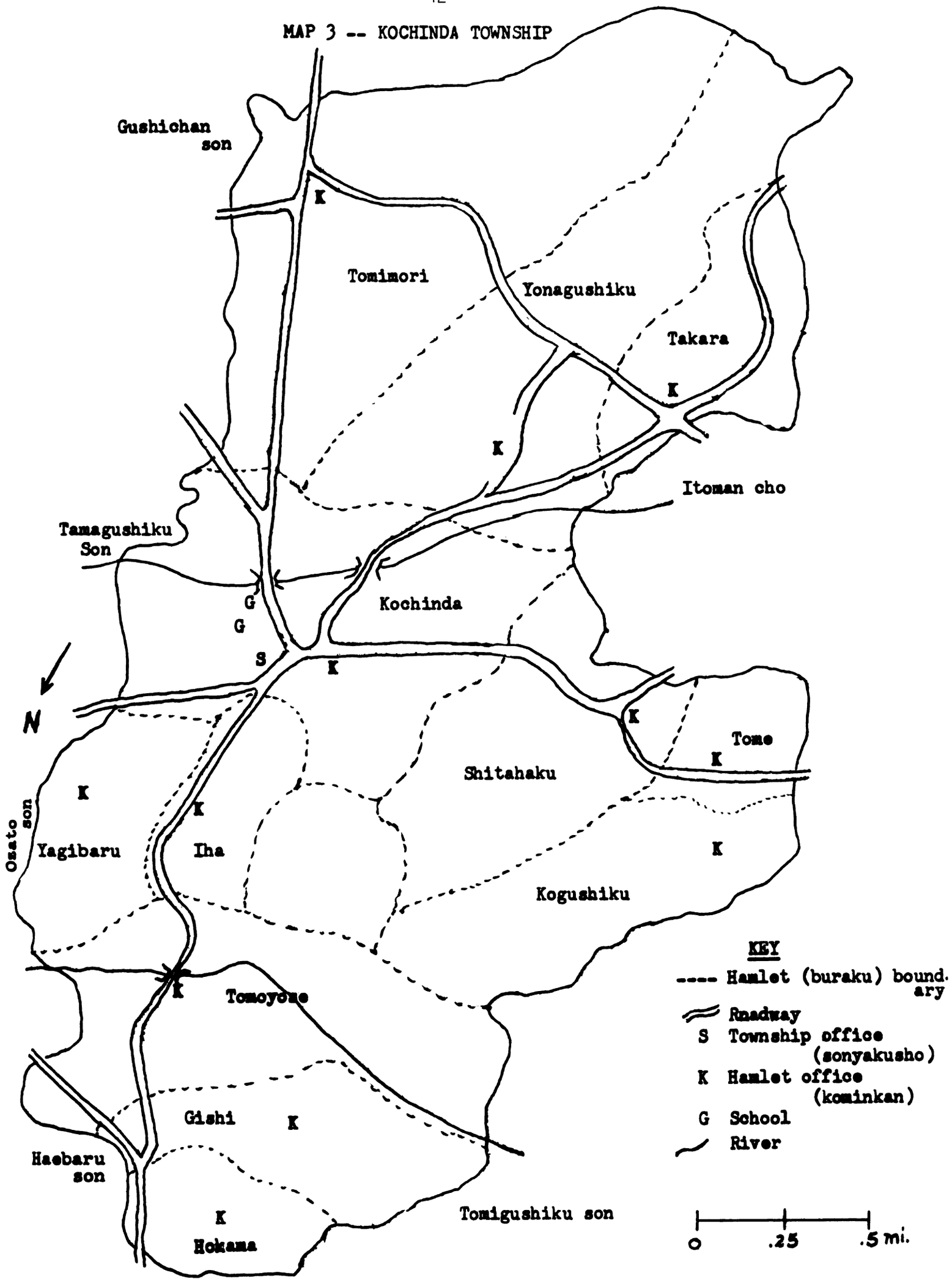
MAP 3 -- KOCHINDA TOWNSHIP



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ever, some contain two separate residential areas. Settlements are usually found along a roadway, though some have access to the road only along narrow foot paths. Kochinda village, the largest of the 13 villages and the seat of township government, is located at the intersection of three roads, all of which are unpaved.

The land, for the most part, is flat though occasional hills of low height arise among the fields. Mt Yaezu, 515 feet high, stands in the extreme southern part of the township. Most of the home sites sit back away from the road and are generally ringed by a block wall, a fence or a shrub row. Privacy is maintained in this way even though houses may be quite close together. Agricultural fields are located away from home sites, sometimes at great walking distances. Footpaths and very narrow roads weave their way among the home sites. Two rivers wind across the township from east to west, though they are dry most of the year.

Settlement patterns appear to bear little relationship to the rivers, which more appropriately should be called streams. Virtually every home was destroyed during World War II and rebuilt since then. Most homes are of solid wood construction with tile (34%) or tin (27%) roofs. Other homes are of either slab (10%) or block (11%) construction with tile or tin roofs. Fewer than 20 per cent of the houses still have thatched roofs. The importance of privacy to the Okinawan can be seen in the construction of a new home site. In the two instances known to me, the wall was constructed

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One further characteristic of the landscape is the large number of burial tombs which dot the countryside, especially the sides of hills. These tombs are large constructions with an interior area sometimes equal to an average-sized house and an exterior shape resembling the back of a turtle, an omega or a horseshoe. The tombs, apparently modeled on those in Fukien Province in southern China, are the burial place for members of a patrilineal sib (Lebra, 1966). Though the tombs cover a total area of about 12 hectares (36,438 tsubo), the land upon which they have been built is generally unsuitable for sugar cane cultivation, and represents no loss of arable or potentially arable land in most instances.

In the total population, women outnumber men by somewhat less than 200 (see Table 1 for populations by village). Births over the past five years have averaged about 250 per year and deaths about 45 per year producing a rate of natural increase slightly higher than 200 per year. The total population has increased at a slower rate, pointing to outmigration.

The actual rate of outmigration is difficult to ascertain, though some indication can be gleaned from the following interpretation of statistical information available. The population in 1960 was 9,338; in 1963, 9,585; and in 1964, 9,780. At the natural rate of increase of 200 persons per

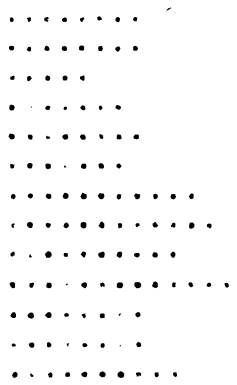
TABLE 1.-- Population and household by village -- KOCHINDA[1]

Village	Males	Females	Total	#Households
Kochinda.....	1,232	1,159	2,391	438
Tomimori.....	631	688	1,319	240
Yonagushiku.....	546	585	1,131	188
Shitahaku.....	435	432	867	153
Tomoyose.....	352	384	736	146
Kogushiku.....	352	383	735	132
Gishi.....	326	339	665	118
Tome.....	319	331	650	116
Takara.....	163	199	362	64
Iha.....	128	127	255	44
Uetabaru.....	110	140	250	40
Yagibaru.....	109	125	234	35
Hokama.....	90	95	185	34
Totals	4,793	4,987	9,780	1,748

[1]Based upon statistics provided by the township administrative office.

year, the population in 1964 should have been about 10,130, or 350 more than the actual 1964 count. This would indicate a gross outmigration of approximately 70 persons per year.

The fact of outmigration, though not the actual rate, was confirmed in many interviews. The number of households in Kochinda has changed by only a few since 1959. This, however, alone is not sufficient evidence since household to many refers to actual structures as well as the inhabitants of those structures. The lack of empty houses is a good indication that the outmigration was individual rather than familial. Only two instances were reported involving new families moving into Kochinda in the past few years. There may have been others I did not know of since I did not interview in each of the nearly 1,800 households. I did, however, interview in each village and a new member



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in the village would almost certainly have come to my attention through one of those interviewed, especially since in each village I interviewed the headman (buraku cho) whose business it is to know such things.

The primary occupation of a large majority of Kochinda dwellers is agriculture, nearly 1,400 of the 1,748 households are classified as farming households. Numerous other occupations represented include base workers, construction workers, school teachers, clerks, government workers, taxi and bus drivers and services of various kinds. Table 2 presents a breakdown by occupation of the total Kochinda labor force.

TABLE 2.-- Occupational Structure -- KOCHINDA[1]

Type of Work	Number of Employees
1. Agriculture	2,590
2. Base Employee	384
3. Official Service: includes government workers, school teachers, etc.	194
4. Transportation Service	156
5. Construction	196
6. Wholesale & Retail Sales	89
7. Other Services	48
8. Manufacturing	44
9. Other: includes those working on social welfare and other non-official jobs, such as road repair, etc.	453
Total	4,154

[1]Based upon statistics provided by the township administrative office.

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By and large, the population of Kochinda would be classified as young in that more than half the total population is 19 years of age or younger. The proximity and ease of transportation to Naha and Itoman make it possible for many to live in Kochinda and work outside. Many of those who work outside also maintain sugar cane fields which are worked by their families and by themselves in their spare time.

Sugar cane is by far the most important crop cultivated in Kochinda. Nearly 80 per cent of the planted area of the township is devoted to raising sugar cane. Table 3 is a breakdown of the various crops cultivated by Kochinda farmers. The reason most often given for the preponderance

TABLE 3.-- Utilization of Arable Land -- KOCHINDA[1]

Crop	Area Planted (Hectares)	Percentage
1. Sugar Cane.....	693.33	78.0
2. Sweet Potato.....	88.00	10.0
3. Vegetables.....	44.04	4.9
4. Paddy for Rice.....	14.10	1.6
5. Other.....	8.00	.9
6. Land not in use.....	40.68	4.6
Total	888.15	100.0

[1]Based upon statistics provided by the township administrative office.

of sugar cane over rice is the lack of water necessary for rice growing. When the cane is ripe, it dominates the entire scene, even obsuring houses and other features of the landscape.

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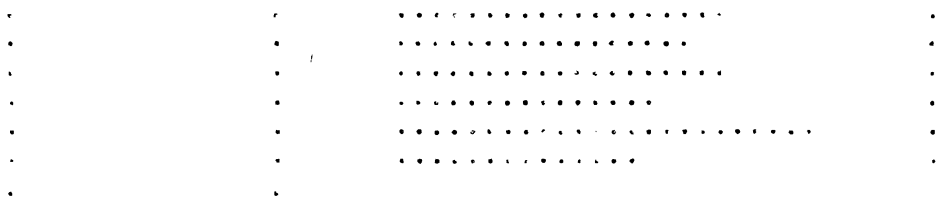

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The entire township was ravaged during World War II and all inhabitants were forced to move to other parts of the Island. Virtually every home site was destroyed and had to be rebuilt following the war. The area was utilized as an ammunition storage area during and shortly after the war and movement back into the township was held up until all ammunition had been removed. The final village of the township to be opened for resettlement was Takara in October 1949, barely one month after ammunition removal was completed. Houses, roads, schools and all public buildings had to be rebuilt and this took until nearly 1960 to complete. Early in 1960 a plan was underway to amalgamate (gappei) Kochinda with the neighboring townships of Ozato and Gushichan and an amalgamation organization to study the move was established. The mayor took a trip to Japan to study the amalgamation process there, but the plan was dropped in July of 1960 as being not feasible. By late 1961 a new two-story township office (sonyakusho) had been constructed and occupied. A new office building for the agricultural cooperative was completed early in 1962.

Since the war a township water system and electricity have been established with service to each house. This, according to the mayor, is one of the major changes since the war. As he explains:

> One of the other major changes since the war is the fact that the living standard has gone up. In pre-war days, there was no electricity, no water supply facilities (suido), no television and no radios in the township. The living standard has gone up so now we have to work to buy these things.

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It appears many have done so. More than 95 per cent of the households in Kochinda own at least one radio; over 70 per cent have television sets; approximately seven per cent have refrigerators; more than five per cent have electric washing machines; and many others have electric fans to cool the many hot, humid summer days. Though mass communications will be discussed in greater detail later, it should be pointed out that more than 51 per cent of the households take at least one daily newspaper.

Average family size in Kochinda is fairly large. The largest number of families (22.5%) contain seven persons. Nineteen per cent have eight persons; 18 per cent, six persons; and 14 per cent, nine persons. Families of ten or more persons comprise nearly 15 per cent of all families in Kochinda. Those with three, four and five members total only eight per cent of all families. The war broke up many families through the death of one or both parents, though the effect seems to have been less than one would expect. Nearly 92 per cent of the families in Kochinda have both parents and one or more children. In five per cent of the families the father is missing and in 1.4 per cent the mother is absent.

The Kochinda Primary School and its two branches in the township have a total enrollment of 1,767 children and the junior high school has an enrollment of nearly 800 pupils. The two schools employ 65 teachers. Those attending high school total nearly 1,200 and all must attend classes outside the township as there is no high school in Kochinda.

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The largest number attends the Itoman High School (620 attending daytime and 45 attending evening classes). Second highest enrollment is at the Southern Agricultural High School (350, of which 41 attend evening classes). Others attend high school in Naha, Shuri, Chinen and Futenma, as well as industrial, business and fisheries high schools.

In summary, then, Kochinda meets the criteria set forth above for the selection of datum townships. Its population is just less than 10,000; it is located in the southern district of the Island; the primary crop is sugar cane; and it is located within easy access of Naha city. In addition,township officials cooperated in every respect.

Kitanakagushiku Township.-- Though smaller than Kochinda, Kitanakagushiku is a much busier, active locale. The busy, traffic-laden highway (No. 30) running through the center of the township with trucks, cars, taxis and buses honking and passing at all hours stands out in sharp contrast to Kochinda's dusty, relatively untraveled main street. The primary reason for activity in Kitanakagushiku is its central location (see Map 2 above). The township is situated between the second and third largest population centers on the Island, Koza city to the north and Ginowan city to the south. Futenma, the central business district of Ginowan city, is within a 15- or 20-minute walk from the center of Kitanakagushiku township. Koza, a city of more than 50,000 inhabitants, is less than 10 minutes away by bus.

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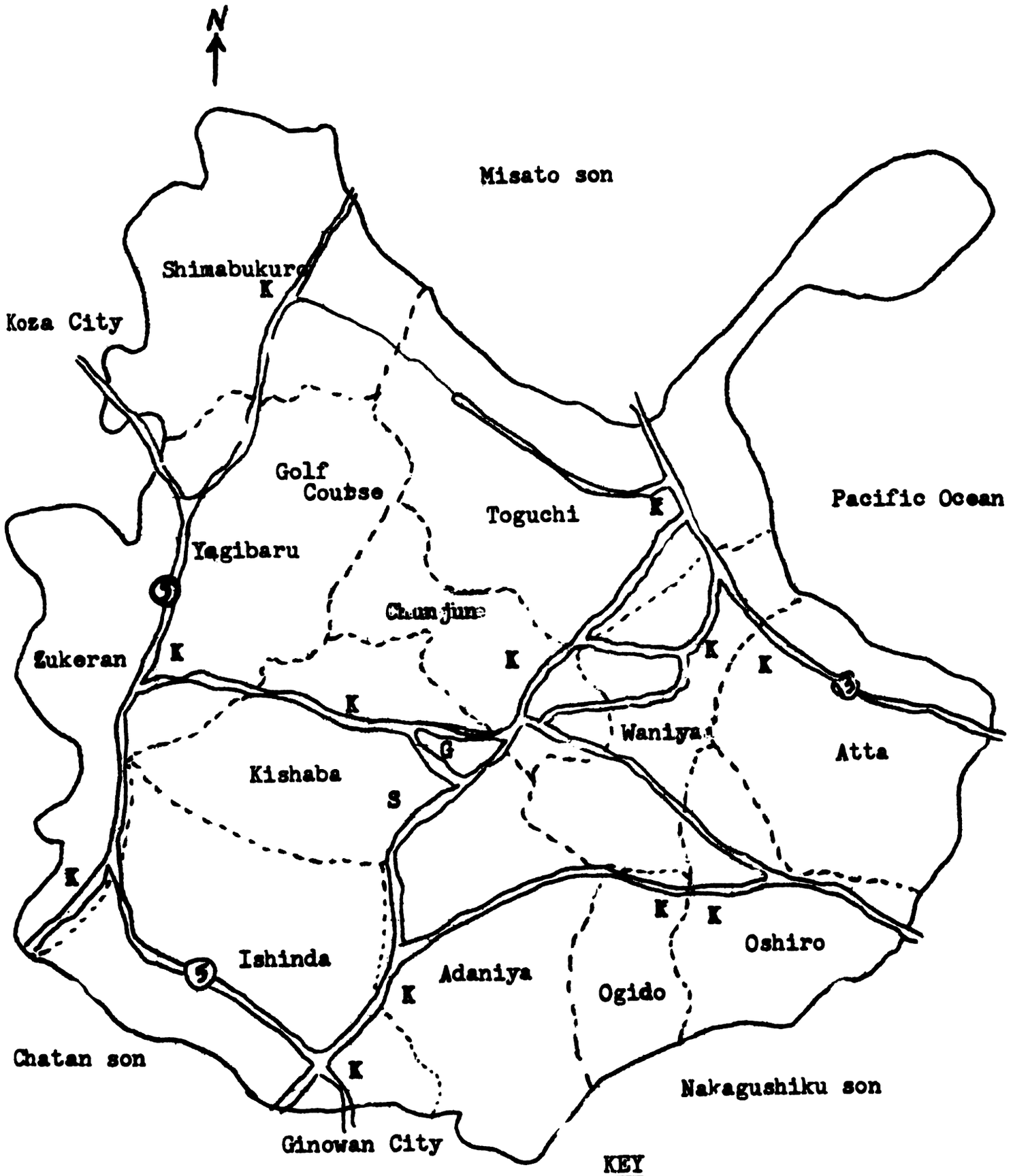
The township is split in half by a paved, two-lane highway (no. 30) which runs from the Pacific Ocean coastline village of Toguchi, past the township offices to the main four-lane highway (No. 5) connecting Futenma and Koza (see Map 4). Four of the township's 12 villages are located along this highway and two others are situated along the main north-south, paved highway (No. 13) running along the Pacific Ocean side of the Island. In addition a road leading to the famous Nakagushiku Castle Park begins in the township running from Highway No. 30. A golf course, for both Okinawans and Americans, is located in the northwestern part of the township and another park is situated on Highway No. 5, about one-fourth of a mile from the township offices.

The terrain is hilly and the central part of the township resembles a valley cut between two high hills, or low mountains. Sugar cane fields dominate the countryside, though vegetable fields of considerable size are also evident in different parts of the township. The twelve villages which make up the township are for the most part located either near one of the main highways or in the mountainous, southern part of the township.

Also scattered throughout different parts of the township are housing areas set aside for occupancy by foreigners, i.e., American military and civilians and their dependents. A large section of land in the western part of the township has been expropriated by the military and therein is located the buildings of the United States Army Ryukyu Islands,

MAP

MAP 4 -- KITANAKAGUSHIKU TOWNSHIP



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(USARYIS), the central command of the armed forces located in the Islands. Approximately 33 per cent of all township land has been expropriated for use by the military. Table 4 shows the total amount of land by classification and the amounts and percentages of each type expropriated by the military.

TABLE 4.-- Type of Land and Amount Expropriated -- KITANAKA-GUSHIKU[1]

Type of Land	Total Land in Hectares	Amount Expropriated Hectares	Percentage Expropriated
Paddy.....	37.02	11.55	31.2
Field.....	580.36	213.71	36.8
Housing Area..	80.47	16.58	20.6
Forest.....	184.09	27.87	15.1
Moor.....	79.73	17.65	22.1
Other.....	61.77	43.06	69.7
Total	1,023.46	330.44	32.3

[1]Based upon statistics provided by the township administrative office.

Kitanakagushiku's central location and nearness to both city and base is reflected in employment statistics. Less than 20 per cent of the total labor force of 2,400 persons is classified as agricultural employees. An even smaller number, 12 per cent, is employed in a secondary industry, that is, manufacturing, mining and construction. A majority of workers, 68 per cent, is employed in tertiary industries, primarily services and base work. An estimated 800 persons (30 per cent) work on military bases. The total population of 9,275 includes approximately 800 foreigners, i.e., American

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military and civilian personnel; leaving a Ryukyuan population total of 8,475 (December 31, 1964). The 2,100 households also include 421 foreigner households. The number of Ryukyuan households in the township totals 1,679. The average number of persons per household is somewhat smaller than in Kochinda, 5.04 as compared with 5.6.

The township is divided into 12 villages, shown in Table 5 together with population and number of households.

TABLE 5.-- Population and Households by Village -- KITANAKAGUSHIKU[1]

Village	Males	Females	Total	#Households
Atta.....	890	967	1,857	360
Shimabukuro.....	617	656	1,273	245
Adaniya.....	582	671	1,253	230
Kishaba.....	381	418	799	167
Yagibaru.....	253	268	521	109
Toguchi.....	224	257	481	103
Waniya.....	227	216	443	74
Chunjun.....	192	216	408	93
Ishinda.....	169	201	370	80
Zukeran.....	166	195	361	67
Oshiro.....	172	183	355	80
Ogido.....	168	186	354	71
Total	4,041	4,434	8,475	1,679

[1]Based upon statistics provided by the township administrative office.

As in Kochinda, women outnumber men, though by considerably more here. This is probably explained by the heavier losses of men in central Okinawa during World War II. The difference would be much higher in both villages, except for the fact that more male children have been born since the war. Males under 24 years of age in Kitanakagushiku outnumber

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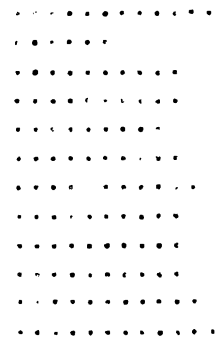

females in the same age group by nearly 100. This might be explained partly by the important role of the male in carrying on the family line. A woman will usually continue bearing children until a boy is born and in many cases, until two are born to make certain the family line is continued. A similar situation, however, does not prevail with regard to female children.

The rate of natural increase has averaged about 150 persons per year over the past four or five years, whereas the population has only increased 268 since 1960, having actually decreased to a low of 8,053 in 1962. This indicates a rather high rate of outmigration. The pattern is somewhat different than in Kochinda in that the number of households has also decreased since 1960, indicating that outmigration has been familial as well as individual.

One factor contributing to the decline in total number of households is the sale of homes and home sites to foreigners. Of the 421 houses for foreigners located within township boundaries, 248 are owned by non-Ryukyuans. The township's proximity to Koza and Futenma, USARYIS Headquarters and one of the largest Post Exchange complexes on the Island, Fort Buckner, makes it a very desirable living area for military and civilian personnel and their families.

Houses are nearly all of wood construction, though one does see an occasional house made of block. Nearly half of the houses have tile roofs (46%) whereas comparatively few are still thatched (11.8%). The remaining roofs are of

tin (31%); slab (7%); and other materials, such as slate (less than 1%). As in Kochinda, house sites are sheltered by either stone walls, block walls, or a hedge row. Noise from the highways running through the township is rarely heard in village centers which are usually well back from main roads. Houses are generally clustered in an area around the village office (kominkan) and agricultural fields are located at some distance from housing areas.

Of the 1,679 households, 970 have sufficient land to be classified by the township administration as agricultural. Table 6 presents the number of farm households, amount of land and average holdings per household.

TABLE 6.-- Cultivated Land by Village and Household -- KITANAKAGUSHIKU[1]

Village	Total Households	Agricultural Households	Cultivated Field (Hectares)	Sugar Cane and Vegetable Field (Hectares)	Paddy Field (Hectares)	Cultivated Land per Household
Atta.....	360	250	75.12	75.00	.12	.30
Shimabukuro...	245	60	8.30	8.00	.30	.14
Adaniya.....	230	130	32.70	32.70	-0-	.24
Kishaba.....	167	80	16.00	16.00	-0-	.20
Yagibaru.....	109	62	12.00	12.00	-0-	.19
Toguchi.....	103	54	16.20	16.20	-0-	.30
Chunjun.....	93	64	20.00	20.00	-0-	.31
Oshiro.....	80	60	19.06	18.80	.26	.32
Ishinda.....	80	44	6.50	6.50	-0-	.15
Waniya.....	74	64	21.05	21.00	.05	.33
Ogido.....	71	56	21.32	21.20	.12	.38
Zukeran.....	67	37	4.60	4.60	-0-	.12
Total	1,679	970	252.85	252.00	.85	.26

[1]Based upon statistic provided by the township administrative office.

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It is evident from Table 6 that the amount of land available for agricultural purposes varies considerably from village to village. In Zukeran and Shimabukuro, for example, much of the land has been expropriated by the military and as housing areas for foreigners. More than half of the non-Ryukyuan houses in the township are in Shimabukuro. Other villages with large numbers of foreign dwellings are Toguchi, Chunjun, Kishaba and Waniya. House sites for foreigners on the average are more than twice as large as house sites for Ryukyuans, thus requiring a considerable amount of land.

Of the total amount of land cultivated, more than 85 per cent, or 214.6 hectares (650,450 tsubo), is planted in sugar cane. Less than 25 per cent of the total township land is actually cultivated, much of it having been expropriated or in many instances unfit for cultivation. Six hundred and sixty households plant sugar cane.

Two kinds of vegetable cultivation are found in the township. The majority of the 582 households growing vegetables do so for home consumption and have small plots in or near the house yard. About 100 of this number grow vegetables primarily for sale to U.S. Forces and to markets in Koza and Futenma. Sweet potatoes are grown by 229 households, the crop being almost exclusively for home consumption, humans eating potatoes and hogs eating the leaves. An insignificant amount of land is planted in rice paddy by only eight households. The amount of rice produced is far below the consumption requirements of the township.

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Land ownership and tenancy is made somewhat complex in rural Okinawa by the fact that many farmers work land that they own while at the same time working rented land and also possibly renting some of their land to others for cultivation. This is related to the location of the fields, most of which are usually a five-to 20-minute walk from the home site of the owner. Furthermore fields are not located in one place, but scattered about. Thus, a man may find it more convenient to rent some of his own land to someone with fields near his, and rent from someone who has fields in the vicinity of his remaining fields. This alleviates, somewhat, the laborious movement of people, goods and equipment from field to field. Nearly 58 per cent of the farm households owned the land which they were cultivating, whereas, another 21 per cent were both renting land and cultivating their own land. Another 22 per cent were primarily renting.

Land holdings among Kitanakagushiku farm households are quite small. Approximately 75 per cent of the 970 farm households have less than .3 hectare (909 tsubo) at their disposal for agricultural production. Ninety-one per cent hold less than .5 hectare (1,515 tsubo) and only two households more than 1.0 hectare (3,030 tsubo). Table 7 lists the number and percentage of farm households by scale of farm.

A further indication of the scale of farming in Okinawa was mentioned above, that is, the fields on one individual farmer are not all located in one contiguous area, but fragmented. This means that an originally small amount

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of land is further subdivided leaving plots of .05 hectare (152 tsubo), more or less, for actual cultivation, and these often quite far apart.

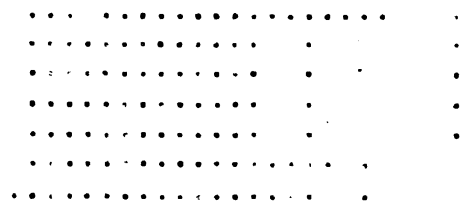
TABLE 7.-- Agricultural Household by Scale -- KITANAKAGUSHIKU[1]

Amount of Cultivated Land (hectares)	Number of Agricultural Households	Percentage
Less than .05	78	8%
.05 -- .1	205	21
.1 -- .3	442	46
.3 -- .5	157	16
.5 -- 1.0	86	9
11.5	1	-
21.0	1	-

[1] Based upon data provided by the township administrative office.

Kitanakagushiku has only existed as a separate administrative unit since the late 1940's. Prior to that time it was part of a larger township, Nakagushiku-son. Various reasons are given for the split, but the one most often cited is transportation. Following the war, a military base area was established at what is now the dividing line between Kitanakagushiku and Nakagushiku. Township offices were in Nakagushiku and to get there from Kitanakagushiku it was necessary to go through the base. The Military Police stopped everyone whether on foot or in a vehicle. Those who might refuse were threatened with imprisonment.

It was felt that administrative efficiency and government contact with the individual would be enhanced through



the division into two townships. Others expressed the opinion that even prior to the war there was a tendency for the two now-separate areas to be different. It is pointed out that Nagagushiku is mainly a coastal township, whereas, Kitanakagushiku is only partly coastal, and mainly situated on the sides of hills.

At the time of the split, it was felt by most that a township of between 3,000 and 5,000 inhabitants was the most efficient administrative unit. This was in part supported by the mayor who had taken an observation trip to Japan and found Japanese authorities expressing such a view. Things have since changed and there is now a movement underway to amalgamate (gappei) Kitanakagushiku, Nagagushiku and Ginowan-shi into one administrative unit.

If such an amalgamation does come about, the new administrative district would have a population of more than 54,000 persons. The general feeling now-a-days is that a larger administrative district can do more for its people than can a small one. Transportation has become more efficient and there is little worry about getting to the township office, whether it be in Kitanakagushiku or Ginowan. In fact, one man pointed out that much of the shopping is done in Ginowan now and that if a person stops first at the township office in Kitanakagushiku, then goes shopping, it costs more to ride the bus than a trip straight to Ginowan. The base between Nakagushiku and Kitanakagushiku is no longer much of a dividing line, being circumvented by a paved highway.

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The two schools in Kitanakagushiku have a total enrollment of 1,757; 1,134 in the primary school and 622 in the junior high school. There are, in addition, 178 kindergarten students who attend four different schools held in village offices (kominkan). The junior high school, which was built in 1948, has classrooms made of block construction.

The primary school, on the other hand, was originally built in 1898 and many of its buildings are inadequate. Many of the classes are held in old Army Quonset huts. Those with tin roofs are extremely hot when the sun beats down upon them, and others have holes and leak when it rains. The principal told me that if it rains hard, the children have to sit inside the classrooms under umbrellas to keep from getting wet. Other classrooms are made from wood and actually shake and rattle in strong winds.

Kitanakagushiku's nearness to urban centers and availability of transportation is reflected somewhat in the smaller number of privately owned autos than in Kochinda. In Kitanakagushiku less than 100 persons own cars, whereas the number was more than 200 in Kochinda. Fewer persons own radio and television sets in Kitanakagushiku than in Kochinda; 71 per cent own radios and only 52 per cent own television sets. More, however, have their own washing machines (9.4%) and refrigerators (17.9%) as compared with five per cent and seven per cent respectively in Kochinda.

It is extremely difficult to state conclusively that one township is wealthier on the average than the other.

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Nearly everyone holds the opinion that those who grow vegetables for marketing are better off economically than sugar cane growers. There is also little doubt that base workers fare better than farmers, though many households have members engaging in both. The total number of households of both types is greater in Kitanakagushiku, which might indicate a somewhat higher standard of living than in Kochinda.

In summary, Kitanakagushiku fits the criteria outlined above in the selection of townships for study. It is somewhat larger than originally intended, but its proximity to military bases, location in the central part of the Island and the relatively large number of households raising vegetables were all points of more importance than population size. The mayor of the township was cooperative on all accounts, giving freely of his time whenever asked. He, himself, was very interested in the research, not only in his capacity as mayor of the township, but also as president of the Okinawa-wide city, town, township (shi, cho, son) mayor's association.

Yabu Township.-- Yabu, in northern Okinawa, is the smallest and most isolated of the three townships (see Map 2 above). Buses from Naha leave every half hour and travel north up Highway 1 along the East China Sea coast to Nago, the largest town in the northern part of the Island. The trip lasts more than two hours, with many stops along the way. The highway is paved, but gets hilly and full of sharp curves as it nears Nago. Passengers must change buses at Nago to go to Yabu

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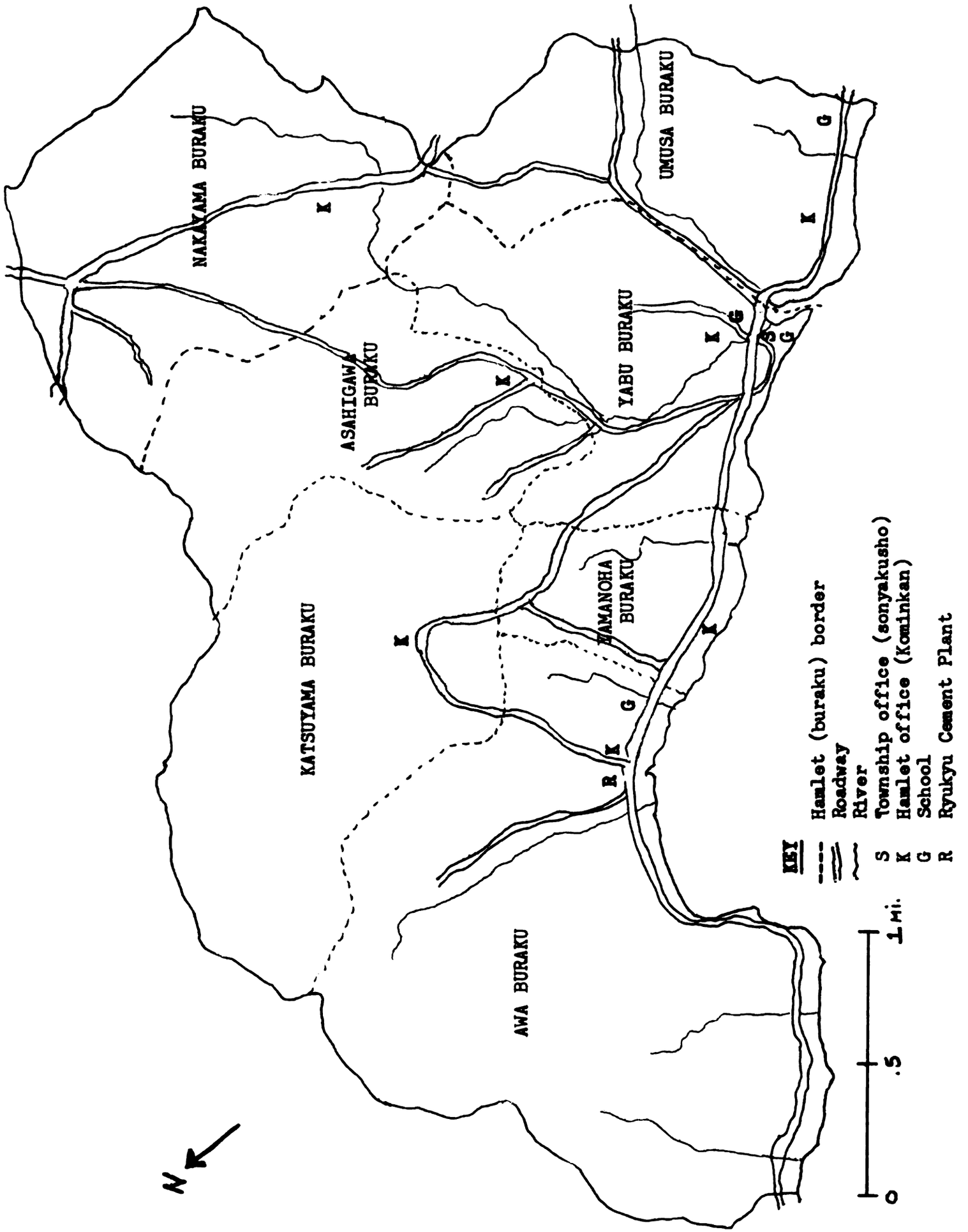
The trip takes less than 15 minutes from downtown Nago to the Yabu township office along a dusty, crooked, bumpy, and as yet, unpaved road. The trip is further complicated by paving and construction crews at work along the way. To reach some of the remoter villages of Yabu, those in the mountains, one must continue his journey on foot, unless fortunate enough to find a taxi driver willing to make the trip into the mountains. Roads into the mountains are steep, rocky, narrow and crooked, though navigable with caution.

Geographically, Yabu is two separate areas, composed of four coastal, lowland villages and three mountainous villages (see Map 5). Three-fourths of the population (3,162 of the 4,355 total) live in the four coastal villages. Both have their disadvantages; poisonous snakes (habu) in the mountains, and tidal waves in the coastal areas. During my stay in the township, a tidal wave warning was sounded. Those in the coastal villages were on alert, but there was no fear in the mountain villages.

Visiting patterns are quite different in the two areas. Virtually no one ventures out at night in the mountains because of the danger from poisonous snakes. Most meetings are held during daylight hours in the mountains, whereas night meetings are more common in the coastal area. Two of the four highest peaks in Okinawa are located within Yabu's township limits. Mt. Yae (1,499 feet) and Mt. Katsu (1,479 feet). The mountains have become a valuable economic resource:

MAP 5 -- YABU TOWNSHIP



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> The rocky hills of Yabu-son, which are beyond development for cultivation, are being converted into dollars ever since the rocks began to be used for construction materials and as raw materials for the manufacture of cement. It is said that the rocks are even exported to South Viet Nam as construction materials. Five or six years ago a contractor discovered that the hills are comprised of good quality limestone. Since then, stone quarrying enterprisers started operation one after another until the number presently exceeds 20. Almost all stone quarrying hills are privately owned, about 80% of the 300 workers are natives of Yabu. The stone quarrying enterprise is also benefiting the village, and tax revenue of some $50,000 is estimated from the business for the current fiscal year (Okinawa Times, Feb. 21, 1966).

The constant roar of trucks through the township is testimony of the above statement. At the northern end of the township, in Awa village, Okinawa's first cement plant is under construction. Upon its completion, it is expected that the cement plant will employ approximately 300 persons.

Mountains cover an estimated 80 per cent of the total land area of the township, leaving only about 13% of the land available for cultivation after subtracting other requirements, such as housing areas, tomb areas, public lands, ponds, swamps and so forth. The main crops planted are, in order of importance, sugar cane, pineapple and rice. This is in marked contrast to the situation as late as 1958. At that time there was virtually no sugar cane and just small amounts of pineapple grown. Since that time, sugar cane has become the most important crop in the township, covering an area of nearly 250 hectares (756,212 tsubo). Pineapple has increased from an unmeasurably small amount to 162 hectares (491,000 tsubo). Rice, on the other hand, has decreased from 101 hectares

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(306,900 tsubo) in 1951 to about 84 hectares (253,500 tsubo) in 1955, and finally to its present low of 31 hectares (93,121 tsubo). This is one of the more dramatic examples of a fairly common process occurring in Okinawa, i.e., the changing of rice paddy land into sugar can field.

In the 1955 township statistics, neither sugar cane nor pineapple were listed in a very detailed classification of crops, but by 1964 both had come to dominate a similar listing. Pineapple is grown mainly on the slopes of mountains, not particularly because it grows better there, but it is about the only crop of value that will grow at all on the slopes. New land is being cleared on those slopes at a rapid rate. If the price of sugar cane continues its downward trend, pineapple may soon outstrip it as the principal crop in Yabu.

Of the 827 households in Yabu, 75 per cent are classified as agricultural. The mountain villages are highest in percentage of farm households, Nakayama and Katsuyama both counting more than 90 per cent of their households as farm households and Asahikawa totaling 79 per cent farm households. Table 8 presents the number of households, population, number of farm households and land area of main crops planted in Yabu township.

The population has fluctuated considerably over the past 20 years. The high point was in 1949 when it rose to 6,345. It declined to about 5,000 in 1955 and to 4,191 in 1960. It has since risen to the present level of 4,355 in-

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habitants. The general population is older than in the other two datum townships and the problem of young people leaving the township for the cities is more extreme here than in either Kitanakagushiku or Kochinda. The problem is especially acute in the mountain villages, but this will be discussed later in relation to agriculture.

TABLE 8.-- Farm Household and Field by Main Crop -- YABU[1]

Village	Total Households	Farm Households	Farm Households (%)	Paddy Field	PLANTED AREA (hectare) Sugar Cane	Pineapple
Coastal						
Yabu.....	247	173	71%	15.02	85.18	24.53
Awa.....	175	125	71	1.33	36.77	13.54
Umusa.....	114	75	65	7.18	37.50	7.95
Yamanoha....	66	54	82	-0-	15.49	3.06
Mountain						
Asahikawa...	85	67	79	3.48	30.03	34.64
Nakayama....	72	66	92	4.00	20.22	67.07
Katsuyama...	68	62	91	.87	24.46	11.24
Total	827	622	75%	31.88	249.65	162.03

[1]Based upon statistics provided by the township administrative office.

The percentage of the population engaged in agriculture has declined from nearly 86 per cent in 1955 to the present 75 per cent. This is, in part, related to the expansion of the township offices and new employment opportunities within the township, especially quarrying operations and construction. The opportunity for base employment is limited due to Yabu's location, though approximately 40 persons are employed on U.S. Army missile sites in the vicinity. The total labor force is less than 2,000 persons.

The average size of farms in Yabu is larger than in either Kitanakagushiku or Kochinda. In Yabu only 58 per cent of the farms are less than .3 hectare (900 tsubo) and nearly 20 per cent are larger than .5 hectare (1.500 tsubo). More than 20 households have land totaling 1.0 hectare (3,000 tsubo) or more, whereas in Kitanakagushiku only two farms were that large. This is to be expected due to the importance of pineapple.

Much land has been reclaimed from the sides of hills and it is usually cleared in large sections. Pineapple fields are in nearly all instances larger than either sugar cane fields or rice paddy. But even in Yabu the most common situation is for a man to have his fields spread out rather than adjoining. This is indicated in the rate of renting. Just as in Kitanakagushiku, the percentage of households working rented land approaches one-half (47%). Many of those working rented land own land of their own which they also cultivate, or rent out.

Four schools are located in Yabu township, two primary schools, one junior high school and the Northern Area Agricultural High School. Total enrollment in the two primary schools is 748 Pupils. The larger of the two (enrollment of 436), located in Yabu village across from the township office, serves a school district which includes the villages of Umusa, Nakayama and Asahikawa as well as Yabu. The other primary school is located in Awa village and serves Katsuyama and Yamanoha villages as well.

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The Awa school was established in 1908 and is the newer of the two, although the buildings of the Yabu school appear in better condition and are of more recent construction. The need for two primary schools in this smallest of the three townships is related to the difficulty of travel due to the mountainous terrain. There is some friendly competition between the two schools as reflected in a statement by the principal of the Yabu school:

> There are two districts in Yabu township, this primary school and the Awa primary school district. Comparing the two, the leaders both now and before the split from Nago are graduates of this school. There are also many successful businessmen from here in Yabu and throughout the Ryukyu Islands as well as many graduates in Peru, Hawaii, etc., who are doing well.

Enrollment in the Junior high school is 408 students.

The Northern Area Agricultural High School serves not only Yabu, but the entire northern district. In addition, there is another high school, with a general curriculum, located in Nago. Enrollment of the agricultural high school is 825 students, 99 of which come from Yabu. It is located in Umusa village, near the Nago town border. The school was constructed in 1946.

Subjects taught include primarily agriculture, afforestation, manufacturing and home economics. Night classes in agriculture are also held. Only 27 per cent of the graduates return to their homes to continue farming. Approximately five or six per cent go on to higher education. Not everyone who applies to the school is accepted.

Of the 550 who took the competitive exam, only 280 were admitted. About 70 students live in dormitories maintained at the school.

The township council and officials had been trying to lure a big company to construct its plant or offices within township limits for the past ten years. All of these efforts came to fruition with the decision by the Ryukyu Cement Company to locate its 300,000 ton cement plant in Awa village. The company's decision was without doubt related to the rich deposits of limestone in Yabu's mountains. It is estimated that approximately 80 per cent of the materials utilized in the manufacture of cement can be found within Okinawa boundaries, most of them inside Yabu. Something that may also have entered into the company's decision was the warm reception given the company by the township in the form of a tax relief during the first five years of operation.

The township council approved a measure which would provide the company $60,000 aid in the form of tax deductions during the first five years. After that time, the total yearly tax paid the township by the company is estimated to be approximately $30,000. The mayor of Yabu indicated that other townships provide similar arrangements to prospective businesses.

The township can impose four different kinds of taxes on the company: normal township tax; fixed asset tax; business tax; and a tax on acquiring fixed assets. An education tax can also be imposed. The education tax is based upon a percentage of the total amount of tax paid.

Some other possible advantages are summarized by the chairman of the township council:

> We are now discussing giving priority to Yabu people in employment. The township office is always thinking about making good technicians of the young people. In all fields this will benefit the people of Yabu. If the population increases, prices of local land will increase, so this will give a direct influence to the people of Yabu. Many people employed in the company are living in Nago, so have to think about accomodations for these people, if they stay in Nago, they spend their money there and that doesn't help Yabu at all. It is estimated that 300 persons will work when full operation begins and when we consider the families moving into the village, it will add many more people.

At the present time 60 persons from Yabu are employed by the plant, and it is not yet in full operation. The number of Yabu employees is expected to increase in the future, but no one would venture a guess as to what percentage of the 300 employees would be from Yabu. Plans to expand the plant next year have already been laid.

The cement plant also presents some problems. From the township office's point of view it is necessary to balance the amount of tax money collected from the business against possible deductions that might occur in aid to the township from G.R.I. As the vice-mayor puts it:

> We have to consider the situation and relationship between the cement company and the township office. It is a serious problem because if we impose a large sum of tax on the cement company, then GRI will observe this and deduct it from the aid to the township. We have to balance these because we are giving aid to the cement company and if things don't work out right, Yabu will have many problems. We have to balance one thing against the other, but we expect to solve this problem through negotiation.

Other problems raised by the cement plant include increased traffic flow through the township. Principals of both schools are concerned about the possibility of traffic accidents involving children since both schools are located on the main road.

It was also reported that when many laborers were staying in the township during construction of the plant, the crime rate increased and it was necessary to put a police box in Awa village. There is also concern about smoke from the plant. It smells bad and has tiny particles in it and many are worried that it might be a health hazard. The principal of the Awa primary school, however, seems to best sum up the opinion of most Yabu township residents toward the plant:

> There are problems, people are worried about the smoke from the cement plant, it has a bad smell and is full of tiny particles, and we worry that it might be bad for our health. But if the economic effect is good -- the other things can be tolerated.

This in general is the attitude, to just be patient with the little things if the plant will be an economic asset to the township in the long run. To construct the plant it was necessary to purchase 6.6 hectares (20,000 tsubo) of land, nearly 60 per cent of the cultivable land in Awa village. The land was purchased at a price of $3 per tsubo (3.3 M^2), a high price when compared with 50¢ per tsubo which was the highest amount land of good quality might sell for.

Yabu as a separate administrative township is a post-war development. Prior to World War II, the villages now

comprising Yabu were part of Nago, but in 1946 Yabu split from Nago and formed a separate township. The relocation was in large part related to the damage wrought by World War II. Another reason given for the split is that Yabu is almost exclusively an agricultural community, whereas Nago is agricultural, fishing and a market center for the northern part of Okinawa. At the time, transportation and communication facilities were underdeveloped and leaders in Yabu felt they could better administer their area as a separate township than as a part of the somewhat more urban Nago district.. This is very similar to the conditions precipitating the Nagagushiku-Kitanakagushiku split.

Conditions have changed in the north much as they have in the central part of Okinawa and there is now talk and some action towards amalgamating Yabu with Nago once more. The plan receiving most support is one which would include not only Nago and Yabu, but Haneji, Yagagi and the northern part of Kushi. Those villages in the southern part of Kushi lean toward an amalgamation with Ginoza-son. The plan has been discussed by all town and township councils concerned and all seem to favor such an amalgamation plan. Reliable informants indicate the amalgamation might be completed within the next few years at the latest.

Amalgamations in Japan are presently being studied by officials to better understand advantages and procedures. No informant doubted the inevitability of the amalgamation and all spoke in favor. The trend toward increasingly larger

administrative units in Japan preceded the second world war and was further intensified in 1953 by the Local Autonomy Law. For a discussion of administrative amalgamations in Japan see Donoghue and Whitney (1965).

Only four of the seven villages in Yabu receive electricity from the Nago Electricity Company, and these only since late 1963. None of the three mountain villages have electricity, except from privately, or jointly owned generators, which operate only four or five hours in the evening, usually from 6:30 p.m. to 11:00 p.m. Approximately 40 per cent of the 225 mountain households have no electricity from any source.

Negotiations are under way to bring electricity from Nago to Katsuyama, Asahigawa and Nakayama, but no one could say when it might happen. Since 1963 and the availability of electricity, the number of television sets and other electrical appliances has rapidly increased. A count is presently being made, but officials estimate more than 200 television sets in the entire township. My own work in the mountains uncovered only 45 sets, which would leave 150 to 175 sets to be divided among the 600 beach households. An estimate of 25 to 30 per cent of the coastal households with television would be very close, but still a low percentage compared with central and southern townships. Nearly every household has a radio, battery-operated in those areas without electricity.

In conclusion, Yabu meets the criteria outlined in Chapter One. It is located in northern Okinawa; its population is at the lower end of the range desired; it is somewhat

isolated, especailly its three mountain villages; and its second most important agricultural crop is pineapple, with a fair number of rice growers as well. Village officials, especially the chief of the general affairs section, were very cooperative, both in introductions and in helping to procure living quarters.

Residents of south and central Okinawa, especially urbanites often call their northern brethren "country cousins." They tend to view them as backward, rough and somewhat vulgar in manner of speech. Yabu dwellers also see themselves as possessing a somewhat different personality makeup from those in the southern and central areas. The principal of the elementary school explains it this way:

> The characteristics of the people of Yabu are very open-minded, but the way of speaking is very rough and harsh. Others call it Yabu taiwan, kind of big and savage. We think this is not too bad, it is a kind of expression of innocence and not evil-minded. It is a kind of open-minded frankness, but not meant to be bad. In training students, I like to try to add softness, kind of molify and quiet them.

Roughness and harshness in speech may be true, but I personally found the open-minded frankness a decided advantage in conducting interviews. Of the three townships least difficulty was encountered in Yabu; any harshness of language or roughness in character was overcome by a genuine friendliness.

Summary

The three townships described above, Kochinda, Kitanakagushiku and Yabu, cover a wide range of township types found in Okinawa. Sugar cane is grown in all three, but with vary-

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ing degrees of importance. Kitanakagushiku has a large number of vegetable farmers, and their participation in the flow of information will be different from the cane farmer. In Yabu, pineapple is of considerable importance, and there is also some rice grown. Two kinds of townships not covered by these three types are forestry and fishing townships.

Forestry is still an occupation practiced by some rural dwellers in the northern part of the Island. For the reader interested in forestry in Okinawa, Maretzki and Maretzki (1963) or Glacken (1955) should be consulted. Fishing is an occupation of declining importance, though some attempts are being made to revitalize the fishing industry in Okinawa. Most fishing is carried out by individuals or small groups, as opposed to large fishing fleets. It is, for the most part, centered in the town of Itoman at the southern tip of the Island. Glacken (1955) includes some discussion of fishing.

This brief survey of the datum townships has made it clear that rural Okinawa is not simply portrayed. They exhibit wide diversity, and do not cover the entire spectrum. The Okinawan farmer is not isolated, but is deeply involved in the world outside his township. Influences from the national government, as well as from outside Okinawa, bear upon decisions a farmer must make. In Chapter Eight, receivers of agricultural information are discussed in greater detail. At the present time, it is enough, I think, to keep in mind that the information flow under analysis is directed at individuals with differing characteristics, not a homogeneous, peasant-like population.

CHAPTER THREE

THE SOURCES OF AGRICULTURAL INFORMATION

Analysis of the information flow system begins with the source of information to be disseminated. As explained in Chapter One, source is the initiatory (advocacy) role in the information flow system. Most of the information flowing through the system is initiated by the Agricultural Experiment Station, the research arm of the Government of the Ryukyu Islands. Of course, in another information flow system, the experiment station is a receiver of information. This would be the case when information about new seedlings developed in Hawaii or Taiwan is transmitted to the Okinawa Agricultural Experiment Station. In the remainder of this study, discussion will be limited to information originating within the Ryukyu Islands; with the Agricultural Experiment Station, the University of the Ryukyu Islands, the Agricultural Cooperative Federation or other Ryukyuan institutions.

The Agricultural Experiment Station

The experiment station is engaged in a continuous process of conducting research on the various crops cultivated in the Islands. Research is primarily directed at the development of new seedlings and testing adjustability of Hawaiian, Japanese or Taiwanese seedlings to Okinawan climate

and soil conditions. Areas of research include: 1) sugar cane; keeping agricultural records (eino kaizen); 3) vegetable cultivation; 4) flowers and fruit trees; and 5) rice. Results of research are in all instances reported to G.R.I. where they are then acted upon. But before turning to the notification and decision-making phase, it is necessary to explain in some detail the organization and activities of the Agricultural Experiment Station and other agencies conducting research.

The main offices and experimental farms of the station are located on the outskirts of Naha city. In addition to the main office in Naha, which serves the southern district of the Island, there are four sub-stations located in Koza city, Nago town, Yaeyama gunto and Miyaka gunto. Employees number 105 regular, plus 81 who administer the 43 hectares of experimental fields located at the central station. The central station is housed in a large, modern building constructed in 1961.

The experiment station is engaged in research only, it being the function of G.R.I. to disseminate research results. Even results of immediate consequence are coordinated by G.R.I. One recurring problem is that of disease control and activities related to disease control are coordinated by G.R.I. For example, if a new disease is uncovered in northern Okinawa and reported to the Nago sub-station, a specialist on disease there will meet with a representative of the G.R.I. Economics Department before taking steps to bring the disease under control. Farmers are requested to use existing

agricultural medicines to control the disease until such time as a new disease killer has been developed and approved by G.R.I.

If the agricultural extension agent (noogyoo kairyoo fukyuin, hereafter referred to as NKF) discovers a disease among the crops in his area of jurisdiction, he notifies the sub-station and works directly with members of the sub-station to bring it under control. G.R.I., however, must be notified at the same time. The director of the experiment station explains how it works:

> They [those in the sub-station] notify the NKF at the same time they notify G.R.I. At the sub-station, we have specialists on disease and insects and if they find something, they notify G.R.I. and the NKF at the same time. Branch offices of the NKF have five or six persons working together on problems of this nature, those of an urgent nature.

NKF are in close contact with experiment station sub-stations. This is especially true in Koza and Nago where experiment station sub-stations and NKF district offices are physically close. In this way, NKF link the farmer with the research of the experiment station and ultimately with G.R.I. Farmers rarely visit the sub-stations and even more rarely visit the main office in Naha to obtain information directly.

The experiment station director in general determines which problems are chosen for research, though he leaves much of the decision to those working under him. Requests for specific research are also received from the special products section of G.R.I. to whom the director is ultimately respon-

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sible. Farmers may also make requests for a particular kind of research through the NKF or sub-station. Such requests are coordinated by G.R.I. and are quite rare. Sub-stations often carry out research related to those activities of the main station, but not in all cases. In Yaeyama, for example, much more research emphasis is placed upon pineapple development than on sugar cane, whereas, sugar cane is the focus of research at the main office in Naha.

Sugar Cane.-- Most reseach effort of the experiment station is devoted to sugar cane improvement. This is as would be expected since both in terms of the number of persons employed in its production and its value as an export commodity, sugar cane is the most important single product in the Islands. Sugar cane is a crop particularly adaptable to Okinawan climate and oil conditions. It is strong enough to withstand many of the numerous typhoons which hit the Islands. It is not uncommon to see a field of cane that has been virtually flattened by a typhoon, growing tall, though crooked, a few months later.

The experiment station has been continuously engaged in research to develop a cane variety more resistant to typhoons which at the same time produces good tonnage per hectare. The most widespread variety, NCO 310, is especially resistant to the strong winds accompanying typhoons. Research is continued in attempts to develop more varieties, especially since it is considered somewhat dangerous to have the entire Island

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covered by a single variety. If that variety is attacked by a disease or insect, it could mean destruction of the entire crop all over the Island. At the present time, it is estimated that more than 90 per cent of the cane grown is of a single variety, NCO 310.

Okinawan soils are not rich, but the addition of composts gives the soil enough body to support cane. Sugar cane requires no irrigation and is not destroyed by droughts of short duration. Its quality is related to rainfall, but unlike rice, does not depend on rains or irrigation at the proper time or in the proper amount.

Sugar cane was introduced to Okinawa from China, the date generally accepted being 1623. First exports of sugar cane were sent to Kagoshima, Japan in 1646 (Kerr, 1958). Since that time, Okinawan farmers have become increasingly dependent upon the Japanese to purchase their sugar cane production. Farmers are almost exclusively dependent upon the sugar cane market for their livelihood and are in a vulnerable position with regard to price fluctations outside their own country, i.e., the world sugar cane market in London and New York. Initial processing of raw sugar into centrifugal sugar is for the most part in local hands, but processed sugar is shipped to Japan for final refining and resale. Since Okinawa imports refined sugar valued at $2.5 million annually, it is quite likely that a farmer may end up buying sugar for his table that came from his own field after it had been exported to Japan for processing and then imported to Okinawa from Japan.

The price of centrifugal sugar sold to Japan is negotiated each year by the Ryukyuan and Japanese governments and may vary considerably depending upon conditions. Some factors that apparently influence the price are: the amount of sugar cane produced by Ryukyuan farmers; the amount of cane produced in Amami O'Shima and sugar beet produced in Hokkaido, Japan; and the predicted need for sugar in Japan. The political climate undoubtedly plays some part in price setting; during the recent price negotiation period, numerous rallies were held by farmers and other groups in an attempt to influence the price setters.

The cultivator is caught in the middle. Since the price of sugar is set after many farmers have already harvested their cane, it is virtually impossible for an individual to plan on a stable income from his labors. The price paid for cane is in large measure determined by the total production of the Islands. Cane is planted a full year before its price is established. For example, cane planted in 1963 and harvested in 1964 brought a price of $24.41 per metric ton, the highest price ever recorded. A major reason for this was a prolonged drought which caused an 18 per cent reduction in sugar cane production. The high price encouraged some 4,000 farmers to switch to sugar cane production, an increase from 59,000 cultivators in 1964 to 63,000 in 1965. Production rose by 108 per cent from 1964 to 1965, but the price dropped by nearly $10 per metric ton to $14.70.

G.R.I. and U.S.C.A.R. statisticians are quick to point out that total production and total export value of sugar increased in 1965, and they further show that income per farmer increased by about $80. over the previous year. What is not stated is that individual cultivators expended considerably more money and labor in order to achieve higher production, and, the $80 increase per farmer does not reflect a significant increase when compared with inputs by farmers.

The experiment station, in addition to its research on new and better seedlings and varieties, operates a model farm. On this model farm, careful records are kept related to labor inputs and costs, as well as production statistics. A continuing problem is the different estimates quoted by G.R.I. and those quoted by the farmer concerning the cost of producing sugar cane. G.R.I. cost estimates are based upon records kept at the model farm as well as samples from the general farm population.

It is extremely difficult to estimate total costs of producing one metric ton of sugar cane. There is continual dismay on the part of farmers because they think G.R.I. is underestimating their production costs. It is generally agreed that the main production input is labor, estimated at between 60 and 70 per cent of the total cost, and this is one area of agreement between farmers and the government.

The cost of labor, however, is an area of disagreement. Government estimates are $1.74 for an eight-hour day for summer planting; $1.83 for spring cane; and $2.22 for

for ratoon, though figures vary somewhat within various departments and are related to the time of year, e.g., planting and harvest wages are differentially weighted. Farmers base their figures on the amount they must pay hired workers, the going price for which is $2.50 per day for men and $1.50 to $1.75 for a woman. The farmer also must provide a lunch for both, and is usually expected to provide cakes and cookies following a day's work by a woman.

In arriving at the following comparison of government estimates of cost per ton, I have assumed that one ton of sugar cane can be produced from 50 tsubo, .015 hectare, of land.[1] The government estimate is based upon time allocation figures and labor costs (above) obtained from the director of the special products section, Economics Department, G.R.I. Farmer estimates are based upon detailed information about time allocation obtained from five farmers during a group interview. Table 9 summarizes these findings.

Assuming labor costs comprise 70 per cent of the total cost of producing one ton of cane, the total G.R.I. estimate per ton amounts to $11.31, whereas, the total cost as estimated by cultivators is $23.08. The discrepancy lies not so much in the cost of labor per day, but in the total number of hours required throughout the year to grow the crop.

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[1] This estimate is based upon many conversations with farmers and agricultural leaders, the only other estimate given with any degree of repetition was 7 tons per 300 tsubo, which works out to one ton per 43 tsubo, but to attain this requires care in weeding and fertilization according to informants.

TABLE 9.--Labor Costs in Producing One Ton of Sugar Cane

G.R.I. Estimate Spring Planting		Cultivator Estimate Spring Planting	
Activity	#8-Hour Days for One Man	Activity	#8-Hour Days for One Man
1. Preparing land	.29	1. Preparing land[1]	.45
2. Planting	1.17	2. Planting (includes seedling selection)	.82
3. Weeding & fertilizing	1.58	3. Weeding & fertilizing (4 times in growing season)	4.09
4. Harvesting	1.29	4. Harvesting	2.72
Total	4.33	Total	8.08
Labor cost per 8-hour day	x$1.83	Labor cost per 8-hour day[2]	x$2.00
Total cost per ton	$7.92	Total cost per ton	$16.16

[1]The amount of time required to prepare land depends upon whether one has a motorized cultivator (kounki) or uses animal power. Since most farmers must rely upon the latter, that is the statistic employed. With a motorized cultivator the same amount of land can be prepared in about 1/5 the time.

[2]I have used $2.00 as the cost of labor per day, this is halfway between the $2.50 for a man and $1.50 for a woman. It should be kept in mind, however, that a farmer prefers men to labor in the fields and would hire men more frequently than women, thereby increasing his cost per ton.

Applying G.R.I labor cost estimates, the total cost of producing one ton amounts to $21.13, and this takes no account of meals provided for laborers when employed. It must be kept in mind that farmers usually do not keep accurate records of time in the field, nor the total production costs. Estimates received from farmers ranged from $14 to $15 per ton to as high as $25 per ton. The latter figure was provided by the head of the Yabu Agricultural Cooperative.

In support of his estimate, the director of the special products section, G.R.I., said:

> I think this cost is right because we got the figure from middle-scale farmers in towns and townships and they provided the figures which became the basis for analyzing costs throughout the entire process: plowing, irrigating, weeding, fertilizing, harvesting, etc. The costs came from average farmers, and I doubt that those people themselves think the real cost is higher than the estimated cost. The higher estimates are a kind of political protest against G.R.I., and is an expression of individual wants. If they have G.R.I. estimate costs higher, then they get more money. It's a kind of political and ideological protest.

In defense of informant estimates who were not protesting as far as I could ascertain, they continually pointed out that the number of hours are what a "good man" could do in "a good day's work." Hours reported herein were arrived at through mutual agreement and discussion of those farmers present. It was agreed that the statistics are generally conservative, though accurate to the best of their knowledge. It may well be, however, that they themselves think they work harder than they actually do. They were surprised when told their costs amounted to $23.08, they having earlier indicated a total estimate of about $13 to $15 per ton.

Pineapple, Rice and Vegetables.-- Other crops upon which research is being conducted by the experiment station include pineapple, rice, vegetables and fruits. Pineapple and vegetables are becoming increasingly important, whereas, rice cultivation is declining. Minor crops, such as flowers, tea, tobacco and fibre also receive research attention, though much less proportionately than the crops just mentioned.

Pineapple cultivation is mainly in northern Okinawa and Yaeyama. Little pineapple is cultivated in central and southern Okinawa. The experiment station imported seedlings from Hawaii and Taiwan and was primarily responsible for the spread of pineapple. Of the two seedling strains, Hawaiian pinapple is the most wide-spread. The introduction of pineapple has meant more efficient use of land in that it is usually planted on hillsides, areas that had previously been unused. Its introduction represents one of the most important changes in northern Okinawan agriculture during the past five years.

Pineapple is the second most important crop in Okinawa, though at the present time it presents no real competition to sugar cane. It is seen by most as a crop for the future. The head of the agricultural cooperative in Yabu township says a man can make nearly twice as much from the same land area planted in pineapple as he can growing sugar cane:

> In making new fields for sugar cane, a man has to have better land than he does for pineapple. The price is about 40 cents per unit for sugar cane, and only 30 cents per unit for pineapple. I feel I can encourage our members to raise pineapple, but not sugar cane. We have stopped lending money for making new sugar cane fields, but still lend it for pineapple. We also discontinued renting the bulldozer for preparing sugar cane fields, but still rent it for pineapple preparation.

The Japanese government promised to give 100 per cent tax exemption on pineapple imports through 1968, though an escape clause was included indicating that G.R.I. is required to faithfully carry out rationalization of the pineapple

industry or Japan could drop all limitations. Pineapple is one of the items listed by Japan to be included in the Free Trade Zone. With Japanese protection, pineapple cultivation can be a profitable enterprise for the Okinawan farmer. Without such protection, only the future will reveal how profitable it might be. As with sugar cane, the Okinawan farmer is hard pressed to compete with the large plantations of Hawaii and the cheap labor of Taiwan. Most pineapple research is carried out by the Nago and Yaeyama sub-stations.

The spread of pineapple cultivation is seen as one of the most important post-war changes by the director of the experiment station:

> The spread of pineapple is the result of experiment station work. We imported seedlings from Taiwan and Hawaii and found them to be adjustable to Okinawa. We could not make a new seedling for Okinawa, so we researched seedlings and found Hawaiian seedlings best. The results of this research were sent to G.R.I. and they tried to increase the number of cultivators. As a result, it has become a new industry in the north and in Yaeyama.

The experiment station now has an experimental farm in Haneji township, in northern Okinawa and in Yaeyama devoted to pineapple research. Research is directed at accelerating the growing period and repressing the bloom to improve quality. At the present time, all plants bear fruit at approximately the same time, and it is difficult for the processing plants to handle the processing. The director continues:

> The result of our research is that we now have very good seedlings, as good as Hawaii. Both the businessmen engaged in pineapple processing and G.R.I. provided assistance in our research. Now the pineapple industry is becoming stable. In order to plant pineapple, farmers use the slopes of hills, thereby increasing the amount of land under cultivation.

Vegetables are grown for three purposes in rural Okinawa: first, and most commonly, for home consumption; second, for sale to city and town markets; and finally, for sale to the U.S. Forces on the Island. Some farmers grow vegetables for all three purposes, though most cultivate them for home consumption. Vegetables grown for home consumption are usually planted in and around the house yard or in the paddy fields between rice crops.

Though still small in number, farmers cultivating vegetables for sale to city and town markets is increasing, especially in the central and southern villages which are in close proximity to the larger population centers. Vegetables are either taken to town on the bus, or are sold to peddlers who regularly visit the rural communities. Money from the sale of vegetables is usually used as petty cash, supplementing income derived from sugar cane cultivation. Supply and demand is usually the most important factor affecting price, though a common amount is $.01 per kilogram paid farmers by peddlers. In some areas, though not in any of the three datum townships, farmers market their vegetables through the agricultural cooperative which in turn sells to city and town markets.

In Kitanakagushiku a large number of farmers grow vegetables for sale to U.S. Forces. Fields must be approved by the veterinarian's office of the Quartermaster Corps. Soils are checked and special emphasis is placed upon the kinds of fertilizer used by the farmer. Many farmers express

a desire to get approval to raise vegetables for sale to U.S. Forces, but are unable to get approval due to strict requirements which have been laid down. Size of farm is apparently important as inspectors visit farmers regularly, and they would be extremely busy if smaller farms were approved. According to one farmer presently growing vegetables for U.S. Forces:

> To produce vegetables for the Quartermaster is very expensive. I can use only chemical fertilizer and I have to spray regularly. If they find one bug, then the whole crop is rejected.

Another:

> It is difficult to get approval from the veterinarian's office. They check the soil and determine different classes, high and low. A farmer on Tsuken Island got rejected because he used chicken manure, but the regulation has changed against chicken manure, and after two years, they inspected again and he was passed.

A wide variety of vegetables are grown, such as tomato, cabbage, lettuce, celery, giant radish (daikon), onion, cauliflower, broccoli, carrots, spinach, sweet corn, egg plant and cucumber. The amount of work required for vegetable raising is much greater than for sugar cane or rice, the usual estimate being between five and seven times more than for cane. This is because of the need for constant attention, weeding, spraying and watering.

Kitanakagushiku vegetable growers market their produce to the Quartermaster through one of two organizations in the township; they do not sell direct. The largest group is the Kitanakagushiku Horticulture Cooperative Association (engei kyoodo kumiai) with 88 members. The other is privately

owned, the Farmer's Exchange, and includes eight large farms. A fuller discussion of the role of the Cooperative and the Farmer's Exchange both in the marketing process and as disseminators of information about vegetable cultivation is presented in a later chapter.

It is generally agreed among residents of Kitanakagushiku that those individuals cultivating vegetables for resale to the Quartermaster are better off economically. They are less at the mercy of the fluctuating sugar cane price. One man, for example, says:

> Last year if I had had all my fields in sugar cane, I could have made more money because the price of cane was so high. But this year the price of sugar cane went down a lot and if all my fields were in sugar cane, I think I would lose money. (Question: How about over the past seven years?) I think vegetables have been better because the price of vegetables has continually gone up, but the price of sugar cane has changed up and down so much. Yes, I think growing vegetables has been more profitable.

According to the Mayor of Kitanakagushiku, those who grow vegetables are generally in a favorable economic position:

> Those who switched to horticulture have a higher standard of living. They suffer less from the changing sugar cane price.

In any discussion of the problems of Okinawan agriculture, vegetables are viewed as a possible alternative to the present dependence on sugar cane. The general term employed is "rationalization" which carries with it the implicit meaning of diversification. It is felt that vegetable cultivation will provide the necessary diversification and relieve some of the dependence on one crop, i.e., sugar cane.

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One G.R.I. official exemplifies this view:

> Okinawa has $12 million in imports including vegetables and flowers, not only agricultural imports, but all imports. I think to decrease this amount we must plant new crops, like vegetables. There is also a change in the dietary habits of the people, they are beginning to eat more fruits and vegetables. It is just my personal opinion, but after typhoon reforestation, the expansion of vegetable growing comes next in importance. I don't expect promotion of vegetable growing for export, but to supply the domestic demand and decrease the amount of imports.

At the township level, the chief of the Kitanakagushiku industrial section of township government typlifies the attitude of many township officials:

> At the present time Okinawa imports approximately $2 million in vegetables and fruits, so if we try to get enough for self supply, then we can cut this out. Vegetable growing can become a big industry in Okinawa. We are very enthusiastic about these crops.

The need is recognized by officials at all levels of government, and by most farmers themselves. But the unusually high price of sugar cane last year did much to stop or slow down any trend toward greater vegetable production. It is a difficult task to convince farmers to change their agricultural practices when they can be assured of at least some income from sugar cane. The experiment station and extension service are researching and disseminating information about vegetable production and its advantages, but with little success thus far.

A further problem is that the sale of vegetables, other than the Quartermaster, is almost wholly on a supply and demand basis, with little price control, except in large

city markets. A farmer really has no guarantee that he will be able to sell his crop for a profit at harvest time. In one village, a farmer was very successful with cabbage, making a large profit from the crop by selling it to a near-by town. This was noticed by others in the village who then planted large areas in cabbage. Those who harvested first filled the market's demands. The price of cabbage declined considerably. The remaining farmers left their cabbage in the fields to rot as the price was too low to even bother harvesting.

What is needed is a quota and planting system whereby all do not plant and harvest at the same time, but supply the market continuously with vegetable varieties, thereby fixing, to some degree, the price. But such an arrangement is not found among those cultivating vegetables for sale to local markets. Such is the case, however, with those selling vegetables through the horticulture cooperative to U.S. Forces, as will be explained in a later chapter.

Rice is of declining importance. Much of the research work is done in northern Okinawa, one of the main research problems being the feasibility of growing three rice crops. Research has shown that three crops can be grown, but the experiment station does not encourage it, mainly because of the ever-present danger from typhoons. Experiment station research has shown that a more effective use of land is to plant two rice crops with vegetables cultivated between crops. Model farms are located in Haneji and Onna townships

in northern Okinawa. In most parts of Okinawa, rice production is an activity of declining importance. For example, virtually no rice is cultivated in either Kochinda nor Kitanakagushiku, and less today than previously in Yabu.

Reasons for the decline of rice cultivation are not very hard to find. In the first place, many farmers were drawn to sugar cane by high prices over the past five years. Secondly, sugar cane can be grown with little care and still produce a relatively good yield -- not so with rice. Thirdly, there is a problem of water for irrigation, as a Yabu farmer explains:

> My reason for switching from rice to sugar cane is because it became hard to get water, the irrigation problem. Others switched to sugar cane and I alone cannot get water from the dam. Until year before last, I tried to irrigate by motor and others planted sugar cane and they tried to exclude water. Also, rice needs so much labor for the small amount of return, so I quit.

Rice, as best I can determine, requires more labor than does sugar cane. No farmers interviewed keep records of labor inputs for both crops, for that matter, only very few keep records for any crop. The head of the experiment station indicates that rice takes more time throughout the year, approximately fifty per cent more labor than sugar cane. Amounts vary according to how conscientious a particular farmer might be and how good a harvest he desires. A Yabu farmer explains it this way:

> On the average we are busier with planting rice because we have to plant it in one or two days, but when we plant sugar cane, it does not matter much. Sugar cane probably requires more work throughout the year if you want a really good harvest, but if you don't worry about the harvest

> then you can let it go and it is all right. But you cannot let rice go or the whole thing is ruined. If you don't take care of rice, then you cannot harvest it. But with sugar cane, even if you don't care for it, you can harvest some.

Sugar cane requires hard work at certain times, such as harvest and removing leaves and weeds. Rice, on the other hand, requires more intensive and careful care. The work might be lighter for rice, but it is more continuous than for sugar cane.

Finally, there is the problem of typhoons. Rice is more easily destroyed by the high winds of a typhoon, whereas sugar cane is more resistant. The most saddening sight for a rice farmer is to see the twisted, submerged stalks of his rice plants following a typhoon. Though early-maturing strains have been developed by the experiment station, rice is still vulnerable to the whimsy of a typhoon. Few farmers today cultivate rice only, in fact, I found no one in any of the three townships growing rice exclusively. Those who plant rice also grow sugar cane or pineapple. Few farmers today grow enough rice for use within their own home; rather they buy it from the local market. Rice imported to Okinawa comes mainly from California.

Animal Husbandry.-- Research on livestock and poultry is not carried out by the Agricultural Experiment Station, but by a separate system of Animal Husbandry Experiment Stations. The various stations serve two main functions: 1) to conduct research on the adjustability of animals, especially cattle

and hogs, to Okinawan conditions; and 2) to maintain purebred livestock and hogs for purposes of artificial insemmination. Though the Animal Husbandry Experiment Stations are separate from the Agricultural Experiment Stations, both occupy similar positions in the information flow system and will be discussed together, unless otherwise specified.

Hogs, cows, horses, goats and chickens are the main animals raised in Okinawa. Horses are kept for work on the farm, whereas other animals are raised for consumption, both within the home and for sale outside. G.R.I. officials are encouraging hog and cow raising in an attempt to diversify Okinawan agriculture. The total number of cows, hogs and chickens has increased consistently over the past years, while the number of horses and goats has declined.

Such consistency, however, is not reflected in comparing the number of livestock in the three datum townships. Table 10 presents such comparative data.

TABLE 10.-- Livestock in Datum Townships

	Kochinda		Kitanakagushiku		Yabu	
	1965	1962	1965	1962	1964	1957
Cow	109	272	27	34	37	89
Hog	4,215	2,432	892	690	957	1,115
Horse	31	37	22	13	92	78
Goat	988	824	428	515	1,091	1,711
Chicken	21,470	N.D.	32,864	29,842	8,078	4,607

The number of cows declined in all three townships. This is partially explained by the fact that the price of cows

has gone up considerably over the past few years. Okinawan farmers generally plan to buy a cow cheap, fatten it up and sell it. Many who bought cows earlier at a cheaper rate find it increasingly difficult to buy one at today's prices. Much of the increase at the national level can be understood when it is known that G.R.I. is importing breeding cattle from other countries. These cattle are in many instances sent to experiment stations for research purposes.

The great increase in hogs in Kochinda reflects the fact that a new hog raising cooperative was established during 1964. The cooperative, actually owned by a few businessmen in Naha, was begun with a loan from G.R.I. and added well over 500 hogs to the Kochinda total. It is somewhat ironic that G.R.I. is encouraging the small farmer to raise hogs, but indications are that hog raising is a business being conducted by businessmen from the city.

This has the effect of keeping the price of pork down because of the greater quantity of operation of the new hog raising businesses, a kind of mass production of hogs. The small farmer, at whom programs are aimed, will find it increasingly difficult to compete with the large hog raising cooperatives (cooperative may be a misnomer here, perhaps they should be labelled corporations).

The decline in hog population in Yabu is attributable to increased emphasis on sugar cane and pineapple cultivation. Much land formerly planted in sweet potato now supports sugar cane mainly because of last year's high price. Hog food has

consisted primarily of sweet potato leaves and stems, but with the decline in sweet potato cultivation, farmers find it difficult to obtain food for their hogs. Thus, in Yabu at least, there has been a drastic decline in hog production, and at a time when G.R.I. is encouraging hog production. Farmers in general fear the same thing will happen to the price of pork that happened to the price of sugar cane, i.e., once they begin to supply greater quantities, the price will decline. One official says:

> There has been a decline in the number of hogs because the price of pork is not stable, and also we are not growing as much sweet potato now that most of the land is in sugar cane. The price of pork has declined.

When I mentioned to the head of the agricultural experiment station that farmers are complaining about the fluctuation of the price of pork, he gave his own, personal opinion:

> I think it is inevitable that G.R.I. will pass a bill stabilizing the price of pork. G.R.I. must lead the farmers in this way. We should think about the market, but this is no problem really because of the big market in Japan. But if at the present time, we have no quantity, the price is bound to fluctuate. I am not a livestock specialist, but am only giving my personal view, not the government's.

One further problem is that although G.R.I. encourages hog raising, it apparently accepts no responsibility for marketing the pork, something which is done for sugar cane. There seems to be general agreement among most officials and farmers that with the decline in sugar cane price, hog production should increase as an alternative. But the question on everyone's lips is to what extent.

Decline in the number of horses in both Kitanakagushiku and Kochinda follows an Okinawa-wide trend, however, horses are increasing in Yabu. Township officials are encouraging horse raising in Yabu mainly as a source for fertilizer. An official explains:

> Commercial fertilizer is expensive and alone is not enough. We are encouraging farmers to raise horses. They are cheaper to buy than cows. I think the number of horses will continue to increase. The purpose for raising them has changed. Before they were used as transportation and cultivation, but now almost exclusively for fertilizer.

Such an attitude, however, is not common throughout the Island, and not shared by government officials. Horses for cultivation are slowly being replaced by machine-driven cultivators (kounki) and tractors.

Other Research Activities

In addition to the research activities of the Agricultural Experiment Station, other institutionalized research is carried out by the University of the Ryukyus, the Federation of Agricultural Cooperatives and the various sugar cane mills and pineapple processing plants. The University of the Ryukyus, located atop Shuri Hill in Naha city, receives monies from G.R.I. for assistance rendered the extension service. Its agricultural extension service is patterned after the United States Land Grant college system. The main function of the University is in research and instruction of extension agents. Four agriculturalists, one livestock specialist and one forestry faculty member of the University are responsible

for extension research in addition to their regular duties at the University. Members of the Home Economics Department and other departments within the University also contribute to extension research and educational activity.

Staff members of the University spend a good deal of their time on research and the University maintains experimental gardens. They find themselves called upon often to visit rural areas to inspect, demonstrate and lecture on new techniques in agriculture. Activities of University personnel are coordinated by G.R.I. and liaison is maintained with the experiment station. Research is aimed primarily at development of new strains and adaptability of same to Okinawan conditions.

The agricultural cooperative is also vitally interested in agricultural research. It depends on the experiment station for most research, but also conducts its own research mainly in relation to farm administration. Close coordination is maintained between the cooperative and experiment station. Sugar cane mills and pineapple processing companies also do some research of their own, though they depend a good deal upon research conducted by the Agricultural Experiment Station.

Coordination of Research Results

The experiment station and other institutions conducting research are primarily concerned with research and not with the dissemination of research results. The director of the experiment station explains:

> To do research and get new seedlings and seeds is under the jurisdiction of the experiment stations and it is our duty to find results and to notify G.R.I. and if G.R.I. decides the results to be worthwhile, it is not part of the experiment station's work to do the informing. It takes money and the experiment station does not have the money and we do not do the informing. When we get the results of experiments or results of adjustability of imported seeds or plants, we send these results to G.R.I. in the form of a report.

Once research results are obtained, they are reported to the Economics Department of G.R.I. and to an Agricultural and Livestock Technical Liaison Committee (noogyoo chiku-san gijitsu renrakyu iinkai). Members of the committee are experts from various fields of agriculture and animal husbandry, such as University professors, representatives from the Economics Department of G.R.I. and from business circles.

The committee meets and receives research reports from the experiment stations and other results of research. These reports are scrutinized carefully and discussed to determine whether the results are of such a nature that they should be made widely available to Okinawan farmers. Once the committee decides such information will be useful to Okinawan farmers, they recommend it be disseminated. For example, if the experiment station has developed a new variety of sugar cane which in the committee's opinion will benefit Okinawan agriculture, they recommend to the Economics Department of G.R.I. that the new variety be made available to farmers throughout the Islands.

The committee also functions to give direction to experiment station research. If for example, requests are received from farmers or extension personnel for certain

kinds of research, the committee analyzes the request. If it is decided that such research would prove valuable, it then requests that the experiment station work on that particular research problem.

With few exceptions (see pages 78-79) the Liaison Committee makes all decisions pertaining to the kinds of plants and seedlings that will be selected for dissemination. It was this committee, for example, that decided in the late 1950's that sugar cane variety NCO-310 was the best-suited variety to Okinawan conditions and should be the most widespread variety grown. The results of this decision will become clearer in the remainder of this study.

Encoding Agricultural Messages

Research results from work by the experiment station are often conceived of and reported in highly technical language. Such language is invariably phrased in a manner which would not be understandable to the average Okinawan farmer. The findings of the experiment station constitute a kind of pool into which the Liaison Committee dips in an effort to improve Okinawan agriculture. Information taken from this pool of stored knowledge must be encoded in such a way as to be understandable by and acceptable to the farmer at whom it is ultimately directed.

Encoding, as defined earlier, is the process of translating or constructing messages into symbols understandable to both source and receiver. This usually means,

in simpler terms, that the thoughts or ideas of the source are expressed in a language common to himself (or itself) and the receiver, and encoding is the process of putting thoughts and ideas into either spoken or written language. In Okinawa, encoding of this sort is done primarily in the Japanese language, and only occasionally in Okinawan dialect.

There is, however, more to encoding than mere translation of thoughts and ideas into a language, either Japanese or Okinawan dialect. Thoughts and ideas can be encoded as pictures or other visual stimuli, such as a demonstration field or set of slides. This being the case, then, I propose to broaden this rather narrow conception of encoding to include decisions related to the selection of channels through which to disseminate information. The reason for doing this is that once a source has made the decision to transmit a particular message, a choice must then be made regarding through which channel(s) the message is to be transmitted. The selection of channel is intimately tied to the manner in which the message is encoded. For example, messages planned for transmission over television must include not only verbal, but visual content as well. Or, a message planned for dissemination over radio need not concern itself with accompanying pictures or other visual materials.

Efficient encoding must take cognizance of the decoding abilities of the receiver(s). Those involved in encoding must have a good idea about receivers' educational level, interests, occupations, working habits, and so forth,

if they are to encode messages and select channels that will have the greatest chance of reaching the receivers in the intended fashion. Within G.R.I., this is a job of the extension information section. Decisions made by the Liaison Committee concerning research results of the experiment station are fed through this department of G.R.I.

The extension information staff works directly under the director of agricultural improvement and is one of the six sub-divisions of that G.R.I. section. The section is responsible for the monthly publication, Farmer's Friend nooka no tomo), the annual agricultural pictorial (fukyu gaho), other publications and pamphlets, agricultural bulletins, movies and television and radio programs. This section receives articles and information from the experiment station and other specialists, rewrites them in an easy style for distribution to farmers. This encoding process is very important if technical findings of the specialists are to be disseminated to farmers.

The annual pictorial is designed for those farmers without electricity so that it can be easily read by fuel lamp. Posters on a variety of subjects are also distributed by this section. Bulletins from the experiment station and the University are distributed as they become available. Agricultural movies were shown 120-130 times in rural areas last year. A daily radio program, "Good Morning Farmers", is broadcast for five minutes and provides professional and technical information as well as a weather report. This pro-

gram has been running for the past seven years and is well-received by farmers. It is supplemented by a monthly pamphlet as the director explains:

> The five-minute radio program is short, so to supplement this we publish pamphlets each month. These cover new techniques on farming and reports from the experiment station. On the back cover of the pamphlet we carry next month's radio schedule. The pamphlet consists of about 20 pages.

Occasional programs are broadcast by another station, though not on a regular schedule.

Pamphlets and posters also carry information related to the work of the Home Demonstration Agents (seikatsu kaizen fukuin, hereafter referred to as SKF), such things as how to cook and eat vegetables, what kind and how to plant vegetables and fruits around the housing yard and so forth. Weekly newspaper columns are also prepared by the extension information staff. Slides are made and distributed to district offices for showing in the villages and townships. Some use is made of television, but the information section faces a problem due to the lack of budget to purchase television time. In response to the question, Which is the best channel for disseminating information?, the director answers:

> I think the best thing is television, but it depends on the characteristics of the information. If it is easy information, radio is best because someone in the village is likely to be listening, but if difficult, television is best because it uses two senses. I think the best way is to go to the farmers and show demonstrations and teach and talk face-to-face. I think television is good, but there is no budget, so we are pushing for face-to-face as probably the best way.

It is easy to see in his statements a concern for proper encoding and channel selection so as to best reach the farmer in a way most likely to produce results. He went on to point out that publications, radio, newspapers, television and movies have one drawback, they present information from the government's side only and allow for little or no feedback from farmers.

The primary advantage of face-to-face contact and demonstrations is that it allows for feedback from the farmers. The difficulty is that when meetings are held in villages and townships, it is the same persons over and over who attend, those in leadership positions, those who are already employing many of the techniques being discussed, or often, those not even engaged in farming. He feels strongly that the agricultural consultation approach (noogyoo soodan) is more effective than scheduled meetings. His conclusion is that as many ways as possible should be employed, i.e., that messages should be encoded in a variety of ways and disseminated through a variety of channels.

He has a plan which he thinks will overcome some of these problems and at the same time meet the demands of the farmers:

> My plan is to have a training center for agriculture next to the experiment station through U.S. and Japanese aid. In this I want materials, statistics, exhibitions of agricultural machines, agricultural medicines, insecticides and sleeping accomodations. On slack days, those who want to can come to the center and stay with cooking and sleeping facilities and can learn agricultural techniques. This, I think, will do much to improve the farmers' situation in Okinawa.

Although the plan seems to have considerable merit, it might not overcome the recurring problem of not being able to reach the disinterested farmers who seem to be in the majority. What is likely to happen, is those who are most interested will make most use of the facility. But one hopes that they will transmit the information within the village or township. Such a plan has little likelihood of coming to fruition due to budgetary problems plaguing the extension information section and the experiment station.

Summary

The flow of agricultural information begins with the research activities of the experiment station and other research agencies, such as the University of the Ryukyus. The experiment station conducts research primarily on the cultivation of sugar cane, vegetables, flowers, fruits and rice, as well as methods of keeping agricultural records and budgets. Animal husbandry research is conducted by a separate system of animal husbandry experiment stations.

Once results of research are known, they are reported to the Agricultural and Livestock Technical Liaison Committee. This committee is responsible for deciding whether or not the research results are of such a nature that they should be made widely available throughout the Islands. The experiment station is not itself responsible for the dissemination of its research results. Research results constitute a pool of information from which the Liaison Committee draws in making decisions concerning agricultural improvement in Okinawa.

Taken together, the researching institutions and the liaison committee constitute the source of the information flow system, which also includes the problems of encoding and channel selection.

The experiment station suffers both from a small budget and a lack of trained personnel, two deficiencies that go hand-in-hand. Before World War II, the experiment station employed many persons, including a number of specialists from Japan, but after the war nearly all returned to Japan. Recruiting efforts since that time have been aimed at enticing graduates from both the University of the Ryukyus and Japanese universities. Approximately 25 per cent of the employees are college graduates at the present time; 60 per cent have graduated from high school; and the remainder are junior high graduates. Most of the latter were hired shortly after the war when trained personnel were in short supply.

The director of the experiment station feels his staff is too small and that there are not sufficient fields for the amount of research needed. He would like to establish a special research station for sugar cane, but indicates that the budget he receives from G.R.I. will not permit this. The director of extension information, G.R.I., would like to see the experiment station used as a kind of residence/training station, but, again, budget limitations tend to render this a remote possibility at best.

CHAPTER FOUR

CHANNEL: AGRICULTURAL EXTENSION

Agricultural information is disseminated throughout the Ryukyu Islands in a variety of ways. Channel, as discussed in Chapter One, includes not only the medium through which information flows, such as newspapers, radio and television, but aspects of the social organization as well, like the extension system, administrative system and associational structure. As an anthropologist, I am most concerned with the flow of information through these latter rather than the former. Some are explicitly designed to facilitate the flow of agricultural information, whereas others, such as the Women's Association and Youth Association, serve manifold functions, only one of which is the dissemination of agricultural information.

Virtually no channels are limited to disseminating information from a particular source, nor of a particular kind, though some are certainly more functionally specific in this regard than others. The various agricultural extension agencies, for example, function primarily to disseminate information originating with the Government of the Ryukyus. Others, such as township and village administration, however, function in the dissemination of information from a number of sources. These, therefore, will be dis-

cussed as separate sub-systems within the overall information flow system, without tieing them to any particular source.

Agriculture and Home Demonstration System

The Government of the Ryukyu Islands, recognizing the importance of agricultural research and the dissemination of agricultural information, established an Agricultural Experiment Station and a system of Agriculture and Home Demonstration Agents to carry out these tasks. They represent important channels between the government and the farmer.

The Agriculture and Home Demonstration System (extension system or service) was established in 1950 and appears to have been an adaptation of the Japanese extension system to Ryukyuan conditions. Initially efforts of the extension service were directed at speeding up the rehabilitation of farmers and agricultural industry after the close of World War II. Its focus today has changed considerably since the early years. The extension service, its main offices within the Government of the Ryukyu Islands, includes on its staff 63 Agricultural Improvement Extension Agents (NKF) and 62 Living Improvement Extension Agents (SKF).

The major function of the NFK is, according to the G.R.I. director:

> To teach and guide farmers about new developments in agriculture, when to plant, how to care for crops, and how to estimate harvest. They do this now, but another important function they have now is to get statistics and figures from the farmers and from this information to organize a five-year plan and give guidance. They must divide the five-year plan

> into five one-year plans and then into 12 one-month plans, and that into weekly plans and finally into daily plans and then the implementation is on a daily basis so as not to be at a loss when it rains, they can follow their plans.
>
> The NFK already have passed the level of how they give information about techniques. They are now aiming at getting information about how and what farmers are thinking.

The major purpose of the SKF is:

> . . . to change attitudes. They are aiming to change the attitude of the people about living, then they can change and improve the way of living. . . . In order to change things in the rural areas, they have to change attitudes first.

All NFK are men, and all SKF are women. Prior to 1958, all extension agents, both NKF and SKF, were employees of the various townships or villages in which they worked, with their salaries subsidized by G.R.I. Now, however, all are paid employees of G.R.I., assigned to areas by the central office in Naha.

Under the present system, adopted in 1961, extension agents are assigned to districts rather than individual townships. For example, the extension agents for Kitanakagushiku are assigned to the district office in Koza; those in Yabu to the Nago office; and those in Kochinda, though assigned there, are also expected to cover neighboring Tomigushiku and Gushichan townships. The number of extension agents in an office varies according to the area, however, it is most common to find four or six agents (both NKF and SKF) assigned to cover three or four townships. One exception is the Nago office which includes five NKF and SKF who cover the five northern townships of Onna, Nago, Yabu, Haneji and Yagaji.

Some reasons for the change from one agent for each township to the present arrangement are explained by the G.R.I. director:

> The work of the extension agents is divided into three parts: 1) special techniques and guidance to farmers; 2) group guidance; and 3) general guidance. It is divided into three parts because even the NKF and SKF have different interests in their work. For example, one likes much and specializes in livestock and another in vegetables. In this case, if they work together in one office, they can cooperate.
>
> General guidance means face-to-face guidance. I think NKF devote 70 percent of their time to general guidance and 30 percent to group and special techniques. We need more than one person for this and this system helps very much.
>
> Also, in earlier times (under the old system) agents became subjective when in one village, they were apt to teach according to subjective experience, getting away from science. To overcome this tendency, they need to think as a group. This occurs when we have more than one in an office.
>
> Also, if farmers get information from three different persons, even if the same information, this will increase their interest. Also in order to use our budget effectively, we must have offices like we do in the present system. Buying materials is cheaper for one office of three persons than if we buy for each one in three different offices.
>
> And, finally, suppose the NKF or SKF gets ill. In the previous system no one could go into his or her area because they had no jurisdiction. But now, under the new system, they can cover for one another. We also have many other small reasons for making the change.

The advantages, in both increased efficiency and budgetary utilization, of the new system appear evident from the director's statements. From an administrative point of view the new system is a more effective utilization of existing human and budgetary resources.

Farmers and extension agents alike, however, are not happy with the new system. From the farmer's point of view, the new system means less face-to-face contact with an extension agent. Another problem seems to be that the information possessed by extension agents is often quite narrow relative to his own specialty and many farmers indicate some difficulty in applying it to their own particular situation. This latter problem is indicated by a farmer in Yabu: (In response to the question: How helpful is the NKF in giving you new agricultural information?)

> He is helpful, I can get information from him and he is a leader in the township, however, his professional knowledge is not based on my field. Therefore, I have to apply things personally to my own field. Sometimes his directions are not good for my own field.

Many extension agents complain they are now required to spend more time in the office out of which they work and have to schedule visits to the farmers' fields two or three times a week. Before, they say, they spent nearly every afternoon in the fields visiting farmers face-to-face. The Yabu extension agent explains:

> Before the new system, I used to spend almost all my time walking around and visiting farmers. I came to the office and checked in and then went out. Now I usually spend time at the office and go out when asked to come by the farmers. I stay in the office in Nago and study and train myself.

In response to the question, Do you now have less contact with farmers?

> Under the new system, I meet less than 1/5 of before. Recently farmers have begun to complain about this. (Question: Number of visits in Yabu per month?)

> Before I used to visit here 18 days a month, but now only four or five times a month. When I come to the township office I discuss with persons of the industrial section how things are going and find out about if farmers want me to come. Recently farmers don't expect me to come too much, not so many requests now.

His dissatisfaction with the new system is evident from the following answer to the question, Do you like the work of NKF?

> Yes, Originally I liked this kind of work, but since the system changed I am not so happy because of less contact with the farmers.

He has discussed the problem with other NKF, but feels since it is G.R.I. policy there is little that can be done. He points out that it is partly a budget problem, NKF are only given travel money for three days each week. Farmer response is not good. He explains:

> People now are eager to discuss this new system. Farmers tell me cynical things, for example, 'You are quite a stranger here'. We NKF often discuss this problem among ourselves.

He, however, concludes that the new system might be a good one, but that "it is too early to have adopted it."

NKF have increasingly become identified with the industrial section of the township office. Farmers who want services of an extension agent are in most instances required to make requests through the industrial section. These requests are then referred to the agent who schedules visits to farmers. As indicated by the Yabu extension agent, the number of requests has dropped, probably due to the time lag between the farmer's need for an NKF and the time when he actually comes to visit, coupled with the present infrequency of visits.

One attempt to overcome the infrequency of face-to-face contact has been the proliferation of an agricultural consultation method (noogyoo soodan). Such meetings are held in all three townships by the NKF and SKF. The usual approach is to have all NKF and SKF from the area office set themselves up in a central location, usually the meeting hall (kominkan) in one of the villages, and make themselves available to farmers throughout the day. It is an attempt to attract farmers passing by on their way to and from their fields. The usual hours, however, are from 10:00 a.m. to 5:00 p.m., hours that begin after the farmer is generally already in his field and finish before he returns.

Attendance at such consultations and the number of times it is held vary from township to township. The usual attendance is from 20 to 30 persons throughout the day at meetings held three or four times a month in different villages within a township. The SKF and NKF stay at the central location during open hours to consult, exhibit and discuss with farmers and their wives. They broadcast their availability by loudspeaker throughout the day. In Yabu this method has become the main way of disseminating information. In Kochinda, agricultural consultation invariably turns into a somewhat regularized meeting. In Kitanakagushiku, it is unsuccessful because of difficulty in getting farmers and their wives to come.

One problem plaguing extension agents in all three townships is that those attending group consultation are the

more progressive farmers in the area. As the NKF in Kochinda puts it:

> We wanted to get the ignorant or indifferent people, but we get the same ones we usually see anyway.

Difficulty in contacting the ignorant and/or indifferent farmer is not only a problem for agricultural consultation, but is a continuing dilemma of the extension agent. It is from the more progressive farmer that agents receive the warmest welcome and with whom they can, in their opinions, most easily and effectively do the job they are paid to do. Even among those agents whose total number of contacts might be relatively high there is a certain cyclical nature, a tendency to repeat visits with a relatively small number of farmers in the township. The same group of farmers belongs to the various organizations and study groups with which the agent has contact. This problem is discussed more in detail in a later chapter.

In response to the question, How do you plan to get indifferent people to come?, the NKF of Kochinda answers:

> I think it depends on public relations. Even though people get the information, the indifferent ones are apt to stay away. We plan to use the loudspeaker, closed circuit broadcasting system (yusen hoosoo) and the village meeting house (kominkan) to advise the people. But, I must admit, we are at a loss as to how to get them to come.

The extension system at the present time provides information for those persons who want it, those who are usually in posession of some information and are seeking more. It is

inadequate, however, to provide information to those who are indifferent, those in greatest need, but who lack even enough information to see the need for having more.

Opinions among extension agents vary as to whether agricultural consultation, group meetings or individual contact is the best channel through which to disseminate information. The Kochinda NKF, for example, feels individual contact to be best:

> I have worked as an NKF for two years and judging from my experience the most effective way seems to be to meet farmers in the field and tell them directly about new techniques in agriculture.

The Yabu NKF feels that agricultural consultation is the best way to instruct farmers, though he feels very strongly about the need for individual, in-the-field contact. In Kitanakagushiku, the agent likes to rely on meetings with groups of interested persons, though says he would like to be able to spend more time in the field talking with farmers. SKF invariably indicate a preference for home visits as the most efficient way of disseminating information, though most of their time seems to be spent at meetings of the Women's Association and other housewife-centered groups.

It is difficult to determine just how many individuals an NKF or SKF might contact in an average month. Analysis of diaries kept by agents to be turned in to the G.R.I., intensive interviewing and periodic observation indicate the following number of contacts to be somewhat representative of a given month, though this varies according to the

season, whether harvest, planting or relatively inactive. For Kitanakagushiku -- between 90 and 100 contacts each month; Kochinda -- 110 to 120 visits to individual farms each month; and Yabu -- 30 to 40 visits per month. SKF are more oriented to group meetings and spend less time and energy on individual visitations. In all three townships the average number of individual contacts by SKF is approximately 40 to 50 per month.

The duration and content of NKF-farmer contacts vary considerably. Often contact consists of an exchange of greetings and a question by the agent concerning the general nature of the fields, whether or not problems exist. A negative answer by the farmer is usually sufficient for termination of the exchange. In some instances the NKF checks the crop for disease or insect damage. If he finds no such disease or damage, he leaves. Many of the discussions are of a general nature, though when the situation warrants, the agent imparts specific information about fertilization, insecticides, weed killer, etc., to the farmer. Such information, however, is usually in response to direct queries from the farmer. Often an agent discusses the kinds of things he has learned from his reading, or on the other hand, informs a farmer what others in the area are doing. He is always a welcome visitor to the farm and is known everywhere he stops.

Extension agents serve as important linkages between the government and the individual. Their primary functions are those of information disseminator, interpreter of G.R.I.

policy and activator of these policies by bringing them into concrete action at the local level. Government planners formulate plans for the rural areas throughout Okinawa and it is up to the extension agent to apply these plans to the area in which he works. For example, the major purpose of the SKF is to "change attitudes of the people about living, then they can change and improve their way of living."

In Yabu, the SKF has a number of things going at one time, such as emphasizing the need for villagers to eat 70 per cent polished rice instead of the usual 100 per cent polished rice as the former seems to be less related to high blood pressure and other diseases. She is also encouraging farmers' wives to eat a more balanced diet, to get more vitamin B_1. A good deal of her time is spent in researching the villages in the township to determine what kinds of uses are made of housing yards. She is encouraging the planting of fruits and vegetables in the areas around houses. Another project is to encourage women to wear clothes made especially for working in the fields, especially long slacks and gloves to protect their skin when working in the pineapple fields. She also teaches women how to make their own clothing.

The Kochinda SKF, though having the same general purpose, emphasizes different things. She, for example, is teaching wives how to make good soy bean paste (miso) for soup. She is also teaching techniques for making pickles and pickled vegetables (tsukemono). Clothing is a project she has worked on in the past. The Kitanakagushiku SKF is

also emphasizing improved clothing for working in fields and the planting of fruits and vegetables in the houseyard.

The general educational level of all SKF in the Ryukyu Islands is about 50 per cent junior college and college graduates. The director of the G.R.I. office indicates that for the most part those with college educations seek jobs in the sugar industry and domestic business. Average pay for SKF is $65 per month. The Yabu SKF has the equivalent of a high school education, is 36 years-old, and makes a monthly salary of $69. In addition, she receives about $4 per month travel allowance. The Kochinda SKF is 49 years-old, has the equivalent of a high school education and is paid $86 per month. She has received special training at the Home Economics Department of the University of the Ryukyus. In Kitanakagushiku the 44-year-old SKF earns $72 per month and has the equivalent of a high school education.

The various SKF receive information from G.R.I. in the form of pamphlets distributed to district offices. They also attend yearly meetings held Okinawa-wide at which time lectures and demonstrations are given by professionals, especially those from the Home Economics Department of the University of the Ryukyus. In this way they are kept up-to-date on the latest information and techniques. Furthermore, they plan their activities on an areal basis, e.g., northern, central and southern areas, and as a group of two to five SKF working out of a district office. They cooperate for agricultural consultation. In all three townships they spend

nearly all their time in a particular township even though officially assigned with others to cover a number of townships. This is perhaps due to the transition from the old system to the new, or may be because SKF find they can do a more efficient job if familiar with a particular township.

SKF express a general satisfaction with their work. They find it frustrating at times, but also rewarding:

> Yes, I like my job. (Why?) Because I get to know many people and get new information and techniques at the same time. I'm happy when I find people are satisfied and grateful for the help I can give them (Kochinda).

They have some difficulty explaining why they became SKF. This apparently is a question they have been asked many times:

> I don't know the answer. We have the same question asked often. Sometimes we have trouble, but I like my work. Our slogan is 'Let's be speculating housewives.' (Yabu)

The Kitanakagushiku SKF has only been there for one month and is spending most of her time becoming acquainted with the area. She had little contact with the former SKF (now assigned elsewhere) and has as yet not formulated programs for Kitanakagushiku. She indicates, however, that she liked her work before in Chatan township.

The NKF face much the same situation as the SKF, i.e., the need to tailor Okinawa-wide programs to a local area. The job is all the more difficult due to the technical nature of the information they must disseminate. Each district office, ideally at least, contains NKF who are specialists in different aspects of agriculture, e.g., sugar

cane, pineapple, vegetables, etc. This often means an NKF cannot answer specific questions from farmers. Some of the older NKF remain generalists, but even this can be a drawback when a farmer wants specific information about his own particular problem.

Though the G.R.I. director of extension feels NKF have already passed the level of giving out information and are "now aiming at getting information about how and what farmers are thinking," this aspect of their job is not mentioned by NKF in any of the three townships. They see their job as the dissemination of information and techniques and the discovery of diseases in the fields:

> My job is to give instruction about main crops of farmers, sugar cane for example. Also instruct how to plant sugar cane and give advice and suggestions on planting techniques or how to fertilize the fields (Kochinda).
>
> There is a special extension agent in G.R.I. and an NKF gets information and knowledge from him and from the experiment station and then passes this information along to the farmers (Kitanakagushiku).

Much the same attitude is expressed by the Yabu NKF, though he also mentions the detection of disease, especially in potatoes and other vegetables.

NKF not only link the farmer with G.R.I. but also with the Agricultural Experiment Station and the University of the Ryukyus. Once each month NKF from an area, such as central Okinawa, meet with specialists from the experiment station to receive lectures about new seeds, fertilizers, techniques, etc., in agriculture. Often at these meetings

professors from the University are invited to present half-day sessions on their findings, things of interest for farmers to be disseminated by extension agents. There are, in addition, special meetings at various times for the same purpose. Once each year NKF attend a weeklong training session at the University in an effort to keep themselves informed and to improve their effectiveness. Content of the week's material is diversified, thus if an NKF specializes in sugar cane one year, he may specialize in insecticides the following year. Other information is obtained by agents from pamphlets issued by G.R.I. as well as from the agriculturalists at the University and experiment station.

The general educational level of NKF is lower than that of SKF, only about one-fourth are graduates of the University, the rest having the equivalent of a high school education. Pay for NKF is the same as for SKF; there being no difference in the pay scale for men and women. The 24-year-old Kochinda NKF has only been in his position for 20 months, is a graduate of an agricultural high school with three years experience at the experiment station. His monthly salary is $53. The 61-year-old Kitanakagushiku agent has 12 years experience and the equivalent of a high school education. He is unwilling to divulge his monthly salary, though it is probably between $80 and $90 per month due to his long experience. The Yabu extension agent is 36-years-old and a graduate of the Northern Agricultural High School (located in Yabu). He likes his job, but is dissatisfied

because of less contact with farmers under the new system. He previously worked at the Nago branch of the Agricultural Experiment Station and is a specialist in vegetables. The Kochinda agent says he likes his work and gets personal satisfaction when his suggestions are accepted.

NKF face one difficulty not encountered by SKF in their efforts to disseminate information to rural dwellers -- a lack of organizations within the village and township through which to pass information. In all three townships SKF work closely with Living Improvement Groups (seikatsu kaizen kai) as well as with the village and township Women's Association (fujinkai). In Yabu, for example, there are 12 Living Improvement Groups which meet at least once each month. The SKF works closely with group leaders. Nearly 200 members are active and a larger number attend irregularly. She is also in regular contact with leaders of the Women's Association, before which she speaks and gives demonstrations. In Kitanakagushiku, Living Improvement Groups have been formed and are active in all but Chunjun village, and the SKF is planning to form one there. In Kochinda there is one group in each village. Much of the work of the SKF is done through these groups.

The NKF, on the other hand, finds himself without organized groups through which to work. In Yabu there were three agricultural study groups in the past, but when the extension agent went to Hawaii for six months to upgrade himself, the groups had been disbanded when he returned.

There is no 4-H club in any of the three townships. In Kitanakagushiku there previously were study groups in each village, but now only four remain with a total membership of less than 55. These four groups meet regularly once each month and the NKF works closely with them. He is at a loss when it comes to organizing groups once more in the other villages. In Kochinda, the NKF often lectures and gives demonstrations to the Living Improvement Groups, the Women's Association and the Women's Agricultural Association (noogyoo fujinbu) because there are no men's groups devoted to agriculture.

Reasons for the lack of men's groups are difficult to obtain. One of the dominant reasons may be a lack of interest on the part of young men to engage in agriculture as an occupation, combined with the possibility that those youth interested in farming might be of less intellectual quality. According to the Kochinda NKF:

> The young people farming in this village and planning to follow farming as a career are of lower I.Q. Those of higher I.Q. go out of the township and find jobs.

Furthermore, there is only a small number of young men in all three townships who are oriented toward agriculture. Among the older men, those already engaged in agriculture, the proliferation of sugar cane may account in part for the lack of agricultural groups. Those planting sugar cane generally feel they know most of what there is to know about the crop. NCO-310 variety has spread throughout the Island and most think this is the best variety and that they know

how to produce a good crop. The fact that only Kitanakagushiku has agricultural study groups can be correlated with vegetable production. Vegetables require more information than does sugar cane and the four groups are primarily concerned with new techniques for vegetable cultivation.

Farm Management Advisors

In addition to NKF and SKF, there is one other kind of extension agent, called a Farm Management Advisor (eino shidoin) in most townships. They are attached to the local agricultural cooperative (noogyoo kyoodoo kumiai). About 60 such advisors (hereafter referred to as ES) are situated throughout the Island. Sixty or 70 per cent of their salary usually comes from the unit cooperative and the remainder from either G.R.I. or the township. Their work is quite similar in nature to that of the NKF, but is more directly tied to the agricultural cooperative. According to the director of extension education of the Ryukyu Federation of Agricultural Cooperatives:

> The NKF's main field is technical improvement, but the ES is mainly concerned with individual management and the use on the part of the individual of the technical information he receives.

The Kochinda ES, however, sees less difference between what he does and what the NKF does:

> My job is almost the same as the NKF, we are trying to promote the production of agriculture and how to fertilize and raise livestock.

He went on to give a detailed number of examples, explaining how much fertilizer to mix with water, how to use agri-

cultural medicine, etc. He works very closely with the NKF in Kochinda. The Yabu ES explains his job:

> It is to teach administration of agriculture. Some crops need special techniques and I teach them. Everything about agriculture is within the field of the ES. . . So far I've tied up closely with the NKF.

My own obeervations lead me to conclude there is considerable overlap between what NKF and ES do. Both face much the same problem as mentioned above, however, the ES has one small advantage in making contact with farmers. Many farmers purchase their materials from the agricultural cooperative and it is out of this office that the ES works. He spends at least half of each day in the office and when a farmer comes in for seed or fertilizer, the ES has a chance to talk with him. The ES also spends as much of each day as time will allow visiting farmers in their fields. He appears to have more face-to-face contact with individual farmers than does the NKF. ES, however, are also caught in a kind of trap by working in the cooperative office in that they often spend a large amount of time there, busy with work around the cooperative quite unrelated to their job as advisors. They are a channel between the farmer and the Federation of Agricultural Cooperatives, one that can be easily located if the farmers desire information. In this sense, they are more accessible than an NKF often turns out to be.

ES receive information and keep up-to-date about new materials and techniques in agriculture from the federation. Each year all ES gather in Naha for a four-day training

course conducted by the federation in cooperation with the University of the Ryukyus. There are also monthly regional meetings and federation representatives and others lecture and conduct demonstrations in an effort to keep ES informed. They also receive information from pamphlets issued by the cooperative as well as G.R.I. and are in contact with the Agricultural Experiment Station.

Summary

This chapter has focused upon the roles of the Agricultural Extension and Home Demonstration Agents and the Farm Management Advisors as channels in the flow of agricultural information. The change to a different type of extension service caused concern among agents and farmers alike. It appears the change may have come too soon, farmers were just becoming accustomed to the idea of having an extension agent for their township to whom they could turn for information. Under the new system, agents may well be better informed and technically more proficient, but the amount of face-to-face contact has dwindled due to the demands upon agents to work in the office and keep themselves up-to-date. They still, however, remain the most direct, personal channel the farmer has linking him with G.R.I. in the field of agriculture.

The biggest problem facing agents and others concerned about reaching the farmer, I think, remains how to reach the disinterested. The new system has not overcome this problem and may have aggravated it by cutting down on the number of

individual visitations possible by agents. There can be little doubt that the information is available and the mechanisms for its dissemination do exist. But, what is needed, it seems is motivation on the part of the potential recipient to seek out the new information. Agents were virtually unanimous in their agreement about the difficulties of reaching the disinterested farmers, who, it appears, constitute a majority of the farm population.

Perhaps what is needed is a new and different approach, one that focuses upon motivating the disinterested farmer to seek out those who can provide information. Existing structures are aimed at disseminating information to those who want it, not at creating an awareness of the need for new information. Not all farmers are linked with G.R.I. or the experiment station, and this is what must be done if the future of Okinawan agriculture is to be bright.

CHAPTER FIVE

CHANNEL: TOWNSHIP AND VILLAGE ADMINISTRATION

Messages which have originated at the national level, with the Agricultural Experiment Station, for example, in many instances flow through the township administrative offices or village headman on their way to the receiver(s). Township administration occupies a key position in the table of organization in Okinawa and functions in part, at least, as a communication channel. Village administration, though an unofficial unit administratively, stands between the township and the individual. Aspects of township and village structural organization will be discussed in connection with the function of these units in the dissemination of agricultural information.

Township Administration

The township (son) is the smallest legally recognized administrative unit within Okinawa's governmental structure. Townships vary in size and population, the larger ones (territorially) being for the most part in northern Okinawa, while those of greater population are located in central and southern Okinawa. There are 30 townships on the main Island and 12 encompassing the off-shore islands. Township administration which is directly responsible to the central government in Naha, is made up of varying numbers of villages (buraku).

Township administration is responsible for the formulation of local planning and the procurement of aid and monies with which to carry out these plans. National plans are interpreted by township officials and have a direct bearing on each individual township resident. Township administration is broadly divided into an executive and legislative branch. The executive branch is headed by the mayor (soncho) who is the chief administrative officer of the township. The legislative branch is the township assembly (gikai), composed of selected residents.

The mayor has a dual responsibility; to the members of the township and to G.R.I. He is seen both as the local representative of the national government, and, since he is popularly elected, as the representative of the people within the overall administrative hierarchy. One of his important duties is to supervise employees working in the township office. Due to the variety of tasks carried out by the township, the administration is divided into five sections, each with its own head and employees. In Kochinda, for example, which is representative, the five sections are: engineering (doboku); economics and industry (keizai); financial affairs (zaimu); census registration (koseki); and general affairs (shomu). In addition, the mayor appoints two officials who are directly responsible to him, the vice-mayor (joyaku), whose appointment must be confirmed by the assembly and a revenue officer (shunyuyaku).

Of the various sections listed above, the economics and industrial section is most important as a channel for agricultural information flow. Its chief is responsible for forestry, animal husbandry, agriculture and industry within the township. Of secondary importance is the general affairs section which is the most inclusive. Its chief is responsible for such things as janitorial work, population and other statistics about the township, public welfare, fixing tea for visitors, procuring newspapers and other publications, public aid and protection and supervising the various clerks working in the township office.

The number of employees varies from township to township, though not directly in relation to the township's population. The Kochinda township office employs 19 persons; Kitanakagushiku, 30 persons; and Yabu, 18 persons. In addition to those employed by the township, there are usually four or five G.R.I. employees working out of the township office, such specialists as the Public Health Nurse, the NKF and SKF and someone from the Social Welfare Department of G.R.I.

One of the most important persons in the township office for the farmer is the chief of the economics and industrial section. In an agricultural township, he works mainly on administration and guidance for farmers, and works closely with the NKF and SKF. His main task is to formulate plans and draft bills for submission to the assembly, and once approved, to implement same. The industrial section chief of Kitanakagushiku explains his job as follows:

> Generally we have a township-wide agricultural contest (kyoshinkai) to stimulate production of agriculture. These are all backed by allowance and aid from the township and my work is to administer these expenditures. My main work is to establish seedling gardens which are supported by aid and to exclude disease and insects. It is also to encourage good seed and seedlings and stimulate self-production of compost, as well as to counter natural damage. Also to improve waterways and water facilities.
>
> These are all programs backed by GRI and township aid. My job is mainly to put this aid to work on these various projects. We also encourage raising good breeds of livestock and poultry.

His statement is fairly representative of the job of industrial sections in both Yabu and Kochinda as well, though the nature of the problems is somewhat different. It is most interesting that he fails to mention encouragement of vegetables, something that is quite important in Kitanakagushiku.

The industrial section chief works closely with NKF in formulating plans for the township, depending mainly upon village headmen to inform residents of the time, place and type of activity. At regular meetings of village headmen (kucho kai), he spends considerable time explaining events planned for the coming week or month. The industrial section chief is linked with the Economics Department of G.R.I., receiving pamphlets from them, being visited by them and visiting their offices as well. Results of experiments from the Agricultural Experiment Station and the University of the Ryukyus are available to him through G.R.I. Farmers often visit the township office to talk with him and he is an important channel for them from the G.R.I. Economics Department.

He is attempting to work out plans whereby NKF can spend more time in the fields visiting farmers:

> I work closely with both the NKF and SKF. There is a tendency for the NKF to do business in my office only, but I am trying to get him to go out and visit the farmers in their fields.

One of the industrial section chief's important tasks is the designation and administration of the middle-test fields. The purpose of the middle-test field is to increase good seedlings. This is accomplished by designating certain fields as middle-test fields which are supported by aid from the township for purposes of testing seedlings under actual conditions and to provide seedlings for dissemination throughout the township. The designation and selection of fields is carried out to a large extent by the village headman as explained in the following section.

Once the field has been selected, G.R.I. provides the farmer with seedlings to be tested and pays $96 for a 10 are (.1 hectare) field. The township pays an additional $54 to defray expenses incurred by the farmer. There are 70 such middle-test fields located in Kitanakagushiku, costing the township and G.R.I. a total of $1,050. In some townships, only G.R.I. money is given the farmer, with no further subsidy from the township. In some instances, a farmer is requested to plant seedlings on land owned by the township, acting as a kind of trustee. In most cases, however, a farmer plants on his own land.

Once the crop is ready for harvest, the farmer cuts shoots for distribution to other farmers in the township.

In this way, the new variety is disseminated. This is the main method by which sugar cane variety NCO 310 became so widely distributed throughout the Island within five or six years. Seedlings from the middle-test fields are distributed free of charge to those farmers desiring them. Various kinds of crops are being experimented on and propagated in this manner.

The industrial section chief spends a good deal of his time visiting farmers and informing them of new techniques and seedling information he has received from the experiment station. As a resident of the township, he is known to farmers and aware of their problems. This puts him in a good position to know what may or may not be beneficial to farmers within his jurisdiction. NKF make extensive use of his knowledge in formulating their own plans for disseminating information to farmers. He visits middle-test fields and is instrumental in distributing new seedlings and findings from the middle-test fields. Many farmers interviewed indicate him as being quite helpful to them in their quest for new knowledge.

In addition, he is in possession of the many bulletins and reports of the experiment station. Part of his task is to keep up-to-date on new information and then to inform farmers. He does this, often, through personal contacts, by working through the village headmen and at meetings held in the various villages. He also goes with the NKF on occasion to make in-the-field visits and serves as a judge at the vari-

ous agricultural contests. He works closely with the agricultural cooperative in an attempt to improve the position of agriculturalists within his township.

The chief of the general affairs section functions more indirectly as a communication channel for agricultural information. One of his many tasks is the accumulation of various publications from offices of the higher administrative levels, many of which are of direct importance to the farmers. Publications of G.R.I. such as Farmers Friend, the Agricultural Calendar and Friend of Agriculture (discussed in detail in Chapter Seven) are sent to the township for distribution and to be kept on file for farmers to consult.

It is also the general affairs section chief's duty to collect agricultural statistics from farmers and to compile them for use in planning. To accomplish this requires considerable research and contact with farmers within the township. These statistics are a form of feedback from the farmer to the administration, and are of considerable importance to the NKF and industrial section chief in their planning.

Village Administration

The village is not a legal unit within the administrative structure, but is nonetheless a recognized, informal administrative unit. In many ways, it is like the small end of a funnel in that information of almost every kind flows through the village on its way to the individual. Township

administrators and representatives of the national government rely heavily upon village administration to pass along information to individuals within the village. Because village administration often consists of one man only -- the village headman (buraku cho) -- his importance is great as a channel for the flow of information. For that reason, attention here is focused on the village headman.

The headman in some of the larger villages is assisted by a vice-headman (kucho dairi) and/or a secretary/clerk. The headman's job is to act as the administrative and informational link with the township; to coordinate activities of the various associations within the village; to see to it that various village activities, such as umachi, abushibare and kyoshinkai, are carried out; to lead the village council; and, in general, to be responsible for conveying information of virtually every kind to those residing within the village.

His days are quite busy. He often must go from househead to househead to inform them personally about something from the township office. It is a difficult, time-consuming and essential, under the present system, job. It is also a job of great responsibility and little reward. In most areas the headman is elected by village residents. Though it is a job neither sought nor desired by virtually anyone, examples of non-acceptance are rare. It is an economic burden to the office holder, few village headmen have time to farm and there are cases of men being forced to give up jobs outside the village to meet the demands of the position. It is an

office that has lost much of the honor and respect of earlier years, not due to malperformance by its holders, but because of poor remuneration in relation to the time necessary to carry out the diversity of tasks attached to the position.

The village headman's job can be broken down into two broad categories; coordination within the village and liaison between village and township administration. As part of his coordinating duties within the village, he must keep a schedule of dates and inform villagers concerning the yearly round of activities within the village. These annual activities in some instances bear religious overtones and in other cases are related to the agricultural cycle. They are times when members of the village come together and are provided with the opportunity to exchange information with one another as well as with village and township officials. He also coordinates activities of the various associations within the village, such as the Youth Association, Women's Association and the Agricultural Cooperative.

In his role as liaison officer between the formal administrative structure and village residents, he is mainly concerned with the flow of information from township office to villagers, as well as the transmission of information about the village to the township office. In this capacity, he often must conduct various kinds of research within the village. His research involves such things as counting the number of television sets; surveying livestock or farm machinery; estimating sugar cane production; and reporting

the number, ages and health conditions of aged residents of the village.

One village headman views his tasks as follows:

> The job of village headman is miscellaneous and covers everything: township office; police; school; and even the public health center. The village is on the edge of the administration, so it has a connection with almost everything. For example, G.R.I. has many divisions or departments, but when all the information comes to this last outpost, it all comes to one man -- the village headman.

This statement cogently sums up one-half of the duties of village headmen, that of linking villagers to the administrative structure above them. A complete inventory of tasks performed by various headmen in the datum villages is virtually impossible to obtain. The following quotations from six village headmen are in answer to the question, "What is the job of a village headman?".

Kochinda, Tomimori village:

> I am entrusted with some parts of the township administration. Also, I sponsor the annual activities of the village. The title is trustee of the business of the township, for example, I do research which cannot be done by the township officials. (Question: What kind of research, for example?) It's very hard to say, we do various kinds of research, to count livestock, and every Wednesday all the headmen meet at the township office. We collect money for the Red Feather, collect various kinds of taxes, research statistics on the aged, try to get people to register for anti-polio shots, we are the examiners for clean-up days, examiners for <u>haru yama shobu</u> (encouraging contest for administration of field and harvest, in both spring and autumn), do research on the cultivation of sugar cane, get agricultural medicine from the township, mix and give it to the farmers, for both the killing of insects and wild rats and many other things.

Kochinda, Gishi village:

> To give information from township office to the people and offer and give people's opinion to the township office. A kind of trustee of township administrative business. Also we are involved in the celebration of the various annual activities of the village.

Kochinda, Kogushiku village:

> To treat relations and affairs between the township office and the village, as well as the business of the village. (For example?) Once a week we have a meeting in the township office of all village headmen and after I get information, I have to pass it along to the people of the village. (What information?) For example, information from industrial section and various things. So far discussed kyoshinkai and after that, bring that information to the people.

Yabu, Katsuyama village:

> Related to the township office and to do survey work and research in the village and notify the township office of the results. (What research?) In an agricultural community like this, 90 per cent of the village headman's work is related to the industrial section of the township office, for example, if have disaster, have to survey the damage, or give new seedlings, have to check and see how well they are doing. I survey and report to the industrial section chief. When a disaster is big, get aid from G.R.I. and I have to administer it. Also I have to have relation with the annual activities of the village.

An interesting additional duty of the Katsuyama headman is related to special parties held in honor of the spirit of the goat. This is unique in Okinawa and the only place such a festival is held. On a small hill in front of the village meeting hall (kominkan) overlooking a deep valley created by the confluence of the two very high mountains and beneath a grove of cherry trees is a monument to the spirit of the goat. A group was formed in 1960 devoted to

the spirit of the goat which meets once a year to eat goat soup and raw goat meat (yagi sashimi) beneath the cherry trees when the trees are in full bloom.

Attendance at the annual party increased from a few score originally to nearly 750 in 1965. It is the village headman's job, with the help of organization officers, to buy goats for eating and make arrangements for the annual party. In addition, the headman is busy throughout the year organizing smaller goat-eating parties. More than 50 were held in 1964. Katsuyama village affords an exquisite view from near the summit of Mt. Katsudake and every New Year's morning nearly one thousand persons climb the mountain to view the first sunrise of the new year. This has meant the village headman must also function as a tourist coordinator in addition to his normal activities.

Yabu, Asahigawa village:

> The job of village headman is to give information to the people. This is information given to him by the township office. He also has to do things related to the school, firemen's group and many others. All kinds of jobs come to the headman, including the annual activities of the village.

Kitanakagushiku, Atta village:

> The main job of the village headman is to pass information from the township office and discuss it with the village officers and find ways to influence the township office to do projects for the village, like building agricultural roads and to decide where to build them first. Also collecting taxes is the headman's job, or organizing the people to repair the waterways or small brooks. he is also responsible for the annual activities of the village and to take care of the general meeting of the village people.

A certain amount of redundancy runs through the responses. All first mention their role as an information channel between township office and villager. Some see themselves as trustees of township administration within the village, whereas, others merely feel they are responsible for passing along information. Their detailed responsibilities vary, some mention taxes readily, others mention research and survey work, still others seem to feel it necessary to give villager's opinions to the township office.

A second common theme throughout the responses is related to the annual activities within the village. Annual activities vary from village to village and in some areas the township has become the focus of activities which remain village-centered in others. These annual activities have an important latent function of bringing together large numbers of villagers and, therefore, serve as communication channels. Before taking up details of the annual activities, however, more should be said about the headman as a communication link between villagers and the township administration.

The nature of this relationship varies from township to township throughout Okinawa. In some, the headman is virtually under contract to the township office to carry out township affairs, whereas, in others the relationship is quite informal. But even in these latter instances, headmen meet with township officials at least once a month to receive information to pass along to his people. One example of the formal relationship is in southern Okinawa (Tomigusuku-son). The mayor explains it this way:

seminated to villagers. It is presided over by the mayor, or vice-mayor in the mayor's absence. Much of the information to be disseminated is reproduced in sufficient copies for each headman. The remainder is in the form of letters to be passed out among villagers, or to be taken down in notebooks by the headmen as a speaker addresses the meeting.

The first part of the meeting is devoted to informing headmen of activities since the last meeting and of things to be done prior to the next meeting. Examples from a few such meetings will indicate the kinds of information given by the township administration to the headmen. In Kochinda, the chief of the general affairs section notifies headmen that Friday is scheduled for cleaning and repairing village roads (roodo aigo de), and that they should inform their people to cut grass along the roads and clean drainage ditches. Each household must provide one member to perform the task and headmen are required to inspect and report the results at the next meeting. They are also told to remind the people about the unveiling ceremony to be held later in the week. The township had solicited money to build a statue of Mr. Johana Noboru, a local hero who had been a mayor and later distinguished himself as an outstanding Okinawan politician.

In Kitanakagushiku, the public health nurse attends the headmen's meeting to request them to ask people to come to the township office for their anti-polio shots. The chief of the industrial section reminds headmen to inform people that kyoshinkai will be held soon and for them to prepare for it.

The head of the agricultural cooperative also gives information concerning the distribution of fertilizer. He also distributes tickets designating dates for delivery of sugar cane.

At a meeting in Yabu, the mayor asks headmen to continue their survey of the number of television sets in their respective villages. The chief of the industrial section tells them that a specialist on the cultivation of white potatoes will be in Yabu and for them to determine which farmers would be willing and qualified to allow part of their fields to be used to demonstrate the new seedlings.

The above is but a small sampling of the kinds of information passed on to headmen by the township administration. It varies in content according to the time of year. It is quite normal for the agricultural extension agent, home demonstration agent, public health nurse, head of the agricultural cooperative or his representative, social education director or others to attend the meeting and request headmen to pass along information or to gather certain kinds of data about the village.

The second half of the meeting is generally devoted to expressions of opinion, results of research and so forth on the part of village headmen. In most cases, such information, though also presented in written form, consists of a verbal statement by headmen. Many times it is a result of a request for information by a villager. For example, a villager wants either the agricultural or home demonstration agent to visit him, or he wants to know the date scheduled for vaccinations,

or other specific information and, in many cases, villagers want an explanation of their taxes. Part of the meeting, infrequently, is devoted to discussing problems in the villages, such things as the repair of agricultural roads, the state of negotiations on the price of sugar cane, the problem of sugar cane rotting in the fields due to late delivery dates and so forth.

One function of the headmen, specifically related to agriculture, is in choosing a site for a middle-test field within the village. As explained earlier, a middle-test field has the purpose of increasing the number of good seedlings and also to test seedlings under normal growing conditions. It is a field owned and administered by a farmer at the request of the township in cooperation with the Agricultural Experiment Station. Each village is allotted a certain number of seedlings and requested to ask a farmer to plant them and then distribute new seedlings to other farmers. The chief of the industrial section of the township relies upon village headmen to find farmers willing to undertake the cultivation of such seedlings. On example from Kitanakagushiku indicates the manner by which a headman accomplishes this:

> It is my responsibility to pick a farmer for the middle test field. I call the various neighborhood group heads (hancho) together and ask them for suggestions as to which farmers are most suited and willing. We use three criteria for choosing a farmer: 1) fields that are near the road; 2) the ability of the farmer as an administrator and technical ability; and 3) the quality of his land, whether or not it is fertile enough to produce good seedlings in times of drought. We try

> to choose one who is enthusiastic and will take care of the seedlings. The total administration of the test field is left up to the farmer. Once we decide on which farmer, I go to him myself and ask him to do it.

This one example, I believe, indicates the kind of reliance placed by township administration upon village headmen. They are aware of the headman's closeness to the villagers and trust his ability and knowledge of those he represents. Though he receives advice from neighborhood group heads (hancho), it is his responsibility to make the final decision. Though the mayor and other township officials are close to some of the people, they can be assured of the headman's closeness and knowledge of the peole he lives with daily and represents. Nearly every headman interviewed knows the names of every household head in his village, and is able to give information regarding place of employment of household members, as well as other information about each household. Only those in large villages are unable to recall such information about every household, though they are not at a loss concerning most households in their village.

In the second category of a headman's responsibilities, that of keeping a schedule of the various village-centered activities, he sees to it that villagers are brought together at regularly scheduled times. The number, purpose and nature of these activities varies from village to village, sometimes varying within the same township. Even those activities with the same name vary in detail in different villages, and, in some cases an activity may be similar, but is referred

to by a different name. Activities are held on different dates in different villages, though there is general agreement with regard to season. Some of the more important activities are discussed below, especially those that cause the gathering together of groups of villagers.

1. Agricultural and Livestock Contests (kyoshinkai, haruyama shobu, nogi shoreikai, chikusan himpyokai, gyuba shoreikai and gyuba kyoshinkai). These are all contests within the village. In some instances competition is among neighborhood groups and in others among individuals. Such things as sanitation, compost making, keeping agricultural records, vegetable production, sugar cane production, horse quality, bull and cow quality and other agriculturally related activities are judged. Also included in the contest are tax payments and the results of attempts to eradicate insects and wild rats, among other things. These contests are held throughout the year, those related to crops usually following harvest or preceding planting. Kyoshinkai is the most inclusive contest and in some villages it is the only contest, all activities listed being subsumed under this one contest.

2. Educational Records Contest (gakkyuji shoreikai). This is a contest for the encouragement of learning. School records of students are compared and judged. It is held in April at the beginning of the school year. In some villages, it is included as a part of kyoshinkai.

3. Athletic Contests (undo kai). In some villages, the Youth Association (seinenkai) sponsors a village-wide

athletic contest in which anyone who wishes can compete. In other villages, Youth Association members compete, either individually, or as neighborhood units, and other villagers merely watch.

4. Rope Pulling Contests. Some of the southern villagers hold rope pulling contests. Usually competition is by the neighborhood unit level. Rope pulling is followed by a party in the village meeting hall. Such rope pulling contests are not found in northern villages.

5. Harvest Festivals (umachi and abushibare). Umachi is a festival related to the local shrine (ujigami). Village members go to the shrine and pray for a good harvest. This is followed by a party at the village meeting hall. It is generally held twice yearly. Abushibare is celebrated after harvest and is a kind of party to provide for rest and relaxation following harvest.

6. Old People's Party (seinen iwai). A party in the village meeting hall to celebrate the birth year of those who are older than 71 years and were born in the present animal year (1964 is the year of the dragon). All villages celebrate this event, usually in January of the lunar calendar.

7. Festivals Related to the Lunar Calendar (bonenkai, shinenkai, honen o'dori and bon o'dori). These are parties or dances related to various seasonal changes, for example bonenkai is a year's end party and shinenkai is a New Year party held in the village meeting hall. Honen o'dori and bon o'dori are celebrated by dancing and are local manifestations of dances held throughout the Island.

The calendar of activities presented below is that of Yabu village in Yabu township. It is not presented by way of being typical, but to give a concrete example of the operation in one village. The calendar is for 1965 and all dates refer to the lunar calendar unless specified as being according to the solar calendar, which is the same as the Western calendar.

Calendar of Activities

Jan. 1	Shinenkai (New Year's Party)
Jan. 3	Nogi Shoreikai (Agricultural Contest)
Jan. 7	Seinen Iwai (Old People's Party)
April 9 (solar)	Abushibare (Harvest Festival)
April 10 (solar)	Gakkyuji Shoreikai (Education Contest)
May 15	Gyuba Shoreikai (Livestock Contest)
May 15	Umachi (Harvest Festival)
May 16	Nogi Shoreikai (Agricultural Contest)
June 4 (solar)	Doro Shuri (Road repair)
July 15	Bon O'dori (Dance)
July 4 (solar)	Haru Yama shobu (Agricultural Contest)
Aug. 9-11	Honen O'dori (Dance)
Oct. 15	Gyuba Kyushinkai (Livestock Contest)
Nov. 25 (solar)	Doro Shuri (Road repair)
Dec. 25	Bonenkai (Year-End Party)

Most activities occur from April through July, which is the slack season for sugar cane cultivators. Generally, sugar cane is harvested by the end of March by the solar calendar (April by the lunar calendar).

In recent years, however, some scheduled activities have not been performed because of the lateness of sugar cane harvest. In 1965, for example, villages in Kochinda and Kitanakagushiku townships did not hold kyoshinkai, which is the most important activity in both townships. This was due to the lateness of sugar cane harvest. Sugar cane is harvested

according to a schedule formulated at the sugar cane mills and in recent years, due to the difficulties outlined earlier with regard to the amount purchased by Japan, harvest has been pushed back into May and even June in some areas. Sugar cane mills want to be certain of the amount Japan will purchase before scheduling pick-ups from farmers. Thus, celebration of village activities is in part influenced by outside forces.

Attendance at all activities is very high. Each household usually sends at least one representative to nearly every activity and in some cases more than one. If less than 90 per cent of the households attend it is considered unusual by village headmen. There is some concern that the increasing number of television sets might result in lowered attendance, but no village headman has seen evidence of this as yet. It is mainly a worry for the next five or ten years, not for the present.

Village activities are times when individuals congregate for a specific purpose, though most activities are followed by a party in the village meeting hall. They are times when a member of each household is present. Participation is not obligatory, but it is socially acceptable to attend. Even those farmers who lack motivation to seek new information attend the activities. In observing a number of such occasions, I found conversation invariably turning to agricultural problems, even though there may have been no overt relationship between the activity and agriculture.

It is virtually impossible to divorce any activity in rural Okinawa from agriculture. Farming is the day-to-day concern of the rural populace, and even the most disinterested farmer is, of necessity, concerned with ways of improving his lot, though he may not seek out the extension agent in an effort to do so. The variety of activities afford the farmer an opportunity to discuss his particular problems with others and in turn he might find others face similar problems. Together they discuss and may reach possible solutions to common problems.

The various extension agents attend as many activities as they can and take this opportunity to pass along the latest information, or to find what problems farmers are encountering. In this way, they find one means of reaching the disinterested farmer, the one who will attend a village harvest festival, but will not go to the extra effort of seeking out an extension agent to get new information. Other township workers, such as the chief of the industrial section, also find it a convenient time to exchange information with farmers. Activities are not held for the benefit of extension agents and township officials, but are used by them to good advantage.

The elaboration of village activities also provides a further example of the variety of responsibilities entailed in the job of village headman. He is responsible for the organization and implementation of activities. He must be aware of upcoming activities and notify each household as well

as see that someone from each household attends, unless sick or otherwise unable. If judging is to be done, he must perform this task also. The task is not quite as time-consuming and difficult as it may seem at first glance since each household at one time or another probably provides a member to serve as headman. Therefore, most househeads are aware of the time and nature of village activities.

In addition to those duties mentioned above, headmen also coordinate activities of various organizations and professionals within the village. Professionals represent interests outside the village, such as the Agricultural and Home Demonstration Agents, the Public Health Nurse, Township Social Education Director and others. The organizations are village-level duplicates of township and Okinawa-wide organizations, such as the Youth Association, Women's Association, P.T.A. and agricultural cooperative. Professionals and organizations are discussed in detail elsewhere, but here relationship of the village headman to them is emphasized.

The village meeting hall, where the headman maintains his office, is the usual meeting place for various groups. Coordination of meeting times is under his jurisdiction. Various professionals find it most convenient to utilize the headman to inform villagers of meetings, whether they be village-level or township-wide meetings. The Kochinda Public Health Nurse ran an experiment to test the efficiency of various methods of informing women concerning classes for pregnancy. At different time, she passed information through the

village headman, over the closed circuit broadcasting system (yusen hoosoo), through the Women's Association, by postcard and by asking midwives to introduce pregnant women to the classes. Though the variables of the experiment could not be rigidly controlled, that is, she could not control the number of pregnant women to be notified nor hold that number constant, she concluded that the village headman method resulted in best attendance, though she felt utilization of a combination of all methods was the best approach.

The Agricultural and Home Demonstration Agents notify villagers of agricultural consultation day (noogyoo sooden) through the headman. They inform each household that extension agents will be in the village meeting hall from mid-morning to late afternoon for consultation on a scheduled day and request as many as possible to attend. According to many agents, this is considered one of the best methods for passing information, second only to visitations to individual farms. This has been discussed in detail earlier, the point being made here is that it is the village headman who notifies villagers. In addition, he remains in the village meeting hall throughout the day and thus becomes informed himself.

The relationship between the village headman and the Youth Association (seinenkai) and Women's Association (fujinkai) revolves around the village meeting hall. This is described by the Gishi headman, Kochinda township as follows:

> The kominkan (village meeting hall) system operates as follows: before the war, the Youth Association, Women's Association and others all worked separately, but now all are considered under the village meeting

> hall and can easily cooperate. For example, they all cooperate in the Old People's Party(seinen iwai) or if the village needs labor for some project. The village meeting hall brings them together. They use the hall at least three or four times a month.

He went on to say that he attends nearly all meetings and is charged with seeing to it that various groups cooperate as much as possible. He is also asked at times to notify members of special meetings.

In nearly every village, headmen are also local representatives of the township agricultural cooperative. The head of the Kitanakagushiku Agricultural Cooperative explains:

> We have a kind of branch of the cooperative in each village. It is headed by a branch chief (shibucho). (Is he the same person as the village headman?) Yes, though we call him shibucho, it is in fact the village headman, and he does everything for the cooperative. He informs farmers at the village meetings at least three times a year, but if there is more urgent information, he informs the people of that too. He also takes orders for fertilizer, seeds, etc., from the people and when we send them out, he may even take it to the household, but we usually do it by truck.

In most villages, also, headmen are the heads of the village-level P.T.A. His role in this job varies from village to village, just as the P.T.A. itself does. Some village-level P.T.A. are very active, going so far as to police students to be certain they are studying. In most villages, however, the village P.T.A. is merely an information channel and meets infrequently when there is some specific information to be disseminated. In either case, it is the village headman who organizes and presides over meetings. Related to this, the township social education director works through the headman in efforts to encourage adult education. Classes, if held,

or lectures are generally conducted in the village meeting hall, and it is again t he village headman who informs people as to time, place and topic of classes and lectures.

Thus, the headman coordinates activities of the various groups within the village, as well as working with extension agents and others in informing villagers of meetings, lectures and so forth. He is consulted in the scheduling of village activities as well as the kinds of programs to be carried out there by others.

Finally, mention should be made of the neighborhood group (han or tonarigumi), or in some areas, what are called branches (shibu). These are subdivisions of villages, and each has a head (hancho, tonarigumicho or shibucho) who cooperates with the village headman in the dissemination of information. Most areas do not call the neighborhood groups tonarigumi, but instead use the word han. Tonarigumi was the wartime name and still recalls unhappy memories to many, thus han has been substituted, though the group and its functions have changed only slightly from that of shortly before the war. The most significant change has probably been a decreasing reliance upon the neighborhood group.

One explanation for the declining importance of the neighborhood group is that the head is not usually elected, but the position rotates within the neighborhood, i.e., heads serve in turn, each filling the post for one year. However, in some villages he is elected and in others appointed by the village headman. The job is not taken seriously and unlike

that of the village headman, has no prestige at all attached to it. It is generally conceded that a village headman should be literate and a man of some ability, but not so for the neighborhood group head. The number of households in most neighborhoods is small, so a man may be required to serve many times throughout his lifetime. Duties are attended to in one's spare time. No neighborhood group head would disregard his farming activities for his position, as many village headman must. In two villages, neighborhood groups are present, but so inactive that no one is serving as head.

In Umusa village, Yabu township, on the other hand, the neighborhood group meets three times a year.

> The neighborhood group met three times last year. Once at the beginning of the year, once just before abushibare and at the year's end. The first meeting is to cement relations and to discuss ways of improving our lives and to discuss the yearly schedule of neighborhood group activities. That was held on January 20. Also we discussed agricultural administration. We often find the talk turning to a discussion of agricultural problems.

In Kochinda township, neighborhood groups are generally more active and a more integral part of the administrative structure than in either Yabu or Kitanakagushiku. This is in part attributable to Kochinda's larger population, both at the township level and, in general, within the villages. Some neighborhood groups in Kochinda are as large as a Yabu village. The mayor of Kochinda explains the function of the neighborhood group head as follows:

> Han were formed immediately after the war and divided according to road borders. The hancho has the job of giving information. If the

> village headman gets information, he gives it to the hancho, who in turn goes from house to house to pass along the information. In some large han he has an assistant. The biggest han is 45 households. Regular meetings of hancho within the village are held about 10 times a year.

This is perhaps the ideal, however, it is inoperative in many villages. The village headman is, for the most part, left the task of going from house to house himself.

Summary

Both township and village administrative structures function as communication channels in the flow of information. Information originating with the experiment station is transmitted to the township industrial section in the form of written bulletins as well as by the extension agents. Specialists from G.R.I. arrange meetings with farmers through the industrial section chief and the village headman. The township industrial section head, in cooperation with the extension agents, processes the information and decides what should be transmitted to farmers within the township. Decisions concerning middle-test fields and agricultural consultation days are made at the township level.

Much of the information to be disseminated is transmitted by the village headman. It is he who is in closest touch with village residents and his primary function is to serve as a communication channel between the administrative structure above him and the villagers whom he serves. He meets with township officials at regularly scheduled intervals, and with villagers both individually and as a group.

Activities within the village are coordinated by the headman and this includes activities planned by the extension agents as well as those planned by township officials.

Headmanship is a time-consuming job, one that carries considerable responsibility, but at the same time is no longer a job of prestige nor much remuneration. It is through the headman that villagers learn about activities of township administration and it is through him that the township administration comes to know what is happening within the village. To better carry out this myriad of activities, headmen in some villages (the larger ones) rely on the help of neighborhood group heads. In smaller villages, headmen perform all tasks themselves.

Headmen appear to fulfill their posts adequately. All are very busy making the rounds of the village and attending meetings. Their tenure in the job, though seemingly just one or two years out of their life for service to their fellow villagers, gives them an opportunity to become more acquainted with new information which they can utilize when they return to farming. Headmen, on the whole, appeared to be very knowledgeable about new information, and in this sense, often stated thatthe one or two years was not entirely wasted. They come to know the industrial section head better, as well as becoming much better acquainted with the extension agents.

Township administration depends upon these village headmen to remain in close touch with residents of their villages. The size and complexity of the Okinawan township

makes it difficult for township officials to administer the needs of the villager directly, they are not usually in direct contact with individual villagers to any great extent. Headmen are in more direct contact, and as communication channels, headmen perform a vital role in the flow of information.

CHAPTER SIX

CHANNEL: FORMAL ASSOCIATIONS

Formal associations have as one of their many functions the dissemination of agricultural information. The associations are considered formal not in the sense that membership is required under any legal aegis, no one is legally required to join any of the associations discussed below. Neither, however, is the converse true, i.e., membership is not completely voluntary. Strictly speaking, an individual has the choice of belonging or not belonging to an association, but is under strong social pressure to join, pressure which most find difficult to ignore. It is part of one's obligation to his township or village to join. The situation is very similar to that found by Befu (1962) in Northern Japan:

> Legally, at least, no one need join any association. That is, it is not the state which requires one to join. What obliges one to join is, rather, the sanction system of the local community which places a premium on conformity to the group. . . . Because it plays this important role in the hamlet [village] group conformity is highly valued and traditional Japanese associations are 'utilized' by the society. . . .to further strengthen the solidarity of the local community rather than provide an outlet for individual interest or to enable the adjustment of a disturbed individual. . .(p. 175)

It is assumed that upon graduation from junior high school, a youth who does not go on to high school will become a member of the Youth Association (seinenkai). A woman, upon marrying

automatically becomes a member of the Women's Association (fujinkai). In response to the question, "Why did you join the Women's Association?" a 24-year-old newly wed in Kochinda simply answered, "When I got married, I became a member." Such a question seemed to make little sense to most informants, the general attitude being, "I joined because it was the thing to do at the time."

Another reason for designating the associations under study as "formal" and not "voluntary" is related to the structural nature of the associations themselves. All are part of broader associational networks linking the village association with one encompassing the entire Ryukyu Islands. For example, the Okinawa Women's Federation is composed of representatives from the various township-level Women's Associations within the township. The same is true of the Council of Prefectural Youth Associations. The Ryukyu Federation of Agricultural Cooperatives is a special case, though the general principle is similar. As the Mayor of Ozato township so aptly describes the associations within his township:

> If G.R.I. has an association, the township will have its counterpart and in the village are all the same associations as found in the township.

It would appear, then, that these associations are organized in such a way as to facilitate the flow of information throughout Ryukyuan society. But what is their function in the flow of agricultural information? The village Women's Association, for example, is, in theory at least, linked

directly with the Okinawan Women's Federation. Each level is formed by representatives from the level immediately below it and should therefore be cognizant of local problems and able to interpret the broad programs at the district and Okinawa-wide level to the local constituency. In the pages to follow, an anlysis of the three main associations found at the village, township, district and Island-wide levels will be analyzed in detail to determine their function in the dissemination of agricultural information. The three associations are: the Women's Association, the Youth Association and the agricultural cooperative.

The Women's Association

Before looking specifically at the association's function in the dissemination of agricultural information, it is necessary to briefly examine its organization. The basic requirement for membership in the Women's Association is to be a married woman older than 25 years. Women older than 60 or 61 are retired from active duty, but can continue as honorary members, though few do. Women younger than 25 years are permitted membership if they are married and older than 20 years. No consideration is given to unmarried women. As the head of the Kitanakagushiku Women's Association explains:

> Old maids are not members of the Women's Association. There are many old, unmarried women -- even 38 or almost 40 years old and still not married. I don't know if they couldn't choose to be members, or if they weren't chosen.

Total membership in Kochinda is 1,040; in Kitanakagushiku, 900; and in Yabu, 500. Membership is not mandatory, however,

only rarely does an eligible women not belong. Membership and activity in the association, however, do not necessarily go hand-in-hand. Nearly every woman readily states she is a member, though many go on to say that they seldom attend meetings.

The township Women's Association is the center of activity. It is the township association that plans the year's calendar, invites lecturers and pursues special programs. It is composed of the president and vice-president of the various village-level associations. They form a township board of directors, from which are elected a president, vice-president, treasurer and clerk. In addition, heads of departments within the association are chosen. In Kitanakagushiku, for example, the township Women's Association has six departments: 1) general affairs; 2) social; 3) culture; 4) production; 5) living improvement; and 6) recreation.

Each department is held responsible for certain activities. The general affairs department handles a variety of activities, primarily of an administrative nature. The social department is concerned mainly with social education and education of youth. The cultural department concerns itself with the celebration of certain annual events, such as o'bon and New Year. The production department has an annual schedule which covers handicraft lectures, the making of pickles (tsukemono), making of jam and planting of fruit trees, among other things. The living improvement department is involved with the home agent and plans lectures in cooperation with

her. The recreation department is responsible for assisting at the Old People's Celebration and cooperates with the Old Man's Club in providing entertainment for them. Some of these activities, though not many, are duplicated by the village association.

Meetings of the board of directors are held at least once each month in Kitanakagushiku and Yabu, and generally twice a month in Kochinda. Such meetings are devoted to discussing information received from the district or Federation of Women's Associations. Also discussed are plans for the annual schedule for the township association; what lectures to have, what kinds of classes to offer and the program emphasis for the coming year. Each department draws up a plan of operation and this is discussed and eventually consolidated into a schedule for the coming year. The number, dates and kinds of lectures and training classes varies from year to year, but the overall projects of the associations in all three townships are relatively consistent from year to year and quite similar in all three. What follows is a list of Kochinda projects for 1965, which is representative for all three townships and will vary little from year to year according to the president:

1. District level baby contest, winners compete Island-wide.
2. Appeal for depositing money with the agricultural cooperative.
3. Appeal to keep the village clean.
4. Social education research meeting.
5. Consultation with pregnant women.
6. O'bon food lecture course.
7. Consultation on baby's health.

8. Handicraft instruction.
9. Promotion of getting x-rays for tuberculosis.
10. Meeting of women teachers and members with children in school.
11. Cooperation in primary school athletic meet.
12. Women teachers meeting with membership at large.
13. Class or lecture on making mattresses (futon).
14. Observation trip.
15. Lecture on preparation of New Year's food.
16. How to fill in domestic records (budget).
17. Meeting to reflect on previous year's administration.
18. General meeting of all village members.

The above schedule reveals that virtually no activity is devoted to subjects directly related to agriculture. Activities reflect the general purpose of the Women's Association which is to enrich the lives of women through social and semi-technical education. But what of agriculture? Does the Women's Association function at all as a channel in the flow of agricultural information? The answer must be a qualified "yes."

The Women's Association is organized in such a way as to facilitate communication not only from the federation to the village, but within the village as well. The home agent, and, the extension agent less frequently, lecture to association meetings held at the village level. In this way, they can bring new information about vegetables and fruit tree planting, clothing to be worn in the fields and similarly related information to the women. Both extension agents also, more infrequently, lecture to township-wide meetings of the Association.

Attendance at village meetings is much higher than for township meetings. Where township meeting attendance

rates are usually between 20 and 30 per cent of the total membership; village attendance is often as high as 80 or 90 per cent, and rarely less than 60 per cent. Meetings at the township level are generally held during the day, usually beginning in late afternoon and running to dinner time. In many parts of every township, no buses run after 8:00 p.m., therefore, it is necessary to complete a meeting while buses still operate. Also, in the more remote areas, such as the mountain areas of Yabu, there is danger from poisonous snakes after dark.

Village meetings, on the other hand, are more often held in the evening. The village meeting hall is within easy walking distance of most member's homes in nearly all villages. A member in Kitanakagushiku explains the length of meetings:

> Meetings in the village are held in the evening. We can all come to the kominkan (village meeting hall). The meeting usually begins about 8:00 p.m. and lasts until 10:00 p.m., but sometimes it is apt to go on until 11:00 or 12:00 midnight when we have lots of topics to discuss.

Village meetings are much less formal than township meetings. At township meetings, following a lecture, some informal discussion might occur, but not a great deal. Village meetings, on the other hand, are primarily informal discussions with the extension agent. Tea is usually served and conversation is informal. Such meetings provide members with an opportunity to meet with a specialist, such as the extension agent, as well as to meet regularly with other village women to discuss mutual problems.

In agricultural villages, women do a good share of the work in the fields and this is recognized by the two extension agents. The president of the Kochinda Women's Association explains her group's role in the dissemination of agricultural information:

> This is a very important function of the fujinkai (Women's Association), especially in this township because there are so many men that work in town or on the base and women must do the farming. We give much information related to new techniques in agriculture, in fact, the association was very active in educating farmer's wives on the new variety of sugar cane, NCO 310.

The same is true of Kitanakagushiku and Yabu. While driving in rural Okinawa, one sees many women working in the cane fields, sometimes a man is present, sometimes not. It is also woman's work to plant vegetables and fruit trees in the housing yard.

As indicated in an earlier chapter, there have been many changes in Okinawa since World War II, especially in the rural standard of living. What has been the influence of the Women's Association? The President of the Kochinda Women's Association answers:

> Compared to 10 years ago, there have been many changes, for example, better food and clothing. The fujinkai has had a hand in these changes, especially in introducing or improving techniques. There has been an improvement in cooking and making futon (mattresses). Before the lectures were presented, most bought expensive ones but now they make their own. Also their way of cooking is changed. Through the activities of the fujinkai, the mental attitude has changed and the people are ready to follow the times of the present. The main influence has come from the lectures.

Change in techniques and attitude is mentioned by officers in all townships as the association's contribution. Considerable emphasis is placed upon the importance of lectures and classes.

The Women's Association is recognized as a channel for the dissemination of information at the village level as well as Island-wide. The chief of the public information section of G.R.I. for example, says:

> We send magazines to the township office and they deliver them to the village meeting hall (kominkan), which is the center for all organizations. In this way, the organizations play a part in disseminating information. Another example, when we have information which can be disseminated by the help of the Women's Association, which falls under the jurisdiction of the Education Department of G.R.I., we go there and inform them, so they can pass it along to the various units in the townships and villages, an example would be information on improving the living standard around the home, and so forth.

The Ryukyu Federation of Agricultural Cooperatives also recognizes the value of the Women's Association as a communication channel. In addition to utilizing the Women's Association, it has established a specialized group within the organization (nokyo fujinbu), especially for disseminating agriculturally-related information.

Within the village, the mayor, home agent, extension agent, Public Health Nurse and others make extensive use of the Women's Association to inform women. Each mayor, however, indicates that even though he utilizes the various associations, such as the Women's Association, he still relies mainly on the village headman (see Chapter Five). The home agent attends

many of the meetings and lectures when asked. She however, works more closely with the Agricultural Women's Group (nokyo fujinbu) and the Living Improvement Group (seikatsu kaizen kumiai) which in many instances is composed of virtually the same members. This will be explained shortly. The extension agent is also asked to speak to the Women's Association. According to the president of the Kochinda association:

> Yes, we work closely with the extension agent: we invite him to speak at many of our meetings. We work closely with him.

As just mentioned, there are two other groups in which women participate; the Women's Agricultural Group (nookyoo fujinbu) and the Living Improvement Group (seikatsu kaizen kumiai). The former is under the jurisdiction of the agricultural cooperative, whereas the latter is a group formed by the home agent. The purposes of the Women's Agricultural Group are to promote production, enrich the economy of the home and increase family savings. It is a group having tangential relations with the Federation of Agricultural Cooperatives (discussed below) in that it was at this level that the idea to establish such groups originated. What activity there is, however, is at the township and village level.

Generally speaking, officers of the Women's Association and the Women's Agricultural Group are the same and there is considerable overlap in membership as well. The same can be said also of the Living Improvement Groups. These groups were formed by home agents to encourage projects not undertaken by the Women's Association, though in many villages the

two are actually one group, under two different names. The village is the center of activity, with no township or Island-wide counterpart. Officers of the Women's Association nearly always serve as officers of both the Women's Agricultural Group and the Living Improvement Group.

This overlapping membership brings up one of the major problems faced by the Women's Association, i.e., an inability to reach those persons who are not interested. That is to say, participation in all three groups mentioned above is by a relatively small number of women in each village and township. The three groups exist in name, but in nearly all instances, the same women belong. There is little attempt made, either by officers or the home agent to interest those who do not attend meetings. Meetings are held for interested women and there seems to be a general lack of concern about reaching those women who for one reason or another do not attend. There is always a wide gap between the number of women listed as members and the number considered "active" by officers. Part of the reason is no doubt due to the lack of variety in lectures and classes from year to year. As noted above, the schedule of activities changes little from year to year, each year being merely a repetition of the same lecture topics and classes. Those women who attend once have little reason to attend again.

The Kochinda Women's Association is making an attempt to overcome this problem by scheduling activities of a more general nature. For example, in 1965, the organization plans

a series of meetings related to laws of interest to housewives especially in the areas of domestic education and budgeting, as well as classes in Ryukyuan history, flower arrangement and discussion sessions of current topics, such as politics. The overall objective is to promote the position of women in the rural areas through education. This education in some instances, includes agricultural techniques, though not to the extent it might.

The Youth Association

The overall purpose of the Youth Association (seinen-kai) is very similar to that of the Women's Association, "to improve the members through their own efforts and to aid the development of society and bring about a better configuration of character." While the method of the Women's Association is primarily educational -- through lectures and classes -- the Youth Association, on the other hand, attempts to accomplish its purpose through discussion meetings, social activities and athletics. It also sponsors lectures, classes, and observation tours, but its primary objective is to provide a pleasant environment in which members can meet to exchange and discuss ideas. But what of its function in the dissemination of information related to agriculture? Following a brief examination of membership requirements, general participation and organization, this question will be taken up.

Membership in the Youth Association, like in the Women's Association is not mandatory, but most eligible youth belong. Generally speaking, the requirement is to have

finished junior high school and not be attending either high school or college. The maximum age varies, but in most instances is 26 to 28 years old. In Yabu, the maximum is 28 years; in Kitanakagushiku, 26 years, though in some villages as old as 30 years; and in Kochinda, 24 years for men and 22 for women. In all three townships allowance is made for those past the allowable age range who want to belong as associate members. Married women in the allowable age range are not members as they generally have become members of the Women's Association upon marriage.

Total membership in the Kitanakagushiku Youth Association is more than 700; in Kochinda, 520; and in Yabu, only 70. This does not correlate with the population for the three townships, since Kochinda is the largest of the three. It can be explained, however, by considering the proximity of the three townships to centers providing outside labor.

Jobs on military bases are more easily obtained by youth living in Kitanakagushiku, therefore, they are able to work outside and still live with their parents. Kochinda youth can find jobs in Naha city, but the distance is farther than from Kitanakagushiku to the military bases, therefore, more of them move out and find apartments in Naha. Yabu is the most remote and to find a salary or base job generally means moving to the city, or near it. Therefore, the number of youth living in the township and working outside is highest in Kitanakagushiku and lowest in Yabu. The number of eligible members decreases as the distance to the job market increases.

Yabu, of course, is the smallest of the three townships, but proportionately, one would expect to find considerably more than 70 members.

As with the Women's Association, the Youth Association is Island-wide, with a federation in Naha, district offices, township units and finally, village-level associations. Representation at the various levels above the village is the same outlined for the Women's Association. Township units formulate their own schedules, though it is necessary to be prepared for Island-wide athletic meets at dates set by the federation. Village associations generally carry out the same activities as township associations.

Meetings are held more often within the village than within the township. In Kochinda, village meetings are held about once a month; in Kitanakagushiku, two or three times a month; and in Yabu, every week on Saturday. Township meetings are held in Kitanakagushiku twice a month, in Kochinda, once a month; and in Yabu, only twice a year. Village meetings provide opportunities for youth to get together and discuss common problems. In Yabu, for example, the president of the Association says:

> During the sports season, we discuss how to hold games and at other times we just meet to talk. When we have a meeting, and it is over, we honestly discuss problems of young men leaving the community, instead of staying and farming.

Attendance rates at village meetings average between 30 and 50 per cent of the membership. Two exceptions to this are dance parties and athletic meets, to which nearly all

members come. The same is generally true at township meetings, though attendance at general assemblies is lower, from about 15 to 30 per cent. Those attending township meetings are mostly officers, few regular members attend. The same is not true, however, for township-wide dances and athletic meets, which may draw well over half the membership, including those participating and those cheering. The Kitanakagushiku officers have recognized this and take advantage of it:

> Recreation and social activities are the main activities. When we have recreation or social activities, we can draw many more members. So now if we have such an activity, we try to do something else at the same time. For example, if we have a dancing practice party, we also include something else like a lecture because we know a lot will come. If we have just a lecture or discussion meeting, members don't come.

The emphasis on athletics and social activities of the Kitanakagushiku Association can be seen by looking at the annual schedule. The 1964 schedule is presented below:

Jan. 17	Adults Day (seijin no hi), for those reaching age 20.
Feb. 21	Table tennis competition.
Mar. 7	Handicraft lecture.
Mar. 25	General assembly.
May 16	General assembly.
May 31	Baseball match.
Jun. 8-13	Get acquainted meeting between members of various village associations.
June 21	Volleyball match.
July 12	Basketball match.
July 12	Cooking lecture.
Aug. 15-16	Training on how to carry out activities.
Aug. 20	Lecture on carpentry.
Sept. 6	Girl's training, including flower arrangement (ikebana)
Sept. 12	Recreation lectures.
Sept. 20	Get acquainted meeting (party) at Nakagusuku Castle.

Sept. 27	Observation trip to see industry.
Oct. 15	Round table discussion with federation.
Nov. 22	Marathon race.
Nov. 28	Meeting on young men's problems.
Dec. 3-5	Dance lectures and practice.
Dec. 12	Dance party at the agricultural cooperative hall.
Dec. 20	Cooking lecture.

None of the three township associations is active in the dissemination of agriculturally related information. Each township association will be considered separately to determine what relation it has with agriculture.

Kitanakagushiku.-- The number of members farming is less than 14, only about two per cent. Many members help their parents on the farm after returning from work and on weekends. About half of the village associations cultivate their own fields and sell crops for the treasury. The production department of the association is responsible for agriculture, but since few members are farming, there is little interest and few activities. About 70 per cent of the members work on military bases. The rest are maids, G.R.I. employees, salesmen or work in businesses in Naha. The president of the association, however, said there was a feeling that agricultural information is important:

> But we think it's important and have observation tours to good facilities and fields and pick some members to go to training sessions on agricultural techniques run by GRI. We also have lectures sometimes on agricultural manufacturing.

Kochinda.-- The number of members farming is not accurately known, but estimated at about 20 or 25, approximately five per cent. When asked about this, the president says:

> Almost all members have their own jobs. On the whole, its an economic reason, if they do farming only, they can't live. So farmers are trying to get jobs. Suppose there are two or three eligible persons for work in a household, the older members do the farming and the younger ones go out to work.

He goes on to say that farming in Okinawa is commonly known as san chan noogyoo because it is generally done by the grandmother (obaachan), the mother (okaachan) and the grandfather (ojiichan). Literally it translates as "three chan agriculture," chan being a diminutive suffix added to grandmother, mother and grandfather.

The Youth Association sponsored a lecture on the care and maintenance of the hand cultivator (kounki) which was attended by about 40 persons, including non-members of the association. They had planned an agricultural movie at the same time but it was not shown. A movie shown in the previous year was attended by about 60 persons, but more children than adults came. Also at that time there were not as many television sets and the president thought that might have accounted for the relatively high attendance.

He explains an observation trip sponsored by the association:

> We went to a model farm, a factory and a large-scale hog farm in Gushichan. About 70 went. We went to all three places in one day. We went by chartered bus. There were many others who wanted to go on the trip but we could only afford one bus. It was considered recreation and promoted friendship and sightseeing also. We are going to have another one in November and visit flower and vegetable gardens in Gushichan. There are many who want to go, but we can take only one bus load, 70 people. Though these are related to agriculture, attendance is high because of the sightseeing and the chance to get together and have fun, I think.

He indicates that the above is all the association is doing in relation to agriculture. However, he says that the federation in Naha is active as a kind of pressure group to fight the sugar cane price problem resulting from Japan's entry into the Free Trade Zone (discussed in Chapter Three).

Four village associations cultivate their own fields. Fields are usually worked in only once a week, early Sunday morning before breakfast, because members usually work in their parent's fields during the day on Sunday. The Tomimori village Youth Association has an extensive library which was paid for in part from funds earned by selling sugar cane grown in association fields. An indication of the lack of concern for agriculture in Tomimori is the circulation of books from the library related to agriculture, only about 10 per cent of the books are related to agriculture, and they circulate rarely according to the librarian.

Yabu. -- The president of the association does not know the number of members farming, though he says all members from Umusa village work outside and only one or two in Yabu village farm. He feels there are quite a few young men farming in the mountain villages. No lectures on agriculture have been given in the past two years. He further indicates that no plans are under way to do anything related to agriculture. However, much of the informal discussion following meetings is devoted to agriculture, not the technical aspects, but the problem of young men leavi ng the farm for the city and the problems this might cause in later years.

A further indication of the apparent lack of interest in agriculture on the part of rural youth is provided by the Agricultural Youth Group (nokyo seinenbu), which, like the Women's Agricultural Group, is under the jurisdiction of the agricultural cooperative. It was established by the Ryukyu Federation of Agricultural Cooperatives to encourage agriculture among rural youth, however, in the three sample townships it exists in name only,with no activities nor meetings. The farm advisor of the cooperative (eino shidoin) of Yabu explains it as follows:

> Now I find that the Agricultural Youth Group exists in name only and I want to make it active. There is a problem of getting agricultural information to the young men of the township, they are small in number and the others are not interested.

The same is also true in Kochinda and Kitanakagushiku. In Kochinda, the extension agent of the agricultural cooperative says:

> Many young men go out of the township to work. I organized an Agricultural Youth Group, but now it exists in name only, virtually no one attends meetings. There is a tendency of young men going to the city area because they prefer to dress up and get a salary. I'm going to attend a district level meeting of the Agricultural Youth Groups, and we will try to think of ways to reorganize the groups and try to get some interest in the rural areas.

In the three townships, there are no 4-H Clubs. The reason given is a lack of interest on the part of the young men in agriculture. The extension agent of Kochinda explains:

> No, we don't have a 4-H Club. There is nothing and it is a big problem. I am now trying to form these kind of groups, either 4-H Clubs or some kind of agricultural study groups. But even after they are formed, the leaders may go to the city area

> to work and the group perishes, or least doesn't grow. I know there are two or three enthusiastic young men in agriculture and on this basis tried to get them organized, but as yet I haven't succeeded. Most members are salary men or laborers and meet at night, but they don't discuss agriculture.

For girls belonging to the Youth Association there are occasional classes in cooking and flower arrangement. The Kochinda association once had a two-day training course for women in cooperation with the neighboring township of Ozato. The general theme of the two-day course was cooking and care of the home. Members from each township formed small discussion groups around a common theme, supplemented by lectures given by invited guests. About 80 young women from Kochinda attended the meeting. A similar number attended from Ozato.

None of the leaders of the Youth Associations of the three townships are farming. The president of the Kitanakagushiku association is 28 years old and works in the township office as a clerk in the economics section. He is a graduate of the Central Area Agricultural High School, but indicates he does not want to become a farmer, though since he is the eldest son, he feels it might be necessary to take over his father's farm when his father retires.

The vice-president is a 21-year-old woman who also works in the township office, department of expropriated land affairs. She is a graduate of Futenma High School. It is the policy of the association to have a female vice-president.

The president of the Kochinda association is 23 years old and works at the Daiichi Sugar Cane Company as a clerk. He graduated from the Southern Agricultural High School and says he probably will not become a farmer since he is not an eldest son.

Kochinda has two vice-presidents, one is a young man, 24 years old, and the other, by policy, is a young woman, 23 years old. Both work outside the township, and are high school graduates. The president of the Yabu association is 28 years old, a high school graduate and works as a guard and dispenser of explosives at an explosives dump. There is no vice-president in office and no policy requiring a female vice-president.

Though the associational structures of the Youth Association and the Women's Association are very similar, they serve quite different functions in the township. The Women's Association, as explained above, is active as a channel for the flow of information, whereas, the Youth Association is more concerned with athletics and social activities. The Youth Association provides an atmosphere and opportunity for young people to meet socially and discuss various subjects in a very informal way, whereas, the Women's Association provides its membership with lectures and classes on subjects of day-to-day concern, to make them better able to cope with the problems they face as mothers and housewives. The Women's Association includes agricultural information as something members should know, but the Youth Association concerns it-

self very little with providing agricultural information for its members. Members of the Youth Association with an interest in agriculture find it necessary to seek such information outside the association.

There is overlap of membership among the three organizations for women, the Women's Association, the Women's Agricultural Group and the Living Improvement Group giving the home agent ready access to interested women in the village. On the other hand,there is virtually no interest in the Agricultural Youth Group and the 4-H Club, and the extension agent and farm advisor find it difficult to reach youths with an interest in agriculture. Study groups composed of men, young and old, with an interest in furthering their knowledge of new techniques and information about agriculture, partly fill the void left by the death of the Agricultural Youth Association and 4-H Club. Such groups, however, are few in number.

Cooperatives

Of the various cooperatives in Okinawa, the most important is the agricultural cooperative (noogyoo kyodoo kumiai). In the three sample townships, fishing and forestry cooperatives are entirely absent. Kochinda and Yabu have only an agricultural cooperative, whereas, Kitanakagushiku has one other, the horticulture cooperative (engei kumiai) Township agricultural cooperatives, though locally autonomous, together form a federation (noogyoo rengo kumiai, locally called nooren) with offices in Naha.

Cooperative activity began in Okinawa in about 1900, mainly as a credit association for stimulating the economy in slowly developing rural areas. Its primary aim at that time was to give assistance to poorer farmers, and was organized by the township people themselves. This is similar to the cooperative movement in Japan, but without the ideological principles. In Okinawa, cooperatives emerged somewhat spontaneously. At about this same time, the movement was spurred on by the passage of a credit cooperative law, giving federal protection to local cooperatives. During these early years, many cooperatives failed due to lack of money on the part of farmers.

In 1930, the central government of Japan, of which Okinawa was a prefecture, formed a nationally controlled agricultural organization for education and information as well as credit. In about 1940, the Japanese government strengthened this with the formation of agricultural associations (noogyoo kai) which existed later in nearly every township and village. At this time there was another system, (noo kai), which emphasized technical extension work. At the end of 1945, these two combined under the name agricultural association (noogyoo kai). The new association was used by the military for supply and distribution of necessities to rebuild agriculture, such as seeds, fertilizer, as well as building materials. In Okinawa, a proclamation was passed by the military government similar to the Japanese cooperative law.

By about 1955, a production level equal to pre-war days was reached. In 1956, the military proclamation was rewritten in the form of G.R.I. legislation. The cooperative law outlines the agricultural cooperatives' fields of activity as: 1) purchasing; 2) savings; 3) processing; and 4) extension education among members. The legislation provided for formation of a federation of cooperatives which was formed with monies from the township cooperatives.

There are 89 unit cooperatives comprising the federation. It carries out basically the same activities as unit cooperatives, but for the entire Ryukyu Islands. For example, the federation purchases fertilizer in large enough quantities for all 89 units; handles savings for the units; operates a sugar cane mill and a pineapple processing plant, with profits being refunded to members at the year's end; and provides farm management advisors (ES) to deal with cooperative matters for the many townships.

The plan is to have one farm advisor for each cooperative, but at the end of 1964, about 60 cooperatives had such advisors assigned to them. In addition, the federation sponsors training courses at the village level (buraku kondan kai), loans out movies for use in the farming areas and publishes a bi-monthly newspaper for members. This role of the federation, and cooperatives in general, in the dissemination of information supplements the extension service described earlier and makes the cooperative an important communication channel for the farmer.

All township cooperatives come under the general provisions of the Articles of Cooperatives as set forth in 1957. The aim of the cooperatives is as follows:

> . . . to promote the productivity of agriculture, to improve the economic situation and to raise the social status of the membership through cooperation of members.

The Articles set forth 13 specific ways of accomplishing this. Those relating to the dissemination of agricultural information are stated as follows:

1. Education to promote techniques and administration of agriculture and facilities to improve living and culture in rural communities.

2. Establishment of facilities to promote efficiency of agricultural labor.

Each township agricultural cooperative interprets the various cooperative functions in slightly different ways, depending upon local conditions. All three in the sample townships provide a number of basic services for members, such as savings, loans, education through farm advisors and sale of agricultural necessities, e.g., fertilizers and sprays. To better understand the emphases of each township cooperative, they shall be discussed separately.

Kochinda Agricultural Cooperative.-- The head of the Kochinda cooperative is the most active, outspoken and dynamic of the three cooperative leaders. He is president of the Southern Area Agricultural Cooperative Association which was formed by the various township cooperatives in the southern area. He is active in negotiations to set the price of sugar

cane and is one of a number of cooperative leaders who went to Japan in an effort to convince the Japanese government to purchase Okinawan sugar cane at a subsidized price. In contrast to the other two township cooperative leaders, he continually turns discussions to topics of more general concern throughout the Ryukyus, not those within the township.

He points out that the scale of agriculture in Okinawa is very small, the average area under cultivation being only about three tan (about .735 acres). Okinawan farmers are poor and it is not effective for them to do things individually. In order to promote the position of agriculture, farmers must cooperate, and they must be informed so as to improve their cultivation techniques and seedling varieties, he says. He discusses the role of the cooperative in the distribution of new seedlings and results of research in the following terms:

> The experiment station is doing research on seedlings to determine which are best suited for Okinawa. After the research is completed, if they find it to be good for Okinawa, they distribute the seedlings to the cooperatives. Sometimes farmers can ask for the experiment station to do research on a particular seedling, but usually the experiment station decides upon which problems to research.
>
> Farmers can take diseased plants and insects to the experiment station by first bringing them to the cooperative. Then we take them, but that is not too common either. The cooperative distributes the new seedlings to the farmers. Then we help them in planting, raising and selling the new seedlings and their products.

The cooperative pays the salary of the Farm Management Advisor (ES), which is $57 per month. His job is mainly that of educating the membership, keeping them informed concerning new

seedlings and agricultural techniques. Each of the three cooperatives employs such an advisor. Their activities were discussed in detail in Chapter Four.

Total membership in the Kochinda Agricultural Cooperative is 1,943 persons. This figure may be a little misleading in view of the fact that there are only 1,748 households, however, it is common for both a farmer and his adult son or sons to be members, even though they reside in the same household. Each member is required to purchase a minimum of one share at a cost of one dollar. On the average, a member owns about $36 in shares and receives from six to ten per cent return per year on one share holdings; it was eight cents on the dollar in 1964. They may also save and borrow money with the cooperative.

When farmers come to the cooperative to deposit savings, pay on loans, or negotiate loans, they generally take time to talk with cooperative employees (especially the farm advisor) concerning new seedlings and other information related to agriculture. This exchange of information also occurs when farmers come to purchase fertilizer or other items from the cooperative.

Yabu Agricultural Cooperative.-- Membership in the Yabu cooperative, as would be expected because of the township's smaller population, is considerably less than in Kochinda, only 773 members. Most members grow both sugar cane and pineapple, and, a few cultivate rice. The cooperative

employs 10 persons, including one farm advisor. It provides much the same services as outlined for Kochinda. The store, which appears to do more business than does the one in Kochinda, stocks daily necessities for farmers. Members as well as non-members may purchase items from the store. One purpose of the store, according to the cooperative president, is to keep other stores in Yabu from raising their prices.

Shares total $23,268. The largest share holder owns 150 shares at one dollar each, the smallest has only two. Dividends from shares are 12 cents on the dollar. One indication of the differential wealth of Kochinda residents vis-a-vis Yabu can be seen in comparing savings and loans in the two cooperatives. In Kochinda, savings are considerably more than loans, whereas, in Yabu loans are more than savings by a good deal. Almost every member of the Yabu cooperative has a loan, according to the president.

The Yabu cooperative is encouraging members to raise chickens. The president explains:

> We are encouraging them to raise more than 500 chickens, then they can make more than $60 per month. We checked many statistics about chicken raising. They have to invest $4 for a baby chick before it produces eggs. Food is 1.1 cents per day. We checked all this and found if they keep more than 500, they can do well. But so far, they are not going in this direction.

The cooperative is discouraging members from raising hogs as being unprofitable. The market is too unstable, the head of the cooperative says, to make raising them in any quantity worth a farmer's efforts. Pineapple growing is encouraged,

but not sugar cane. The cooperative administers a tractor for land clearing which was purchased by the township government, but it is not rented for clearing land for sugar cane, whereas it is for pineapple land. The president of the cooperative explains:

> I feel I can encourage our members to raise pineapple, but not sugar cane. We have stopped lending money for making new sugar cane fields, but still lend it for pineapple. We also discontinued renting the bulldozer for preparing new sugar cane fields, but still rent it for pineapple cultivation.

This is one very direct way of disseminating information to the farmers within the township, and, it has proven quite effective.

The head of the cooperative is 69 years old and was born in Yabu. He is very knowledgeable about conditions within the township and encourages farmers to do those things he thinks will contribute to their development. G.R.I. is encouraging hog raising throughout the Island, but the head of the cooperative thinks it is a mistake for farmers in his township to raise hogs. He sees pineapple as a good crop for the future of Yabu and is attempting to convince farmers to decrease sugar cane acreage and focus more on pineapple. He has been the head of the cooperative for the past 12 years.

Cooperatives in Kitanakagushiku.-- In Kitanakagushiku there are two cooperatives, the agricultural cooperative and a special cooperative for vegetable growers (engei kumiai). Membership in the agricultural cooperative numbers 1,057, but only 88 in the vegetable cooperative. The vegetable

cooperative is almost exclusively for purposes of marketing vegetables grown by members to the U.S. Forces through the Quartermaster Corps. It is more of a liaison organization between vegetable growers and the Quartermaster.

It was organized 15 years ago when the Quartermaster appointed farms within the township as eligible for selling to U.S. Forces. It is separate from the agricultural cooperative because that cooperative is designed to serve the entire township and includes all kinds of crops. Membership in the agricultural cooperative is open to anyone cultivating more than 30 tsubo (.1 hectare) of land. The requirement was changed from 100 tsubo (.33 hectare) in 1962. Most of the members of the agricultural cooperative cultivate sugar cane.

The vegetable cooperative does not provide savings and loan services, nor does it employ any kind of extension agent or farm advisor. Knowledge of vegetable production is obtained mainly from the NKF. The cooperative operates two trucks for delivering vegetables to the Quartermaster. Farmers themselves are responsible for bringing vegetables to cooperative headquarters. Tickets are given farmers indicating the kind and amount of vegetables delivered. The marketing system is explained by the head of the vegetable cooperative:

> When the quantity of the Quartermaster wants is small, we divide that quantity equally among members, but if it is large, we collect from members as much as possible. Tomorrow/Thursday/ is the

> day, so before tomorrow we have to get concrete figures on the quantity and the kinds of vegetables. If the farmers tell us they can deliver 10,000 pounds next week, then we can have an idea of how to bid.

It is a very complex system, one that requires the head of the cooperative to intimately know the members, what they are growing and how much they can deliver. Branch heads of the cooperative are located in areas where vegetables are grown and are responsible for keeping check on what and how much is growing and ready for harvest. The main kind of information provided by the cooperative to members is what kinds of vegetables to grow, but not actual techniques for growing them. Meetings are held twice each month at the village level. A general assembly is held yearly in September.

The term of the cooperative president is two years. The number of members is not increasing, in fact there has been a decrease. This is attributed to an event of five years ago. At that time, the then president erred and lost $8,000 of the cooperative's money through poor management. The cooperative still must pay $4,000 of that debt, and it was said that no one wants to be in a cooperative with such a big debt. The future of the cooperative is not bright even though it is generally agreed that those cultivating vegetables are financially ahead of those growing sugar cane.

The agricultural cooperative has no such problems. It employs 18 persons and is housed in a relatively new, modern-style building. The relative affluence of Kitanakagushiku compared with both Yabu and Kochinda is reflected in higher sav-

ings and lower loan rates per member over the past few years. Many persons work outside the township, especially younger persons whose parents are still members of the cooperative. Salaries of these younger persons are higher and they generally contribute part of this salary to their family. The relative unimportance of agriculture in Kitanakagushiku is evidenced by low membership in the cooperative relative to total population, as well as a decline in membership over the past five years. Lower total amounts in savings and loans might be explained by Kitanakagushiku's proximity to both Futemna and Koza and the availability of banking facilities.

The head of the cooperative is 50 years old and has worked there since 1948. He was born in Kitanakagushiku and still lives with his parents who are both 74 years old. He became head of the cooperative in 1960. He seems to lack the general enthusiasm exhibited by the head of the Kochinda Agricultural Cooperative and does not readily discuss plans for agriculture as did the cooperative head in Yabu. His concern is mostly about the present sugar cane price problem and his knowledge of sugar cane cultivation and marketing is extensive.

Sugar Cane Marketing.-- One of the most important functions of the cooperative from the farmer's point of view is the marketing of his cane. A crop that does not get to the mill is useless and it is here that the cooperative serves as a channel for the flow of material (cane) as well as information. It is only within the past few years that most farm-

ers have begun marketing their cane through the cooperative, prior to that they made individual agreements with the mills.

Before the harvest, each farmer makes a contract with the cooperative, including the number of tons he will have ready to sell. The cooperative totals these and makes a contract with the sugar mill. Tickets indicating amount and delivery date are issued to the cooperative, which in turn divides the total amount among farmers and issues its tickets, usually through the village headman. Money for the crop is paid the cooperative which in turn pays the individual farmer.

If the estimate is low, the mill usually purchases the surplus directly from the farmer. Tickets given farmers indicate the delivery date, quantity, number of brix (degree of sweetness), name and address. There is also space for the weight of the cane, arrived at by weighing the truck before and after pickup. Notes are also made concerning the quality of the cane, its degree of freshness, the variety, type and whether spring or summer planting. The mill determines the date various cooperatives should deliver cane, and the cooperative determines which villages will deliver what quantity on which date. Delivery dates for each farmer are determined by a village council. They negotiate among themselves to determine which farmers will deliver what percentage of their cane on a given date.

This decision has become very important in the last few years due to the lateness of price determination. Mills

are reluctant to accept much cane until the price has been set in Naha and Tokyo. They make the cooperatives hold off on delivery and, of course, this is passed along to the farmer. Cane left standing past maturity tends to decline in brix content and this can mean a lower price. For example, the price for 18-brix cane is $14.17 per ton, but for 19-brix cane it is $15.07 and for 20-brix cane, $15.97. Good cane at maturity is generally about 20 brix or more, but after standing in the fields, brix content drops to 18 and sometimes to 17, which brings only $13.27 per ton.

By April 1965 about 60 per cent of the cane had been delivered to the mill. But the 40 per cent left in the fields was losing brix content fairly rapidly. Farmers were somewhat fortunate early in 1965 because the weather was colder and wetter than usual, thus maintaining brix content, which usually begins to decline after March and when hotter weather sets in. It was quite common, even in June, to see ripened cane standing in fields waiting to be cut. The procedure in most villages had been to allow individuals to deliver half of their cane, the other half left standing until the final price had been determined.

There is nothing the cooperative can do except attempt to exert its influence, which had been done throughout the early months of 1965 to little avail. The cooperative keeps check on the villages to see that cane is delivered equally by all farmers within a village. The head of the Kitanakagushiku cooperative explains:

> Delivery of the cane is carried out equally. (You mean that farmer "A" delivers half, farmer "B" delivers half, etc.?) Yes. Even the village influentials (yuryokusha) do not get special privileges. The cooperative keeps check to make sure of this. (Most have about 40 per cent of the cane still left in the field?) Yes. Farmers themselves decide who delivers how much, so that they know roughly when their time will come.

The cooperative does all it can by keeping in close contact with village headmen and checking delivery slips to see that cane deliveries are equitably distributed. It also does whatever it can to pressure the mill into accepting as much cane as possible before the cane's value drops too far.

Cooperative General Assembly.-- Once each year, the cooperative holds a general meeting of its total membership. This usually involves only about one-half of the membership as all do not attend. Many obtain letters giving them the right to vote by proxy for one other member who does not attend. The cooperative is similar to a stockholding company, except the votes are not according to the number of shares held, but on a one-man-one-vote basis. Only one proxy can be used by any given member.

General assemblies generally last from four to six hours, including two or three hours of recreation. The president of the cooperative usually opens the meeting with a summary of the previous year's business and an indication of what will be attempted in the future. Bills are introduced and voted on by the membership. The following list of bills introduced at the Yabu cooperative general assembly is representative of such meetings:

1. Bill related to business and accounting report and what to do with surplus monies.
2. Revision of specific regulations.
3. Approval of expenditure of funds for business projects (65 such projects).
4. Setting maximum interest for loans at 2.5 cents per day per $100.
5. Setting maximum amount that can be borrowed.
6. Setting maximum debt that can be incurred by the cooperative ($300,000).
7. Approval of purchase of a truck for the cooperative.
8. Bill related to how to use reserve fund.
9. Setting salaries for clerks and other employees. President's salary set at $95 per month.
10. Election of committee that determines ability to repay money loaned to members.
11. Election of board of directors and auditors. The board of directors appoints the president of the cooperative.

At this particular assembly, a group of community players was contracted to come from Naha and present a play. Dancers were also hired for the event. It lasted about four hours, from 2:00 p.m. to 6:00 p.m. Discussion lasted two hours and entertainment another two hours.

Summary

The three associations discussed in this chapter, the Women's Association, Youth Association and agricultural cooperative, all function in varying degrees as communication channels for the dissemination of agricultural information. Virtually every adult member of a village or township is a member of one or more association. Membership, however, does not necessarily mean that a villager actively participates in association affairs.

The associations discussed are in one sense voluntary associations, but as has been shown, not all of those maintaining membership actively participate. Membership in the

Women's Association and Youth Association is nearly mandatory, being a function of sex, age and residence. Individuals of a certain sex and age virtually become members automatically. Membership in the agricultural cooperative is related to occupation and residence and one has the option of belonging or not.

All three associations have federations at the national level which coordinate part of their activities and through which information is passed. The Women's Association and Youth Association are found in the villages and townships, with the village headman usually serving as branch chief for the cooperative. All three directly affect rural dwellers (mainly those who actively participate) and serve as channels for the flow of information throughout the Island. The associations also may serve as channels for the flow of information in a more indirect way. Those actively participating in the associations receive information which is then further disseminated by the various personal networks which are found in all villages.

The agricultural cooperative employs an advisor whose main task is to disseminate information about agriculture. The Women's Association is active in this also because so many women are engaged in agriculture, especially in those villages and townships where their husbands have an opportunity to work at non-agricultural occupations. Since young people in Okinawa are not, in most instances, actively concerned with agriculture, the Youth Association does not have

as great a part in the dissemination of information about agriculture. The exception to this, as slight as it may be, is in Yabu where those young people who do remain in the villages have some interest and spend a good deal of their time at meetings discussing their problems. The Youth Association functions more to provide members with social activities and athletic events, a chance to meet one another.

Association leaders are influential in the village and township. The Women's Association and Youth Association presidents serve on village councils and represent membership interests to other village leaders, and in so doing, gain a good deal of information of importance to their memberships. Agricultural cooperative presidents in all three townships serve on the township assembly and in this way represent their membership within the formal administrative structure. All make considerable use of village headmen in carrying out their jobs, such as informing members of meetings. They also represent their township and village to the national federation, and, in this way, villagers are linked with the nation communicatively.

Though virtually every villager or some member of his household belongs to one or more of the three important associations, few actively take part in association affairs. Leaders attempt to provide activities which will encourage participation of all members, but thus far seem to have been relatively unsuccessful. Attendance at Women's Association-sponsored lectures is relatively low partly, it seems, because

of the repetition of content. Youth Association members attend athletic meets and dances, but those few activities related to agriculture are poorly attended, with the exception of the Kochinda tour. The cooperative serves as a communication channel, but its main function for the farmer seems to be in marketing his sugar cane, not the dissemination of information about cultivation techniques or new seedlings.

CHAPTER SEVEN

CHANNEL: MASS MEDIA AND EDUCATION

The preceding pages have focused upon those aspects of Okinawan social organization which serve as channels for the flow of agricultural information, some to a greater extent than others. Both the mass media and educational system are designed primarily for the dissemination of information. The question to be answered is, To what extent do they function in the dissemination of agricultural information?

Mass media of every kind are readily available to the Okinawan villager, as is education. Television and radio receivers are found in all villages with electricity, and transistor radios in those without it. Newspapers are delivered daily to all areas and magazines, both Ryukyuan and Japanese, come by mail weekly and monthly. Public schools are found in every part of the Island.

Because of time and personnel limitations; it was not possible, nor was it attempted, to complete an intensive investigation of mass media and education in Okinawa. Both were only studied as channels in the flow of agricultural information. Therefore, the focus was on the variety of mass media available in rural areas, not on media content, its relation to the acceptance or rejection of innovations, nor the influence of mass media and education on behavior patterns and values, except in a gross manner.

Newspapers

Some agricultural information is disseminated through weekly and daily newspapers. The two major dailies are the Okinawa Times and the Ryukyu Shimpo. Articles discussing sugar cane price negotiations appear in the newspapers regularly. Feature stories and picture pages about cane and cane growing appear with some regularity as well, especially during harvest months. Articles distributed by the public information section of G.R.I. (see Chapter Three) find their way into local dailies. Technical articles from the experiment station and University are rewritten so as to be more easily understood by the farmer. These are then distributed to the various newspapers. Limitations mentioned above prohibited me from doing a content analysis of even the two major newspapers, but periodic checks revealed many articles of the kind outlined.

Besides articles about sugar cane in newspapers, one finds articles dealing with a variety of subjects related to agriculture. Vegetable production, pineapple cultivation, animal husbandry, sweet potato and rice growing are all subjects found in newspaper articles, both news items and feature stories. News stories of interviews and speeches by G.R.I. and U.S.C.A.R. officials often refer to the need for diversification of Okinawan agriculture, the need to quit the present reliance on one crop and raise livestock, grow pineapple or cultivate vegetables.

Readership of various newspapers distributed in the datum townships appears to be quite high. Of the 1,386 persons given the sample questionnaire (see Chapter One), 75.4 per cent (1,045) responded that they read newspapers at least once weekly. Table 11 presents the results of the question concerning newspaper readership.

TABLE 11.-- Newspaper Readership by Household

Newspaper	Readership Frequency Yabu	Kochinda	Kitanaka	Total
Okinawa Times.....	79	272	203	554
Ryukyu Shimpo.....	108	220	114	442
Both Times and Shimpo.....	7	8	19	34
Times and one other.....	2	-	-	2
Shimpo and one other.....	1	-	1	2
Other newspapers	3	7	1	11
None.....	101	171	69	341
Total	301	678	407	1,386

The Okinawa Times is the most popular newspaper with the Shimpo not far behind. It is somewhat surprising to find 34 persons who read both newspapers. A few people indicate they read newspapers published in English, such as the Morning Star or the Stars and Stripes, but the number is small.

As would be expected, Kitanakagushiku, the most urban of the townships, has the highest readership, 83 per cent, followed by Yabu and Kochinda with 77 and 75 per cent respectively. It is not readily explanable why Yabu has a higher readership percentage than Kochinda. Both, however, are pre-

dominately rural areas, though Kochinda is located much closer to an urban center, Naha.

Newspapers, as indicated earlier, are published in the Japanese language. Many news articles are about international events and happenings in Japan, as well as domestic. The Viet Nam war receives much attention in the local press as would be expected because of its influence on Okinawa. Reversion is another topic receiving considerable attention. It is somewhat surprising to find so many rural dwellers who are aware of world-wide events. An impression, unsubstantiated by concrete data, is that rural Okinawans are as knowledgeable and concerned about events in the United States and the world as many Americans.

Magazines

Magazine readership in rural townships is not as high as newspaper readership, but contributes significantly to the township dweller's knowledge. In my research, I concerned myself only with those magazines related to agriculture. The most important of these is Ie No Hikari (Light of Home), published in Japan. This is a magazine directed primarily at farming households and has a circulation of nearly two million throughout Japan, Okinawa and other parts of Asia. The magazine covers various subjects: political and economic editorials; amusement and movies; sports, fiction; dressmaking; cooking; housekeeping; health and sanitation; agricultural techniques, such as rice cultivation, animal husbandry and vegetable raising; and news of cooperatives.

It also publishes a journal edited exclusively for farm leaders and youth, as well as a magazine directed at children (kodomo no hikari). Ie no hikari is read by approximately 20 per cent of the households sampled. Table 12 is a tabulation of magazines read by households in the datum townships.

TABLE 12.-- Magazine Readership by Household

Magazine	Readership Frequency Yabu	Kochinda	Kitanaka.	Total
Ie no Hikari, incl. children's edition.....	97	122	22	241
Ie no Hikari and one other magazine.....	6	15	6	27
Ie no Hikari and two other magazines.....	1	1	-	2
Shufu no tomo.....	3	6	5	14
Two other magazines.....	11	18	23	52
Three other magazines.....	2	1	2	5
Four other magazines.....	2	-	1	3
None.....	179	447	299	925
Total	301	678	407	1,386

Of the 23 per cent who read one or more magazines, most (nearly 20 per cent) read Ie no Hikari. Shufu no tomo (Woman's Friend) is a magazine directed exclusively to women and their problems. Articles are mainly about keeping house, maintaining records of expenses, taking care of children, dressmaking, cooking and fiction. All are things of concern for the rural Okinawa housewife as well as those living in cities. Yabu residents have the highest percentage of magazine readers, almost 40 per cent; followed by Kochinda, 34 per cent; and Kitanakagushiku, 29 per cent. This reversal of

percentage from newspaper readership can be explained by the fact that I have chosen those magazines dealing primarily with agriculture. Yabu and Kochinda are the most rural, and most directly concerned with improving their agricultural situation, whereas in Kitanakagushiku, more women read shufu no tomo than in the other townships.

Government Publications

Publications of a strictly agricultural nature are distributed by G.R.I. These publications were discussed in earlier chapters and include some of the following: shurei no mon (the name of the entrance gate to Shuri Castle); shurei no hikari (Light of Castle Gate); Agricultural Calendar; nooka no tomo and noogyoo no tomo (Farmer's Friend and Friend of Agriculture); and konnichi no Ryukyu (This Day in the Ryukyus).

Table 13 is a tabulation of readership by household of these G.R.I. publications in the datum townships.

TABLE 13.-- G.R.I. Publications Read

Publication	Frequency of Readership Yabu	Kochinda	Kitanaka.	Total
shurei no mon.....	2	4	2	8
shurei no hikari.....	49	52	34	135
Agricultural Calendar.....	6	24	10	40
nooka no tomo and noogyoo no tomo.....	4	12	11	27
konnichi no Ryukyu.....	3	8	5	16
One other publication.....	6	7	4	17
Two publications, incl. above.....	25	24	16	65
Three publications, incl. above.....	2	3	1	6
none.....	204	544	324	1,072
Total	301	678	407	1,386

Publications are distributed free of charge by G.R.I. to township and village offices. Some are kept in the office for reference by those interested, others are given out to various farmers and their families upon request. NKF, SKF, ES and other officials are also in possession of copies. More than 22 per cent of the households sampled read them regularly, either at a township or village office, or have them in their own home. Shurei no hikari is most widely read.

These publications contain articles written by professionals, mainly at the experiment station or the University which have usually been rewritten by the G.R.I. staff in a more simplified form. Farmers are given suggestions as to when to plant, fertilize, weed and so forth; information about new seedling varieties; new agricultural techniques, such as the use of vinyl for rice seedling beds; successful experiments by other farmers, such as the results of attempts to grow three crops of rice; and other useful information related to agriculture.

G.R.I. publications are most widely read in Yabu, 23 per cent, as would be expected because of the predominately agricultural nature of the township. Kitanakagushiku readers total 20 per cent, somewhat higher than might be expected at first glance. But this is most likely related to the large number of vegetable growers found there and their desire to gain information to improve their crop. Kochinda is close behind Kitanakagushiku with almost 19 per cent.

A problem mentioned above regarding NKF, SKF and ES contacts with farmers who are interested and the cyclical

nature of these contacts finds its analogy in the analysis of readership frequencies. For example, of the 1,045 persons who read newspapers in the sample, 28 per cent also read government publications. Nearly 300 of those who read a newspaper also read one or more G.R.I. publication mentioned above. A higher correlation exists between those reading Ie no Hikari and those reading one or more G.R.I. publication, more than 41 per cent of those reading Ie no Hikari also read one or more newspaper.

Finally, those reading all three, Ie no Hikari, one or more newspaper and one or more G.R.I. publication amount to 104, or almost 40 per cent of those reading Ie no Hikari alone. Thus, as with the information disseminated by the extension agents, information flowing through mass media channels discussed above reach a relatively small number of persons. It appears it is those who have an interest who read the various publications and newspapers, those with enough information to recognize the need for more. But those at whom such media are directed, the disinterested, are not taking full advantage of its availability. The influence of mass media thus far described is strongest on those persons, a relatively small number in proportion to the entire population, who seek it out, but has less influence on most of the rural dwellers.

Television and Radio

Sixty-three of every 100 households in Okinawa has a television set. Television viewing is a popular pastime in the datum townships and the rate of ownership is relatively high:

Kochinda, 70 per cent; Kitanakagushiku, 52 per cent; and Yabu, about 30 per cent. The role of television in the dissemination of agricultural information is not important mainly because there are few programs related to agriculture to be seen. One reason for this was mentioned in an earlier chapter, i.e., G.R.I. lacks funds to purchase television time to air such programs.

A majority of programs seen on television originate in Japan, though local programs are aired regularly during the evening. Some American television programs are aired with Japanese dubbed in, for example, the "Fugitive" was a particularly popular program during the research period. News programs, both Japanese and local, are very popular. The sugar cane problem receives considerable attention on news programs, not techniques of cultivation, but price negotiations.

Television links the rural Okinawan with his nation and with Japan. Viewing programs originating in Japan gives him a chance to see how Japanese families live and serves to raise his aspirations. It works to strengthen the tie between Japan and Okinawa, culturally and ideologically. On the average, children watch television more than their parents, women more than men. Table 14 presents a tabulation of television viewing habits in the datum townships. Data are from the questionnaire. Viewing is mainly during the evening hours, though a man or his wife will occasionally watch a program after lunch. Women seem especially fond of soap box opera-type programs seen during the daytime. Primary school children are avid viewers, junior high school children, however,

usually spend their evening hours studying. Percentages for children rise at a much higher rate than for adults in the 8-14 and 15-21 (two or three hours per day on the average) columns. Television sets, I was told, are turned on daily in most households.

TABLE 14.-- Television Viewing

Township and Viewer	Hours per Week					
	1-7	8-14	15-21	22-28	29-35	36
Yabu (n=278)[1]						
Househead.....	43%	13%	12%	4%	1%	1%
Wife.....	47	19	13	2	1	1
Child.....	41	27	15	5	2	1
Kitanaka. (n=360)						
Househead.....	45%	24%	10%	2%	-	2%
Wife.....	47	27	8	3	-	1
Child.....	35	37	17	3	-	1
Kochinda (n=600)						
Househead.....	40%	26%	15%	3%	1%	1%
Wife.....	46	28	14	3	1	1
Child.....	31	31	24	7	1	1

[1]N=number of households in township with television sets.

As mentioned earlier, Okinawa is linked to Japan by the Japan-Ryukyus Microwave System. The system provides Okinawa with live telecasts from Japan, such as Japanese wrestling (sumo) and the Olympic Games. Ryukyus Broadcasting Corporation (RBC) is affiliated with ABC-TV in the United States, linking Okinawan viewers with both Japan and the U.S.

Radios are more widely distributed throughout the Island than are television sets. In Kochinda, 95 per cent of the households have radios; in Yabu, nearly 85 per cent; and

in Kitanakagushiku, about 71 per cent. Agricultural informational programs are more prevalent on radio than on television, for example, one station carries a daily, five-minute program devoted to agriculture. The program, aired at 6:00 a.m., is called "Good Morning Farmers." It carries technical and professional information for farmers and is supported by G.R.I. It has been on the air for the past seven years.

Another station broadcasts agricultural programs, though not on a regular schedule. Still it must be pointed out that radio is not utilized as effectively as it might. Very little programming is devoted to the rural Okinawan, being for the most part music, soap operas and news programs. It, like television, is a channel tieing the farmer to his nation and the world, but not with regard to agriculture, one of the farmer's main concerns.

Closed Circuit Broadcasting System

Only Kochinda of the datum townships has a closed circuit broadcasting system (yusen hoosoo). Some of the villages in both Yabu and Kitanakagushiku have loudspeakers on the village meeting hall (kominkan), though not all. The system in Kochinda consists of a transmitting station located in the township office with speakers in approximately 80 per cent of the houses (more than 1,400 speakers). Transmission is one way, from township office to household, Nearly everyone leaves the speaker turned on throughout the day. When no messages are being transmitted, the system carries music from a radio station and serves much the same function as a radio.

The mayor indicates that messages of one kind or another are broadcast daily over the system. Messages of importance are usually broadcast over the yosen hoosoo and at the same time passed through the village headman as indicated in Chapter Five. Other townships on the Island have closed circuit broadcasting systems. Yabu had such a system until a few years ago, but it was privately financed, though operated by township officials. When electricity became available and many persons purchased radios, the financiers de-activated the system.

Tax collection dates; announcements of agricultural consultation days (noogyoo sodan); results of agricultural contests, such as kyoshinkai; and other information related to agriculture are broadcast over the system. In Yabu and Kitanakagushiku, similar use is made of loudspeakers mounted on the various village meeting halls. Those without loudspeakers usually borrow hand loudspeakers for the announcement of important information.

Most townships also have a siren which is blown at scheduled times throughout the day and to indicate emergencies. In Yabu, for example, the siren is blown at 8:00 a.m., noon, 5:00 p.m., and 10:00 p.m. The first blowing is to tell children to go to school and farmers to go into the fields. The noon and 5:00 p.m. sirens are to indicate meal times and the 10:00 p.m. siren is to tell those visiting, partying or attending meetings to stop and go home to bed.

Education

Since 1948, schools in Okinawa have been divided into three types, primary schools, which include grades one through six; junior high schools, which include grades seven through nine; and the high schools, for grades ten, eleven and twelve. Primary and junior high education are mandatory. A high school education is highly desired, though not universally achieved. Primary school curriculumn covers eight main subjects: math, Japanese language, sociology, science, gymnastics, music, painting and handicrafts. In the fifth grade, home economics is also taught. Agriculture is not included in the primary school curriculumn.

The school year, which is the same throughout the Island, runs from April to March, with vacations scheduled during June and July, two weeks at Christmastime and two weeks at the end of March. The school year is divided into three semesters. Primary school pupils do not wear uniforms, they dress in a variety of ways, though boys' dress is quite uniform, usually dark trousers and a white shirt. The Kochinda primary school principal explains:

> Students do not wear uniforms. But even though we have not decided on what to wear, the boys almost all wear the same clothing. Girls' clothing, however, is much more varied. I think it is better to not have uniforms in primary school. The variety we have is colorful and is better for the students.

Each student belongs to a club with activities outside, though related to, the school. Club membership is up to the discretion of the pupil himself. Clubs aim at enrich-

ing hobbies and sensibilities of pupils and include music, sports, biology, abacus, brush writing and painting. No clubs related to agriculture are found. Clubs meet after school hours and are usually under the direction of a teacher.

No tuition is required and textbooks are free to pupils. Fees include a P.T.A. fee and a kind of self-governing tax, which is used mainly to support clubs. Lunches are provided by the school and usually consist of milk and bread. Flour is provided by a church organization with the P.T.A. bearing the expense of baking.

The Kochinda primary school is the largest in the southern part of the Island with a student population of 1,767 and 40 teachers. The school, located next to the township office is, for the most part, quite new and modern. Buildings are of various ages, the oldest having been constructed 16 years ago and the newest being finished during the past two years. About half of the pupils come to school by bus at a cost of two cents one way. The remainder walk. Two branches of the school are maintained.

The distinctive feature of Yabu is that it has two schools, though its population is the smallest of the datum townships. The Yabu primary school has 436 students including 42 who are in grades one through four in the mountain village of Nakayama. Fourteen teachers are employed, including two at the branch school. The Awa primary school has 312 pupils and employs 11 teachers. The reason given for construction of this second school in the township was population increase. That school dates back to 1908.

The most run-down of the four primary schools in the datum townships is that of Kitanakagushiku. Students totalling 1,135 are squeezed into 25 classrooms, some of the roofs of which leak when it rains. There are nine men and twenty women teachers. The school itself, though not the buildings, dates back to 1898. Four American children attend the school. They, of course, must converse in Japanese. Their blond heads stand out quite noticeably from the rest of the pupils. In a brief conversation with one of them, I was told that he gets along well with the other pupils.

Since it is in the primary school that a good deal of a child's outlook on life is formed, it is instructive to compare the philosophies of education of the four schools to see what kinds of virtues are stressed in a particular township. Statements are from the principals of the four schools:

Yabu:

> This school emphasizes going abroad for education and prepares children to go abroad and do big things. We have a sign at the school, shin un, it means to cultivate one's destiny with one's efforts. . . . I would like to add more peacefulness and quietness to the Yabu character, add softness, kindness, to molify student's minds. I'm very attentive to teaching, especially on courtesy, etiquette and their way of speaking. This school is counted one of the best in painting, drawing and music. It's a result of these efforts.

Awa (Yabu):

> First comes frontier spirit, volunteer to do things. There are so many things. When pupils come to this school, we train them to study voluntarily and also pick certain pupils each week for cleaning, etc. Classes compete with one another. We emphasize self-government type of activities, such activities make them diligent, bright and healthy.

Kochinda:

> Our aim is to educate the kind of human being who can go out into society and do well after finishing school and who gives no trouble to others. In order to make this kind of person, we have to give intelligence and control of physical body and mind. This school emphasizes promotion of mental sensibility of pupil and is famous for musical ability of students. On Thursday, all bring their own musical instruments and play and sing songs.

Kitanakagushiku:

> There are two purposes. One is a future purpose, a long-term image of a desire to be self-governed and to have good relations with others and to be healthy. Image of a future society is one where the individual and other people can live together. Three characteristics of a desirable person are: 1) faithful; 2) diligent; and 3) cooperative. We have three aims of school that we promote, and five points that we emphasize: 1) to have courteous behavior; 2) willingness to study; 3) to have patience; 4) protect righteousness; and 5) to be healthy. The staff of the school tries to keep the atmosphere bright and beautiful, but at the same time, strict. Our slogan is to 'keep harmony.'

The focus of primary school education is to instill in youngsters the values of Ryukyuan society and to keep the young bodies healthy. Students are responsible for cleaning and repairing the school, with special time during the school day set aside for this. An equally strong emphasis is placed on athletics and health. One of the main events of the school year is an athletic meet (undo kai).

The school brings together children from various villages within the township, thus linking them in a group that usually has significance throughout life. At athletic meets, township officials preside, including the mayor and assemblymen. It is a festive affair, an opportunity for most members of the township to gather.

Junior high school education is a continuation and an intensification of primary school. Children begin wearing uniforms upon entrance into junior high school. Club activities are continued and students continue responsibility for cleaning and repairing, being expected to do more arduous tasks because of increased strength and ability. Athletics are important and the aims of the schools are very similar to those mentioned for primary school.

Agriculture is taught in the junior high school, but is less important than in earlier days, according to the principals interviewed. Part of the training is devoted to planting and raising various crops. What agriculture is taught is covered in the seventh grade, but not in the eighth or ninth grades, unless a student selects it. In reality, however, few can select agriculture in the advanced grades because the curriculum is filled with other subjects. The principal of the Kochinda junior high school explains:

> There is some agriculture taught, but compared with before, it is much decreased. The textbook in the seventh grade covers planting and raising, but not in the eighth and ninth grades. Less than half of the book is devoted to agriculture in the seventh grade. A student, in theory, can elect agriculture in the eighth and ninth grades, but we really don't have time to let them choose this course of study.

Less than half of the junior high graduates go on to high school. Entrance into high school is by competitive examination and junior high students spend many long hours during their final two years studying for the examination. Since high schools are located for the most part in populous areas, stu-

dents often live away from home while attending. Many students who fail the examination the first time try again one year later. A student may attempt to enter the high school of his choice without regard to its location in relation to his residence. The larger high schools of Naha and Koza are most desired, but also are most difficult to enter. Students from the rural areas often receive an education of less quality than those in the cities, and are at a disadvantage in the competition.

Lack of space seems to be one of the main problems facing high schools. Of the 28,000 junior high graduates in 1966, 24,000 applied for high school admission, but only 14,000 could be accepted (Ryukyu Shimpo, Feb. 8, 1966). The severity of the admissions test seems to be correlated with the availability of space at the various high schools. Though difficult to substantiate, it appears that many qualified junior high school graduates are turned away from high school because of inadequate facilities, not lack of potential.

Only one of the three datum townships has a high school within its borders. The Northern Area Agricultural High School is located in Umusa village, Yabu township. This school was discussed in Chapter Two. It serves the northern area, not only Yabu. Subjects are mainly agriculture, afforestation, manufacturing and home economics. Enrollment at the school is 825 students. Its location in Yabu does not make it easier for Yabu junior high graduates to gain admission, but usually means once admitted, they can live at home while attending school.

Less than one-third of the graduates return to their home villages to continue farming. The majority seek jobs in government and industry. Graduates of the Kitanakagushiku junior school usually attend high school in Futenma and Koza, and those from Kochinda go to Gushichan, or, sometimes to Naha. If they desire to study agriculture, they normally attend the Southern Area or Central Area Agricultural High Schools respectively.

Education is an important agent for socializing children into Ryukyuan culture. It is a communication channel, disseminating information about the values, attitudes and behaviour patterns of adults to children. Instruction about agriculture at the elementary and junior high levels is significant by its virtual absence. Farmers constantly complain about the problem of youth no longer desiring to make a living in agriculture. It is not surprising in view of the lack of agricultural training received by pre-high school youth. The principal of the Yabu high school indicated that a large proportion of students attending his school are there not because of a desire to learn about agriculture, but because it was easier to gain admittance to his school than to other, non-agricultural high schools, and because so many youths desire a high school education. It would seem evident that the lack of instruction about agriculture aggravates the problem of youth leaving the farm for other occupations.

Summary

Mass media and education, though important channels for the flow of information in general, function much less effectively in the dissemination of agricultural information. It is surprising that the primary and junior high school curricula are so lacking in instruction about agriculture, especially in farming townships, such as Yabu. Primary and junior high school students assist their parents in the fields after school and during vacations, but in school learn virtually nothing related to this important aspect of their home life. It is no wonder that older men complain about young men not wanting to return to farming, and it is understandable why they do not. At least one reason is the kind of education youth are receiving in their early years at school.

The same is generally true of the mass media. Television is nearly void of programs about agriculture. Children,as has been shown, spend a good deal of time watching television. From their viewing they do not get an appreciation for the work their father is doing in the fields and end up aspiring to something they think better, invariably outside the village. Agricultural radio programs, magazines and government publications are directed at adults, not children. Only kodomo no hikari, of the magazines found in the villages, is designed for youthful readers. On the basis of my research, I conclude that education and mass media are working more against agriculture than for it.

CHAPTER EIGHT

RECEIVERS OF AGRICULTURAL INFORMATION

The flow of information, originating from the most part with the Agricultural Experiment Station and the Economics Department of G.R.I. and being transmitted through the various channels delineated above, is ultimately destined for the rural Okinawan farmer, the receiver of the information flow. It is to these farmers that attention is now turned.

At this point, it might be well to recall some of the characteristics of the three datum townships, Kochinda, Kitanakagushiku and Yabu. Following a brief summary sketch of each, I shall discuss the cultivation of various crops and then present character sketches of selected inhabitants in an attempt to provide the reader with information about the receivers of agricultural information. Character sketches are chosen with an eye toward presenting not only what might be considered the "average" farmer, but also to indicate a range of types found in the rural areas.

Kochinda, the largest of the three townships with a population of 9,780, is located in the southern part of Okinawa Island, about 20 or 30 minutes from the capital city, Naha. It, like most Okinawan townships, is predominately an agricultural area. More than 80 per cent of its households are farming households and 78 per cent of the arable land is planted in sugar cane. No pineapple and very little rice are

planted. Sweet potatoes are grown on 10 per cent of the land, but mainly for home consumption and as food for animals. Vegetables are planted on less than 5 per cent of the land, and those not grown for home consumption are taken to urban markets for sale. Base employees number 384 and many others work at such occupations as construction, wholesale and retail sales, manufacturing (mainly at the sugar cane mill and a construction board processing plant), government employment and services, such as transportation.

Kitanakagushiku township, with its 8,475 inhabitants, is located in central Okinawa between two large population centers, Koza and Futenma. It is easily accessible by paved highway. It was chosen for study because of the large number of vegetable cultivators and proximity to U.S. military installations. Less than 20 per cent of the total labor force is engaged in agriculture, with the majority (68 per cent) being employed in base work and services. Sugar cane is the main agricultural crop, but vegetables are also important, approximately 100 households growing vegetables for sale to U.S. Forces. Others grow vegetables for home consumption and for marketing in Koza and Futenma. Little rice is cultivated.

Yabu, in northern Okinawa, is the smallest of the three sample townships with a population of only 4,355. It is somewhat isolated, being 15 minutes from Nago, the largest town in the north (20,000 population) and about two hours by bus from Naha. Geographically, Yabu is two separate areas,

composed of four coastal, lowland villages and three mountainous villages. Mountains cover an estimated 80 per cent of the total land area of the township. Sugar cane is the primary crop, but pineapple is rapidly growing in importance, now occupying more than half the area planted in sugar cane (pineapple 162 hectares and sugar cane 249 hectares).

Seventy-five per cent of the households in Yabu are agricultural households, and, of the remainder, most work either in the Ryukyu Cement Plant (located within Yabu boundaries), in the township office or in Nago. Approximately 40 persons are employed on U.S. Army missile sites in the vicinity of Yabu and Nago. Farms, for the most part, are larger in Yabu than in either Kochinda or Kitanakagushiku. Only four of the seven villages in Yabu recieve electricity from the Nago Electricity Company. Some households in the mountain villages get electricity periodically from jointly owned generators, but approximately 40 per cent of the 225 mountain households have no electricity at all. This is in sharp contrast with Kochinda and Kitanakagushiku, both of which have electricity from power companies for all township households. This, of course, means fewer residents have television sets and other electrical conveniences.

Sugar Cane Cultivation

The purpose of this chapter is to outline the general conditions in which Okinawan farmers find themselves. To this end, it will be useful to look in some detail at the process of raising the more important crops, such as sugar

cane, pineapple, rice and vegetables. With a more thorough knowledge of the agricultural cycle, one can pinpoint times of lesser and greater activity and in this way begin to gain an understanding of those times when farmers might be more susceptible to receiving agricultural information. The busiest seasons are not the most appropriate times to bombard the farmer with new information, whereas, slack seasons would certainly be a better time to call special meetings, produce special radio and television programs or to publish pamphlets containing large quantities of information. It is toward this end that the following detailed discussion of the planting, care and harvesting of various crops is presented.

The planting season for most Okinawan sugar cane growers begins in late January or early February. It is at this time that a man begins either to clear new land for planting, or if planting on previously cleared land, begins hoeing and making the land ready to receive the seedlings. Cane shoots are planted on dry-crop land in rows approximately one meter apart. The crop planted in February, known as spring planting (haru ue), is ready to be harvested about one year later. Another variety, known as summer planting (natsu ue), requires one and one-half years to ripen, and is planted by fewer farmers. The longer growing natsu ue yields more cane per area planted, but is less widely cultivated than haru ue. The work cycle is basically the same for both, but natsu ue requires more weeding and additional fertilization during its growth. The variety of cane most widely planted in Okinawa,

NCO 310, has the further advantage of being a ratoon crop, i.e., crops can be grown each year from the same shoots without the necessity of replant. Ratoon cane can usually be harvested two or three years consecutively without replanting. The cycle for ratoon is the same as for natsu ue with the exception of initial planting.

Soil is usually hoed to a depth of approximately 30 centimeters and those spots which will receive shoots are given fertilizer, usually compost containing animal manures. One man, working alone, can select shoots and plant an area of about 50 tsubo in less than a full day's work. From planting to harvest, cane requires only intermittent attention and labor

It must be weeded in March, May, August and November. Weeding becomes more difficult as the cane gets taller. Weeding is not a task that must be performed on schedule, and a man working alone can usually keep his fields weeded by working alternately in each field day after day. Weeding becomes more and more important as the cane matures because of the danger from rats. A field that is not kept clean is more subject to damage from rats. Usually four or five times during the growing season, rat poison is applied to the fields. Fertilizer is usually applied to cane in March, May and possibly once between May and harvest. This task also becomes more difficult as the cane matures.

Leaves should be trimmed from the cane at least twice during the growing season, in August and again in November or

December. This, of course, means clearing the trimmed leaves out from the cane rows. Thus, a man and his family are kept busy going from field to field performing the various activities mentioned above. Most farmers cultivate 1,000 to 2,000 tsubo or more of cane (.33 to .66 hectare) and relate that the various tasks keep them busy throughout the year.

It should be pointed out that cane is a strong crop and those who do little in the way of weeding, fertilizing and rat eradicating still manage to harvest some of the crop. But almost everyone agrees that a good crop and a high yield per area planted depends upon constant care and performance of these three necessary activities. Many, though not all, of the fields I walked through did not appear to be well cared for. I often found weeds and dead leaves piled up between the rows.

A typhoon usually does not destroy cane, but high winds blow it down. A farmer is required to work much harder following a typhoon; he must attempt to straighten the stalks and must be especially careful to clear debris from between rows to keep rats out. It is a rare year indeed when Okinawa is not hit by at least one typhoon.

Cane, like any other crop, requires water during its maturation, but this is the most neglected aspect of sugar cultivation. Okinawan farmers leave watering to nature, depending wholly upon rainfall. No irrigation ditches are in evidence as in Hawaiian cane fields. As one farmer in Kitanakagushiku says:

> To tell the truth, sugar cane needs water also. From May to October is the most important time when it needs water, but we just depend upon rainfall for water, that's all.

A severe drought in 1963 demonstrated clearly that sugar cane needs water; unit yield was much lower than usual because of the lack of water.

Probably the hardest work of the entire cycle is harvest. Though one often sees women in the fields harvesting cane, it usually is said to be man's work. Cane stalks are cut, one at a time, close to the ground with a sickle-knife. The stalk is then trimmed of its leaves and top and thrown on a pile with other stalks. Fields are not burned off prior to harvesting as is commonly done in Hawaii. Stalks are then bundled and tied to be carried to the nearest road for pick-up. Bundles are large and quite heavy, often weighing as much as 70 or 100 pounds. This points up another important problem for the Okinawan farmer; many cane fields have been recently cleared and are located far from any passable road. In the northern township especially, the distance from field to road is great, thereby increasing the amount of time and labor involved. Construction of new agricultural roads is an important item on the agenda of every township studied, and is also recognized by G.R.I. as an important problem.

Once bundles have been brought to the road, they are stacked in an upright position along the roadside to await pickup by trucks which will deliver them to the mill. Since all arrangements for delivery to the mill are made through

the agricultural cooperative, farmers have only to be concerned with getting cane to the road for pickup. Each farmer knows well in advance when the trucks will come to pick up his cane and usually he does not take it to the roadside until the same day or day before pickup is made.

All subsequent arrangements for payment are made by the cooperative and the mill; the farmer being notified after it is all completed. Mills begin accepting cane in February and expect to be in full operation by March or April. Many farmers deliver half of their cane, and sometimes all of it, before knowing what price has been agreed on for its sale in Japan. The farmer usually receives a portion of the expected price right away and the remainder when final prices are set. For example, in 1965, the price was not set until summer, after nearly all cane had to be harvested. It was known that the price would be lower than the previous year's $24.14 per metric ton, so sugar mills were paying farmers only $14.17 in most instances. Some farmers said they were being paid only $10, with the balance promised following settlement of the price.

Most labor related to sugar cane can be accomplished by an individual farmer and his immediate family. He is not required to maintain irrigation ties with fellow farmers for the maintenance of canals, nor for labor exchange. Planting, weeding, fertilization and harvesting of cane, though tied closely to the weather, does not have to be completed within strict time limitations, but can be carried out over longer

periods of time. At those times when additional labor is required, at harvest for example, a farmer will generally employ someone to work by the day, paying that person in cash. As evidenced by the foregoing description, the most important tie for the farmer is that with the agricultural cooperative. It is through the cooperative that he is linked with the sugar mill and the extra-village interests, such as G.R.I. and the Government of Japan.

Households operate much as independent entities, except in marketing. It is the househead who decides what kind of cane and how much to plant. Information concerning new seedling varieties, new techniques or fertilizers is directed at the househead. Sugar cane is not a labor-intensive crop and there are many slack periods during its growth. These are times when extension agents can best reach farmers with new information.

Pineapple Cultivation

One of the most important changes in northern Okinawa has been the introduction and increased cultivation of pineapple. Little pineapple is cultivated in central and southern Okinawa. The experiment station imported seedlings from Hawaii and Taiwan and was primarily responsible for the spread of pineapple to northern Okinawa and Yaeyama. Hawaiian seed strains are the most wide-spread. The introduction of pineapple has meant more efficient use of land in that it is usually planted on hillsides, areas that had previously been unused.

The first step in pineapple cultivation involves clearing the hillside of small trees and bushes. This is usually done by bulldozer, though some farmers accomplish it by hand labor. The Yabu township government purchased a bulldozer which is rented by farmers through the agricultural cooperative at the rate of $.02 per tsubo. Eight or ten pineapple plants can be planted on one tsubo of land. Seedlings cost 1/3 to 1/2 cent each. From first planting to harvest is usually two years, though some farmers report harvesting as early as one and one-half years, and others as late as two and one-half years later. Plants must be fertilized three or four times during the year and weeded three times.

The following is a fairly typical cycle for pineapple: planted the first plants in August 1961; fertilized and weeded once during the remaining months of 1961; fertilized three times during 1962 and weeded four times that year; fertilized in April 1963 and weeded that same month; and harvested some of the plants in August 1963 and the remainder in October of 1963. The later harvested plants had been fertilized in September. Pineapple planted at the same time became two separate harvests, those that grew well and those that did not grow so well. One pineapple is taken from each plant, though some produce two fruits of lesser quality. All fertilizer used is commercially produced, compost being rarely used for pineapple. Stems are covered with tree leaves to protect the soil and provide some nourishment.

Following the first harvest from a plant, a second harvest can be obtained approximately one year to 14 months

later. The same plants produce pineapples for about five years under normal conditions. If conditions are bad, such as a typhoon, they have to be replanted after three years. Some cultivators indicate the plants could produce pineapple for as long as seven years, but most felt four or five years was about the maximum. Once a field has been established, harvest usually occurs in July or October, though weather conditions may make harvests as much as a month earlier or later than this.

Pineapple fields are invariably located away from roadways. A farmer's greatest labor inputs are usually in getting fertilizer to the field, weeds away from the field and the harvested pinapples from field to a road for pick-up. One farmer in Yabu, for example, said it takes him about two hours to harvest 1,000 pineapples and another three or four hours to transport them to the roadside for pick-up. Others spend greater or lesser amounts of time depending on the distance from field to road.

Pineapple is marketed through the cooperative, which in turn sells it to the factory in Haneji township for processing and eventual shipment to Japan. The price is 5.7 cents per kilogram for a first class pineapple and 5.4 cents per kilogram for second class. Average pineapple size is approximately 1.5 kilograms, or a price of about $.09 per pineapple. It is a fairly common sight in late July and October to see small stands alongside northern Okinawa roads selling fresh pineapples to passersby. The price generally varies from $.20 to $.30 for a 1.5 or 2 kilogram pineapple.

Like the sugar cane grower, a pineapple cultivator's ties are for the most part extra-village linkages. Labor is mostly done by household members without outside help unless one's fields are extensive. Work is on the average lighter, one man said that sugar cane is the work of men and strong women, but that his young sons help him in the pineapple field. The cultivator's primary linkage is with the township agricultural cooperative. It is through the cooperative that he rents a bulldozer to clear land and also through the cooperative that he markets his crop. The price he receives for his crop is decided outside the village, either in Naha or Tokyo. He is in competition with the large plantations of Hawaii and Taiwan. Few farmers raise pineapple exclusively, usually cultivating it in conjunction with sugar cane.

Pineapple is the second most important crop in Okinawa, though at the present time it presents no real competition to sugar cane. It is seen by many as a crop for the future. The head of the Yabu Agricultural Cooperative says a man can make nearly twice as much from the same land area planted in pineapple as he can growing sugar cane:

> In making new fields for sugar cane a man has to have better land than he does for pineapple. The price is about $.40 per tsubo for sugar cane, and only $.30 per tsubo for pineapple. I feel I can encourage our members to raise pineapple, but not sugar cane. We have stopped lending money for making new sugar cane fields, but still lend it for pineapple. We also discontinued renting the bull-dozer for preparing new sugar cane fields, but still rent it for pineapple preparation.

The Japanese government promised to give 100 per cent tax exemption on pineapple imports through 1968, though an

escape clause was included indicating that G.R.I. is required to faithfully carry out rationalization of the pineapple industry or Japan could drop all limitations. Pineapple is one of the items listed by Japan to be included in the Free Trade Zone.

With Japanese protection, pineapple cultivation can be a profitable enterprise for the Okinawan farmer, without it, only the future will reveal how profitable it might be. As with sugar cane, the Okinawan farmer will be hard pressed to compete with the large plantations of Hawaii and cheap labor of Taiwan.

Rice Cultivation

Those farmers who grow rice usually plant two crops a year. A good rice crop is dependent upon intensive care and labor input and an adequate and continuous water supply. Another important factor is proper timing, i.e., rice should be planted, transplanted, weeded, fertilized and harvested at the proper time during the climatic cycle.

Preparation of a seedling bed begins during the first week in February. Large chunks of earth are broken up either by hand or with a small, motorized cultivator. The seedling bed is then flooded and left until the earth softens. Rows are cut, each about two arm lengths apart and the muddy earth is piled between rows, forming a kind of table between the rows. Mud between the rows is then smoothed with a flat board with a handle on top until it looks something like smoothed cement. Seeds are then broadcast in the smoothed areas and

the smoothing process is repeated, covering the seeds with a thin layer of muddy earth. The entire seedling bed is then flooded.

Seeds are chosen from the previous crop. They are kept for four or five days in a wet gunny sack, then removed and placed in a tub of warm water. The temperature of the water is right when it is as warm as a baby's bath. Seeds are taken out of the damp sack each day, rinsed and checked, bad seeds are thrown out. Seeds begin to germinate in the sack and after four or five days are ready to be planted.

The seedling bed remains flooded during the first few weeks of seedling growth. Water serves to protect sprouts from cold damage and regulation of the water is very important. Too little or too much water can bring ruin to the entire seedling bed. Some farmers in Yabu cover their seedlings with vinyl, though most continue flooding. Shoots grown under vinyl can be transplanted sooner, but many farmers say it is dangerous to use vinyl because young shoots may burn on sunny days. The ends of the rows are opened during the day to allow air passage and cooling. Vinyl requires more intensive care as well as greater labor in laying it and expense in purchasing it.

Seedling beds are terraced in Yabu village, one bed being about one foot higher than the next. None of the seedling beds are well-cared for, grasses grow on boundaries separating beds and boundary walls are muddy and somewhat irregular. Water is allowed to run from the highest bed to

the one below, keeping a steady, though trickling, stream of water flowing over the young plants throughout their early phases of growth. Openings in boundary walls are plugged with large chunks of earth to control water flow. Because of the decline in rice farming in Yabu, little care is given to the maintenance of boundary walls or irrigation ditches.

Many farmers who previously cultivated rice have switched to sugar cane and this works a hardship on the remaining rice farmers. The seedling beds in Yabu are completely encircled by sugar cane fields, fields which once had supported rice seedling beds. Seedling beds are located about a 20-minute walk from the owners' homes and since it is one of the few areas with a water supply, there is little alternative to the long walk. Most rice cultivators point out that they too will soon be forced to switch to sugar cane because of the difficulties of water management created by those who have left rice for sugar cane.

From planting until first fertilization, seedling beds require little care, except for water control. Initial fertilization is carried out on the 25th day after planting. Fertilizer, a powdered, commercially produced substance, is either broadcast by hand or by hand-forced air pump with a hose. A fertilized field looks as though a light snow had fallen on it. Second fertilization is accomplished between the 35th and 37th day following planting. The most difficult part of fertilization is transporting 100-pound bags of fertilizer to the seedling bed. Many carry them on the back of bicycles or on carts, usually pulled by hand.

Shoots are transplanted to the main fields after they have grown for about 40 days, though the exact date varies from year to year. A daily check is made to determine the right day for transplanting. The best time to transplant is when shoots have sprouted five leaves. Transplanting usually requires more workers than is found in a single household, thus a household has the option of exchanging labor with ofther rice cultivators, or of hiring outside help on a day/wage basis. The latter is the most common arrangement nowadays because of the small number of rice growers in any given village. Since many sugar cane growers are experiencing a slack period, it is not difficult to find workers.

One or two persons are kept busy in the seedling bed pulling up the seedlings, bundling them and throwing them into piles. The househead usually transports the seedlings from the beds to the fields for planting. In the fields, transplanters, usually women and young boys, are busy transplanting. The more inexperienced transplanters place the shoots along strings which are stretched across the fields marking off the rows. Faster, more experienced ones then fill the rows, with their hands moving at lightening speed, shoving a shoot into the muddy field, reaching up for another, shoving it in, and so forth. In each village where rice is grown, there are usually a few women who are especially noted for their speed in transplanting young shoots.

From the time it is transplanted to the time it is harvested, rice is weeded three times, twice in April and once

in May. Weeding is especially important when the rice is short and might be crowded out by weeds. It is generally done by hand, though some employ a motorized cultivator (kounki). Harvest usually occurs 120 days after transplanting, sometime after the middle of July. It is usually a family affair, though outside help may be employed. Stalks are gathered together in one hand and cut a few inches above the ground with a small sickle. The sheaves are then bundled tied and thrown aside.

Some farmers carry the bundles back to their homestead for drying and further processing. Others complete the entire process, separating grain from stalk, winnowing and bagging while in the field. Grain is usually separated from the stalk by a treadle thresher (dakkoki), though other, older methods are employed. Winnowing is accomplished by pouring grain from above one's head into another basket on the ground. (under which is a large canvas) allowing the wind to blow away chaff. Grain is stored in large burlap bags until such time as it is taken to the mill for polishing.

It is difficult to determine which requires more labor, rice or sugar cane. Few farmers keep records of labor inputs for both crops. The head of the experiment station indicates that rice takes more time throughout the year, but the amount is almost the same, about 1.2 or 1.5 more labor than sugar cane. Amounts vary according to how conscientious a particular farmer might be and how good a harvest he wants. A farmer in Yabu explains it this way:

> On the average we are busier with planting rice because we have to plant it in one or two days, but when we plant sugar cane it doesn't matter much. Sugar cane probably requires more work throughout the year if you want a really good harvest, but if you don't worry about the harvest, then you can let it go and it's all right. But you can't let rice go or the whole thing is ruined. If you don't take care of rice, then you can't harvest it, but with sugar cane, even if you don't take care of it, you can harvest some. I take more time with sugar cane than with rice.

Rice cultivation does not require as extensive a set of ties on the part of the farmer today as it did previously. Few farmers actually make use of the irrigation ditches and dams and irrigation societies are a thing of the past in Yabu. No extra-village nor extra-township links are required. Rice is grown for home consumption and fertilizer can be purchased locally. Neither is labor exchange widely practiced. Rice production is an activity of declining importance in all three townships, having almost completely disappeared in Kochinda and Kitanakagushiku.

The reasons for its decline are not very hard to find. In the first place, many farmers were drawn to sugar cane by high prices over the past few years. Secondly, sugar cane can be grown with little care and still produce a relatively good yield -- not so with rice. Thirdly, there is a problem of water, as a Yabu farmer explains:

> My reason for switching from rice to sugar cane is because it became hard for me to get water, the irrigation problem. Others switched to sugar cane and I alone cannot get water from the dam. Until year before last, I tried to irrigate by motor, and others planted sugar cane and they tried to exclude water from the fields. Also, rice needs so much labor for the small amount of return, so I just quit.

Finally, there is the problem of typhoons. Rice is more easily destroyed by the high winds of a typhoon, whereas, sugar cane is more resistant. The most saddening sight to a rice farmer is to see the twisted, submerged stalks of his rice plants following a typhoon. Though early-maturing strains have been developed, rice is still vulnerable to the whimsy of a typhoon. Few farmers today cultivate rice only, in fact, I found no one in any of the three townships growing rice exclusively. Those who plant rice also grow sugar cane or pineapple. Few farmers today grow enough rice for use within their own household; rather they buy it from the local market, rice that is imported to Okinawa mainly from California.

Vegetables and Fruits

The most widely grown crop, other than sugar cane, is sweet potato (satsuma imo). It is difficult to estimate the number of farmers cultivating sweet potato since nearly all do at one time or another. Sweet potato has long been the staple for most Okinawan families. Since its introduction from China in the 17th Century the sweet potato had by prewar days become the most important crop in Okinawa. Since the war, however, it has declined in importance as a major crop, though remains an important dietary staple.

Cultivation of the sweet potato is relatively simple and requires less labor input than practically any other crop grown in the Islands. The tops of plants are cut and provide slips for the following crop. During the growing season,

weeding is the only labor input. This is accomplished with a hoe and there are a number of hoe varieties for use in the sweet potato field. The plant is cultivated throughout the year and is intercropped where possible. Crop quality is most dependent upon rainfall and planting slackens during the winter months. Sweet potato planting and weeding is usually worked into the busy schedule of cane, pineapple or rice cultivation. Spare time from these crops is spent in the sweet potato field.

The entire plant is used: leaves and other residue as compost or plowed under as fertilizer for the next crop; the better potatoes as food for the family; the poorer potatoes mashed, cooked and fed to hogs and goats; the slips for the following crop; and the leaves are constantly cut as food for hogs and cattle. The sweet potato is invariably grown for home consumption, both human and animal. It can be grown in most any kind of soil, can be planted and harvested throughout the year and the work is light enough for all family members to take part. It requires no extra-family ties; once the initial slips have been obtained, all that is needed is land and labor, plus, of course, relatively good weather. No marketing arrangements are necessary. The sweet potato is grown by most farmers in the three datum townships.

The cultivation of other vegetables and fruits was discussed in some detail in Chapter Three. They are most often grown in the housing yard and in such cases are little more than spare-time crops. In Kitanakagushiku, however,

vegetables are grown as cash crops for sale to U.S. Forces and to the markets in Koza and Futenma. As such, they are crops of the same degree of labor intensity as rice, perhaps more. Considerable planning is required on the part of the vegetable farmer and his crop must be given his full attention. Vegetable farmers depend, for the most part, on their own resources in seeking information about vegetable cultivation. The extension agent in Kitanakagushiku admits he just does not have enough background in vegetable cultivation to be of much assistance. He does provide them with government publications, but little more.

Okinawan Farmer/Receivers

The purpose of the following character sketches is to acquaint the reader with a variety of farmer types, focusing upon their role as receivers of agricultural information. They are not meant to be seen as typical farmers, but it is true that there are many similarities between them and their fellow villagers. I have selected sugar cane, pineapple and vegetable cultivators, as well as some who raise a variety of crops, in hopes of pointing up some of the differences in information reception in relation to crops cultivated. Sketches are grouped according to township since there are also differences as receivers from township to township.

Kochinda.-- Mr. Kamiya is 58 years old and resides in Shitahaku village, Kochinda township. His household consists of nine persons: including him and his wife; their old-

est son, his wife and their four children; and an unmarried daughter. He and his family farm 2,600 tsubo of land (.86 hectare), all of which is planted in sugar cane variety NCO 310 except one small field of sweet potato. He has one female cow and four hogs. As is true of most farmers, Kamiya's fields are fragmented, in fact it was difficult to contact him at first because his wife did not know which field he was working at the time of my initial visit. It was necessary to leave word that I would return the following day.

Kamiya has been planting NCO 310 sugar cane for about six years. He explains the way he received seedlings from the township industrial section:

> The seedlings were first given to a man in the village by the township office (industrial section). He planted them and then gave seedlings from his field to others in the village. G.R.I. provided the money for seedlings, not the township. G.R.I. paid him for seedlings he distributed. At first he gave each of use 100 seedlings. One stem can be cut into five seedlings. The second year on my fields I did not get any harvest at all because I used all the shoots as seedlings. It took only about two years to spread the seedlings to everyone who wanted them.

All but two or three families in Shitahaku village plant NCO 310. They plant a variety known as sanpachi (No. 38). It grows faster than NCO 310, producing three harvests during the growing season for NCO 310. It has the disadvantage of not being very resistant to typhoons and it is not a ratoon crop, i.e., it must be replanted each year and does not produce from the stems if left in the ground.

Kamiya received his introduction to NCO 310 at a meeting held in the village meeting hall. At that meeting,

the NKF explained the advantages of NCO 310 to the 60 or 70 farmers present. The NKF now visits Kamiya about twice yearly, and the ES comes once a year. They usually talk about the price of crops, especially sugar cane, and about ways to rationalize agriculture, such as by diversification or by raising livestock. In response to the question, From what source do you mainly get information about agriculture? Kamiya replies:

> I get agricultural information from my second son. He finished agricultural high school in Japan and spent six months in Hawaii and is now working at the Ryukyu Sugar Company. I also read Ie No Hikari (Light of Home) and belong to the agricultural cooperative.

At the present time, the NKF visits the village at least three times each month. This is because the area in which Kamiya lives (han) is a test area for vegetable planting. A test garden is being operated by the Women's Association (of which Kamiya's daughter-in-law is a member) and the NKF comes often to assist association members in caring for their vegetables. Kamiya does not see him on these occasions, however.

He classifies the farmers of his village as progressive:

> When they hear something is good, they will volunteer to try it and if it proves good, they will accept it. The farmers are keen for making money.

Villagers, he feels, are broad-minded and willing to attempt to put new ideas into practice. His village is ranked by him as high relative to the other villages in Kochinda, and

this ranking is supported by reference to the amount of taxes paid and the high percentage of persons who pay their taxes on time.

Mr. Tomita is a 45-year-old farmer who lives in Tomimori village, Kochinda township. His fields total nearly 6,000 tsubo (2 hectares), all but 1,000 tsubo (.3 hectare) of which is planted in sugar cane. Until a few years ago, his holdings were split almost evenly between rice and sugar cane, but when the price of cane rose, he, like so many others, changed former paddy into sugar cane. He explains:

> There was a big sugar cane boom, so I turned my paddy into sugar cane. The price of sugar cane went way up, so we all changed. Now the price of sugar cane is going down and now we're at a loss as to what to do.
>
> (Will you change sugar cane fields back to paddy?) If the price of sugar cane continues to go down, I think I will. Last year the price was about $25 per ton, but this year it's down to $12 or $13 per ton. If sugar cane prices become half of last year, it's almost the same as if we were selling our sugar cane and buying rice, so I might change. But even if I change to rice, I still have a problem because there is not enough water, the irrigation problem.

Tomita feels Tomimori is too far from Naha to make vegetable raising profitable, though with the increase in auto and bus traffic, he thinks it might be a crop for the future. He now only plants enough vegetables for self-supply.

Like virtually everyone else in the village, Tomita plants NCO 310 variety sugar cane. His reason is that labor can be saved because of the ratoon capability of NCO 310, which he has planted for the past four years. Prior to that he planted variety 2715 because he thought NCO 310 was not

resistant against typhoons. He explains his own switching back and forth like this:

> About ten years ago the experiment station was encouraging farmers to plant NCO 310 and we were given seedlings by the township industrial section. But when we planted it, we found the stem was quite small, so many of us abandoned it for 2725. But, about six years ago, we were asked to try it again (NCO 310) and were told it was resistant to typhoons. I planted it again and found it resistant, so I have continued to plant NCO 310. Seedlings were given to the village and then distributed to individual farmers. Once we got a harvest, we cut some stems and used these to plant the next crop, and finally were able to cover all our fields.

Tomita said he became informed about NCO 310 planting techniques in many ways, such as attending meetings called by the village head at which the ES gave lectures; through written papers posted on the meeting hall bulletin board; over the G.R.I. morning radio program; and by reading various pamphlets and newspaper articles.

The ES visits Tomita two or three times each month, but he visits mainly because he and Tomita are friends. The NKF comes with the ES on most occasions. They talk about general subjects, not about specific planting techniques. Tomita is the vice-chairman of the township assembly and this, he says, explains why the agricultural agents visit him often.

Yabu.-- Mr. Higa is a 51-year-old farmer living in Yabu village, Yabu township. He has been planting pineapple for the past five years and his fields presently are divided into the following crops: pineapple, 3,000 tsubo (1 hectare); sugar cane, 2,200 tsubo (.73 hectare); rice 1,200 tsubo

(.4 hectare); and vegetables, 500 tsubo (.16 hectare). He also raises hogs. He began planting pineapple in an attempt to increase his income and felt the best way to do this was to plant a variety of crops. Techniques of pineapple cultivation were learned by him in the following manner:

> About two or three years before I began to plant pineapple, I went to observe a couple of friends of mine in Motobu township who were planting pineapple. I also talked with the ES and went to the experiment station to get information. I wanted to know all I could before I began to actually acultivate the crop myself.

In our discussions about pineapple planting, Higa constantly referred to a bag of printed materials and to records he has kept, most of which he had obtained from the experiment station and G.R.I.

His knowledge about agricultural techniques was obtained mainly from reading and from personal experience. He keeps records which he often refers to. Information obtained from sources other than his own experience, he says, is only useful if he can apply it to his own fields. The NKF is helpful because information can be obtained from him and he is looked upon as a leader within the village, however, Higa points out, the NKF's professional knowledge is not based on a particular field and it must be interpreted if it is to be applicable. Higa feels the ES is doing only superficial work, but he likes him and listens when advice is offered. "I think seeing is good," Higa says. He often visits the experiment station to see for himself.

Higa reads Ie No Hikari (Light of Home) and Nooka No Tomo (Agriculture's Friend) and finds them very useful because, "They contain many articles written by respected Japanese farmers and their experiences." Though he seldom watches agricultural programs on television (mainly because there are few), he finds the early morning radio programs useful:

> Yes, the radio programs are helpful and useful. I'm encouraged by the radio programs, for example, if the program is about some village where someone planted fruits and had a good harvest, then I can read about it the next day in the newspaper or in the G.R.I. pamphlet.

He is a member of an agricultural affairs practice group (noojigi ko kumiai) which has contests throughout the year on crops and harvests. Yabu village is divided into two halves, with about 75 farming households in each. They meet twice a year to announce results of various agricultural contests held throughout the year. Higa finds such meetings and contests useful because they are times when all members are in one place and he can find out how and what others did last year.

He is presently a member of a loosely organized group of about 15 individuals who meet two or three times each month to discuss agriculture. In the past, he has belonged to various organized agricultural groups, all of which have since disbanded. He finds farming somewhat competitive:

> Human beings are a little strange. If someone plants vegetables and makes money at it, then his friends go to visit him and talk about how to do it. Then they begin planting vegetables. Once they are all planting vegetables, then they like to compete and the meetings become interesting.

Higa's records, he says, are not exact, and, although he plants various crops according to a plan, it is one kept inside his head and not written down in detail. He does keep records of farm expenses and at one time kept a diary, but found it too much trouble and stopped. Now he just makes simple memoranda.

Higa sees the current sugar cane price declines as the farmer's biggest problem. He has combated it by diversifying his crops, but says:

> As far as I am concerned, the price drop in sugar cane was not a shock, but I think it might have been to others. I have confidence in my own way of administering my fields. I do not think I am qualified to give suggestions or directions to other farmers, but I am always willing to explain my way to them. I think farmers should plant several crops, then if sugar cane declines, the loss can be covered with pineapple, and if pineapple drops, it can be covered by vegetables.

He has not changed the percentage of planted area in various crops much over the past few years, but says he might find it necessary to do so in the future.

Mr. Kishimoto, a respected farmer in Yabu village, approximately 60 years old, is best known throughout the village and township for having given a report on his experiences with white potatoes at an all-Okinawa farmer's meeting. He plants 4,000 tsubo (1.3 hectares) of which 3,000 tsubo (1 hectare) is in sugar cane, 700 tsubo (.2 hectare) in vegetables and 300 tsubo (.1 hectare) in rice. For the past six years, he has been planting sugar cane variety NCO 310. Like everyone else in the village, he first received seedlings

of NCO-310 from middle-test fields operated by the township and village. Initially, he learned about the qualities of NCO-310 from friends, though he said he then went to the Nago branch of the experiment station for more detailed information. He also attended meetings sponsored by the village at which techniques were discussed.

Kishimoto stressed that much assistance was given him by the NKF, but at the same time, he got information from neighbors:

> We have groups and we talk and discuss agricultural affairs. Farmers are divided into two kinds, those who are full-time farmers and those who do agriculture as a side work. Full-time farmers get everything from agriculture. My group was full-time farmers and had a rule that we would meet once a month. But now we work hard all day and cannot meet, so we try to meet on days when we are not so busy, like between harvests. In this way, we can pick up one another's ideas, but we have to take topography, land and other things into consideration to adopt ideas to our own land.

Such meetings are no longer held in Yabu village, he says though a group meets in Umusa village with 17 members under the direction of the NKF. Like most farmers, Kishimoto feels he knows most of what there is to know about raising sugar cane and no longer needs to discuss techniques.

Kishimoto has kept accurate records as to land use and time allocation for vegetable and rice cultivation, though he no longer does so. He kept them as part of a controlled experiment on a designated area of land. He approaches the cultivation of rice on a more scientific basis than he does sugar cane. For example he checks the daily temperatures and follows experiment station advice on transplanting, fertili-

zing, weeding and harvesting rice. He is in close contact with the NKF and makes a number of visits to the Nago branch of the experiment station. Most of Kishimoto's rice harvest is eaten at home, the remainder being given to his sons in Naha, one of whom pays for the fertilizer plus giving him $10 a month. Having resigned himself to a life of farming, Kishimoto sees the future of the Okinawan farmer as being quite dim:

> Agriculture doesn't pay back enough, so people prefer to work outside. When one gets old, he cannot find another job, so he must do agriculture. Anyhow, a farmer has to farm, no matter how poor he becomes, there is nothing else to do.

His answer to the problems facing Okinawan farmers is diversification, to plant a number of different crops so that lowering prices for one crop will not spell total disaster. If he had to do it all over again, he says he would not go into farming where he sees little future.

Mr. Yoshimoto, an 83-year-old retired mayor from Umusa village, Yabu township, is regarded as one of the most powerful men in Yabu and is one of the oldest. He was mayor of Nago and Yabu as well as chairman of the Yabu township assembly. What makes him an especially interesting person is his attitude toward the future. Last year he began planting papaya. He now has 1,500 tsubo (.5 hectare) planted in papaya.

He explains why and how he began:

> If I do nothing, I will become unhealthy. About two or three years ago there was an article in the newspaper asking why more people did not plant papaya in Okinawa. I thought I might be able to and took

> an interest in it. I visited the Nago branch of the experiment station and talked to them and did some research on my own. I visited Nakijin, Motobu and Yomitan where they are planting papaya. I was told I could make $2 per tree per year, but I doubted it. I planted 800 trees and now make $.50 from one tree. This year I will plant another 1,000 trees and from then on plant in groups of 500 tsubo (.16 hectares). The trees last for five or six years and then I will trim them short so they will grow up again and bear fruit.

Discussions of agriculture with Yoshimoto revolve around his plans for the next five or six years. It was interesting that he never referred to his old age and the fact that papaya cultivation requires long-range planning. He is convinced he can make a living from papaya in a few years and never shows resignation concerning the fate of the farmer in Okinawa. He is concerned about the lack of resistance papaya have to typhoons, but attempts to spread his investment by planting in different parts of his fields. Though he keeps no records, he speaks of the cost of seedling trees, the area planted, time allocation, expected profits and long-range plans without hesitation. He is a man that thinks optimistically about the future and makes no mention of the possibility that he might not be around to enjoy it.

Kitanakagushiku.-- Mr. Kinjo is a 36-year-old vegetable farmer in Chunjun village, Kitanakagushiku township. As a member of the horticultural cooperative, he sells his vegetables through that cooperative to the Quartermaster Corps for U.S. Forces. In addition to his 1,500 tsubo (.5 hectare) of vegetables, he plants 500 tsubo (.16 hectare) in sugar cane. He plants tomato, cabbage, lettuce, celery, radish

(daikon), onion, cauliflower, broccoli, carrot, spinach, sweet corn, egg plant and sweet potato. He himself decides what to plant, though in so doing, he takes the needs of the Quartermaster into consideration as evidenced by schedules received from the cooperative. The amount of work required in vegetable cultivation he estimates to be seven times that required for sugar cane cultivation.

Most of his knowledge concerning planting techniques has come from reading magazines, especially Nooka no engei (Horticultural Agriculture, which comes from Japan) and G.R.I. publications. He also attends meetings arranged by the cooperative, or less frequently the township or village, at which specialists speak on vegetable cultivation or, he visits the agricultural experiment station. Farming, he feels, just comes naturally:

> Mostly I feel that if a man is born to a farming family, then he will just naturally know what to do.

The NKF visits Kinjo's fields at least four or five times a year. Whenever Kinjo changes the kind of vegetable he is planting, wants to try a new technique, such as using vinyl for faster maturing of plants, or, has insect problems, he goes to talk with the NKF, who, he says, is very helpful. The ES comes less often, and is less helpful, Kinjo says. He is a member of the agricultural cooperative. The horticultural cooperative has no extension agent.

He sells surplus vegetables to local markets either in Koza or Futenma, and, sometimes to another vendor in Kitanakagushiku who resells to the military through the Quartermaster.

Kinjo also raises about 200 chickens and sells the eggs to the military through the vendor (mentioned above), or to the local market. One cow is kept for breeding purposes. Kinjo moved into Kitanakagushiku seven years ago and has found that over that period, he can make more money raising vegetables than had all his fields been planted in sugar cane, though he says, planting vegetables for the Quartermaster is precarious business:

> I think I am a little better off planting vegetables than sugar cane. Though last year if I had all my fields in cane, I would have made more money that way. But this year the price of cane went down so much that if all my fields had been in sugar cane, I would loose money. I think I have made more over the past seven years because vegetables are harvested on a shorter term and the price does not change so much between harvests. But to produce vegetables for the Quartermaster costs alot of money. I can use only chemical fertilizer and have to spray frequently and regularly. If the inspector finds one bug, everything is rejected.

The main problem he faces is selling his vegetables when he has a surplus and the military does not purchase the entire crop. He then must make trips to the nearby town markets to sell them if he can, sometimes even going as far away as Naha.

Summary

Rural Okinawa manifests a variety of conditions in spite of the smallness of the Island. Northern townships are generally smaller and more isolated than are central and southern townships. Some rice is grown in the north, but very little in south and central townships. Virtually no pineapple is grown in areas other than northern Okinawa and Yaeyama. The hills and mountains of Yabu in the north contrast

with the flatter land of Kochinda in the south. The availability of transportation and proximity of U.S. bases makes it more profitable for a Kitanakagushiku farmer to grow vegetables for market than it would be for a Yabu farmer.

The various crops cultivated by Okinawan farmers show different cycles of activity, and, therefore, a knowledge of their cycles is important for agricultural agents engaged in the dissemination of information. Sugar cane, for example, is a crop with intermittent periods of difficult labor and slack. Pineapple is much the same, though the periods of labor and leisure are not the same as for sugar cane. Both rice and vegetables require labor more continuously throughout the growing cycle, with fewer and shorter slack periods. It often appears that the annual round of village and township activities is not geared to the sugar cane cycle, but, because they are strongly influenced from Japan, is more in line with rice, and secondly, sweet potato. Events often must be cancelled because of the sugar cane harvest, such as the case of kyoshinkai in Kitanakagushiku. The sugar cane cycle is less stable than is the rice cycle, and a delay in settling on a purchase price can mean the delay in harvest.

Okinawan farmers are market-oriented. Their main concern is with marketing their sugar cane crop. They do not labor for food for the table, but expend their efforts on a crop that must be sold in the marketplace. Their orientation is outside the village, and, often outside the township. They often do not maintain close ties with other villagers

in the form of work exchange, but when extra labor is required, wage labor is sought. They are, in a general sense of the term, agricultural entrepreneurs.

Most see farming as a business, especially, they say, since they have begun growing nothing but sugar cane. This is especially evident in the character sketches of Mr. Higa and Mr. Kishimoto in Yabu and Mr. Kinjo in Kitanakagushiku. They keep records, plan the amount of crops to be planted in proportion to one another and follow schedules and advice given them by the experiment station. To them, and to many other Okinawan farmers, farming is a business, one to be administered in such a way as to bring a profit.

Many farmers in Okinawa are like the three mentioned above, but feel they have too much invested in sugar cane to change. They have seen the price of cane rise rapidly in the past, and feel it might do so again, and do not want to be caught without a crop if it does. They have also seen the price of cane drop suddenly because of higher production, and, feel the same thing could happen to any other crop they might cultivate. Their attitude seems to be, "as long as we might lose money in agriculture, we might as well lose it while cultivating a crop we can grow and possibly make a lot of money on."

CHAPTER NINE

CONCLUSION

Two questions were posed at the beginning of this thesis. The first question was, How is information from national agencies disseminated to the farmer? The second was, How effective is the present system of information dissemination? Of the two, the first is the easier to answer. The answer to the second follows from the presentation of data directed at answering the first, but, at the same time, involves going beyond the data in an attempt to assess, insofar as possible, the effectiveness of the information flow system in Okinawa. A third question, implicit in the approach taken, is, In what way does the information flow model point up strengths and weaknesses in the system of disseminating agricultural information in Okinawa?

The answer to the first question has been provided by the data presented in the preceding pages and all that remains at this time is to summarize the main points. Such a summary will lead into an assessment of the overall effectiveness of the information flow system, while at the same time providing the opportunity to test the utility of the information flow model.

From Source to Receiver

The flow of agricultural information begins primarily with the experiment station, the research agency of

the national government. The experiment station is continuously conducting research on the various crops cultivated by Okinawan farmers, particularly sugar cane, pineapple, vegetables and rice. Other agencies, such as the University of the Ryukyus and the Federation of Agricultural Cooperatives, to a lesser extent, also conduct research. Results of all research are coordinated by an Agricultural and Livestock Technical Liaison Committee which is composed of Okinawan experts from various fields of agriculture and animal husbandry.

The liaison committee decides whether research results are of sufficient importance to warrant dissemination throughout the Islands. Virtually all decisions about what kinds of information should be disseminated are made by the liaison committee. Another function is to give direction to the research efforts of the experiment station, however, the director of the experiment station and his staff also select areas of research on a day-to-day basis in light of general recommendations of the liaison committee.

The experiment station is itself not involved in the actual dissemination of information. Once results are obtained from its research they are reported to the liaison committee and the experiment station's task is ended. It has neither facilities nor responsibility for disseminating results of its research. The University of the Ryukyus and the Federation of Agricultural Cooperatives, on the other hand, are involved in disseminating their research findings as well as

those of the experiment station. Of the two, the federation employs extension agents (ES) whose job it is to work with farmers in the villages and townships and inform them of new cultivation techniques and developments in agriculture.

Once the liaison committee has determined a particular kind of information should be disseminated, it notifies the Economics Department of G.R.I. which then takes responsibility for dissemination. Since research results are often reported in highly technical language, a major task involves reformulating (encoding) the messages into symbols understandable to the average Okinawan farmer. This is the task of the extension information section of the G.R.I. Economics Department. Encoding is done almost exclusively in the Japanese language, which is understandable to virtually all Okinawans, except a few very old or very young.

Perhaps a more important task than encoding into Japanese is the selection of the appropriate channel to be used in dissemination. Bulletins from the experiment station are rewritten and issued in simpler language; calendars are produced indicating times to plant, weed, fertilize and harvest; agricultural pictorials, such as fukyu gaho are issued; pamphlets with both pictures and writing are issued; radio programs are produced for early morning airing; movies are made to be shown throughout the Islands; television shows are more rarely produced for broadcast; articles are rewritten for distribution to newspapers; slide shows are put together for distribution and showing in rural areas; posters are

made for village meeting hall and township office bulletin boards; and more technical bulletins are published for use by specialists such as the Agricultural Extension and Home Demonstration agents.

Encoding and channel selection are very important if the technical findings of the research specialists are to be disseminated and understood by the farmer/receivers who must ultimately put them to use. The same message is often encoded in a variety of ways and sent out over a variety of channels. There is little agreement regarding what those concerned with encoding and channel selection think to be the best channel. Some think television is better than printed media; others think meetings more effective; others indicate a preference for written reports because they can be consulted a number of times; and still others admit confusion and feel as many different channels as possible should be employed. Most seem to feel that face-to-face contact and demonstrations are effective, but are at a loss as to the best way to accomplish this.

A variety of channels are available from which a source can choose. The most obvious channel for the dissemination of agricultural information is the extension agent. There are three different kinds of agents in Okinawa: the home demonstration agent who works primarily with rural women; the agricultural extension agent whose task is to upgrade farming; and the farm management advisor, a representative of the Federation of Agricultural Cooperatives, whose job is very

similar to that of the agricultural extension agent, though focused more on farm administration and technical information.

In the past, extension and home agents were assigned to particular townships, however, the system was revised a few years ago. Now a team of agents is assigned responsibility for two or three townships. A number of reasons are given for the change, the most important of which seems to be that agents can now better center their attention on particular subjects and thereby better learn a limited amount of information and disseminate it. Budgetary restrictions also seem to have been a factor in that the new system is viewed as a more efficient utilization of existing monetary resources. There are both advantages and disadvantages to the change and these will be discussed below. Farm management advisors are situated in virtually every township, there being more than one in some. They are assigned to the agricultural cooperative office and find themselves required to carry out many tasks other than the dissemination of information.

Extension agents, who function as channels in the dissemination of information from national agencies to the farmer, become sources and must face decisions related to channel selection and encoding. They rely for the most part on the spoken word and face-to-face contact with farmers. They also make use of printed materials, though less frequently. The extension and home agents often attend meetings of various township and village associations in their attempts to reach a large number of farmers and housewives. The farm advisor

attends such meetings less frequently, but depends on his ties with the agricultural cooperative to bring him into contact with farmers.

Extension and home agents organize special interest and study groups, but these often prove to be short-lived. Women's Living Improvement Groups (seikatsu kaizen kai) have proven more easily organized and more long-lived than men's groups. In Yabu, for example, 200 women actively participate in 12 different groups, whereas, only one study group of 15 men exists. Such differential participation by men and women is most readily explained by reference to age. Young and middle-aged women actively seek to improve the conditions under which they live. Many of them are not the wives of householeads, but daughters-in-law. Young and middle-aged men, on the other hand, are not generally interested in making a living from agriculture and many work outside the township. Older men have a tendency to think they know most of what there is to know about farming and therefore are difficult to involve in study groups.

Both the township and village administration function as channels for the dissemination of agricultural information. The head of the township industrial section spends a good deal of his time informing farmers about new developments in agriculture. He is responsible for administering the middle-test fields and it is through these fields that new seedlings are distributed throughout the township. He works closely with extension agents in scheduling meetings and agricultural con-

sultation days (noogyoo soodan) as well as visiting farmers in their fields.

The township office is a depository for bulletins and other materials issued by the experiment station and G.R.I. Specialists are invited by township officers to speak at group meetings of township residents. Plans for agricultural development are drawn up in the township office, usually under the direction of the industrial section chief. Statistics covering the varieties and amounts of crops cultivated in the township are collected by township officials, which are then used as a basis for future planning.

Township officers depend primarily upon the village headman to carry out their plans and to disseminate information. The village headman is in closest contact with villagers and his primary duty is to serve as a communication channel between the township administration and residents of the village. Headmen meet regularly with township officials to receive information, which they then pass on at village meetings. Extension agents rely on the headman to inform villagers about meetings and to encourage attendance. It is the headman who usually decides, in conjunction with the industrial section chief, who in the village will be chosen to administer a middle-test field. Extension agents and township officials also depend on the headman to inform them of villagers' attitudes, as well as to keep them informed concerning amounts and kinds of crops being cultivated. Information flowing from village to township and from township to village nearly all passes through the village headman.

The headman is also responsible for seeing to it that the various agricultural contests, such as kyoshinkai, haruyama shobu and nogi shoreikai are carried out on schedule. He, with assistance from the township mayor or industrial section chief, serves as judge at these events. Village activities are times when most households come together. This provides them an opportunity for discussion of agricultural topics. These are even more important now because of the decline in study groups and special interest groups within the township.

Village and township festivals, such as bonenkai, abushibare, umachi and seinen iwai, are also the headman's responsibility. He must make certain they occur at the scheduled time and that everyone in the village is notified of time and place. He spends a major part of his time going from household to household informing them of news from the township office or of dates and locations of activities.

The village headman also serves as the local representative of the agricultural cooperative, the P.T.A. and assists leaders of the Women's Association and Youth Association in planning their meetings and lectures. The village meeting hall (kominkan) is used by these associations and the headman must coordinate their activities. He attends most meetings and serves as their advisor within the village. In some of the larger villages, headmen are assisted in their multifarious tasks by neighborhood group heads (hancho), but such is the exception rather than the rule. Of the three

datum townships, only Kochinda has active neighborhood groups (han).

The Women's Association and Youth Association are both organized to facilitate communication among their members about topics of special interest to the membership. Of the two, the Women's Association is more involved with the dissemination of agricultural information. In the rural areas, many women spend a good share of their time working in the fields, especially in those townships close to urban centers and military bases which provide work opportunities for men outside the village and township. Youth associations tend to focus more on athletic and social events and less on agriculture. Young people in Okinawaare oriented toward the towns and bases, away from village and township.

Women's associations often invite the home agent, and less frequently, the extension agent to speak before their membership. Women are told that to raise their position in Okinawan society, they most improve their economic base and this can be done through improved agricultural practices. The agents spend considerable time encouraging women to plant fruits and vegetables in the housing yard as a way of earning extra spending money.

Special women's groups devoted to agriculture are formed by the home agent (seikatsu kaizen kumiai) and by the agricultural cooperative (nokyo fujinbu). The purpose of the latter groups is to promote production, enrich the economy of the home and to increase family savings. These groups

are generally less active than the Women's Association, but since there is considerable overlap in membership and leadership, the Women's Association often takes on these functions as well and serving as a communication channel for the dissemination of agricultural information, initially to women, and, ultimately to men in the village.

The Youth Association is less active in the dissemination of agricultural information. The number of young men who stay on the farm is declining. A major concern of Okinawan farmers today is the exodus of youth from farm to city and town. Leaders of the youth associations in all three townships indicate the dissemination of agricultural information is important, but are at a loss as to how to accomplish this within their organizations.

In Kitanakagushiku, socializing and agriculture were combined in observation trips to agricultural sites. The Kochinda Youth Association, the most active of the three, has on occasion sponsored lectures and movies on agricultural subjects and found that more non-members than members attend. Four village youth associations in Kochinda cultivate their own fields, but this seems an exception rather than a common occurrence. Of the books in one Youth Association library in Kochinda, only 10 per cent are related to agriculture and the librarian says these rarely circulate. In Yabu, agricultural subjects are often discussed informally, but no activities related to agriculture are undertaken by the Youth Association there.

In some areas, there are Agricultural Youth Groups (nokyo seinenbu), but none are active in the datum townships. Extension agents in the three townships are all anxious to form viable groups devoted to agriculture among youth, but they have had little success due to a general lack of interest among youth. The Federation of Youth Associations is active as a pressure group to fight the sugar cane price decline, but such activity and concern does not seem to filter down to township and village associations.

Agricultural cooperatives are located in every township and it is the cooperative that employs the farm advisor. The cooperative is directly concerned with farmers and their problems, however, its focus seems to be on marketing sugar cane, encouraging savings, providing money for loans and purchasing and selling farm materials and other goods. Such activities, of course, involve the transfer of information e.g., the Yabu cooperative does not lend money for clearing new land for sugar cane cultivation, but does lend money for clearing new land for pineapple. The farm advisor spends a large proportion of his time in the cooperative office and talks with farmers when they come to the office, leaving little time to visit fields and talk with farmers there.

Information of a general nature is disseminated at annual cooperative general assemblies. Such meetings provide an opportunity for nearly all farmers in the township to meet, and, following the formal part of the assembly, there is much discussion of an informal nature about agriculture. The

horticultural cooperative in Kitanakagushiku is mainly involved in procuring vegetables from its members and reselling them to the Quartermaster for use by U.S. Forces. It does not employ an extension agent and is not actively engaged in disseminating information about cultivation techniques.

Mass media and education, though important in the dissemination of information of a general sort, are not important channels for the dissemination of agricultural information at the present time. Radio, television, newspapers, G.R.I. publications and agricultural magazines are readily available to rural dwellers in most areas, but are not widely used by them in obtaining new information. Seventy-five per cent of those in the three datum townships read a newspaper regularly, however, newspapers contain little agricultural information other than news items about sugar cane price negotiations. Less than one in four read magazines of an agricultural nature or G.R.I. publications devoted to agriculture. Radio and television sets are listened to and watched, but programming includes little of a direct bearing on agriculture.

The elementary and junior high school curricula include little instruction in agriculture. Agricultural high schools are found throughout the Island, but seem, for the most part, to attract students who found it impossible to obtain entrance to a non-agricultural high school instead of those who are genuinely interested in learning about agriculture. Students attending agricultural high schools tend to seek employment outside the township from which they came, only about one in four returning to farming after graduation.

An answer to question one, then, -- How is information from national agencies disseminated to the farmer? -- can be formulated in very general terms as follows. Information from national agencies is disseminated through a variety of channels, including: the Agricultural and Home Demonstration System; the Farm Management Advisor; township and village administration; formal associations, such as the Women's Association and Youth Association; the agricultural cooperative; mass media; and the educational system. Furthermore, information is exchanged between and among individuals within the township, both in the context of inter-personal, face-to-face contact and in group meetings. The channels function in varying degrees to disseminate agricultural information and their effectiveness in the dissemination of agricultural information can now be discussed.

Effectiveness of the Information System

Before attempting to assess the strengths and weaknesses of the information flow system, I would like to point out that Okinawan agriculture has made great strides in the last two decades. Okinawa was decimated by World War II. In addition to a great loss of life suffered in that war, physical damage was almost complete. Virtually no village was left untouched, and in central and southern Okinawa, entire villages were leveled. Okinawa had to be rebuilt from the ground up.

The task of rebuilding their country was an enormous undertaking by Okinawans. They had to clear and plant

fields while at the same time constructing homes to live in and village and township offices, as well as rebuilding their destroyed social structure. This all had to be accomplished while attempting to provide for the basic necessities of life. Such rebuilding has, for the most part, been completed. Okinawans who remember what it was like before the war all agree that the standard of living has far exceeded that of pre-war days.

In light of events of the past 20 years, one must conclude, I think, that the information dissemination system has proved quite adequate. Its overall effectiveness can be seen in the sustained rise in per capita earnings, in the possession of basic necessities by virtually all Okinawans, as well as in the proliferation of luxury items to many households. Farm production has increased steadily, even in the face of natural calamities, such as typhoons and droughts. The fact that more than 90 per cent of today's farmers cultivate sugar cane variety NCO 310 is one indication of the past effectiveness of the information flow system.

However, its overall effectiveness has not been a primary concern of this study thus far. Particular processes in the total information flow system have been dealt with throughout. It is possible, as a result of research conducted, to ascertain weaknesses as well as strengths in the flow of agricultural information. To facilitate discussion, assessment of these strengths and weaknesses is presented in the form of the source, message, channel, receiver model of the information flow system as outlined in detail in Chapter One.

Source and Message.-- A pressing problem is that of feedback from receiver to source. The information flow system is designed for the transfer of information from source to receiver, but does not seem well adapted to handle the flow of information from receiver to source. Feedback is important in the communication process because it is the way in which the source learns what effect its messages have had and to what degree the objectives are being accomplished, and, this, then, influences the encoding of future messages. The experiment station and the liaison committee should, if the information flow system is to be effective, be receiving feedback from farmers regarding messages transmitted in the past. There is little indication that such is the case, however.

Research efforts at the experiment station are determined by the liaison committee and by the director of the experiment station and his staff. Research is directed mainly at developing new seedlings, whether it be sugar cane or tobacco, or, at improved techniques which will cut down production costs of existing crops. Such research is important and necessary if Okinawan agriculture is to improve, however, it does not directly help the farmer solve what he considers to be his immediate problem -- the decline in sugar cane price. Farmers see themselves caught on a treadmill, continually producing more and more sugar cane with the aid of better seedlings developed by the experiment station, this higher production causing the price of cane to decline. As they produce more, the price goes down further, and so on.

The experiment station, and it seems the liaison committee, are too committed to the once-successful program of new and better seedlings to shift their emphasis and attack the problem from a fresh perspective. Were the experiment station and liaison committee more cognizant of the problems the farmers see themselves as facing, better solutions to these problems might be devised. Virtually all the leaders I talked with, including the head of the experiment station, pronounced a personal opinion that diversification of crops was one way out of the present sugar cane dilemma. But such a program is not being effectively communicated to the farmer.

One program put forth encouraged farmers to raise hogs for marketing. It was felt that this would relieve some of the pressure on sugar cane, and, since it was felt important, G.R.I. provided financial backing in limited amounts. What seemed to be happening, however, was that the government gave financial aid to large-scale hog raising operations, such as the one in Kochinda, and these had the effect of reducing the price because of the large quantities they were able to supply with less cost per unit. The farmer who was gradually building up his stock found the price dropping even before he could get one or two hogs to market. He was convinced that hog prices would follow the pattern of sugar cane prices, i.e., more production, lower prices, so he ceased raising hogs as a means of diversification, but only kept one or two.

If diversification is the answer to Okinawan agricultural problems, and I am not convinced it is, then the experiment station and liaison committee are faced with a difficult problem. It is more difficult to encourage farmers to change their overall way of farming, their farm administration, than it is to encourage them to plant a different variety of sugar cane which involves only minor changes in cultivation techniques. Lindstrom (1960), for example, has shown that Japanese farmers readily adopted changes in techniques, but were reluctant to adopt innovations that called for changes in basic operation and farm enterprise. This, I think, is the case with sugar cane in Okinawa.

Farmers will accept new techniques or a new variety of the same crop, as evidenced by the rapid spread of NCO 310, but are reluctant to change from sugar cane to another crop, or to a variety of other crops, i.e., diversification. The experiment station and liaison committee (as well as, of course, the channels disseminating information from these sources) are, for the most part, encouraging farmers to make changes in cultivation techniques and seedling variety, rather than the basic changes in farm operation which may be necessary to combat lowering sugar cane prices. The success of NCO 310 may be working against the future, rather than for it.

The need for feedback is great. The hiatus between source and receiver in Okinawa is best exemplified, I think, by the two widely separated estimates of the costs of producing one ton of sugar cane, the one from G.R.I., the other

from the farmers (see Chapter Three). Also, farmers feel they know most of what there is to know about cultivating sugar cane, and, the experiment station expends much of its efforts on sugar cane research, research most farmers will reject. It would seem that more research should be devoted to such crops as vegetables, and perhaps, pineapple. Rice research seems almost unnecessary. It is a crop of declining importance, grown only in scattered parts of the Island. Many farmers find it impossible to cultivate rice even if they wished because of poor soil, lack of water for irrigation and the threat of typhoons. The experiment station should be less crop- and technique-oriented in its research and should be discovering ways to disseminate information about farm administration, crop diversification and management practices, research which would also include more intensive studies of local conditions, social and physical.

Finally, it appears that the source of agricultural information relies too heavily upon the development of new information from within the system, rather than taking advantage of developments from outside the Ryukyus. Could not Okinawan agriculture take advantage of research results of the International Rice Research Institute in the Philippines, or the Taiwan Agricultural Research Institutes? Okinawa seems to be more oriented toward Japan, but it might make more sense for them to look closely at Hawaii and Taiwan, areas in which both pineapple and sugar cane are cultivated, instead of Japan which has little of either. Taiwanese and Hawaiian seedlings are often tested for suitability to Okinawan conditions, but more close contact might prove valuable.

Messages, for the most part, are encoded in printed form. Agricultural information is issued by G.R.I. in pamphlets, bulletins and magazines which are then distributed throughout the rural areas. Printed media seem to lend themselves better to disseminating information about new seedlings and cultivation techniques than to basic changes in farm administration. Two attempts to overcome this reliance on printed media are being made by the public information section of G.R.I. One is a "moving consultation" (idosodan) van. It is explained by the head of that section.

> We have idosodan once a month when possible. Persons from all sections of G.R.I. go to see the people to get their opinions and to give information about government policies. It covers a number of different subject areas, including agriculture.

The moving consultation van is not devoted entirely to agriculture, which actually receives little attention. It could be an effective means of disseminating information if more widely and frequently employed.

The second approach is called a "culture caravan." Its objective is basically the same, but it goes to areas too remote for the moving consultations. When possible, movies are shown and representatives from G.R.I. are available to answer questions. The head of public information explains:

> The members of the culture caravan cannot always answer the questions, for example, if people want to know how to get an agricultural road repaired, but if they cannot answer, they give the questions and opinions to the section in G.R.I. that is related to the question.

During the past year the caravan visited seven villages and

and the moving consultation visited ten. Nine persons are employed in these two operations on a full-time basis. They represent attempts to obtain feedback from farmers, but due to budgetary problems, both programs are very limited. It would seem they might serve a very useful purpose if money for their operation could be obtained.

Some conflict seems to exist between the kinds of messages being disseminated and the problems faced by farmers. Messages have changed little over the past few decades, except with regard to detail, but not meaning. Messages are still aimed at bringing about changes of a minor nature, not changes in overall farm administration or crop cultivation. Furthermore, messages are directed at persons who feel themselves to be "stuck" with farming as a livelihood, and miss entirely the youth of Okinawa. Greater attention should be paid to encoding messages that would interest youth in farming since without them the future of Okinawan agriculture is bleak.

This could be done, it seems, through greater use of audio-visual materials. Movies, when shown, have proven effective interest getters. Many young people attend agricultural movies when they are presented in the rural areas. G.R.I. should also pay greater attention to inclusion of agriculture as part of the elementary and junior high school curriculum. Television and radio should be used. Money for this might come from a cutback in other areas deemed less essential.

Channel.-- Effectiveness of the various channels discussed in this thesis should be fairly clear from the summary of each at the beginning of this chapter. Some associations, such as the Youth Association, do virtually no disseminating of agricultural information to their membership. The agricultural cooperative, though it does employ a farm advisor, does not have information dissemination as its primary focus. This is clear from the fact that advisors are often required to spend many of their hours in the cooperative office, rather than out talking with farmers. The Women's Association, though mainly concerned with other problems, does function as a channel for the dissemination of some agricultural information.

These associations, and the mass media and education, are not being employed to their full extent. Their organizational structure would easily permit use of them for the dissemination of agricultural information, however, G.R.I. does not deem to do so. The source (G.R.I.) relies almost entirely upon the formal channel of the extension agents. Use of alternate channels, such as the associations, would increase the likelihood of information reaching a greater number of receivers. The problems, however, are not so simply solved. The associations themselves do not involve the active participation of all village and township residents. A distinction has been made between association membership and activity. Membership in associations is in one sense voluntary, and as has been shown throughout, many of those

maintaining membership do not actively participate in association affairs.

Women within a certain age range and marital status are expected to be members of the Women's Association; youth are expected to belong to the Youth Association after completing school until they reach 25 or 30 years of age; and farmers are expected to be members of the agricultural cooperative. Active participation is not a requirement, but social pressure demands membership. The situation is similar to that described for common-interest associations by Norbeck (1962) in Japan:

> Many of the Japanese associations on the buraku [village] level are branches of larger organizations. . . .No legal provisions today require membership in any buraku association, whether instrumental or expressive, but social and economic pressures serve, for most people, to make membership in a large part of the groups obligatory. On the local level, membership in associations is not by ascription. One joins them, but membership often comes close to being ascribed (p. 77, emphasis in original).

Association membership depends on age, sex, occupation and special interests. Membership is virtually mandatory, but participation is not required. Thus, many associations incorporate a number of members who do not actively participate. Members do not always join the association for a particular reason, but often because, "it was the thing to do at the time."

The various associations do, however, facilitate the flow of information from national agencies to the villager. Within the village it is brought under the control of a few

key individuals who are responsible for translating overall government plans and programs into terms compatible with local conditions. These individuals mediate between nation-oriented groups and individuals and community-oriented groups and individuals. These individuals are the leaders of the associations and cooperatives, the extension agents and the local officials. The situation is very similar to that found by Eric Wolf (1956) in Mexico. He termed such mediating groups and individuals as "brokers":

> The study of the 'brokers' will prove increasingly rewarding, as anthropologists shift their attention from the internal organization of communities to the manner of their integration into larger systems. For they stand guard over the crucial junctures or synapses of relationships which connect the local system to the larger whole. Their basic function is to relate community-oriented individuals who want to stabilize or improve their life chances, but who lack economic security and political connections, with nation-oriented individuals who operate in terms of the complex cultural forms standardized as national institutions, but whose success in these operations depends on the size and strength of their personal following (p. 1076)

The leaders of various associations, then, function as "brokers" in the flow of information. Such leaders command information of two types: first, they, as members of the local community, are knowledgeable about local conditions; and, second, they are in possession of information passed to them from national agencies.

It is not necessary, then, for each villager to participate directly in the flow of information. This is true if there exist individuals and groups at the village level who participate. Ideally, associations, professionals

and administrators at the village and township levels serve this function. It has been shown, in the case of Okinawa, that sufficient "brokers" can be found within the datum townships who function as channels for the dissemination of agricultural information. It is,then, incumbent upon the source of agricultural information to more fully employ these "brokers" in its attempts to disseminate information, especially if the messages to be disseminated beoome more complex as will be necessary to solve current agricultural problems.

At the other extreme from the lack of use of associations for the dissemination of agricultural information is the overuse, or channel overload, of the extension agents and the village headmen. Under existing conditions, these are the two most-used channels in disseminating information. The many duties of headmen and extension agents need not be reiterated to demonstrate this. Both are constantly involved in obtaining and transmitting information. Increased reliance on associations and cooperatives might relieve some of the overload, thereby increasing effeciency.

Perhaps greater cooperation between the farm advisor of the cooperative and the extension agent would lead to a reduction of channel overload. Their functions in large part overlap, and, in addition, both are required to spend considerable time in their office in non-dissemination tasks. If they could cooperate and divide the workload, it might make for more farmer contact. This, of course, would require cooperation between the Federation of Agricultural Cooperatives

and G.R.I., something which does not seem likely to occur in light of present attitudes of each toward the other.

Village headmen might be better paid so they would not feel the conflict between their occupation and temporary duty as headmen. They might become officials of the township office, with concomitant salaries which would allow them to devote full time to their administrative tasks with no worry about earning a living. If such were the case, it would be possible for them to remain as village headmen for longer periods, removing the problems inherent in rapid changeover, usually from year-to-year. As salaried officials within the township administration, they might also find a rise in prestige, and the position might become once more a position of importance within the community, rather than an onerous duty that must be met.

Receivers.-- Any change in the existing information flow system must be ultimately measured against the needs of the receiver. This, of course, is primarily a problem of feedback as discussed earlier in this chapter. More information must be known about the local conditions and farmer attitudes if effective changes are to be made. It appears that there is lack of articulation between the messages being disseminated and the needs of farmers as they see them.

But there is more to the problem than this. Farmers must be better trained in the utilization of information once they receive it. At the present time, farmers, on the average seem to think they know how to grow sugar cane and do not need

new information in order to do so adequately. If the kind of information is changed to indicate the need for diversification or more efficient agricultural administration, farmers would realize there is more to agriculture than they had imagined.

Such education must begin with the youth. More courses devoted to agriculture must be available to elementary and junior high students. Study groups must be organized and maintained, and their topics should not focus on new techniques and methods, but on a new way of agriculture. An awareness of the problem must be stressed, and, only then can the solutions be made acceptable.

The breakdown in communication is usually blamed on the recipients of the transactions, not on the structural nature of the system. The existing network, however, demands that receivers seek out information, that they make use of available channels. This they do not seem willing to do. They have done so in the past, however, as evidenced by the rapid spread of sugar cane variety NCO 310, as well as, by the kinds of changes which have occurred in rural Okinawa over the past 10 or 15 years. Perhaps the blame should rest with both, but, as has been stated, much of the information being disseminated is not felt by the farmer to be relevant to existing problems.

Extension agents and association leaders bemoan the lack of interest and participation on the part of most farmers. The inability to form viable, continuing agricultural study

groups or 4-H clubs and low attendance at most association meetings are cited as indications of this lack of interest. It should be pointed out, however, that women do actively participate in special interest groups. This is because the topics being discussed are seen by them as relevant to the solution of some of their current problems. Such an approach must be taken if the disinterested farmer is to be reached. The existing structure is adequate for reaching those with an interest, but not for reaching those who are, for one reason or another, disinterested. The information being disseminated must be made more relevant to the farmers before they will seek it out.

Farmers might be motivated more by movies, slide showings, television and radio programs, or other more interesting approaches. Mass media have proven effective channels for initiating interest in agricultural subjects (Lindstrom, 1960). The extension agent and others are in a much stronger position to make improvements if the information they have to offer is directed at sustaining this aroused interest and providing ways of solving the problems raised. Radio, television and newspapers should be employed to encourage farmers to seek out answers to questions raised over the mass media. A close coordination between the extension agents in the field and the source should be maintained so that the extension agent answers questions raised through mass media. A farmer who is not interested in solving his problem, or who has no idea how to do so, is not likely to seek new information.

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