THE UTILIZATION OF MICHIGAN STATE UNIVERSITY AGRICULTURAL PUBLICATIONS IN SELECTED VOCATIONAL AGRICULTURE ACTIVITIES

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ABSTRACT

THE UTILIZATION OF MICHIGAN STATE UNIVERSITY AGRICULTURAL PUBLICATIONS IN SELECTED VOCATIONAL AGRICULTURE ACTIVITIES

By James Eugene Wall

Purpose. To determine the nature of use and extent of use of college type agricultural publications in vocational agriculture activities.

Method. A sample of twenty-four publications, stratified according to a distribution classification and randomly selected from within strata, was treated in eighteen vocational agriculture activities. Data were obtained by means of the depth interview technique from twenty-five Michigan teachers who had been teaching vocational agriculture a minimum of two years, and who had been in the same department one or more years.

Findings and implications. Following are eighteen activities ranked in descending order of the extent to which publications were used in them: (1) professional growth and self-improvement of teachers, (2) supervised study, (3) individual instruction, (4) reviewed by teacher

prior to introducing the topic in out-of-school classes, (5) assisting students to identify main ideas, (6) small-group instruction, (7) assisting students to interpret tables, charts, and other graphics, (8) assisting students to evaluate date-of-printing and source, (9) listing publication as a reference in student notebooks, (10) used in "decision-making" for student farming programs, (11) encouraging out-of-school class members to read publications, (12) used by students to make individual reports, (13) borrowing by students, (14) assisting students to evaluate table of contents and index, (15) assignment of publication parts for out-of-classroom study, (16) reproduction of publication parts for all-day students, (17) reproduction of publication parts for out-of-school classes, and (18) browsing or leisure-time reading by students.

Composite extent-of-use scores indicated that publications in Class C (popular) were used to a significantly greater extent than those in Class B (semi-technical), and those in Class B were used to a significantly greater extent than those in Class A (technical).

Correlation coefficients computed between composite extent-of-use scores of publications and their mean raw scores of readability approached zero. Low correlation

coefficients indicated that readability of publications was not associated with the extent to which they were used.

Teachers thought timeliness, ease-of-reading, and adaptability to local conditions were features which all publications should possess. The "Available Publications" list and the "Agricultural Education Service Letter" were the two main agencies by which teachers maintained an awareness of publication release.

Findings concerning the utilization of publications imply that: (1) publication use may have relevancy to the teachers' perceptions of their roles as educators, (2) teachers may be considered as a primary audience of the agricultural scientist, (3) extent of publication use for teacher self-improvement may be an index of the vocational agriculture teachers' contribution to the "two-step" flow of agricultural information, and (4) some effort needs to be expended in determining suitability of publications before students use them.

Most teachers allow students free access to publications. Over half of the teachers kept single copies of publications in their private files for personal use, and

maintained separate files of multiple copies for student use. Pamphlet file boxes were used more than any other method of storage, with sliding-drawer, steel or wooden file cabinets second, and "pigeon-hole" cabinets third. In all but two departments publications were kept in the classroom. Twenty per cent of the teachers had adopted the AGDEX indexing system for filing publications. No definite standardized or uniform indexing patterns were found among the remaining eighty per cent of filing systems.

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By

James Eugene Wall, Sr.

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TABLE OF CONTENTS

LIST OF TABLES

Table Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Publications acquired from various origins constitute a major source of agricultural information used by teachers of vocational agriculture in their instructional programs. Sources of such information in general use are: (1) commercially prepared books and publications used as references, (2) farm and agricultural magazines, (3) publications prepared by the home-state agricultural education teacher-trainer staff, (4) United States Department of Agriculture Farmers Bulletins and other Federal government publications, (5) publications from colleges of agriculture in adjoining states, and (6) publications from the home-state college of agriculture. This study was limited to only those publications produced by a home-state college of agriculture. Specifically, the study was confined to those publications produced by the College of Agriculture at the Michigan State University which are made available to Michigan departments of vocational agriculture.

Publications in Michigan are prepared under a joint editorial agency known as the Department of Information Services of Michigan State University. This editorial unit

services both the Agricultural Experiment Station and the Cooperative Extension Service. Agricultural Experiment Station publications are prepared for scientists doing agricultural research and technically trained agricultural personnel; whereas, Cooperative Extension Service publications are designed primarily to convey information to the general agricultural public of the state. Information from both groups is based on the results of scientific research studies which were conducted under Michigan climate, soil, crop, and livestock conditions.

All these publications are made available to teachers of vocational agriculture, who use them in the three types of classes characteristically taught by them. Such classes are composed of: (1) all-day or high school students, (2) young farmers facing problems in getting established in agriculture, and (3) adult farmers who are seeking to improve their agricultural status. Questions often arise as to how teachers of vocational agriculture use this type of publication in their classes as well as to what extent they use them. Answers to these questions are sought by teacher trainers and state vocational agriculture consultants who work directly with high school teachers of vocational agriculture. Cooperative extension service workers also are interested in this information.

This chapter will: (1) present information to render evident the need for a study of this problem, (2) state the problem in detail and list pertinent aspects concerning the problem, (3) present definitions of terms necessary for a better understanding and interpretation of the ensuing material, and (4) state the basic assumptions which, to some extent, served as points of departure in making the study.

A. Need for the Study

The importance of these publications to teachers of vocational agriculture and their constituents cannot be over-estimated. Such publications have become one of the important vehicles for diffusing technical and applied agricultural information.

Publications produced at the home-state college of agriculture, and referred to in this study as college publications, were rated highest in value as sources of information by farmers enrolled in the institutional on-farm training program.[1] They also were rated very important by

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[1]Central Regional Conference on Research in Agricultural Education, Report of the Cooperative Study of Institutional On-Farm Training in the Central Region (Danville, Illinois: The Interstate Printers and Publishers, Inc.,1952), pp. 54-56.

adult farmers.[2] The main reason given was that the information contained in them frequently was more appropriate for the home-farm situation, i.e., it seemed to be better suited to local farming needs than information available from other sources. A reason less frequently mentioned was that the information disseminated in publications from the home-state college of agriculture seemed to be more up-to-date or timely.

From the standpoint of teachers, the material found in these publications not only lends itself to timely and orderly presentation, but also to subsequent reference and review when reference is necessary. Review, or re-referral, often is necessary in the decision-making process or farm-practice-adoption process. The classes of the teacher of vocational agriculture are formalized in that they are characterized by continuity of presentation of subject-matter. The follow-up or application phase is an integral part of the instructional program. Thus, the teacher is readily available to the farmer or student during the critical trial and adoption stages of the decision-making process,

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[2]Barton Morgan, Glenn E. Holmes, and Clarence E. Bundy, Methods in Adult Education (Danville, Illinois: The Interstate Printers and Publishers, Inc.,1960), p. 150.

when review and subsequent references need to be made in order to bolster a decision already tentatively concluded. The way and extent to which teachers of vocational agriculture utilize these publications in guiding students and farmers in the decision-making process needs detailed study.

Viewed from the sociological standpoint of the communication process, these publications are used best where two-way communication with the agency representatives is possible.[3] Two-way communication as referred to here means a face-to-face exchange between a farmer or student and an institutionalized agency representative, such as the teacher of vocational agriculture, the local county extension agent, or extension and research staff members at the home-state college of agriculture.

The teacher of vocational agriculture by virtue of his position is in an excellent situation to develop and maintain good two-way communication with his constituents because those with whom he works live within the school district and reside relatively close to each other. His on-farm visits keep him in close contact with the local

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[3]Herbert F. Lionberger, Adoption of New Ideas and Practices (Ames: The Iowa State University Press, 1960), pp. 7-8.

farming situation. Supervision of his all-day students' farming programs helps the teacher to maintain contiguity with parents who also attend high school functions. Many of these parents attend adult classes in agriculture at the school, although they often would not go the distance to the county seat for similar types of meetings. All of this provides a kind of local accessibility for the teacher of vocational agriculture not ordinarily enjoyed by most other agricultural agency representatives. The teacher, therefore, has ample opportunity to become locally known and to become an integral part of the community.

By maintaining this two-way communication and face-to-face relationship, the teacher can be of great assistance to students and farmers in defining the path of action to a goal or decision. Consequently, the more specifically defined the path of action to a goal, the more likely the path will be followed. Likewise, the more specific the suggestion which a personal contact makes, the greater the likelihood that the advice or guidance will be followed.

The publications treated in this study come from an institutionalized structure that acts as a source for

originating, collecting, and disseminating information about new developments in farming and agriculture. Coming as they do from an institutionalized structure, such publications frequently are viewed as containing the most authoritative information available to farmers. The extent to which the teacher of vocational agriculture evaluates this authoritativeness, or assists his constituents in making the evaluation, needs consideration.

Workers in the Michigan State University Cooperative Extension Service have expressed a desire to know how publications prepared by them are used by Michigan teachers of vocational agriculture. Richardson[4] indicated that of some 2,000,000 publications produced annually by the Michigan State University Department of Information Service, Michigan teachers of vocational agriculture receive approximately one-tenth or 200,000 copies each year. A knowledge of the nature and extent of use of these publications would be beneficial to extension workers who produce and disseminate them.

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[4]Earl C. Richardson, Extension Editor, Department of Information Services, College of Agriculture, Michigan State University, in an interview, October 1960.

Further need for a study of publications used by teachers of vocational agriculture was revealed in a recent Indiana study.[5] Education specialists were asked to rate the importance of twenty-five purposes of vocational agriculture. These specialists numbered thirty-two in school administration, thirty-three in curriculum construction, and thirty-nine in agricultural education, for a total of 104. Their ratings yielded a "quantitative hierarchy indicative of the order of importance of 25 purpose items and a set of purpose scores amenable to statistical treatment."[6]

Of the twenty-five vocational agriculture purposes rated by the specialists, the one ranked first according to importance was: "To assist students in developing the ability to organize and apply technical agricultural knowledge and information to the solution of farm problems."[7]

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[5]Norbert J. Nelson, Frank J. Woerdehoff, and John K. Coster, "The Appraisal of Programs of Vocational Agriculture and Industrial Education, --- Vocational Education in Public Schools as Related to Social, Economic, and Technical Trends: Part II"(Lafayette, Indiana: Division of Education, Purdue University, 1960).

[6]Ibid., p. 25.

[7]Ibid., p. 54.

In view of the overall importance of the entire Purdue University study, the soundness of the procedures used, and the implications and inferences that were drawn from it, this writer felt that the purposes rated were of special significance to this study. This seemed especially so with respect to the purpose which was rated first. The meaning implied by this purpose indicated that it is the explicit function of each teacher of vocational agriculture to assist and guide his constituents in making wise decisions through the use of scientifically derived agricultural knowledge and information, i.e., <u>that</u> which is conveyed in the type of publication treated in this study.

Insofar as this writer could determine, thorough studies of the contributions made by this type of publication to these aspects of the vocational agriculture teacher's program have not been made.

B. The Problem

The utilization of state agricultural college publications by teachers of vocational agriculture was the basis of this study. Utilization as used in this study refers to how and in what activities publications are used, as well as the extent to which they are used.

The identification and analysis of instructional practices and activities employed by Michigan teachers of vocational agriculture in the use of technical and applied information found in publications emanating from the College of Agriculture at the Michigan State University served as a basis for determining the nature and extent of use of this type of publication. In order to describe further the central problem of this study, it seemed feasible and desirable to utilize a stage concept similar to that theorized by rural sociologists in depicting the farm-practice-adoption process. The stages of this concept are: (1) awareness, (2) interest, (3) evaluation, (4) trial, and (5) adoption.[8]

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[8]North Central Rural Sociological Committee, Subcommittee for the Study of the Diffusion of Farm Practices. How Farm People Accept New Ideas. North Central Regional Publication No. 1 (Ames, Iowa Agricultural Extension Service, November 1955).

In the awareness stage, the teacher becomes cognizant of the existence of a publication. Among the many ways by which he becomes aware of a publication's existence are: (1) from other teachers, (2) from the local county extension agent, (3) from service- or news-letters sent from the college agricultural education teacher-trainer staff, (4) from the state vocational agriculture consultant staff, (5) by attending in-service meetings, conferences, and workshops, (6) by making field trips to college and branch agricultural experiment stations, (7) from the state cooperative extension service available-publications lists, and (8) from agricultural and educational activities held on the campus of the state college of agriculture. In the awareness stage, he has only general knowledge about the publication. He knows little more than the title, almost nothing of its special qualities and its potential usefulness, or how it would likely work for him or for his constituents.

At the interest stage, the teacher develops enough concern about the publication to become more aggressive or active in seeking its source. He attempts to gain more information about its contents. Here probably is the

point at which he pauses to order or attempts to secure from the local county extension agent a copy or copies of the publication. Some teachers may delay the ordering of this type of publication until summer when replenishing the stock of publications becomes one of the activities connected with reorganizing the departmental files. Other teachers may order periodically throughout the year.

Upon receipt of the publication the teacher probably performs what can be termed the evaluation stage. One teacher may evaluate the contents by leafing through the publication, then places it in his files, whereas another teacher may spend considerable time in weighing the information contained in the publication. At this point the teacher may begin to be concerned about its readability and whether it can be understood by his constituents (all-day students, young farmers, and adult farmers). He may apply one of many readability formulas to determine the reading level of the publication. In any event, this is the stage in which the teacher determines mentally to either include the publication among his other already acceptable references or to reject it as unsuitable for departmental reference material.

In the trial stage, he introduces the publication to his constituents. The teacher and his constituents may jointly make further evaluation of the merits of the information found in the publication and determine its applicability to local farming conditions. Based on this group judgment it may be determined that competent outside assistance is needed to make most effective use of the information. On the other hand, it may be found that the publication supports, enhances, or complements the practices already known or decisions already made. At this stage it may be considered as a supplementary reference until it gains wider acceptance and gradually becomes a primary reference.

In the adoption stage, the publication receives more extensive use. It may be more prominently displayed than other publications containing similar information when that subject is under study and it is referred to more frequently than other publications. It may receive increasingly more extensive use in the review and referral phases of the decision-making process. It gradually becomes accepted as a primary or basic source of information for those who are seeking solutions to problems through the aid of reference materials of the vocational agriculture department.

The stages of such a theoretical concept are not necessarily distinctly separate, nor is it implied that these stages are the most appropriate terms to use. Furthermore, it is not implied that these stages are universally followed by all teachers of vocational agriculture, nor are they used exclusively to describe the process of procurement and utilization of only college agricultural publications. The same process may apply equally as well to other forms of reference materials utilized by the teacher of vocational agriculture.

What these stages do represent is a useful way of describing a relatively continuous sequence of action, events, and influences that intervene between initial knowledge about a publication and the actual adoption or final acceptance of it as a basic reference for the department of vocational agriculture.

There seem to be stages by which college publications are procured and used by teachers of vocational agriculture. The purpose of the present study was not to actually define each of these stages in any great detail. Conversely, the purpose of this study was to identify and analyze some of the practices involved in these stages

based on the interview responses from a sample of teachers of vocational agriculture in Michigan. Information was sought regarding the procurement procedures, the extent to which the publications were used, and the nature of the practices employed in their use.

This study attempted to discover some of the answers to the following questions:

1. What are the instructional activities in which teachers use these publications?

2. How and to what extent do teachers use these publications in these activities?

3. What sources or agencies do teachers use to maintain an awareness of revised and recently released publications?

4. What are some of the characteristics and features of the publications which are deemed important by teachers?

5. How do teachers store and file these publications?

6. Do teachers determine the reading level of this type of publication and use them accordingly?

C. Definition of Terms

The following definitions are given in order to clarify terms which will be used frequently throughout this study. For the sake of brevity certain contracted terms will be used throughout the remainder of the study. These are indicated in the definitions.

1. Adult farmers. These are adults who are gainfully employed in the business of farming and who regularly attend adult farmer classes taught by teachers of vocational agriculture. They usually are married.

2. Adult-farmer class. Such a class is an educational program providing systematic instruction designed to help solve problems confronting adult farmers. The program is conducted by a teacher of vocational agriculture.

3. All-day class. This is a class in vocational agriculture composed of high school students who are taking vocational agriculture as one of their high school subjects. It is taught by a teacher of vocational agriculture.

4. All-day students. This refers to students who are enrolled full-time in the high school and who are taking vocational agriculture as one of their high school subjects. When the term students is used it will refer to this definition.

5. Combination young- and adult-farmer class. This type of class is an educational program providing systematic instruction designed to help solve problems confronting both young and adult farmers. Combination classes usually are found where the teacher deems it advisable, for one reason or another, not to conduct a separate class for each group. Hereinafter, when the term combination class is used, it will refer to this definition.

6. Extent-of-use. As used in this study, extent-of-use denotes the degree to which teachers indicated they used publications, relative to other types of references on the same subject, in the various instructional activities treated in the study. This term includes the quantitative dimension.

7. Individual instruction. This term refers to the teaching and study procedures adapted to the differing interests, abilities, and needs of individual students. This type of instruction is basic to such plans of classroom, shop, and laboratory organization as the project method and the problem method. Steps in individual instruction may be listed as: (1) the individual states his problem, (2) he lists questions, (3) he lists

references, (4) he reviews with the teacher before consulting references, and (5) finally he seeks answers to questions which form the bases for decisions.

8. Instructional activity. This is any singular element of teaching method, practice, or procedure used with all-day classes, young-farmer classes, adult-farmer classes, or combination young- and adult-farmer classes.

9. Instructional orientation. This is the process of making students aware of methods of teaching that will be used throughout their vocational agriculture enrollment, and of principles of interpreting and conceptualizing in the use of reference materials found in vocational agriculture. It denotes the assistance given students in order for them to obtain a sufficiently inclusive background of a particular body of knowledge, study, or procedure, so that they can better grasp and understand individual steps in the light of the whole, and thereby reach a sound conclusion or decision. When the term orientation is used it will refer to this definition.

10. Method of teaching. Method is a planned procedure to an end. It is the setting up of a sequence of events, experiences, or activities so as to get the desired

behavior and adoption of practices. Method per se does not exist, but is derived from the nature of the following raw materials: (1) the problem to be solved, (2) the group with whom the teacher will be working, and (3) the objective to be developed. It is a standard procedure in the presentation of instructional material and the content of activities. A method may, and frequently does, involve more than one instructional practice.

11. Nature of use. This refers to the processes, influences, principles, and policies determining the use made of the publications. It is based on the premise that the manner of utilization determines the effectiveness of the publications. It may be conceived as a plurality of formative agencies, influences, or principles governing the use of the publications. The term is not restricted to the totality of finite agencies and forces, but may be a phenomenon of creative and guiding intelligence on the part of an individual teacher. This term includes the qualitative dimension.

12. Out-of-school class. This term includes all young-farmer classes, adult-farmer classes, or combination young- and adult-farmer classes that are taught by teachers of

vocational agriculture, i.e., all classes taught other than high school classes.

13. Procurement of publications. This refers to the procedures and agencies through which teachers of vocational agriculture become aware of and obtain publications for use as references in their instructional programs.

14. Publications. As used in this study, publications refer to those bulletins, folders, monographs, circulars, etc., which meet the following criteria: (1) they are produced by the College of Agriculture at the Michigan State University, (2) they are made available to Michigan teachers of vocational agriculture, and (3) they have been classified according to the policy set forth in the Plan for Distribution of Michigan State University Publications to Teachers of Vocational Agriculture (Revised June 20, 1957).[9]

15. Reference evaluation. This term means appraising or judging the worth or value of reference materials used in vocational agriculture teaching. If performed jointly by the teacher and students, it is considered as a step in analyzing information in preparation for decision-making.

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[9]Appendix A.

16. Small-group instruction. This is the teaching of two to six persons the same thing at the same time. Steps listed in the definition of individual instruction may apply as well for small group instruction.

17. Supervised study. A type of study procedure in which the teacher is present and helps direct or guide the students in their quest for knowledge. It usually is recognized as one of the steps in the problem solving approach to teaching vocational agriculture. It also is considered as a phase of directed study. Steps listed in the definition of individual instruction may apply also to supervised study.

18. Teacher of vocational agriculture. One who is employed by a public school and who teaches one or more classes of vocational agriculture for which reimbursement is paid the school from funds provided by the Smith-Hughes[10] and subsequent acts. When the term teacher is used it will refer to this definition unless otherwise indicated.

19. Tenure. This term is used to define the length of service of one teacher in one school.

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[10]United States Congress, Public Laws of the United States of America Passed by the Sixty-Fourth Congress, 1915-1917 (Vol. XXXIX, Part 1, Washington, D.C.: United States Government Printing Office, 1917), pp. 929-36.

20. Vocational education in agriculture. This term includes those educational activities relating to training present and prospective farmers for proficiency in agriculture as a phase of the instructional program provided through the public school with financial assistance from the Federal government. The contracted term vocational agriculture carries the same meaning.

21. Young farmers. These are young adults who are gainfully employed in the business of agriculture and who regularly attend young-farmer classes taught by teachers of vocational agriculture. They usually are over the age of high school graduates and are in the process of becoming established in agriculture.

22. Young-farmer class. This is an educational program providing systematic instruction designed to help solve problems confronting young farmers. The program is most generally conducted by a teacher of vocational agriculture.

D. Basic Assumptions

Certain assumptions are listed below which were believed to be fundamental to the realization of the purposes of this study.

1. It was assumed that publications as defined in this study make up an essential part of the reference materials in the instructional programs of teachers of vocational agriculture.

2. It was assumed that teachers' responses, judgments, and opinions received during interviews were reliable and valid. It was assumed further that what teachers said they did with regard to the practices they follow in using this type of publication is highly correlated with what they actually have done.

3. It was assumed that schools in which the sample teachers were located were uniform with respect to facilities for procuring and using publications.

4. It was assumed that those publications which have been classified according to the plan for distribution are representative of all the Michigan State University College of Agriculture publications that are made available to

teachers of vocational agriculture. It also was assumed that the sample of publications selected randomly for use in the study was representative of all publications that are made available to teachers.

5. It was assumed in this study that those publications which have been classified according to the distribution policy apply directly to the program of vocational agriculture as taught in Michigan public schools. For the purposes of this study, it was further assumed that all publications within each classification carried equivalent weight with respect to value.

6. It was assumed that teacher growth is a continuum and that information obtained at the time of interview with the teacher was an adequate expression of the situation as it existed at that time. However, due to the existence of the growth continuum, it is expected that changes would have occurred since the time the interviews were conducted.

CHAPTER II

REVIEW OF LITERATURE

An exhaustive survey of related literature yielded an enormous collection of works that had some bearing on this study. Bibliographies compiled by workers in agricultural education, rural sociology, and communication were consulted. An extensive bibliography in the National Project in Agricultural Communication of the Michigan State University yielded a wealth of pertinent literature. Various books and periodicals in the above mentioned fields were reviewed. Among the major sources consulted were Dissertation Abstracts[1] and Summaries of Studies in Agricultural Education.[2,3,4,5,6,7,8,9,10,11,12,13,14,15,16]

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[1]University Microfilms, Inc., Dissertations Abstracts, Vol. 14, No. 2 through Vol. XXI, No. 12; Abstracts of Dissertations and Monographs in Microform (Ann Arbor: University Microfilms, Inc. 1943-1961).

[2]Summaries of Studies in Agricultural Education, U.S. Office of Education, Vocational Education Bulletin No. 180, Agricultural Series No. 18, United States Government Printing Office, Washington, D. C.: June, 1935, 196 pp.

[3]Summaries of Studies in Agricultural Education, Supplement No. 1, Interstate Printers and Publishers, Danville, Illinois: September,1943, 199 pp.

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[4] Summaries of Studies in Agricultural Education, Supplement No. 2, U. S. Office of Education, Vocational Division Bulletin No. 237, Agricultural Series No. 57, United States Government Printing Office, Washington, D. C.: 1948, 120 pp.

[5] Summaries of Studies in Agricultural Education, Supplement No. 3, U. S. Office of Education, Vocational Division Bulletin No. 242, Agricultural Series No. 59, Office of Education, United States Government Printing Office, Washington, D. C.: 1950, 61 pp.

[6] Summaries of Studies in Agricultural Education, Supplement No. 4, U. S. Office of Education, Vocational Division Bulletin No. 246, Agricultural Series No. 61, Office of Education, United States Government Printing Office, Washington, D. C.: 1951, 48 pp.

[7] Summaries of Studies in Agricultural Education, Supplement No. 5, U. S. Office of Education, Vocational Division Bulletin No. 248, Agricultural Series No. 62, Office of Education, United States Government Printing Office, Washington, D. C.: 1952, 62 pp.

[8] Summaries of Studies in Agricultural Education, Supplement No. 6, U. S. Office of Education, Vocational Division Bulletin No. 251, Agricultural Series No. 63, U. S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1953, 100 pp.

[9] Summaries of Studies in Agricultural Education, Supplement No. 7, U. S. Office of Education, Vocational Division Bulletin No. 253, Agricultural Series No. 64, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1954, 75 pp.

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[10] Summaries of Studies in Agricultural Education, Supplement No. 8, U. S. Office of Education, Vocational Division Bulletin No. 256, Agricultural Series No. 66, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1955, 108 pp.

[11] Summaries of Studies in Agricultural Education, Supplement No. 9, U. S. Office of Education, Vocational Division Bulletin No. 263, Agricultural Series No. 68, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1956, 89 pp.

[12] Summaries of Studies in Agricultural Education, Supplement No. 10, U. S. Office of Education, Vocational Division Bulletin No. 265, Agricultural Series No. 69, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1957, 94 pp.

[13] Summaries of Studies in Agricultural Education, Supplement No. 11, U. S. Office of Education, Vocational Division Bulletin No. 272, Agricultural Series No. 71, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1958, 86 pp.

[14] Summaries of Studies in Agricultural Education, Supplement No. 12, U. S. Office of Education, Vocational Division Bulletin No. 275, Agricultural Series No. 72, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1959, 56 pp.

[15] Summaries of Studies in Agricultural Education, Supplement No. 13, U. S. Office of Education, Vocational Division Bulletin No. 282, Agricultural Series No. 75, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 1960, 90 pp.

[16] Summaries of Studies in Agricultural Education, Supplement No. 14, U. S. Office of Education, Vocational Division Bulletin No. 291, Agricultural Series No. 77, U.S. Department of Health, Education, and Welfare. United States Government Printing Office, Washington, D. C.: 56 pp.

Abstracts and titles contained in these major sources were of such import that it was thought desirable to obtain copies of some of the original literature for a more detailed review than was possible from the abstracts alone. Some of the educational institutions from which certain of the studies were requested refused to forward them to the Library of Michigan State University. This hindered the search in original literature, but the abstracts appearing in the aforementioned annotated bibliographies were used in such cases.

This review of related literature was conducted for the following major reasons: (1) to acquire some knowledge about the history and importance of this type of publication in order to construct an adequate study outline or research proposal; (2) to ascertain whether previous research had been conducted for the purpose of discovering how and to what extent teachers of vocational agriculture used such publications; (3) to determine if research techniques existed which seemed appropriate for conducting this study; (4) to discover ideas and suggestions concerning activities in which this type of publication might be used that would be appropriate for inclusion in the

schedule or data-gathering instrument; and (5) to make comparisons of findings reported in earlier studies with the findings of the present investigation.

In preparing this review, parts of the studies have been classified into four major divisions which make up this chapter. These divisions are composed of literature which dealt with: (1) the role of publications in the dissemination of agricultural information, (2) the procurement of publications by teachers, (3) the selection and evaluation of publications used in vocational agriculture, and (4) the storage, filing, and instructional uses made of publications found in vocational agriculture departments.

A. Role of Publications in the Dissemination of Agricultural Information

1. The Communication Process. The importance of publications as a means for conveyance of agricultural information was touched upon briefly in the introductory chapter of this study. This importance cannot be overemphasized. However, it must be emphasized here that publications constitute only one of the many ingredients that go to make up the communication process. Likewise, mere numbers of ingredients do not necessarily make the process

effective. Berlo[17] indicates that "it is the blending, the dynamic interrelationships among the ingredients," that determines the effects of the communication process.

In addition to the publications, a few other ingredients which influence the process of communicating agricultural information are: (1) the teacher, (2) his constituents, and (3) the abilities and experiences of both parties. The complexity of the process is magnified because of the variation of the ingredients. Due to their age differential, differences in their experience, and the degree of responsibility thrust upon them, high school students and adult or young farmers will possess somewhat different problems. The type of information that would be suitable for one group might not necessarily meet the needs of the other. Blizzard[18] found that teaching high school boys about fertilizers was for information and understanding,

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[17]David K. Berlo, The Process of Communication (New York: Holt, Rinehart and Winston, Inc., 1960), pp. 26-27.

[18]Paul T. Blizzard, "The Role of Vocational Agriculture Teachers in Boosting the Per Capita Income of North Carolina Farmers Through Fertilization," (unpublished Master's thesis, North Carolina State College, Raleigh, 1959), 49 pp.

whereas, teaching adults was for adoption of new and approved fertilization practices.

Format and style, readability, and means of dissemination also are important parts of the communication process.

Any discussion on the process of getting agricultural information from source to audience would be incomplete without considering briefly at least one of the theoretical communication models that have been postulated. One such model was advanced by Schramm.[19] He lists three essential elements of communication for his model: the source, the message, and the destination. Berlo[20] and others have expanded this model to include: (1) the communication source, (2) the encoder, (3) the message, (4) the channel, (5) the decoder, and (6) the communication receiver.

The use of publications by teachers of vocational agriculture may be adapted to this theoretical model. In so doing, the source becomes the agricultural entity

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[19]Wilbur Schramm, The Process and Effects of Mass Communications (Urbana: University of Illinois Press, 1954), pp. 3-26.

[20]Berlo, op. cit. p. 32.

sponsoring the research and the research scientist as encoder converts the report into a printed message or signal contained in a publication. The message is disseminated by means of many channels. The teacher as decoder reconverts the message into information for his constituents, who are classified as the receivers.

If any of these elements in the process are deleted or by-passed, the ultimate effectiveness of the message is altered. For instance, should the high school student of vocational agriculture be given a publication to study without getting any assistance from the teacher, it is extremely likely that his interpretation would not be the same as though the teacher (decoder) had aided him. In the use of these publications as references in his instructional program, the teacher becomes an interpreter of the message of the agricultural scientist. By the same token he becomes an audience for the scientist.

2. The Farm Practice Adoption Process. Rural sociologists have pioneered in the attempt to bring about a better understanding of how farmers adopt new or improved agricultural practices. To do this a theoretical stage concept was advanced, the steps of which are, awareness,

interest, evaluation, trial, and adoption.[21] Some writers have referred to this process as the "diffusion process," "decision-making," and "problem-solving." Irrespective of the labels which have been used to identify the process, the consensus among writers seems to be that the steps are relatively the same.

College publications may not serve as well in certain stages of the farm practice adoption process as they do in others. At the awareness stage, the mass media, farm magazines, television, radio, and newspapers, appear relatively more influential than any other source.[22] At the interest stage, mass media and other farmers are most often used as sources of information. Agricultural agencies, including teachers of vocational agriculture and county extension agents, rank a close third at this stage.

In the evaluation stage, fellow farmers who have had requisite experience are the information sources most in demand, with agricultural agencies ranking second. At the trial stage, the same is true, with agricultural agencies again ranking a close second. During the final

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[21] North Central Rural Sociological Committee, loc. cit.

[22] Lionberger, op. cit., pp. 26-31.

adoption stage, the person's own experience and the experiences of fellow farmers are deemed most important as sources, with agricultural agencies still considered as the source ranked second. Agricultural agencies are used to reinforce decisions already made or they provide additional information on the various aspects of outcomes resulting from having applied the practice.

Farmers have been classified into various adopter categories according to the rapidity with which they adopt a new agricultural practice after it has been recommended by the entity performing the research. These categories are innovators, early adopters, early majority, late majority, and laggards.[23] According to Lionberger,

> . . . these [agricultural] agencies are more important for people who adopt new practices soon after their introduction than for people who adopt them later.[24]

Those persons falling into the innovator and early adopter groups ordinarily have larger farms, higher incomes, more risk capital, and are more willing to take risks than the average farmer in their respective areas.

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[23]Everett M. Rogers, "Categorizing the Adopters of Agricultural Practices," Rural Sociology, XXIII (December, 1958), pp. 345-54.

[24]Lionberger, op. cit., p. 27.

They usually are middle-aged or less and, according to Lionberger,

> . . . broad spatial orientation is ordinarily a distinguishing characteristic. Not only do they participate in more formal groups, they participate relatively more in those that take them to the county level and beyond. . . . [They] have a wide range of contacts with originating sources of farm information, and often do not wait for research findings to be published. They go directly to experiment station personnel to learn about the latest research being done. . . . They remain in close contact with the agricultural agencies. . . . [25]

Persons falling into the early majority and late majority categories have about average-sized farms and corresponding incomes in their respective areas. However, due to the large number of farmers who fit into these groups, considerable variation exists. Their participation in formal groups usually is confined to the church and other local groups. As indicated by Lionberger,

> The great majority are generally receptive to new ideas about farming, but may not be actively seeking them. . . . They read farm information articles in newspapers and magazines but ordinarily do not read the more technical ones. They also use radio and television frequently but generally remain aloof from agricultural agencies as information sources.[26]

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[25] Ibid., pp. 38-39.

[26] Ibid., pp. 40-41.

Persons categorized as laggards or late adopters ordinarily have smaller farms and subsistence operations. They usually are middle-aged and older. The desire for security and declining physical energies characterize this group. By virtue of their being security oriented, they are more inclined to adhere to the tried and tested practices which seem safer. Farmers in this group generally do not participate in formal groups other than the church. Contacts for agricultural information are ordinarily confined to nearby farmers. Lionberger[27] states that, "with this group, the almanac is important, while the agricultural agencies are virtually out of the picture." Frequently, they develop unfavorable attitudes toward agricultural agencies as acceptable sources of information and depend upon local dealers whom they have known for some time.

As indicated previously, many farmers, irrespective of the category into which they may fall, use personal sources for their agricultural information. These personal sources may be nearby farmers or farmers who are

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[27] Ibid., p. 40.

viewed as being technologically competent. Farmers who are sought as sources of information are more likely to be placed in the innovator and early adopter groups. They are the ones who tend to use agricultural agencies, such as the vocational agriculture teacher and the county extension agent, as sources of agricultural information.

It is conceivable that the effectiveness of the work of the agricultural agencies with the majority of the population may be indirect, for people who are influenced by the agricultural agencies may in turn influence others. This aspect of communication is commonly referred to as the two-step flow of information in the communication process. To measure this indirect influence is difficult. Likewise, to measure the extent to which publications contribute to the knowledge of the teacher as he participates in the two-step communication process also would be difficult. However, the extent to which teachers use these publications for their own self-improvement probably can be considered as one index of this contribution.

3. Importance of Publications in Vocational Agriculture. As they go about the tasks of assisting their constituency in solving agricultural problems, teachers of vocational agriculture need reliable sources of information as a basis for their teaching. Their teaching cannot extend beyond their own knowledge. By referring to the type of publication treated in this study, teachers and their constituents can find those facts which have been determined by scientific research. The importance which teachers attach to state-produced publications is evidenced in the following studies.

Based on the results of a forty-one-state study, Miller[28] listed the ratings given different types of publications by ninety-two teachers of vocational agriculture and ninety-one county cooperative extension agents. The study revealed that approximately eighty-one per cent of the teachers and ninety-four per cent of the extension agents rated "extension bulletins and circulars," as being "important," or "very important," as sources of information

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[28]Howard Leland Miller, "Procedures for Improving the Use of Publications in the Communications Process by Professional Leaders in Agricultural Education" (unpublished Doctor's dissertation, The Ohio State University, Columbus, 1959), p. 43.

for use in their instructional programs. The popular series of experiment station publications were rated lower in importance, with technical and research publications next in descending order. The United States Department of Agriculture publications were rated still lower by these teachers and agents.

Ridenour,[29] in a questionnaire survey of thirty-four teachers of vocational agriculture, found that they wanted: (1) handbooks of experiments, (2) presentation of research information in film strips, (3) to automatically receive newly released publications, and (4) to be able to purchase publications in quantities large enough for classroom use. Here again the desire for publications produced within the state seemed apparent.

While the general consensus among professional agricultural workers is that publications rank high as to importance, they have been criticized and may be subject to some improvements. The nature of the criticisms may indicate the direction of needed improvements. Miller[30]

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[29]Harlan E. Ridenour, "Procedures Used by Ohio Vocational Agriculture Teachers in Using Research Data Published by the Ohio Agricultural Experiment Station" (unpublished Master's thesis, The Ohio State University, Columbus, 1952), 138 pp.

[30]Miller, op. cit., p. 47.

found that professional users stated the publications were "not timely enough and too few were available." Other comments were that the publications did not contain recommendations, draw conclusions, or keep technological developments up-to-date. Research publications were criticized because of readability, degree of detail, and level of technicality.

Professional agricultural workers generally have agreed that the publications were not adequate enough in either quality or quantity of information to meet the demands of their respective programs. This inadequacy was emphasized further in studies that dealt with farmer-opinions as to what type of information they thought they needed in order to make sound decisions. According to some writers, college publications may not be making their maximum contribution in the decision-making process if the information contained in them is based on farmer-opinions. In this regard Lionberger stated:

> Evidence indicates that college publications do not always provide the information that farmers *think* (italics in the original) they need in regard to new technology. Nor do they give them the knowledge about local conditions necessary for making management decisions.[31]

Potentially, the effectiveness of college publications might be increased if certain improvements were made as to subject-matter content. Johnson and Haver, based on interviews with 1,075 farmers in eight midwestern states, indicate that extension services tend to under-emphasize information in the following areas:

> (1) new methods which would help farmers operate for maximum profit; (2) human factors which would enhance the family satisfaction aspects of farming; and (3) information on institutions, the human element and home technology which would help farmers organize farms.[32]

Johnson and Haver also indicate that experiment station publications tend to under-emphasize:

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[31] Lionberger, *op. cit.*, p. 7.

[32] Glenn L. Johnson and Cecil B. Haver, *Agricultural Information as an Aspect of Decision Making* (Department of Agricultural Economics, Agricultural Experiment Station Technical Bulletin No. 273. East Lansing: Michigan State University, 1960), pp. 7-8.

> (1) information on prices and new technology which would aid in operating farms to maximize profits; (2) information on institutions, home technology and the human element, relative to existing production methods, which would help in operating farms to maximize family satisfaction; and (3) information on institutions, home technology and human elements, as an aid in organizing farms.[33]

Although based on the farm management aspects of agriculture, these criticisms may give direction to publication improvement and enhance the effectiveness of these publications for both professional agricultural workers as well as farmers.

Studies of farmer preferences as to types of agricultural information needed by them are not new. Nor are preferences voiced years ago radically different from those of today; at least in principle they are similar. Crandall[34] stated that he and his associates conducted experiments with 1,000 farmers in 1920-1921 "to determine the nature of subject matter needed by teachers of vocational agriculture for instructional purposes." Indications were that farmers then were "eager for original data which were applicable to their problems,

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[33] Ibid., pp. 8-9.

[34] W. G. Crandall, "Servicing the Agricultural Teacher," The Agricultural Education Magazine, 1 : 5, August, 1929.

data which had been accumulated over a long period of years, data which had been originated near home, and data which were up to date." Further indications were that much of the unpublished experimental data of the time needed to be put into bulletin form for wider distribution which would include teachers of vocational agriculture. Thus, it appears that the importance of publications of the type treated in this study has been realized for quite a long period of time.

Despite the many advantages of the publications used in teaching vocational agriculture, there are still some limitations. One of the major limitations is that they require reading rather than personal contacts as a means of obtaining information. Although the publications may be had free from the county agent's office, the state college of agriculture bulletin office, and, in some instances, from the vocational agriculture teacher; and although they are used in supervised study in the classroom; their use still requires active effort on the part of the information seeker. Usually the quest for information by means of a publication occurs when the seeker wants additional information about a particular thing that he already knows something about.

Publications cannot provide personalized advice or show how the recommended practices can be specifically applied to a particular farm situation. The use of publications presupposes a certain amount of independent action, initiative, and aggressiveness which are not ordinarily required when personal sources are used. Hence, it would be expected that the more progressive and competent farmers, teachers, and students would make greater use of publications.

B. The Procurement of Publications by Teachers

A number of different plans for distribution of college publications have been advanced so that teachers can procure needed materials for instructional purposes. However, the problem of lack of awareness by teachers that a publication exists has never been solved completely. Efforts to overcome the lack-of-awareness problem have been made by including in distribution plans a provision which stipulates that teachers should receive automatically, at no cost, single copies of each newly released or revised publication.

After reviewing the publication the teacher may then order additional copies to be used with his constituents. These additional copies usually are sent free and orders are based on some classification procedure. This classification scheme ordinarily is based on the numbers of all-day students, young farmers, and adult farmers served by the teacher. Should schools require more copies than the classification scheme allows, then additional copies may be purchased at a nominal charge.

One such distribution plan was proposed and put into operation by the University of Wisconsin in 1941. Fay,[35] who developed the plan, reported that it seemed to be successful. The plan provided that single or multiple copies of certain publications, depending upon their classification, would be sent free to all departments of vocational agriculture. The more popular publications, or ones which the teachers needed in quantity, could be procured at cost-price. The plan met with enthusiastic support and approval by teachers.

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[35]Ivan G. Fay, "The Wisconsin Plan for Bulletins," The Agricultural Education Magazine, 14:125, January, 1942.

A copy of the distribution plan for Michigan is found in Appendix A[36] of this report. This plan, or policy statement, was developed in 1952 and revised in 1957. It provides for many of the procurement procedures mentioned previously.

As indicated at the outset of this section on procurement, awareness of the existence of available information remains a problem for the teacher of vocational agriculture. Deyoe interviewed thirty Illinois teachers of vocational agriculture in an effort to identify program adjustments that had been made in order to keep pace with the rapid technological changes in agriculture. He found that:

> Teachers in 25 departments (of a total of thirty indicated various problems in securing up-to-date references and teaching aids. Approximately one-third of these mentioned some difficulty in obtaining materials about recent developments in some phases of agriculture. Of concern to several teachers is the lag between some of the recommendations from the College of Agriculture and those from some other sources.[37]

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[36] Appendix A.

[37] George P. Deyoe, "Adjusting Local Programs of Vocational Education in Agriculture to Changes in Agriculture" (unpublished Staff Study, Urbana, Illinois: Division of Agricultural Education, University of Illinois, 1959), p. 60.

The time-lag between the release of a publication and the receipt of it by the teacher is sometimes great. To overcome this problem, lists of publications are made available periodically to teachers and county agents in some states. Many states mail these lists automatically, but in Michigan they are made available to teachers only upon their request.

The nature of the information sometimes determines the degree of difficulty with which the teacher can procure it. Some types of agricultural information are long-lived while other types are considered to be rather short-lived. Price and outlook information is ordinarily considered to be short-lived, whereas production information is generally viewed as long-lived. Byram pointed out the importance of reducing the procurement problem for teachers when he stated:

> Many states are working out effective means of narrowing the subject matter gap. These include in-service conferences, short courses, workshops, and graduate courses, previews of new publications, and preparation and dissemination of recent informational releases to name only a few. A recent development in Michigan may be of interest here. Our Department of Information Service of the College of Agriculture decided that dependence on published bulletins alone for new subject matter is too slow for this jet

> age. So, for the past two years there have been fewer new bulletins, but these are being supplemented by what are called Fact Sheets of more current, newer technical information.
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> After two years of trial with county staffs of the Cooperative Extension Service these are now also being made available without charge to all teachers of vocational agriculture in Michigan who have requested them. Sets of 146 of these were distributed this fall through in-service education meetings of teachers. These Fact Sheets are indexed and filed in a large, attractive, specially built and lettered cover, purchased by local schools through the state association of teachers of vocational agriculture. Many feel that this is the most significant single step in the past twenty-five years taken cooperatively by the Colleges of Agriculture and of Education to help teachers keep abreast of agricultural technology.[38]

The practice of distributing these Fact Sheets has not been in operation long enough to determine its value. However, it is the opinion of this writer that an evaluative study comparing the effects of information disseminated through Fact Sheets and that disseminated through bulletins would be needed after the former has been in operation for some time.

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[38]Harold M. Byram, "Challenges to Leadership in Agricultural Education in the Golden Sixties," Journal of the American Association of Teacher Educators in Agriculture, 1:1, April, 1961.

King[39] conducted a study to determine if a loose-leaf style notebook would provide the physical characteristics necessary to improve the effectiveness and efficiency of printed agricultural material. Commercial and educational organizations were contacted as well as eleven teachers. Looseleaf materials were used to some extent in all schools visited. The extent of their use depended on their availability. Teachers agreed that standardization of size resulting from use of the looseleaf style notebook would make printed materials easier to file and handle. Principal advantage of looseleaf style was that materials could be kept in a permanent binder without losing flexibility in organization.

Some teachers request publications based only on lists provided by the disseminating agency. Others perform a thorough analysis of their instructional programs by dividing enterprises into job units. References are then listed and adjudged as to primary and supplementary

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[39]Harold Darling King, "The Looseleaf Notebook: A Possible Means of Enhancing the Use of Printed Agricultural Material in High School Vocational Agriculture Teaching," (unpublished Master's thesis, University of Wisconsin, Madison, 1954), 44 pp.

value and are requested according to this analysis. Such a procedure was outlined by Nelson[40] some years ago. Though time consuming, the procedure seemed to assure that adequate references could always be found in the department.

Sanders,[41] in an effort to obtain publications, requested them from forty-one different sources, including government agencies and commercial producers. He concluded that: (1) it was not too difficult to procure technical publications and the cost was relatively small; (2) to maintain an adequate supply of up-to-date publications required constant effort on the part of the teacher; (3) small requests, sent regularly, were most effective in procuring publications; (4) technical publications were available on practically all agricultural practices; (5) information should be supplemented as new data become available; and (6) sources should be acquainted with the

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[40]Gordon Vernon Nelson, "References for the Agricultural Instructor," (unpublished Master's thesis, Virginia Polytechnic Institute, Blacksburg, 1928), 367 pp.

[41]Robert Willard Sanders, "Providing Technical Publications for Use in Bacon County High School Vocational Department," (unpublished Master's thesis, University of Georgia, Athens, 1951), 33 pp.

fact that publications requested are for use in departments of vocational agriculture.

C. Selection and Evaluation of Publications for Vocational Agriculture

Various criteria have been formulated for selecting different types of reference materials for use in departments of vocational agriculture. Some of the criteria which have been used are: (1) subject-matter content, (2) method of presentation, (3) readability, (4) cost, and (5) physical features, such as size, format, and attractiveness.

The following literature dealt with the problem of selecting reference material. Though all of the studies did not deal directly with college or governmental publications, some of the criteria used are applicable to their selection.

Warren[42] used the following criteria for selecting instructional materials for a Georgia department of

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[42]Howard M. Warren, "Providing Instructional Materials for Use in the Warwick High School Vocational Agriculture Department, Warwick, Georgia," (unpublished Master's thesis, University of Georgia, Athens, 1955), 39 pp.

vocational agriculture: (1) instructional material must contain the latest information pertaining to the subject to be dealt with, (2) the information must be appropriate to local situations and conditions, (3) it should be based on scientific experiments and observations, and (4) it must stimulate interest.

Boyd[43] found in a questionnaire study of 100 teachers that they selected reference books for the following reasons in this descending order of importance: (1) subject-matter content; (2) the book was in the department when the instructor arrived on the job; (3) printing, size, and clearness; (4) cost; (5) recommended by teacher-trainers; (6) table of contents; (7) graphs, charts, and diagrams; (8) overall attractiveness; (9) recommended by a district supervisor; and (10) adequacy of the index. It was noted in this study that readability was not mentioned as a criterion for selection. The

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[43]Charles R. Boyd, "A Study of Reference Books More Commonly Used in Courses of Vocational Agriculture in Oklahoma," (unpublished Master's thesis, Oklahoma State University, Stillwater, 1953), 93 pp.

fact that the questionnaire was composed of open-end questions, and the fact that teachers do not ordinarily determine the readability of references, would tend to explain why readability did not occur as a criterion for selection.

Haff[44] developed a score card for selecting reference books which was based on ratings given effective criteria by sixty-seven teachers in New York. Ratings given were: (1) subject-matter content, thirty-seven per cent; (2) readability, seventeen per cent; (3) illustrations, thirteen per cent; (4) organization of material, twelve per cent; (5) format, eleven per cent; and (6) the author's training and experience, ten per cent.

Cardozier and Carpenter[45] conducted a study among Tennessee teachers to determine how they selected reference books for their departments of vocational

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[44]Floyd Robert Haff, Jr., "The Selection of Reference Books in Vocational Agriculture," (unpublished Master's thesis, Cornell University, Ithaca, 1960), 88 pp.

[45]V. R. Cardozier and Louis A. Carpenter, "Practices Used in Procuring Reference Books for Vocational Agriculture Departments in East Tennessee," (unpublished Staff Study, Department of Agricultural Education, University of Tennessee, Knoxville, 1958), 14 pp.

agriculture. They found evidence to indicate that most teachers selected their own books and some expressed a need for outside assistance in selecting all types of reference materials. The writers found no patterns of financial arrangements for purchasing reference materials.

People who have made studies on selection of reference materials generally agree that, in addition to items previously discussed, the following also should be considered in the selection process: (1) recommendations of other teachers are not always a valid base for reference selection, (2) all materials should be tested for readability, (3) some financial arrangements should be made to cover cost of materials, and (4) student evaluation of materials appears to be highly important.

The means by which information is presented in publications has significant bearing on their nature of use and extent of use. As a criterion for selection of reference materials this should not be overlooked.

Clark[46] attempted to discover how farmers, farm boys enrolled in high school vocational agriculture, and

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[46]Clyde Farrell Clark, "Methods of Presenting Results of Agricultural Experiments," (unpublished Master's thesis, Mississippi State University, State College, 1939), 95 pp.

professional agricultural workers prefer to have the results of experiments presented when the results were to be used as bases for making decisions. He found that:

> Contrary to popular opinion, farmers, farm boys, college students in agriculture, and professional workers in agriculture (647 out of 976), when using the results of an experiment as the foundation for a decision, preferred to have the results of the experiment in tabular form, and then, a clear explanation of the more important conditions under which the experiment was conducted. Those methods in which there was a detailed statement of the conditions under which the experiment was conducted were more popular than those which were indefinite with regard to these conditions. Methods of presenting results should undoubtedly vary to some extent according to the type of experiment.[47]

McJunkin[48] tried to determine if the time-lag between the time when corn practices were discovered through research and the time they were adopted on the farm could be reduced by changing the methods of presenting research data. He found that: (1) information published as a unified body of knowledge on a single subject is more thoroughly understood and more readily applied than if

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[47] Ibid., p. 94.

[48] Murry Carpenter McJunkin, "Development and Measurement of the Effectiveness of Different Methods of Presenting Data Obtained in Studies of Efficient Corn Production," (unpublished Doctor's dissertation, Pennsylvania State University, State College, 1949), 195 pp.

published in separate articles, (2) research information must be organized into a body of unified knowledge by someone other than the vocational agriculture teacher, and (3) the gap between research and farm practice is primarily a lack of understanding because of faulty presentation of information.

Readability as a criterion for selection should not be under-emphasized. Readability of reference material should correspond to the reading level of those persons who will use it. By giving students publications which contain technical information that is beyond their comprehension, their interest is discouraged rather than stimulated toward seeking facts to use in solving their problems.

Reading is one of the most important learning procedures in vocational agriculture. It is important because there is such a wide variety of written material in agriculture with which one should become familiar if he is planning to work in that area. Likewise, reading is important because it is a method of self-education. To the teacher of vocational agriculture it is of considerable importance in his program because he frequently has students working on individual problems. The success of this

learning process is entirely dependent upon the ability of the student to understand the available written material on the subject. Explanation of material is possible but is necessarily limited by lack of time on the part of the teacher and by the likelihood that the student would not ask for assistance. For maximum reading effectiveness the student must possess the ability to read and must have available to him material that is comprehensible to a person of his reading ability.

The reading level that a student has attained is the result of his own ability, the training that he has received, and the degree to which he has applied himself. His ability to understand publications containing agricultural information also may be influenced to some extent by previous farm experience. His reading habits influence his reading level. For instance, the amount and type of reading material which he has used will influence his reading rate and his comprehension.

McPherson[49] studied the degree of comprehension of students and the parts of publications that require

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[49]David E. McPherson, "A Study of the Readability of University of Tennessee Agricultural Extension Service Publications and Leaflets for Boys Taking Vocational Agriculture in High School," (unpublished Master's thesis, University of Tennessee, Knoxville, 1957), 113 pp.

explanation by the teacher in order to get reasonable understanding. He used forty-eight students in one high school and the publications found in the department of vocational agriculture at the school. Among his more significant findings were that twenty-five per cent of the publications could not be understood by first-year high school students. Students with eighth grade reading ability had reasonable understanding of approximately sixty per cent of the publications. First-year students had satisfactory understanding of fifteen per cent of the publications and seven per cent could not be understood by second-year students.

McPherson also found that the parts of the publications which were considered most difficult were: (1) statistical tables, (2) mechanical drawings, and (3) charts. Individual items that were considered most difficult were: (1) technical terms, (2) chemical symbols, and (3) abbreviations. It was recommended that teachers offer small-group and individual assistance to the students in the use of the publications. Also, the teacher should select with great care all reference materials that will be used by students.

Christensen[50] studied those agricultural textbooks and bulletins which were used most in departments of vocational agriculture in the Pacific Region. He found that publications produced at the state level on the whole were easier to read than those disseminated by the United States Department of Agriculture. Among his other specific findings, the following seemed pertinent: (1) thirty-one per cent of state bulletins were suitable for students in the seventh and eighth grades, (2) eighty-six per cent were suitable for ninth and tenth graders, and (3) ninety-nine per cent were suitable for eleventh and twelfth grades.

He further indicated that on the average experiment station bulletins were one-half grade level more difficult than extension bulletins. Technical bulletins and circulars on the whole were too difficult for high school students. Most farmers' bulletins produced by the Fereral government were suitable for eleventh and twelfth graders, while leaflets and miscellaneous publications were suitable for ninth and tenth graders. Christensen recommended that

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[50]Howard Christensen, "The Readability of Agricultural Textbooks and Bulletins," (unpublished Master's thesis, Colorado State University, Fort Collins, 1953), 123 pp.

teachers take great care in selecting reference material. He also stressed that frequency of use does not necessarily mean proper readability of a publication.

Bentley and Galloway[51] reported on a study of the comparison of readability of reference books with the reading ability of the students using them. The Dale-Chall Readability Formula[52] was used to determine the readability of the ten books most frequently found in Indiana departments of vocational agriculture. Two tests were used to measure the reading ability of vocational agriculture students. The Cooperative English Tests, Test C1, "Reading Comprehension," was used to measure general reading ability. Iowa Tests of Educational Development, Test 6, "Ability to Interpret Reading Materials in the Natural Sciences," was thought to yield the best index of ability to read technical materials in agriculture.

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[51]Ralph R. Bentley and R. Edward Galloway, "A Comparison of the Readability of Vocational Agriculture Reference Books with the Ability of Students Using them," Journal of Experimental Education, 29:373-383, June, 1961.

[52]Edgar Dale and Jeanne S. Chall, "A Formula for Predicting Readability: Instructions," Educational Research Bulletin, 27:37-54, January 21, 1948.

Several implications were drawn from that study which were deemed important enough to the present study to include here. They are:

(1) It seems apparent that if a single vocational agriculture textbook were selected for use by students in a given grade, some students would experience difficulty reading any but the most readable portions and some would find all but the most difficult portions distressingly easy. Therefore, it seems desirable to use a variety of reference materials with varied readability in each agricultural subject area.

(2) Teachers cannot assume that a student is an average reader because he possesses average mental ability.

(3) When authors and publishers prepare agricultural reference books, they should give special attention to book readability and the reading ability of vocational agriculture students.

(4) The fact that vocational agriculture students consistently scored higher on the test of ability to read natural science materials than on the general reading test suggests that the ability to read agricultural references may be specific and different from general reading ability.

(5) Teachers of vocational agriculture should include readability as a factor in the selection of reference books.

(6) Teachers of vocational agriculture should give special attention to the reading problems encountered by their students.[53]

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[53]Bentley and Galloway, op. cit., pp. 382-83.

Gartley[54] administered the Iowa Silent Reading Test to 225 vocational agriculture students to determine their reading level. He recommended that teachers of vocational agriculture develop functional reading procedures as an integral part of their instructional programs, such as: (1) reading rate; (2) reading for main ideas; (3) word recognition; (4) skimming; (5) reading for sentence, paragraph, and complete passage comprehension; (6) location of information; (7) reading for details; (8) reading to follow directions; (9) reading graphs, maps, charts, and tables; (10) reading to organize; and (11) reading critically.

D. Filing, Storing, and Using Publications

Upon receiving new publications, the teacher's next problem is to adequately care for them. Publications should be filed and stored so they will remain as attractive and serviceable as possible to students. They should be so arranged that they can be found easily and returned to storage with minimum effort after use. The methods by

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[54]Boyd C. Gartley, "Reading Ability in Relation to Achievement in Vocational Agriculture," (unpublished Master's thesis, Pennsylvania State University, State College, 1952), 59 pp.

which publications are filed and stored has a direct bearing on the nature of use and the extent of use to which they are subjected. There have been numerous filing systems outlined for teachers to use.

Among the first filing systems recommended to teachers for their use was one advanced by Hammonds.[55] His plan was a simple modification of the Dewey Decimal System. The plan was formulated on the basis that each enterprise, whether crop or animal, had the same general subdivisions, thus giving uniformity to the classification. Hammonds also suggested that a card index, although not necessary, would make the use of the system more convenient.

Oglesby[56] sent questionnaires to selected teachers in Georgia and similar questionnaires to twelve agricultural colleges in the Southeastern United States to determine what filing systems were in use. He developed criteria to measure the practicality and functionality of

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[55]Carsie Hammonds, "A Plan for Classifying and Filing Bulletins," Agricultural Education Magazine, 5:58-59, October, 1932.

[56]Ralph A. Oglesby, "Planning and Establishing a System of Filing Technical Bulletins in Bowden High School," (unpublished Master's thesis, University of Georgia, Athens, 1951), 59 pp.

the various systems. Seven systems were compared using these criteria. The Georgia Plan, using a divided-drawer, steel filing cabinet and a decimal system of classiciation, was found to be the most practical for high school vocational agriculture departments. All the agricultural college library plans were thought to be too complex for use in high school vocational agriculture departments. Oglesby indicated that there was a definite need for further work in departments of vocational agriculture to effect a more efficient use of the technical materials by the students themselves.

Numerous suggestions have been made with respect to storing agricultural publications. Most publications, particularly bulletins, are stored vertically. Among other ways, vertical storage has been effected in the standard, sliding-drawer, steel file cabinet; in commercially made cut-corner or plain pamphlet file boxes; in home-made wooden pamphlet boxes; or in discarded metal cans specially reconditioned for such use. Many teachers have constructed special cabinets which facilitated vertical storage of publications, while others have used a type of "pigeon-hole," cabinet which allows flat storage.

Mullen[57] conducted a study to determine which sizes and shapes of bulletins, charts, and magazines lend themselves as most functional for proper packaging and filing. The teachers from whom he solicited responses indicated that they preferred bulletins to be six-by-nine inches in size; charts to be twenty-seven-by-twenty-one inches; and all agricultural magazines to be standardized to eight-by-eleven inches. Uniformity and standardization seemed to keynote teacher preferences, but no specific reasons were given for preferences.

Miller[58] identified and analyzed at least thirty-five different plans used by teachers and extension agents for filing their agricultural publications. Generally speaking, these plans followed a decimal system, but were far from being standardized or uniform. One of the major contributions of Miller's study was the formulation of a uniform index or filing system for use by professional agricultural workers. He made a thorough study in the comparison of various systems.

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[57] Donald T. Mullen, "A Study of Vocational Agriculture Teacher Preference in Size of Bulletins, Charts, and Magazines," (unpublished Master's thesis, University of Wisconsin, Madison, 1957), 37 pp.

[58] Miller, op. cit., p. 299.

The AGDEX was developed as a result of Miller's study and has been highly recommended to professional agricultural workers. It incorporates many desirable features of a good filing system. The features of standardization and uniformity will be achieved as the system becomes more widely accepted. Tentative plans are to have the AGDEX classification placed on agricultural publications at the time they are printed. This will aid in standardizing the system among professional agricultural workers.

Taylor[59] suggested a practice to be followed by teachers of vocational agriculture. He recommended that the titles and other bibliographical information of all references contained in the department of vocational agriculture be placed in the catalog of the school's central library. This would allow use of the materials by students and faculty members other than those directly connected with the vocational agriculture department. Taylor made the following assumptions and recommendations: (1) a reference collection is essential to the vocational agriculture department; (2) an adequate collection is

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[59]Kenneth I. Taylor, "Central Library Records for the Department Reference Collection," The Agricultural Education Magazine, 31 : 136, December, 1958.

continually changing; (3) agricultural reference materials will occasionally be needed by teachers and pupils outside the department of vocational agriculture, and loan of these materials, when not in use, should be encouraged; (4) length of loan, whether for an hour, day, or overnight, should be left to the discretion of the teacher of vocational agriculture; (5) central library records of the materials should be maintained, but the materials should be kept in the department of vocational agriculture; and (6) all materials should be processed and classified uniformly in the central library before placement in the department of vocational agriculture.

The uses to which publications are subjected are many and varied. The nature of use depends on many things. To a great extent use is influenced by the various ingredients of the previously mentioned communication model. Certainly, the source has great influence on the ultimate use of a publication, and so does the encoder. The message includes the words in the publication and the way that the words are arranged. The channel, including the medium of a bulletin or circular or flyer and the

procedures employed to disseminate it, exert its share of influence on the ultimate effectiveness of the publication. The interrelationships between the encoder and the receiver also influence its use.

Miller had this to say about the ways in which agricultural publications are used:

> The professional worker in agricultural education uses publications primarily for (1) personal reference, (2) classroom reference, and (3) for distribution. Teachers of vocational agriculture normally are not distributors of agency publications although this is a specific function of the Extension Service.[60]

Elsewhere, Miller[61] indicated that teachers used sixteen per cent of their total number of publications for personal reference; seventy-four per cent were used for student, office, or classroom reference; and ten per cent were used for distribution to students or the public.

The above findings are not necessarily an accurate portrayal of the uses to which teachers apply the various publications found in their departments. Reasons are summarized as follows. In the findings of the above study all publications in a department were given equivalent weight with respect to use and importance. Variation in

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[60] Miller, op. cit. p. 41.

[61] Ibid., p. 183.

subject matter alone demands that publications be treated separately in an evaluation process. Furthermore, teachers were instructed to consider their total number of publications without regard to the fact that they may have had twenty or more copies of certain publications and only single copies of others. Miller recognized that there were variations among teachers' interpretations of use, as well as extent of use of publications.

Publications are used both in high school classes and in adult-farmer and young-farmer classes. Ridenour's study, which was conducted in Ohio, indicated that:

> . . . 60 percent of the use made of the 39 experiment station bulletins studied was in high school classes while the remaining 40 percent of the use was in adult work.[62]

Ridenour recognized that his study did not show the extent of use given these bulletins in the classes but only whether or not they were used as a source of information by the teacher or student or class members. He concluded that the lower percentage of use in adult classes may have been due to the fewer times the adult classes met during the year and also because not all of the teachers conducted

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[62]Ridenour, op. cit., p. 47.

adult courses. It would appear that merely determining the number or per cent of times used in a class does not portray a true picture of publication use. The extent of use probably should be based on the degree to which this type of publication is used as compared to the use of other reference sources on the same subject.

Elsewhere, Ridenour commented on the use of publications by stating that:

> . . . bulletins which meet teacher needs received the most use and thus the research information contained in them is presented to more farm people than information contained in those bulletins which do not meet teacher needs. . . . the fact that the research bulletins deal with only one subject accounts for their being used by a greater number of teachers than farm and home research bulletins which contain articles on several subjects.[63]

The reproduction of information found in publications for presentation to a constituency is limited to a great extent by the equipment which is available to a teacher. It is limited further by the amount of time he can devote to reproduction of information. In addition to these, reproduction is limited by the teacher's ability to make abstract information appear meaningful to his constituents.

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[63] Ibid., pp. 55 and 58.

Of the many ways by which information is reproduced for consumption, Ridenour indicated that too much dependence was placed on the chalkboard method of presentation. He further indicated that the practice of passing out publications to students for them to use as references in supervised study too often replaced teacher preparation. He elaborated further by saying:

> The practice of passing out bulletins to students for their study received the lowest average evaluation, 2.87 points (out of a possible five points), of all the methods of presenting research information considered, but received the second largest amount of use by the teachers reporting.[64]

Ridenour found that although teachers rated "teacher-made charts," as being the most effective method of reproducing tabular material for student consumption, it was used in presenting only eleven per cent of the information treated in his study. He indicated further that although the chalkboard was rated third in effectiveness, teachers still rated it first as being the method of presentation which they used most.

A concluding statement which may be drawn from Ridenour's study is that the methods of presenting

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[64] Ibid., p. 75.

research information to students which required the least amount of teacher time for preparation were those which were used most extensively by the teachers, regardless of the effectiveness of the method. Furthermore, those publications which contained the most useful subject matter, regardless of format or readability, seemed to be used most.

The following conclusions were drawn as a result of having made this review of related literature.

1. Previous studies substantiated the fact that college publications are extremely important to teachers of vocational agriculture as references for agricultural information and have been ever since they were first made available to them.

2. Earlier studies indicated that this type of publication was used as a teacher reference and as a classroom reference. (One study dealt with the reproduction of information from this type of publication for use in adult-farmer classes.) Insofar as could be determined, no studies had been conducted to ascertain the extent to which such publications had been used in instructional orientation activities, informational evaluation activities,

methods-of-teaching activities, instructional procedure activities, and in student-usage activities.

3. No studies reviewed attempted to determine the extent of use based on a distribution classification of this type of publication. Most studies compared this type of publication with commercially produced publications or with textbook type references. A few studies were reviewed which attempted to ascertain the most desirable style or form for presenting agricultural information in this type of publication.

4. Approximately one-fourth of the eighteen activities included in the present study were obtained as a result of this review of literature. The remaining activities were included at the suggestion of specialists in various fields who were consulted.

At appropriate places in the summary chapter comparisons of findings in earlier investigations will be made with significant findings of this study.

CHAPTER III

SOURCES OF DATA AND METHOD OF PROCEDURE

This chapter deals with the description and means by which data were obtained and the methods of procedure that were used to analyze the data. The chapter was organized to include discussions on the following: (1) selection of the sample of teachers to be interviewed, (2) selection of the sample of publications to be used in the study, (3) interview procedure and instrument, (4) methods of analysis of data, and (5) limitations of the study.

A. Selection of the Sample of Teachers and Departments

In order to secure data that would be satisfactory, it was determined that teachers who had been using this type of publication would be in the best possible position to render the most reliable information. It was considered desirable to select a group of teachers who had been teaching long enough to employ most of the publications which would be treated in the study. Also, it seemed desirable to select teachers having tenure sufficient to enable them to be familiar with the publications in their departments.

This would bolster the recall process in the event the teacher found it necessary to pause and ponder whether he had any one certain publication, or the extent to which it had been used.

A list showing the teachers of vocational agriculture, the schools in which their departments were found, and their addresses was obtained from the Vocational Education Division of the Michigan Department of Public Instruction. This list, contained 237 teachers and was complete and correct as of July 14, 1961.

Teachers who had not been teaching for at least two years and those who had not been teaching in the same department for at least one year were eliminated from the total population of 237 teachers before the sample was drawn. Eliminations were made after consulting various records in the Agricultural Education Service of College of Education at Michigan State University, and those in the Vocational Education Division of the Michigan Department of Public Instruction. Where records yielded incomplete information, the agricultural education teacher-trainer staff and state consultants in vocational agriculture were asked to assist in identifying those teachers to be eliminated under these two criteria.

By this elimination process, the population of teachers was reduced from 237 to 170 before the sample was drawn. Each of the remaining 170 teachers was then assigned a number and by use of a table of random numbers[1] a sample of twenty-five teachers was selected for interview.

The numbers appearing in the left marginal column of Table 1 correspond to those on a map of the State of Michigan found in Appendix D.[2] Shown also is a list of the teachers and their departments which were included in this study. The map depicts the geographical representativeness of the sample of departments and teachers. The data in Table 1 show the length of time in years which individual teachers had been teaching, the length of time each teacher had been teaching vocational agriculture, and the tenure of each teacher. Means for all teachers in the study were 11.04 years in all types of teaching, 10.4 years in teaching vocational agriculture, and 7.56 years tenure in the school where they were located at the time the interview was conducted.

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[1] George Waddel Snedecor, Statistical Methods Applied to Experiments in Agriculture and Biology (Ames: The Iowa State University Press, 1957), pp. 33-35, 366-370.

[2] Appendix D.

Table 1. Departments included in the study showing the years of total teaching experience, vocational agriculture teaching experience, and tenure of teachers

Department No.	Total Teaching Exp.	Vo-Ag Teaching Exp.	Tenure in Present School	Department No.	Total Teaching Exp.	Vo-Ag Teaching Exp.	Tenure in Present School
1.	27	23	15	14.	37	35	35
2.	24	22	15	15.	3	3	1
3.	17	15	12	16.	18	17	7
4.	7	7	3	17.	3	3	3
5.	9	5	5	18.	5	5	5
6.	25	25	22	19.	3	3	3
7.	5	5	5	20.	3	3	3
8.	3	3	3	21.	20	20	15
9.	12	12	12	22.	8	8	6
10.	2	2	2	23.	8	8	4
11.	2	2	1	24.	2	2	2
12.	3	3	1	25.	2	2	2
13.	28	27	9	Mean	11.04	10.40	7.56

The data in Table 2 indicate the amount of academic work which the teachers in this study had completed. All teachers had completed at least enough collegiate level courses to meet the requirements for the bachelor of science degree. In addition to having been awarded the bachelor of science degree, approximately twenty-four per cent had completed from five to fifteen credits toward a permanent teaching certificate or toward the master of science or master of arts degree. Approximately thirty-six

per cent had completed sixteen or more credits beyond the bachelor of science degree, but had not completed all requirements for the master's degree. Twenty-eight per cent had received the master's degree and had taken no further course work. Approximately twelve per cent had been awarded the master's degree and had earned as many as fifteen credits beyond this degree.

It was thought desirable to obtain some information regarding the constituents of the teachers included in the study. This information for the 1960-1961 academic year is shown in Table 3. There were a total of 1334 all-day students enrolled in the twenty-five departments. As indicated in the table, there were two departments that were located in senior high schools which had no ninth grade. Hence, these two departments offered no ninth grade vocational agriculture subject.

There were six departments which offered no out-of-school classes. Thus, the numbers shown represent only nineteen departments, or approximately seventy-six per cent of the sample. Of these nineteen departments, there were six in which both young farmer classes and adult farmer classes were offered. This should explain why there is a total of twenty-six out-of-school classes shown in Table 3 when only nineteen departments offered these types of programs.

Table 2. The amount of academic work completed by teachers in the sample

Amount of Academic Work	N	%
B.S. degree plus 5 to 15 credits	6	24
B.S. degree plus 16 or more credits	9	36
M.S. or M.A. degree only	7	28
M.S. or M.A. degree plus as many as 15 credits	3	12

Table 3. The number of all-day students and out-of-school class members enrolled in the vocational agriculture departments

Type of Class	Number of Classes	Total	Mean
All-day students	98	1,334	53.4
First year	23[a]	375	16.3
Second year	25	372	14.9
Third year	25	280	11.2
Fourth year	25	307	12.3
Out-of-school class members[b]	26	546	21
Adult farmer classes	10	275	27.5
Young farmer classes	7	95	13.6
Combination young and adult farmers classes	9	176	19.6

[a]Two of the departments were located in senior high schools with no vocational agriculture offered in the ninth grade.

[b]Six departments had no out-of-school classes.

B. Selection of the Sample Publications

It was desired that a representative group of publications be used in this study. In order to get a sample that would be representative of publications that are normally found in Michigan departments of vocational agriculture, it was first necessary to determine which publications had been made available to teachers. This was done by reviewing listings of all the publications which had been classified according to a policy statement.[3] This policy statement was arrived at mutually by representatives from the Michigan Association of Teachers of Vocational Agriculture, the Michigan State University Cooperative Extension Service, and the Agricultural Education Service of the College of Education at Michigan State University. These representatives drafted the original policy statement in 1952 and revised it in 1957.

Under this mutual agreement, publications were, and still are, classified into three categories as follows: (1) Class A -- the publications listed in Class A are highly technical or of such nature that a single copy

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[3]Appendix A.

distributed when published will meet all usual needs; (2) Class B -- one copy for each group of three students in classes studying the subject covered in the publications; and (3) Class C -- one copy for each student in classes studying the subject covered in the publication.[4]

After being classified, the publications then are listed in a service-letter that is sent to all teachers once each quarter. These quarterly service-letters are produced and disseminated by the staff members of the Agricultural Education Service of the College of Education at Michigan State University.

The titles of all publications that have been classified since 1952 were taken from back issues of the service-letter. Listed according to classification category, each was then assigned a number and, by use of a table of random numbers,[5] a ten per cent sample for each category was selected. A total of 234 publications have been classified since 1952; sixty-six in Class A; fifty-six in Class B; 112 in Class C. Hence, a ten per cent sample yielded seven Class A publications, six Class B

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[4]Appendix A.

[5]Snedecor, op.cit., pp. 33-35, 366-370.

publications, and eleven in Class C, or a total of twenty-four that were used in this study.

A list of these publications is given in Appendix B.[6] Shown in annotated bibliographic form are the publication title, the number assigned by the Michigan State University Cooperative Extension Service, the date of release of each publication, and the readability as determined through application of the Dale-Chall formula.[7] The numbers one through twenty-four were assigned to the sample publications by the writer and, for brevity, will be used in context material when referring to individual publications.

C. The Interview and Instrument

It was deemed desirable to obtain the information for this study by interview after consultation with specialists in agricultural education and educational research. Reasons for doing so were that teachers probably would give more conscientious and valid answers to queries if proper rapport were established in a face-to-face exchange. This would not have been possible had information been

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[6] Appendix B.

[7] Dale and Chall, loc. cit.

sought via the mailed questionnaire technique. Furthermore, it was thought that probing or the seeking of answers to queries in depth would be accomplished to a greater degree through the personal interview.

It was thought that when certain aspects of the nature and extent of use of publications were mentioned during the course of the interview that had not been included in the data-gathering instrument,[8] these could be followed up by asking additional questions in further detail. The information gained in this manner proved to be of as much importance as that obtained through the use of the instrument. The nature of the information thus obtained dealt with the attitudinal aspects of the nature and extent of use of the publications, as well as with the relationships that existed between teachers and the agencies from which they obtained the publications.

The interview times and dates with teachers were made by telephone conversations. The interview procedure was flexibly structured in the following manner. Upon arrival at the department, the purpose of the study was

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[8]Appendix C.

explained in detail to the teacher, observations of the physical conditions for storing and filing publications were made, the instrument was administered, and follow-up in depth was conducted on pertinent items which had arisen during the first phases of the interview period. Notes were taken during the entire course of the interview.

The instrument used in this study was designed primarily to assist in the collection of information which would accurately portray the extent to which teachers used these publications. Here again, due to the length of the instrument, it was thought that the interview technique of obtaining information for the study would yield the most reliable data. The instrument was constructed after consulting with specialists in the following areas: (1) agricultural education, (2) agricultural extension, (3) communication, (4) educational research, and (5) statistics. Construction also was based on a thorough review of pertinent literature in teaching methods, reference selection and use, readability and student reading level determination, and the sociological aspects of communication. The instrument was presented before a seminar of advanced graduate students in agricultural education. Their comments and suggestions were incorporated in the final revision of the instrument.

The instrument was divided into three major parts. The first part consisted of items which were designed to obtain as accurately as possible some of the background information that would be used to describe the teachers, the department, and the facilities for storing and filing the type of publications treated in this study.

Activities that would depict the nature of use and the extent of use of the publications formed the second part of the instrument. In order to facilitate the completion of this part of the instrument, a copy of each of the twenty-four publications in the sample was placed in the hands of the teachers. This enabled them to recall accurately the extent to which each publication had been used in their instructional programs. These eighteen activities were further subdivided into: (1) two instructional orientation activities, (2) two reference evaluation activities, (3) three methods-of-teaching activities, (4) three instructional procedure activities, (5) four student-usage activities, (6) three young-and/or-adult-farmer class activities, and (7) one teacher self-improvement activity.

Following are more detailed explanations of the above listed categories.

(1) Instructional orientation activities. The two activities in this category are probably more applicable to beginning students of vocational agriculture than to advanced students.

The interpretation of information found in tables, charts, diagrams, and the like, was thought to be a most important activity; one in which the teacher might very well spend considerable time. Information in this form is found very frequently in publications of the type under consideration in this study. The consensus among most agricultural workers is that most all agricultural problems are complex enough that they probably would require the use of several kinds of information in order to obtain the most functional solutions. Furthermore, this activity seemed directly related to the purpose of vocational agriculture that was ranked first in the Purdue University study.[9]

The activity of assisting students in identifying main thoughts and principles involves the sifting of

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[9]Nelson, et. al., op. cit., p. 54.

contextual material and reducing it to the most significant ideas. This activity may well be regarded as conceptualization.

In Chapter II literature was cited which indicated that students preferred information in tabular form accompanied by an explanation in context.[10] Other studies indicated the need for guiding students in conceptualizing. Hence, the desirability of including such activities in this study was obvious.

(2) Reference evaluation activities. The two activities in this category were based on the premise that students should assist the teachers in evaluation. Whether teachers are aware of it or not, students do make some evaluation of the references which they use. Although the students themselves may not be aware of it, they tend to use references in which the desired information can be found without difficulty. This in itself is a form of evaluation. It is desirable that the teacher and his students perform this evaluation process jointly.

Evaluation of reference material is normally based on format, completeness of the table of contents, adequacy

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[10]Clark, loc. cit.

of the index, completeness of the outline, and specificity of the sub-headings. Other criteria for evaluation are authoritativeness of the material, the date of printing or release of the publications or timeliness. The review of related literature yielded many of the criteria for evaluation that were used in the present study.[11,12,13,14,15,16]

(3) Methods-of-teaching activities. Of all the methods used in teaching vocational agriculture, those of individual instruction, supervised study, and small-group instruction were ones in which it seemed publications would be used most extensively. It was thought that they also were ones with which teachers were most familiar and were ones which teachers employed most frequently.

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[11] Warren, loc. cit.

[12] Boyd, loc. cit.

[13] Haff, loc. cit.

[14] Cardozier and Carpenter, loc. cit.

[15] McJunkin, loc. cit.

[16] McPherson, loc. cit.

(4) Instructional procedure activities. The three activities included in this category may be viewed as elements of various methods. They might be employed in many of the known methods. They seemed to be activities that possessed specificity and would not be so apt to be misconstrued or misinterpreted by teachers.

The reproduction of parts of publications in order to present the material to students was considered important because the activity included reproduction in any form. It included reproducing material by ditto, mimeograph, transfer to chalkboard, use with opaque projectors, and/or other audio-visual equipment. The activity also included the reproduction in chart or graphical form of tabular information found in the publication. Ultimately, the activity meant reproduction in any form that would present the material in a more understandable manner to the students or class members. One earlier study treated this activity.[17]

(5) Student-usage activities. Those activities included in this category were thought to be important

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[17] Ridenour, loc. cit.

because they reflected uses that were, for all practical purposes, independent of the need for assistance from the teacher. However, it was recognized that each was an activity in which the teacher might well encourage his students to participate.

(6) Young-and/or-adult-farmer class activities. The three activities in this category were thought to apply equally as well to young farmers, adult farmers, or combination classes. These activities reflect practices which were thought to have been employed frequently in out-of-school classes. It was recognized that publications of the type treated in this study probably are seldom read during class by class members, nor is class time directly devoted to using them as texts.

(7) Teacher self-improvement activity. This single activity was thought to be of importance in this study because of the consensus among educators that professional growth and self-improvement must be continuous. The degree to which this type of publication contributes to the teachers' improvement was deemed extremely important. One earlier study mentioned this as an activity in which this type of publication was used.[18]

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[18] Miller, loc. cit.

The third part of the instrument dealt with features or characteristics of publications and the importance of these in the instructional program of vocational agriculture. Also treated in this last part were means by which teachers became aware of recently released publications.

Following are explanations of the features or characteristics of publications which appear in Item 37 of the instrument.

a. Adaptability to local conditions. The subject should not only be treated in a statewide manner, but it should be "localized" according to type of farming, type of soil, adaptability of crop strains, varieties, hybrids, etc.

b. Ease with which publication can be procured. This indicates the degree of difficulty in procuring, replacing or replenishing needed publications.

c. Publications free or inexpensive. The fact that publications are free, or at least relatively inexpensive, may be of high import; especially in departments where budgets are inadequate for purchase of reference materials.

d. Publication up-to-date or timely. The recency or newness of the information frequently has much significance due to the rapidity of technical agricultural change. The subject should include findings of latest research and be abreast with current information.

e. Publication easy to read and understand. The type of paper, print, style, format, headings, sentence and paragraph length, readability level, clarity, and vocabulary all should be conducive to maximum use.

f. List of qualifications of the author. His capabilities, his experience, and his knowledge of the subject lend authoritativeness to the subject-matter in the publication.

g. Adequate table of contents and index. This pertains to the ease with which the various aspects of the subject can be found in the publications, the searching out of information without the necessity of reading the entire publication.

h. Action pictures showing application of the information. Pictures, either black and white or colored, portraying activities connected with the actual employment of the subject-matter treated in the publication seem to be important.

i. Tables, charts, diagrams, (aids to understanding). These are methods used to emphasize and clarify various aspects of the subject.

j. Brief general history. This refers to the origin and stages of development and research background of subject.

k. Importance of subject to farming. This pertains to the benefits, economic influence and other implications, the need for farmers to know the subject.

l. List of skills and abilities needed by the reader to use the information. This means special training or technical skills needed in addition to those which are possessed by the average farmer.

m. Relationships to closely allied subjects. This refers to the influence, bearing, or pertinency to other subjects; especially those of reciprocal dependency.

n. Conditions necessary for most efficient and effective use. These are the soil and climate conditions, stage of crop or livestock development, seasonal influences.

o. Suggested sources of additional information or references. These are other publications which might enhance the subject or would further enlighten the reader about the subject.

p. Precautions, safety measures, and limitations. These refer to health, sanitation and safeguards against hazards.

q. Pictures of the authors. These are small identification pictures.

r. List of special tools, equipment, etc., needed to use the subject-matter. These are any special devices, implements, machines, or instruments not ordinarily found on farms.

The preceding explanations of parts of the instrument were given to the teacher at the time of the interview. This was done in order to prevent teachers from varying too widely in their interpretation of each item in the instrument.

The instrument was revised a number of times. After each revision the specialists in the various areas mentioned previously were consulted in an effort to perfect the schedule. Immediately prior to the final revision, it was administered to three different teachers in an effort to gain their suggestions, opinions, and judgments regarding various items. Following final revision, the instrument was personally administered to the sample of twenty-five teachers.

D. Method of Analysis of Data

The data obtained by interview were treated in a number of ways. Mean scores of extent of use for each publication and each teacher were computed. Composite scores were obtained for Class A, Class B., and Class C publications, as well as for each category of activities and individual publications. The readability for each of the twenty-four publications used in the study was determined. Correlation coefficients were calculated between readability and the extent to which publications were used.

E. Limitations of the Study

There were certain inherent factors which limited this study. In the first place, it was recognized that publications produced by state colleges of agriculture were many and varied; hence, their uses would be many and varied. Likewise, individual teachers use them differently in certain activities; yet some patterns were found to be characteristic of most of the teachers included in the study.

Secondly, the sample of publications was randomly selected and such selection methods have inherent limitations. Nevertheless, the theory of randomization infers that the sample probably would be representative of all those publications which have been made available to teachers of vocational agriculture in Michigan.

Thirdly, as to the sample of teachers, it was assumed that the sample was representative of the State of Michigan exclusively since it was randomly selected from departments located in that state only. The map appearing in Appendix D[19] shows the georgraphical representativeness of the sample of teachers and departments.

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[19]Appendix D.

Another limitation seemed to be that some of the information obtained through the instrument was based on the teachers' recall ability. However, by using example publications and situations during the interview, the recall process was aided tremendously. The recall process also was greatly enhanced by virtue of the fact that the interview technique was used to gather the data.

Such limitations as those listed above should be recognized before attempts are made to interpret the findings of this study and apply them in various other situations.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Following are findings which were obtained by interview with twenty-five teachers of vocational abriculture regarding how, and to what extent, they used college-type publications in selected activities. The chapter includes findings in the following major aspects of the study: (1) storing and filing publications, (2) publication use in selected activities, (3) importance to teachers of certain features and characteristics of publications, and (4) agencies through which teachers maintain an awareness of revised or recently released publications. Only the more important findings depicted in each table will be discussed in the contextual material of this chapter.

A. Storing and Filing Publications

Upon receipt of publications in a department of vocational agriculture, it becomes necessary for the teacher to provide adequate facilities for storing and filing them. The place of storage frequently influences the ease with which publications can be found, used, and

returned to storage after use. The data found in Table 4 show the place of storage and the type of storage facilities that were provided in the twenty-five departments included in this study.

As shown, most teachers placed their publications in the classroom. This would seem to have contributed much toward allowing students unrestricted freedom in their search for information. Such was not the case in every department, for place of storage did not prevent the two teachers who stored publications in the conference room and laboratory from allowing their students complete freedom in their search for answers to problems. That publications were stored in the conference room and laboratory was due to existing physical plant conditions and not because these teachers wanted to restrict student use of them.

Methods used by teachers to store this type of publication apparently had not been explored in any of the earlier studies that were reviewed. The pamphlet file box was found to be the most common method of storing publications among the teachers in this study. Boxes in use included both the "cut-corner," and the "square-corner," types. Two teachers were using home-made pamphlet boxes.

The major reason given for using this method of storage was that an entire box full of publications on the same subject could be taken from storage and moved to study tables for use by the students. Another reason given was that this was a fairly cheap method of storing. Two teachers reasoned that this had been the method of storage employed by the teachers who had preceded them in the departments and the two had not seen fit to change an already "well-established," method. Pamphlet boxes were labeled according to the subject-matter information contained in the publications stored in them. In all instances observed, pamphlet file boxes would accommodate only one size of publication, the common six-by-nine-inch bulletin.

Although less frequently used, the standard, one-letter size, sliding-drawer file cabinet seemed to allow more flexibility in the storage of publications than other methods that were observed. Multiple copies of publications placed side by side on end could be accommodated in them. A decided advantage of the standard file cabinet was that different sized publications containing information on the same subject could be stored in the same drawer. The AGDEX[1] classification or indexing system was easily adapted to this method of storage.

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[1]Miller, loc. cit.

Table 4. Teachers grouped according to the place and method that publications were stored

Method of Storage	Place of Storage: Classroom N	Conf. Rm. N	Lab. N	Total N
"Cut-corner" or "square-corner" pamphlet boxes	11	--	--	11
Standard, one-letter size, sliding-drawer file cabinet	6	1	1	8
"Pigeon-hole" cabinet	6	--	--	6
Total	23	1	1	25

One teacher was using a commercially manufactured steel file cabinet which contained three sliding drawers in a section. Sections of the cabinet could be stacked to a height comparable to that of the standard, one-letter size, four-drawer, steel file cabinet. Each of the three sliding drawers in a section was of such size that standard six-by-nine inch agricultural bulletins could be accommodated in them when stood on end. Dividers facilitated the use of the AGDEX classification system. Although this type of cabinet provided compact storage, only one size of publication could be accommodated because of the size of the drawers.

Hence, this teacher also was forced to provide separate storage facilities for publications of larger size that dealt with the same subjects.

The "pigeon-hole," cabinet was less frequently found. When used it normally was home-made. Publications could be stored vertically in some of them and flat in others. Teachers thought that home-made "pigeon-hole," cabinets were cheaper than commercially made storage facilities. However, disadvantages were expressed by some teachers. One criticism was that the "pigeon-hole," cabinet was rigid and size of cells could not be varied. Therefore, one cell might contain almost twenty copies of one publication, while only single copies were stored in another cell of the same size. Generally, "pigeon-hole," cabinets occupied more space and facilitated the storage of fewer publications than other methods of storage. In addition, they usually accommodated publications of only one size.

Four studies were reviewed that dealt with classification or indexing systems which had been recommended to teachers for their use.[2,3,4,5]

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[2] Hammonds, loc. cit.

[3] Oglesby, loc. cit.

[4] Miller, loc. cit.

[5] Taylor, loc. cit.

Those teachers interviewed were asked to describe the classification or indexing system by which they filed their publications. Table 5 contains their responses to this item. The largest number of teachers, twenty, indexed publications according to subject. They used decimal systems of numbering major headings and their subdivisions. These systems were similar to the Dewey Decimal system, but with modifications. No uniform indexing patterns or standardized classification procedures could be identified among the twenty teachers who had not adopted the AGDEX. This finding is in keeping with those of Miller.

All of the five teachers who had adopted the AGDEX classification system indicated that they had attended in-service meetings in which the system had been explained and in which procedures had been demonstrated for putting it into operation. These in-service meetings, held in various areas of the state in the Fall of 1960, were conducted by staff members of the Agricultural Education Service of the College of Education at Michigan State University. Two of these five teachers had adapted the AGDEX to their existing storage facilities. Three had changed to the standard, one-letter size, sliding-drawer file cabinet.

Table 5. Teachers grouped according to methods of indexing publications and the length of time the system had been in operation

Indexing System	Length of Time in Operation				
	6 Mos.	1 Yr.	1-4 Yrs.	5 or More Yrs.	Total
By subject and decimal system	--	--	10	10	20
AGDEX	4	1	--	--	5
Total	4	1	10	10	25

Various arrangements were found for filing and storing publications. Some teachers kept one copy of each publication in private files for their own use, and multiple copies were located in separate storage facilities for students to use. The major reason given by teachers for maintaining separate storage for teacher and student uses was that as students returned publications to storage after use, they frequently disrupted the entire filing and storage system. Thereafter, if the teacher used the same files, he experienced considerable difficulty in finding the publications that he needed for his lesson preparation. Furthermore, policing the files became a laborious and time-consuming task for these teachers.

Other teachers indicated they had spent considerable time in teaching their students how to use the filing system. They found that spending extra time in this activity had proven to be a tremendous saving of time later because their students seldom disarranged the filing system when they returned the publications after use.

The degree with which students are allowed access to publications is influenced in part by the filing and storage arrangements. Most teachers that were interviewed generally agreed that students should have completely free access to all reference publications. The consensus among teachers, however, was that allowing access to publications should be preceded by a thorough orientation of students concerning the filing and storage systems used in the department.

Data were secured to indicate those teachers who allowed their students to have "free access," "limited access," or "no access," to the departmental publications. It was the consensus of eighteen teachers that allowing students to have free access to publications increased their initiative. Furthermore, ability of students to seek answers to problems seemed to be enhanced and

decisions involving the students' farming programs could be made faster and easier. Many teachers indicated that allowing students free access to publications tended to stimulate class discussions and promote a better attitude toward vocational agriculture in general. In allowing students freedom in their search for information, the permissiveness of the educational atmosphere in the classroom was magnified.

Those teachers allowing students only limited access to publications numbered six. They indicated the major reason for limiting student access to publications was that students were prone to misplace the materials when returning them to storage. This seemed especially true for the younger students. One teacher said he never allowed his students to "rummage" through the publications because they "seldom knew what they were hunting for."

B. Use of Publications in Selected Activities

This study was conducted by interviewing a random sample of twenty-five teachers. A sample of twenty-four publications was randomly drawn from within strata after the publications were stratified according to their

distribution classification. The selection procedure was explained in Chapter III. Data in Table 6 show the number of different sample publications in each classification that were found in each of the twenty-five departments of vocational agriculture included in this study. The teachers may have had multiple copies or only single copies of individual publications. No attempt was made to determine the numbers of copies of each publication in the departments. The reason for not counting the number of copies was, according to the teachers, that numbers of copies fluctuated from time to time throughout the year. For instance, there may have been on hand thirty copies of a certain publication at the beginning of the academic year and at another time during the year there may have been only ten copies. Regardless of when the count was made, it would not have been an accurate picture of the number of publications on hand for the entire year.

Of the twenty-five teachers interviewed, only two had copies of all twenty-four of the sample publications. There were two teachers who had less than ten. Teachers averaged 15.9 different publications from the possible twenty-four in the sample.

Table 6. Number of different sample publications found in departments according to distribution classification

School	Distribution Classification[a]			Total
	Class A	Class B	Class C	
1	2	5	10	17
2	4	4	7	15
3	3	3	9	15
4	2	5	9	16
5	5	5	7	17
6	1	5	8	14
7	--	3	10	13
8	2	1	5	8
9	7	5	9	21
10	1	5	8	14
11	2	5	10	17
12	--	3	7	10
13	6	6	10	22
14	2	4	10	16
15	1	4	5	10
16	4	5	10	19
17	7	4	10	21
18	7	6	11	24
19	5	1	7	13
20	4	4	9	17
21	2	3	8	13
22	4	4	8	16
23	7	6	11	24
24	--	1	6	7
25	3	4	11	18
Average	3.2	4.0	8.6	15.9

[a] Class A = 7 publications, Class B = 6 publications, Class C = 11 publications, Total = 24.

Class A publications were considered to be somewhat more technical than those in Class B or Class C. Three teachers did not have any of the Class A publications, while four teachers had all seven in this group. Supposedly, teachers should have had only one copy of Class A publications, but such was not always the case. Approximately ten of the teachers indicated that they had made special requests to, and had received from, the Michigan State University Bulletin Office, one or more copies of the sample publications in Class A. Teachers averaged 3.2 different sample publications out of a possible seven in this classification.

Class B publications shared a slightly larger portion of the total that was found in the departments, although there were only six publications in this classification that were treated in the study. There were three teachers who had only one of the publications in this classification, while three teachers had all six. Teachers had an average of four different publications out of a possible six in this classification.

Class C publications, of which there were eleven used in this study, were by far the most popular among all

teachers. Two teachers had only five Class C publications, while three had all eleven. The average was 8.6 different publications out of a possible eleven.

It was possible for all teachers to have had all publications treated in the study. Teachers gave various reasons why they did not have at least one copy of each of the sample publications. Some teachers, especially those with short tenure, indicated that those publications which they did not have probably had been discarded by the teachers who had preceded them in the same department. However, no teachers were used in this study who did not have tenure of at least one year. This would seem to have been ample time to replenish the stock of those publications which might have been discarded by a previous teacher.

Many of the teachers indicated that they either had not requested certain publications, or that they had discarded the single copies which had been sent to them without request. A few teachers stated that they did not have certain publications because the subject-matter treated in them did not occupy an important place in their instructional programs.

The data in Table 7 show the sample publications, grouped according to distribution classification, and the number of departments in which each was found. Only two publications, Fertilizer Recommendations for Michigan Crops and Soils of Michigan, were found in all twenty-five of the departments used in the study. The publication found in the least number of departments was Automatic Washers and Dryers. Many of the teachers indicated that they had forwarded this publication to the home economics department in their respective high schools. Other teachers stated that they had filed this publication along with others and had used it, but only to a very limited extent.

Activities were selected for use in this study that would depict the nature of use and extent of use to which publications ordinarily are subjected. Included were fifteen activities that dealt with teachers and/or all-day students and three activities that dealt with young farmers and/or adult farmers. Activities 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, and 36, which dealt with all-day students and/or teachers, will be treated first. The treatment of those that dealt with young and adult farmers, activities 33, 34, and 35, will be treated last.

Table 7. Sample publications and the number of departments in which each was found

Classification	Publication Title	Departments having publications
Class A = 7	F 229 Automatic Washers and Dryers	8
	S 428 Orientations Toward Occupation & Residence	10
	T 253 Effects of Suburbanization Upon Rural Land Use	11
	T 263 Farm Practice Adoption in Michigan	13
	T 264 Farmers' Reactions to New Practices	13
	T 274 Changes in Agri. Production Efficiency and Earnings	17
	T 275 The Demand for Farm Machinery & Tractors	9
Class B = 6	S 383 Inheritance of Farm Property in Michigan	23
	S 390 High Quality Roughage Reduces Dairy Costs	20
	S 429 Economics of Alternative Pasture Systems	13

Table 7. Sample publications and the number of departments in which each was found (continued)

Classification	Publication Title	Departments having publications
	CE 8 Lighting Your Home	16
	CE Questions & Answers About Home Sewage Disposal	11
	FBC 736 Poultry House for 2,000 Layers	18
	F 157 Field Crop Varieties for Michigan	23
	F 161 Rates for Custom Work in Michigan	24
	F 254 Raising Calves To Improve the Dairy Business	19
	F 291 Fertilizers for Christmas Trees	20
	F 292 Sudan Grass in Michigan	14
Class C = 11		
	E 159 Fertilizer Recommendations for Michigan Crops	25
	E 342 Handling Milk in Bulk on the Farm	20
	E 345 Poultry Feeding	16

Table 7. Sample publications and the number of departments in which each was found (concluded)

Classification	Publication Title	Departments having publications
E 355	Charcoal Broiled Chicken	17
S 402	Soils of Michigan	25
FBC 719	Selecting Wood Joists & Beams for Farm Buildings	12

It was first determined which publications of the twenty-four were available in the department. Next, each teacher was asked to rate the extent to which he had used each of the sample publications that he had in his department in the activities. Ratings were made according to: GE = Great Extent, ME = Moderate Extent, NE = No Extent; and weights of three, two and one, were applied respectively to each of these ratings. Composite scores were computed for each activity to determine in which ones the publications had been most used. The data in Table 8 show these results. As indicated, publications were used most in the activity of professional growth and self-improvement of teachers. They were used least in the activity of browsing or leisure-time reading by students.

Table 8. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which all publications were used in each

Rank	Activity	Composite Score[a]
1	36. Professional growth and self-improvement of teachers.	2.13
2	24. Supervised study in the classroom	1.96
3	23. Individual instruction in the classroom, shop, laboratory, or on the farm.	1.86
4	20. Assisting students in identifying main thoughts, principles, and ideas (conceptualizing).	1.79
5	25. Small group instruction in the classroom, shop, laboratory, or on the farm.	1.75
6	19. Assisting students in the interpretation of tables, charts, graphs, figures, diagrams, etc.	1.72
7.5[b]	22. Assisting students in evaluating the publication in terms of date of printing, authority of source or author,etc.	1.71
7.5[b]	27. Having students list publication as a reference in their notebooks.	1.71
9	30. Application of publication by students in making some decision about their farming programs.	1.68

[a]Great Extent = 3, Moderate Extent = 2, No Extent = 1.

[b]These two activities tied for seventh place.

Table 8. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which all publications were used in each (concluded)

Rank	Activity	Composite Score[a]
10	29. Application of publication by students in making individual reports in the classroom.	1.60
11	32. Borrowing by students for out-of-classroom study.	1.59
12	21. Assisting students in evaluating the publication in terms of the table of contents format or outline, etc.	1.58
13	28. Assignment of specific parts of the publication for out-of-classroom study.	1.55
14	26. Reproduction of parts of the publication to present to the students.	1.52
15	31. Browsing or leisure-time reading by the students.	1.27

[a]Great Extent = 3, Moderate Extent = 2, No Extent = 1.

These data indicate that publications were used more in the activity of supervised study than in individual instruction or in small-group instruction. Apparently, teachers reproduce little of the information contained in the publications for presentation to students since this activity was next to last in descending order of extent of use. Activities 22 and 27 tied for seventh place. Publications were used least in browsing or leisure-time reading by students.

Tables 9, 10, and 11 contain data which show the extent to which Class A, Class B, and Class C publications were used, respectively, in the fifteen activities dealing with teachers and all-day students. The activities are ranked in descending order of extent of use in each table.

All classes of publications were used more in the activity of professional growth and self-improvement of teachers than in any other single activity. During the third phase of the interview period in which certain aspects of the observations and responses were explored in depth, most of the teachers implied that this type of publication contributed more to their self-improvement than

Table 9. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which Class A publications were used in each

Rank	Activity	Mean Score[a]
1	36. Professional growth and self-improvement of teachers.	1.85
2.5	23. Individual instruction in the classroom, shop, laboratory, or on the farm.	1.35
2.5	24. Supervised study in the classroom.	1.35
4	20. Assisting students in identifying main thoughts, principles, and ideas (conceptualizing).	1.31
5	21. Assisting students in evaluating the publications in terms of the table of contents, format or outline.	1.30
6	22. Assisting students in evaluating the publication in terms of date of printing or release and authority of source or author.	1.28
7	26. Reproduction of parts of the publication to present to the students.	1.23
8	19. Assisting students in the integration of tables, charts, graphs, figures, diagrams, etc.	1.19
9	32. Borrowing by students for out-of-classroom study.	1.16
10	29. Application of publication by students in making individual reports in the classroom	1.15

Table 9. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which Class A publications were used in each (concluded)

Rank	Activity	Mean Score[a]
11.5	27. Having students list the publication as a reference in their notebooks.	1.12
11.5	30. Application of publication by students in making some decision about their farming programs.	1.12
13.5	28. Assignment of specific parts of the publication for out-of-classroom study.	1.10
13.5	31. Browsing or leisure-time reading by the students.	1.10
15	25. Small-group instruction in the classroom, shop, laboratory, or on the farm.	1.07

[a]Great Extent = 3, Moderate Extent = 2, No Extent = 1.

it did to their professional growth. Teachers explained it in this way. Self-improvement to them was in the nature of the acquisition of agricultural practices and techniques which had been discovered through scientific experimentation. By contrast, professional growth conveyed to teachers the meaning that it was the acquisition of new and better methods of teaching, as well as a greater understanding of philosophical and psychological principles involved in education.

The data in Table 9 indicate that Class A publications were used most in the activity of professional growth and self-improvement of teachers. Individual instruction and supervised study tied for second place as activities in which Class A publications were used most. It is of special interest to note that Class A publications were used least in small-group instruction. A possible explanation of this may be that teachers may not use small-group instruction techniques as much as they do supervised study techniques and individual instructions. This seems especially true with high school students. Teachers probably use small-group techniques more with young-and/or adult-farmer classes than with all-day classes.

Table 10. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which Class B publications were used in each

Rank	Activity	Mean Score
1	36. Professional growth and self-improvement of teachers.	2.00
2	24. Supervised study in the classroom.	1.96
3	23. Individual instruction in the classroom, shop, laboratory, or on the farm.	1.81
4	20. Assisting students in identifying main thoughts, principles, and ideas (conceptualizing).	1.75
5.5	19. Assisting students in the interpretation of tables, charts, graphs, figures, diagrams, etc.	1.70
5.5	25. Small-group instruction in the classroom, shop, laboratory, or on the farm.	1.70
7	27. Having students list the publication as a reference in their notebooks.	1.63
8.5	21. Assisting students in evaluating the publication in terms of the table of contents, format or outline, etc.	1.62
8.5	22. Assisting students in evaluating the publication in terms of date of printing, authority of source or author, etc.	1.62

Table 10. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which Class B publications were used in each (concluded)

Rank	Activity	Mean Score[a]
10	29. Application of publication by students in making individual reports in the classroom.	1.55
11	30. Application by students in making some decision about their farming programs.	1.54
12	28. Assignment of specific parts of the publication for out-of-classroom study.	1.53
13	32. Borrowing by students for out-of-classroom study.	1.52
14	26. Reproduction of parts of the publication to present to the students.	1.40
15	31. Browsing or leisure-time reading by students.	1.26

[a]Great Extent = 3, Moderate Extent = 2, No Extent = 1.

Table 11. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which Class C publications were used in each

Rank	Activity	Mean Score[a]
1	36. Professional growth and self-improvement of teachers.	2.30
2	24. Supervised study in the classroom	2.20
3	23. Individual instruction in the classroom, shop, laboratory, or on the farm.	2.07
4	25. Small-group instruction in the classroom, shop, laboratory, or on the farm.	2.02
5	20. Assisting students in identifying main thoughts, principles, and ideas (conceptualizing).	1.99
6	27. Having students list the publication as a reference in their notebooks.	1.96
7	30. Application by students in making some decision about their farming programs.	1.95
8	19. Assisting students in the interpretation of tables, charts, graphs, figures, diagrams, etc.	1.93
9	22. Assisting students in evaluating the publication in terms of date of printing, authority of source or author, etc.	1.92

Table 11. Fifteen activities dealing with teachers and/or all-day students ranked in descending order of the extent to which Class C publications were used in each (concluded)

Rank	Activity	Mean Score[a]
10.5	29. Application of publication by students in making individual reports in the classroom.	1.79
10.5	32. Borrowing by students for out-of-classroom study.	1.79
12	28. Assignment of specific parts of the publication for out-of-classroom study.	1.73
13	26. Reproduction of parts of the publication to present to the students.	1.69
14	21. Assisting students in evaluating the publication in terms of the table of contents, format or outline, etc.	1.66
15	31. Browsing or leisure-time reading by the students.	1.26

[a]Great Extent = 3, Moderate Extent = 2, No Extent = 1.

Further explanation may lie in the highly technical information found in Class A publications. An examination of the data in Tables 10 and 11 reveal that small-group instruction ranked fifth and fourth, respectively, with regard to the extent to which Class B and Class C publications were used in that activity. Information found in the publications of these classes is not considered as technical as that in Class A publications.

The following major findings were revealed from an analysis of the data found in these three tables. Publications in all three classes were used more in professional growth and self-improvement of teachers than in any other activity. Class B and Class C publications were used more in supervised study than they were in individual instruction. Class A publications were used equally as much in supervised study as in individual instruction, but not in small-group instruction.

Class C publications were applied more by students in making some decisions about their farming programs than were either Class A or Class B publications. There is the possibility that the information in Class C publications is in such form that it can be more easily

used in decision-making by students than the information contained in Class A or Class B publications.

All classifications of publications were used to approximately the same degree in assisting students to identify main thoughts, principles, and ideas; in other words, to conceptualize. The same is true for assisting students in the interpretation of tables, charts, graphs, figures, diagrams, and the like.

Teachers used Class A publications more in the activity of assisting students to evaluate the publications in terms of date of printing or release and authority of source or author, than they did Class B or Class C publications. This may be explained by the fact that revisions of Class A publications are made less frequently than for Class B or Class C publications, thus, the need for performing this activity for Class A publications is greater.

Class A publications were used more in assisting students to evaluate them in terms of the table of contents and format or outline than those in Class B or Class C. The probable reason for this was that all but one of the Class A publications contained a table of contents and were

written according to some form of outline containing sub-headings. Many of the publications in Class C did not contain tables of contents.

All publications were used to approximately the same extent by students in making individual reports in the classroom. This activity ranked tenth in all three classifications. Teachers used all publications to approximately the same extent in the activity of assigning specific parts of the publication to students for out-of-classroom study. The data indicate that the publications do not lend themselves well to browsing or leisure-time reading by students.

Teachers intimated that students had little time to spend in browsing, and what little time they did have was spent in going through commercial and trade magazines. One reason for this was that in almost all instances, teachers had the commercial-type publications more prominently displayed than the college-type publications. This no doubt encouraged students to spend more of their leisure time with them than with the college-type publications. Another reason, according to many of the teachers, was that commercial publications were more colorful, had more "eye-appeal," than did the college-type publications.

Teachers also stated that commercial publications were more interesting to students. Variation in subject-matter contributes to interest motivation in commercial publications.

According to the composite extent-of-use scores that were computed for individual classifications, publications in Class C were used more than those in Class B, and those in Class B more than those in Class A. However, as will be shown later, certain individual Class A publications were used to a greater extent than were certain individual Class C publications.

These differences in composite extent-of-use scores tend to support the soundness of the policy by which the publications were classified. The theory behind the classification policy indicated that publications placed in Class C would be used most, those placed in Class B next, and those in Class A least.

Table 12 contains composite scores which show the extent to which each of the twenty-four sample publications had been used in fifteen activities dealing with students and/or teachers in the instructional programs of vocational agriculture. For the purpose of brevity in the following discussion, publications will be referred to by

Table 12. Twenty-four publications ranked in descending order of the extent to which they were used in the fifteen activities dealing with teachers and/or all-day students

Rank	Class	No.	Publication	Composite Score[a]
1	C	10.	S402 Soils of Michigan	2.46[b]
2	C	6.	E159 Fertilizer Recommendations for Michigan Crops	2.43[b]
3	C	1.	F157 Field Crop Varieties for Michigan	2.08[c]
4	C	3.	F254 Raising Calves to Improve the Dairy Business	2.02[c]
5	C	2.	F161 Rates for Custom Work in Michigan	2.01[c]
6	B	12.	S388 Inheritance of Farm Property in Michigan	1.86
7	B	13.	S390 High Quality Roughage Reduces Dairy Costs	1.85
8	B	14.	S429 Economics of Alternative Pasture Systems	1.82
9	C	8.	E345 Poultry Feeding	1.80
10	C	7.	E342 Handling Milk in Bulk on the Farm	1.61
11	C	11.	FBC719 Selecting Wood Joists & Beams for Farm Buildings	1.49

Table 12. Twenty-four publications ranked in descending order of the extent to which they were used in the fifteen activities dealing with teachers and/or all-day students (continued)

Rank	Class	No.	Publication	Composite Score[a]
12	B	17.	FBC736 Poultry House for 2,000 Layers	1.48
13	C	5.	F292 Sudan Grass in Michigan	1.47
14	A	24.	T275 The Demand for Farm Machinery and Tractors	1.39
15	C	9.	E355 Charcoal Broiled Chicken	1.38
16.5	C	4.	F291 Fertilizers for Christmas Trees	1.34
16.5	B	16.	CE9 Questions & Answers About Home Sewage Disposal	1.34
18	B	15.	CE8 Lighting Your Home	1.31
19.5	A	19.	S428 Orientations Toward Occupation & Residence	1.30
19.5	A	21.	T263 Farm Practice Adoption in Michigan	1.30
21	A	22.	T264 Farmers' Reactions to New Practices	1.25
22	A	23.	T274 Changes in Agri. Products Efficiency, & Earnings	1.23

Table 12. Twenty-four publications ranked in descending order of the extent to which they were used in the fifteen activities dealing with teachers and/or all-day students (concluded)

Rank	Class	No.	Publication	Composite Score[a]
23	A	20.	T253 Effects of Sub-urbanization Upon Rural Land Use	1.20
24	A	18.	F229 Automatic Washers and Dryers	1.02

[a]Great Extent = 3, Moderate Extent = 2, No Extent = 1.

[b]Significant at the .01 level.

[c]Significant at the .05 level.

number. The numbers used here correspond to the numbers assigned to publications in the annotated bibliography shown in Appendix B.[6]

As shown in Table 12, publications 10 and 6 ranked first and second, respectively. It should be recalled that of the twenty-four publications treated in the study, these two were the only ones which were found in all twenty-five of the departments. This was shown in Table 8.

Publications 10 and 6 were considered to be essential to vocational agriculture instructional programs by each of the teachers interviewed. The information contained in them was deemed indispensable to adequate instruction. Teachers indicated that they were used some in each of the four levels of vocational agriculture instruction in high school, as well as with young-and adult-farmer classes.

Some Class B publications were used to a greater extent than certain ones in Class C. However, a more significant observation was that certain Class A publications were used to a greater extent than certain ones in Class C. This would seem to indicate that importance of subject-matter, rather than distribution classification,

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[6]Appendix B.

was the main determinant in the extent-of-use scores for individual publications. As will be shown later in another table, readability of a publication also did not seem to influence the extent to which individual publications were used as much as subject-matter did.

The data contained in Table 13 show the mean scores of individual publications computed for each instructional activity that deals with teachers and/or high school students. Composite extent-of-use scores also are shown for each classification, as well as for each instructional activity. Activity rank by publication classification score, as well as rank based on total score, also are given in the table.

Publication numbers and instructional activity numbers in Table 13 correspond to the assigned numbers as shown in the annotated bibliography in Appendix B.[7] The use of numbers instead of titles of publications and descriptions of activities permits condensation of data. By condensing the data in this manner, a rapid and realistic comparison can be made between publications, between

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[7]Appendix B.

Table 13. Mean scores[a] of publications in instructional activities dealing with teachers and/or all-day students

Pub. No.	Instructional Activities														
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	36
1.	1.39	2.43	1.61	2.65	2.22	2.74	2.09	1.74	2.30	1.96	1.83	2.39	1.30	1.87	2.65
2.	2.40	1.71	1.29	2.54	2.33	2.29	2.08	1.83	2.08	1.67	1.62	2.21	1.42	2.04	2.46
3.	1.84	2.26	1.42	1.79	2.05	2.42	2.42	1.95	2.21	1.89	2.05	2.32	1.37	1.95	2.37
4.	1.20	1.35	1.10	1.00	1.75	1.30	1.55	1.15	1.35	1.20	1.45	1.30	1.20	1.45	1.70
5.	1.07	1.21	1.21	1.29	1.71	1.86	1.64	1.29	1.71	1.43	1.57	1.57	1.07	1.43	1.93
6.	2.76	2.76	2.74	2.52	2.48	2.88	2.60	2.16	2.44	2.16	2.20	2.52	1.44	2.00	2.92
7.	1.65	1.75	1.55	1.55	1.80	1.60	1.75	1.15	1.75	1.30	1.80	1.75	1.10	1.60	2.00
8.	2.31	1.75	1.75	1.81	1.75	2.25	1.81	1.50	1.88	1.62	1.88	1.81	1.19	1.81	1.81
9.	1.24	1.53	1.00	1.00	1.59	1.41	1.53	1.35	1.24	1.41	1.00	1.12	1.71	1.53	2.06
10.	2.68	2.76	2.68	2.56	2.52	2.92	2.52	2.44	2.48	2.48	2.36	2.28	1.52	2.04	2.68
11.	1.75	1.33	1.17	1.17	2.08	1.58	1.50	1.42	1.42	1.25	1.42	1.42	1.17	1.58	2.08
Class C MS	1.93	1.99	1.66	1.92	2.07	2.20	2.02	1.69	1.96	1.73	1.79	1.95	1.33	1.79	2.30
Rank	8	5	14	9	3	2	4	13	6	12	10.5	7	15	10.5	1
12.	1.57	2.22	2.09	2.13	1.91	2.22	1.83	1.48	1.78	1.74	1.78	1.48	1.48	1.83	2.30
13.	1.90	1.95	1.80	1.85	1.85	2.30	1.95	1.75	1.95	1.95	1.80	1.90	1.10	1.50	2.25
14.	2.08	2.15	2.00	1.92	1.92	2.08	1.85	1.69	1.92	1.54	1.62	1.69	1.15	1.54	2.15
15.	1.19	1.31	1.19	1.13	1.69	1.69	1.56	1.00	1.19	1.12	1.12	1.19	1.38	1.44	1.50
16.	1.45	1.27	1.09	1.09	1.73	1.55	1.45	1.00	1.27	1.27	1.27	1.45	1.18	1.45	1.55
17.	2.00	1.33	1.28	1.28	1.72	1.67	1.44	1.28	1.50	1.33	1.50	1.50	1.17	1.28	1.94
Class B MS	1.70	1.75	1.62	1.62	1.81	1.96	1.70	1.40	1.63	1.53	1.55	1.54	1.26	1.52	2.00
Rank	5.5	4	8.5	8.5	3	2	5.5	14	7	12	10	11	15	13	1

Table 13 (Continued)

Pub. No.	Instructional Activities														
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	36
18.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
19.	1.10	1.50	1.30	1.30	1.50	1.50	1.20	1.20	1.20	1.30	1.20	1.30	1.10	1.10	1.70
20.	1.18	1.45	1.27	1.45	1.55	1.18	1.00	1.09	1.00	1.00	1.09	1.00	1.00	1.00	1.73
21.	1.15	1.31	1.54	1.31	1.38	1.46	1.00	1.31	1.23	1.08	1.15	1.15	1.08	1.15	2.23
22.	1.15	1.31	1.31	1.15	1.31	1.31	1.08	1.31	1.15	1.08	1.08	1.00	1.15	1.23	2.08
23.	1.24	1.24	1.24	1.29	1.24	1.35	1.00	1.24	1.18	1.12	1.18	1.06	1.06	1.18	1.82
24.	1.44	1.33	1.33	1.44	1.44	1.56	1.33	1.44	1.00	1.11	1.33	1.44	1.33	1.44	1.89
Class A MS	1.19	1.31	1.30	1.28	1.35	1.35	1.07	1.23	1.12	1.10	1.15	1.12	1.10	1.16	1.85
Rank	8	4	5	6	2.5	2.5	15	7	11.5	13.5	10	11.5	13.5	9	1
Composite Scores	1.72	1.79	1.58	1.71	1.86	1.96	1.75	1.52	1.71	1.55	1.60	1.68	1.27	1.59	2.13
Rank All Classes	6	4	12	7.5	3	2	5	14	7.5	13	10	9	15	11	1

[a]Great Extent = 3; Moderate Extent = 2; No Extent = 1.

selected activities, and between publication classifications. This type of table also saves space, for if each publication title had been listed along with its extent of use in each activity, it would have necessitated the use of at least forty-eight additional tables in this report.

A close analysis of the data in Table 13 reveals that two Class A publications; number 21 entitled Farm Practice Adoption in Michigan, and number 22 entitled Farmers' Reactions to New Practices; rank first and second, respectively, in the activity of self-improvement and professional growth. In the latter part of the interview, teachers indicated that these two Class A publications contributed more to their professional growth than to their self-improvement.

Class A publications 20, 19, and 24 ranked first, second, and third, respectively, with respect to extent-of-use in individual instruction. Teachers explained that publication 20 had furnished them information which they in turn had used to help individuals whose home-farm had been affected by "creeping" suburbanization. The same was true for publication 19; however, teachers explained that it furnished them information that was used more in guidance

counseling of individuals rather than in individual instruction as it usually is thought of in the classroom. Teachers indicated that publication 24 aided in supplying them with an economic framework on farm machinery purchases which they used in instructing individuals on this subject.

Publications 19 and 20 ranked first and second, respectively, in the activity of assisting students in identifying main thoughts, principles, and ideas. Teachers related this activity to that of individual instruction because guidance counseling, for which both publications 19 and 20 furnished some information, usually was performed with individuals rather than with a group.

Class A publication 24 ranked first in activities 19, 24, 25, 26, 29, 30, 31, and 32. Publication 21 ranked first in activities 21, 27, and 36; publication 19 ranked first in activities 20 and 28.

Further analysis of Table 13 reveals that publications numbered 12 through 17 represent those that compose Class B. Publication 13 ranked first in activities 24, 25, 26, 27, 28, 29, and 30; publication 12 ranked first in activities 20, 21, 22, 3, 32, and 36; and publication 14 ranked first in activities 2, 19, and 23.

Teachers indicated that publication 12 was especially useful at the senior level of high school instruction. Aspects of agricultural law were treated at this level. Publications 13 and 14 contributed most to the farm management aspects of dairying which also were treated at the senior level. Publication 13 seemed somewhat easier than publication 14 for students to understand. They used it to a relatively greater extent in making individual reports in the classroom and in making decisions about their farming programs than they did any of the other publications in Class B.

Those publications numbered 1 through 11 comprised Class C. As shown in Table 13, publication 10 ranked first in activities 21, 23, 24, 26, 27, 28, and 29, with publication 6 always ranking second. Publication 6 ranked first in activities 19, 20, 25, 30, and 36 with publication 10 ranking second in all these activities with the exception of activity 30. Publication 10 ranked fourth in activity 30, which involved the use of publications by students in making decisions about their farming programs. By studying the nature of the information found in the first, second, third, and fourth ranked publications in activity 30; it is

readily discernible why publication 10 ranked fourth. The information found in those publications that ranked first, second, and third seemed to be better adapted to decision-making than the information contained in publication 10. Yet, publication 10, Soils of Michigan, was the most extensively used of all the twenty-four publications treated in the study. This was true because the information in publication 10 was deemed basic to the study of agriculture in Michigan, but did not seem to be viewed as information to be used in decision-making.

Publication 1 ranked first in the extent to which Class C publications were used in assisting students to evaluate publications in terms of date of printing or release and authority of source or author. Students borrowed publication 2, Rates for Custom Work in Michigan, more than any other publication for out-of-classroom study. Teachers indicated that publication 2 was used most in keeping and analyzing records. Information in this publication was used to determine returns for labor, as well as for making future plans for the student farming programs. Students used publication 9, Charcoal Broiled Chicken, more than other publications in their browsing or leisure-time reading, activity 31. Teachers indicated that this

publication found its greatest use by members of the food committee who planned the meal for the Future Farmers of America banquet held each year at the local school.

The bar graphs in Figure 1 show the relative extent-of-use of the three classes of publications in each of the fifteen activities that dealt with teachers and those that dealt with all-day students. The activities are portrayed in the same descending order of the extent to which publications were used in them as they appeared in Table 8. Figure 1 makes it possible to rapidly compare publication extent-of-use scores between all three classifications within each activity. Comparison also can be made of individual classification extent-of-use scores among activities.

There were three activities included in the interview instrument which dealt with adult-farmer and/or young-farmer classes. All data for these activities were derived from the responses of only nineteen of the twenty-five teachers used in this study. The reason was that there were six departments in which no out-of-school classes were conducted in vocational agriculture.

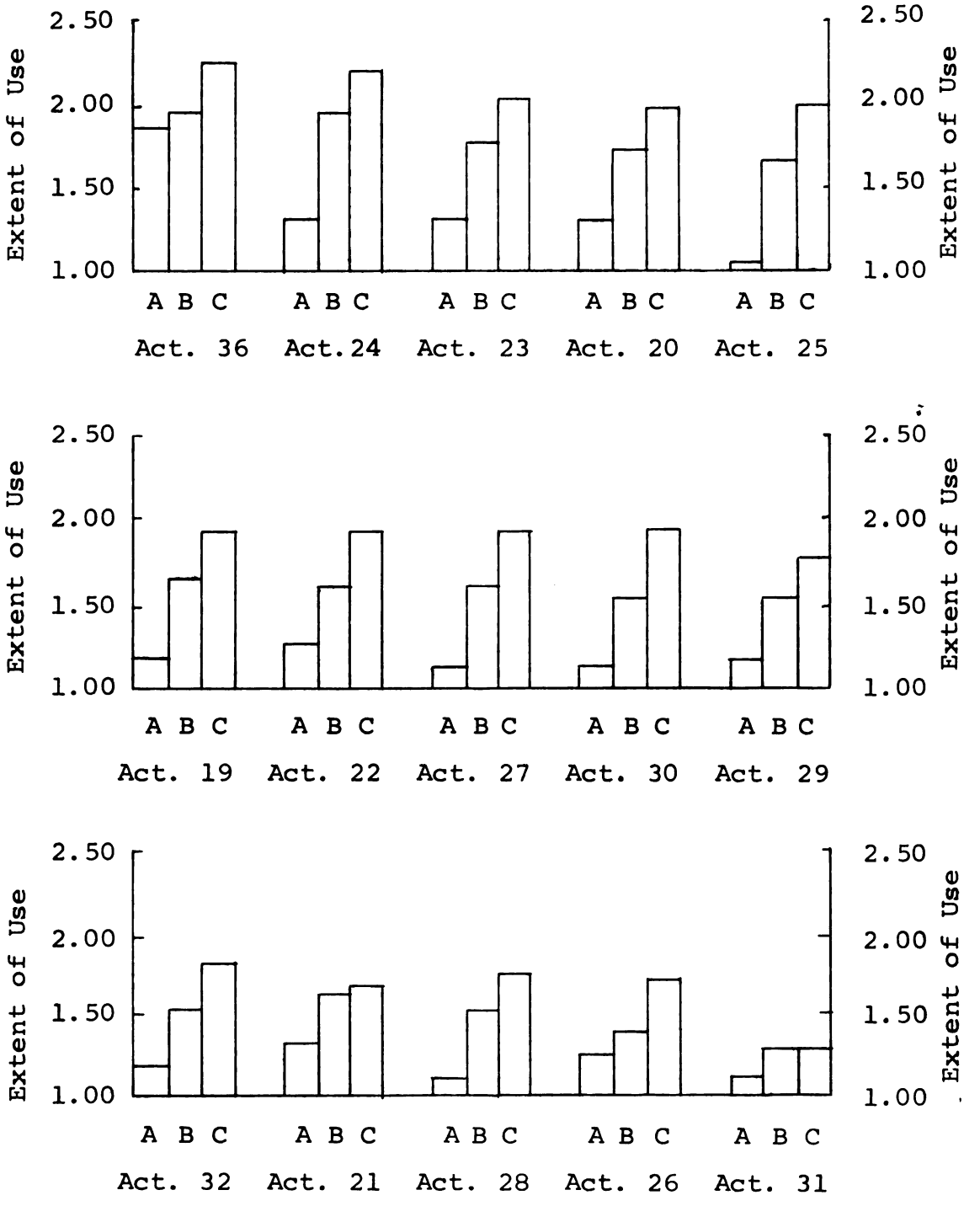

Figure 1. Comparison of the extent to which each of the three classes of publications were used in the fifteen activities that dealt with teachers and/or all-day students

Shown in Table 14 are these three activities ranked in descending order of the extent to which publications were used in each. Composite scores also are shown for each classification. As indicated, teachers used publications to a relatively greater extent for their own reference or review, but apparently gave somewhat less encouragement to class members to do outside reading in them. Very little of the material found in the publications was reproduced for presentation or dissemination to the class members. More was reproduced from Class C publications than from Class A or Class B. This is in direct contrast with regard to the same activity that dealt with all-day students, where more material from Class A publications was reproduced for student consumption.

The data recorded in Table 15 show the twenty-four publications ranked in descending order of the extent to which each was used in the three activities that dealt with out-of-school classes. Publication 6, Fertilizer Recommendations for Michigan Crops, ranked first in extent-of-use in all three activities, and publication 10, Soils of Michigan, ranked second. These two publications also were used most in activities that dealt with all-day students.

Table 14. Three instructional activities dealing with adult-farmer and/or young-farmer classes ranked in descending order of the extent to which publications in all classifications were used in each

Rank	No.	Activity	Mean Scores[a]			
			Class A	Class B	Class C	Composite scores
1	33.	Reviewed by teacher prior to introducing a topic previously requested by class members	1.38	1.80	2.02	1.85
2	35.	Encouraging class members to do outside reading in the publication	1.26	1.55	1.80	1.64
3	34.	Reproduction of parts of the publication to present to class members	1.23	1.37	1.62	1.48

[a]These scores were derived from responses of only 19 of the 25 teachers used in the study. There were six departments in which no out-of-school classes were conducted in vocational agriculture. Great Extent = 3, Moderate Extent = 2, No Extent = 1.

Publications 18 and 19 were not used at all with young-farmer and adult-farmer classes. Publications 20 and 22 tied for fifteenth place and publications 8 and 9 tied for eighteenth place.

Table 16 contains data which portray the individual mean scores of publications for each of the three activities dealing with young farmers and/or adult farmers. Also, shown are composite extent-of-use scores of each publication for all three activities. Rank within classification also is shown.

In Class C, publication 6 ranked first in all three activities. Publication 1 ranked second in activities 33 and 35, but was fourth in activity 34. Publication 10 ranked second in activity 34, but was third in activities 33 and 35.

Based on other data in Table 16, it would seem apparent that the study of fertilizers and fertilization practices rate very high as to importance in the instructional program for out-of-school classes. The study of soils and selection of crop varieties also rank high, insofar as the use of these publications are concerned.

Of the Class B. publications, number 13 ranked first in activities 33 and 34, and third in activity 35.

Table 15. Twenty-four publications ranked in descending order of the extent to which they were used in the three activities dealing with adult-farmer-and/or-young-farmer classes

Rank	Class	No.		Publication Title	Composite[a] Score
1	C	6	E159	Fertilizer Recommendations for Michigan Crops	2.53
2	C	10	S402	Soils of Michigan	2.53
3	C	1	F157	Field Crop Varieties for Michigan	2.20
4	C	3	F254	Raising Calves To Improve the Dairy Business	2.14
5	C	2	F161	Rates for Custom Work in Michigan	1.93
6	B	13	S390	High Quality Roughage Reduces Dairy Costs	1.89
7	B	12	S388	Inheritance of Farm Property in Michigan	1.87
8	B	14	S429	Economics of Alternative Pasture Systems	1.80
9	C	7	E342	Handling Milk in Bulk on the Farm	1.71
10	C	11	FBC 719	Selecting Wood Joists and Beams for Farm Bldgs.	1.53
11	A	24	T275	The Demand for Farm Machinery & Tractors	1.50
12	C	5	F292	Sudan Grass in Michigan	1.47
13	A	21	T263	Farm Practice Adoption in Michigan	1.46
14	A	23	T274	Changes in Agricultural Production, Efficiency, and Earnings	1.36

Table 15. Twenty-four publications ranked in descending order of the extent to which they were used in the three activities dealing with adult-farmer-and/or-young-farmer classes (concluded)

Rank	Class	No.		Publication Title	Composite[a] Score
15.5	A	20	T253	Effects of Suburbanization Upon Rural Land Use	1.29
15.5	A	22	T264	Farmers' Reactions to New Practices	1.29
17	B	17	FBC 736	Poultry House for 2,000 Layers	1.26
18.5	C	8	E345	Poultry Feeding	1.23
18.5	C	9	E355	Charcoal Broiled Chicken	1.23
20	B	16	CE9	Questions and Answers About Home Sewage Disposal	1.22
21	B	15	CE8	Lighting Your Home	1.19
22	C	4	F291	Fertilizers for Christmas Trees	1.14
23.5	A	18	F229	Automatic Washers and Dryers	1.00
23.5	A	19	S428	Orientations Toward Occupation and Residence	1.00

[a]Great Extent - 3, Moderate Extent - 2, No Extent = 1.

Publication 12 ranked first in activity 35, and second and third in activities 34 and 33, respectively.

Publication 24 in Class A ranked first in activities 34 and 35, and second in activity 33. Publication 21 ranked first in activity 33, second in activity 35, and third in activity 34.

The data in Table 17 show a comparison of the extent to which each publication was used and its readability as derived from application of the Dale-Chall[8] formula. Comparison was made between composite extent-of-use scores and readability mean raw scores. Composite extent-of-use scores were computed from scores of the extent to which publications were used in all activities. Mean raw scores were derived from the Dale-Chall formula computations. The grade-level shown for each publication was determined by the mean raw score obtained for that publication.

The composite extent-of-use scores, mean raw scores, and the average grade-levels of readability also are given in Table 17 for individual classifications and for all publications irrespective of classification. As

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[8]Dale and Chall, loc. cit.

Table 16. Mean scores[a] of publications in each activity dealing with young and/or adult farmers

Publication Number	Activity 33	34	35	Composite Score	Rank
1	2.56	1.72	2.33	2.20	3
2	2.22	1.72	1.83	1.93	5
3	2.43	2.00	2.00	2.14	4
4	1.12	1.12	1.18	1.14	11
5	1.70	1.30	1.40	1.47	8
6	2.89	2.16	2.53	2.53	1
7	1.94	1.38	1.81	1.71	6
8	1.23	1.15	1.31	1.23	9.5
9	1.23	1.15	1.31	1.23	9.5
10	2.53	2.11	2.05	2.23	2
11	1.67	1.50	1.42	1.53	7
Class C Score	2.02	1.62	1.80		
12	2.12	1.53	1.94	1.87	2
13	2.27	1.73	1.67	1.89	1
14	2.20	1.50	1.70	1.80	3
15	1.25	1.08	1.25	1.19	6
16	1.33	1.11	1.22	1.22	5
17	1.38	1.08	1.31	1.26	4
Class B Score	1.80	1.37	1.55		

Table 16. Mean scores[a] of publications in each activity dealing with young and/or adult farmers (concluded)

Publication Number	Activity			Composite Score	Rank
	33	34	35		
18	1.00	1.00	1.00	1.00	6.5
19	1.00	1.00	1.00	1.00	6.5
20	1.38	1.25	1.25	1.29	4.5
21	1.75	1.25	1.38	1.46	2
22	1.38	1.25	1.25	1.29	4.5
23	1.45	1.27	1.36	1.36	3
24	1.50	1.50	1.50	1.50	1
Class A Score	1.38	1.23	1.26		
Rank	1	3	2		
Total Score	1.85	1.48	1.64		

[a]Great Extent = 3, Moderate Extent = 2, No Extent = 1.

shown in the table, a low mean raw score of readability corresponds to a low grade-level of readability.

A correlation coefficient was determined between extent of use of publications and their mean raw scores of readability. The hypothesis was adopted that the extent to which publications were used was related inversely to the mean raw scores of readability. The resultant r of -0.058 for the data in Table 17 indicates that high mean scores of extent-of-use are associated with low mean raw scores of readability, but to only a negligible degree. From a table of critical absolute values of correlation coefficient, the value of -0.404 was given for the five per cent critical point. Since -0.058 was less than -0.404, this seemed to indicate that the readability of a publication had no influence on the extent to which teachers said the publication was used.

Similarly, correlation coefficients were computed between extent-of-use of publications and their mean raw scores of readability for each of the eighteen activities that were treated in the study. This indicated that there was negligible relationship between the readability of a publication and the extent to which it was used in any of the activities.

Table 17. Comparison of extent-of-use and readability for twenty-four publications

Publication Number	Composite Use-Score x	Readability	
		Mean Raw Score y	Grade-Level
1	2.08	7.62	9th-10th
2	2.01	7.40	9th-10th
3	2.02	7.74	9th-10th
4	1.34	9.06	13th-15th (college)
5	1.47	8.04	11th-12th
6	2.43	8.96	11th-12th
7	1.61	8.18	11th-12th
8	1.80	8.35	11th-12th
9	1.38	6.82	7th- 8th
10	2.46	8.90	11th-12th
11	1.49	7.41	9th-10th
Class C	1.89	8.20	11th-12th
12	1.86	9.88	13th-15th (college)
13	1.85	8.97	11th-12th
14	1.82	8.42	11th-12th
15	1.31	7.31	9th-10th
16	1.34	8.71	11th-12th
17	1.48	8.14	11th-12th
Class B	1.64	8.75	11th-12th

Table 17. Comparison of extent-of-use and readability for twenty-four publications (concluded)

Publication Number	Composite Use-Score x	Readability	
		Mean Raw Score y	Grade-Level
18	1.02	7.52	9th-10th
19	1.30	8.98	11th-12th
20	1.20	9.58	13th-15th(college)
21	1.30	9.02	13th-15th(college)
22	1.25	9.58	13th-15th(college)
23	1.23	9.27	13th-15th(college)
24	1.39	10.54	16th(college grad.)
Class A	1.24	9.33	13th-15th(college)
Average (all publications)	1.69	8.74	11th-12th

r_{xy} = -0.0575 (negligible relationship)

C. Importance of Certain Publication Features or Characteristics

The interview instrument contained eighteen features and characteristics of college-type publications. Teachers were asked to rate these with respect to how important they were to this type of publication insofar as they applied to the instructional program in vocational agriculture.

Table 18 contains data showing the teachers' ratings. Timeliness of information was deemed most important by the teachers. Although it was shown in Table 18 that little or no relationship existed between the extent to which a publication was used and its readability; teachers still rated "ease of reading," as being highly important.

The feature or characteristic of "picture(s) of the author(s)," was rated by the teachers as being of least importance. Despite this low rating, it seems worthwhile here to explain why this feature was included in the interview instrument. During the pre-test of the instrument with three teachers, one suggested that it should be included for the following reason. He found that when he brought some of his students to the campus of Michigan State University on field trips, during Farmers' Week,

Table 18. Teachers' ratings with respect to importance of features and characteristics of publications.

Feature or Characteristic	Mean Score[a]
Up-to-date or timely	2.96
Easy to read or understand	2.94
Adaptability to local conditions	2.72
Tables, charts, diagrams, etc., aids to understanding	2.70
Publications free or inexpensive	2.60
Ease with which publications can be procured	2.56
Precautions, safety measures, and limitations needed	2.52
Action pictures showing application of the information	2.44
Importance of subject to farming, benefits, economic influence	2.40
Suggested sources of additional information or references	2.38
Conditions necessary for most efficient and effective use	2.26
List of special tools, equipment,etc.,needed	2.24
Adequate table of contents and index	1.96
Brief general history of the subject, its origin, etc.	1.94
Relationships to closely allied subjects	1.92
List of the qualifications of the author(s)	1.84
List of skills and abilities needed by reader to use the data	1.82
Picture(s) of the author(s)	1.12

[a]Extremely Important = 3, Moderately Important - 2, Not Important - 1.

Career Days, and on similar visitations, they frequently saw and met some of the authors of publications which they had been using in the classroom. This teacher cited instances in which an author's name had been mentioned in normal conversation among his students and the fact that the author had been seen during a field trip. His students tended to identify themselves with the author. According to this teacher, this may have some influence on the students' views as to the credibility and authoritativeness of the subject-matter contained in a publication. Rural sociologists think that similar viewpoints or attitudes on the part of students and farmers may have some influence on the rapidity with which they adopt new ideas and practices in farming. Thus, the reason for including this feature in the interview instrument, becomes obvious.

D. Awareness of Revised and Recently Released Publications

Teachers become aware of the existence of a publication in many ways. There were eight different ways or agencies included in the interview instrument by which teachers keep abreast of revised and recently released publications. Teachers were asked to indicate the extent to

which each of these had been of value in keeping them aware of currently released publications. The ratings of these are shown in Table 19.

As shown in Table 19 the "Available Publications," list disseminated by the Bulletin Office of Michigan State University was rated as being the most important way by which teachers maintain an awareness of revised or newly released publications. According to those teachers interviewed, this periodic listing is not automatically sent to them. At the time of the interview the list was sent to them only upon their request. Some teachers indicated they never received it. Rated equal in importance were the "Agricultural Education Service-Letter," and "conference and/or workshops." The "Service-Letter," not only contains a list and classifications of publications revised or recently released by Michigan State University, but it also contains current releases of publications by other states and the United States Department of Agriculture. Recently released materials are displayed at conferences and workshops held for Michigan teachers.

Almost every teacher that was interviewed stated that his local county extension agent aided him in keeping

Table 19. Importance of agencies by which teachers keep abreast of revised or recently released publications

Rank	Source of Awareness	Mean Score[a]
1	MSU Bulletin Office "Available Publications," list	2.40
2.5	MSU "Agricultural Education Service Letter,"	2.36
2.5	Conferences and/or workshops	2.36
4	Your local county extension agent	2.20
5	In-service meetings held off-campus	2.16
6	Other teachers of vocational agriculture	1.92
7	MSU Agricultural Experiment Station or its branches	1.88
8	State consultant staff of the Michigan Department of Public Instruction	1.32

[a]Extremely Important = 3, Moderately Important = 2, Not Important - 1.

abreast of new publications. Some teachers indicated that they procured all their agricultural publications produced by Michigan State University from their county agent rather than ordering directly from the Bulletin Office. Teachers first determined from the "Available Publications," list the number of copies needed of each publication and then submitted the order to the county agent. The county agent included this order with his own request to the Bulletin Office. Upon receipt of the publications the county agent forwarded the desired copies to the teacher. For most teachers this seemed to be a very satisfactory arrangement and it seemed to have promoted a highly cooperative relationship between county agents and teachers of vocational agriculture.

CHAPTER V

SUMMARY

Major items to be considered in this chapter are: (1) a statement of the problem, including the purposes and the sources of data; (2) statements on the various aspects of the findings; (3) implications drawn from the findings; and (4) suggestions for further study.

A. The Problem

The utilization of state agricultural college publications in selected vocational agriculture activities was the basis of this study. The term utilization as used in this study referred to how publications were used, as well as the extent to which they were used in selected vocational agriculture activities.

1. Purposes. Specifically, the purposes for which this study was conducted were as follows:

a. To determine storage, filing, and indexing procedures for this type of publication which were used by teachers of vocational agriculture in Michigan.

b. To determine the nature of the specific activities of vocational agriculture in which this type of publication was used.

c. To determine the extent to which these publications were used in each of the selected activities.

d. To determine whether correlation existed between the readability of publications and the extent to which they were used.

e. To determine what agencies teachers used to maintain an awareness of revised and recently released publications.

f. To determine what features and characteristics of publications were deemed important by teachers.

It was thought that information gained from such a study would be of value to teacher-trainers as they work with students and teachers in pre-service and in-service programs which are apt to include some work in instructional materials used in teaching vocational agriculture. Likewise, it was thought that such information would be of interest to those persons who have as their responsibility the preparation and dissemination of this type of publication.

2. Teacher sample. After consultation with specialists in the fields of agricultural education, agricultural extension, statistics, educational research, and communication, it was determined that teachers would be interviewed personally to gather information for the study. A sample of twenty-five teachers of vocational agriculture in Michigan were selected randomly who (1) had been in teaching for a period of at least two years and (2) had been in the same high school position for at least one year.

The teachers in this sample averaged 11.04 years of total teaching experience with a range from two to thirty-seven years. Years of teaching vocational agriculture for teachers averaged 10.40 with a range from two to thirty-five. Tenure of the teachers in their present school systems averaged 7.56 years with a range from one to thirty-five.

Twenty-four per cent of the teachers had earned from five to fifteen credits beyond the bachelor of science degree. Thirty-six per cent had earned sixteen or more credits beyond the bachelor of science degree. Twenty-eight per cent had been awarded the master's degree and twelve per cent had earned as many as fifteen credits beyond this degree.

There was an average of 53.4 students per department in all-day classes; an average of 27.5 members per adult-farmer class; an average of 13.6 members per young-farmer class; and an average of 19.6 members in combination adult- and young-farmer classes. Six departments out of the twenty-five had no out-of-school classes. Two departments were located in senior high schools in which no freshman-level vocational agriculture was offered.

3. Publication sample. Based upon consultation with the specialists mentioned previously, it was determined that a representative sample of all those publications which had been made available to teachers would be chosen for treatment in this study.[1] Prior to dissemination to teachers, publications had been classified according to a policy statement previously agreed upon by those concerned.[2] The sample of publications for use in this study was chosen from within these three classifications and totaled twenty-four: seven in Class A, six in Class B, and eleven in Class C.

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[1] Appendix B.

[2] Appendix A.

Five teachers had twenty or more of the publications while the average was 15.9 and the range was from seven to twenty-four. Three teachers had no sample publications in Class A and four had all seven, while the average was 3.2 out of the seven in this group. Three teachers had only one in Class B, and three had all six, with the average being four. For Class C, two teachers had only five and three had all eleven, with the average being 8.6 per teacher.

The teachers gave the following reasons for not having all the various publications included in the sample: (1) publications had been discarded by teachers who had preceded them in the department, (2) publications had never been requested nor received by the present teacher, (3) publications had been forwarded to other departments within the high school, (4) publications had been discarded because the subject-matter contained in them did not occupy an important place in the instructional program of that particular teacher, and (5) publications had been given to students and class members.

The readability of each publication was determined by use of the Dale-Chall readability formula.[3]

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[3]Dale and Chall, loc. cit.

4. Activities. As a result of a thorough review of related literature, coupled with the advice received from specialists in various fields, eighteen activities in which publications are used were selected for treatment in this study. There were two instructional-orientation activities; two reference-evaluation activities; three methods-of-teaching activities; three instructional-procedure activities; four student-usage activities; three young-and/or-adult-farmer class activities; and one teacher self-improvement activity included in the interview instrument.[4] Teachers were asked to rate the extent to which individual publications had been used in each of the activities.

In addition to the activities, the interview instrument also contained questions for teachers to answer regarding the place of storage, method of filing, procedures for indexing or classifying, importance of publication features or characteristics, and means by which teachers maintained an awareness of revised and recently released publications.

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[4] Appendix C.

B. Major Findings

The major findings of this study follow. Comparisons with findings reported in earlier studies will be made where appropriate.

1. Storage and filing. Findings that dealt with storage and filing of publications were as follows:

a. Eighteen teachers allowed their all-day students to have free access to publications, while six teachers allowed their students to have only limited access, and one teacher allowed his students no access to publications. The major reason given for limiting accessibility to publications was that students disarranged the files when they returned publications to storage after use.

b. Fourteen of the teachers kept single copies of the publications in private files for their own personal use and maintained spearate files of multiple copies of the same publications for the students to use.

c. Pamphlet file boxes were used by eleven teachers for storing publications; while eight were using the standard, sliding-drawer, steel file cabinet; and six were using some type of home-made "pigeon-hole," cabinet.

d. Twenty-three of the teachers kept their publications in the classroom, one kept them in the conference room and one kept them in the laboratory. Place of storage apparently had no influence on the extent to which students were allowed access to publications. Place of storage was dictated by physical plant arrangements.

e. No definite standardized or uniform patterns were found among those twenty teachers who indexed or classified publications according to subject with a modified decimal system. This corresponds to the findings of Miller.[5]

On the other hand, all of the five teachers who had adopted the AGDEX[6] system said they had done so as a direct result of having attended in-service education meetings. These in-service meetings, held in various parts of Michigan in the Fall of 1960, were conducted by staff members of the Agricultural Education Service of the College of Education at Michigan State University. The AGDEX classification system was described and procedures demonstrated for placing it into operation at these in-service meetings.

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[5] Miller, loc. cit.

[6] Ibid.

2. Nature of use of publications in activities. Following are those findings which dealt with the extent to which publications were used in the various activities. Listed in descending order of the extent to which the publications were used in them, these activities are:

a. Professional growth and self-improvement of teachers

b. Supervised study in the classroom

c. Individual instruction in the classroom, shop, laboratory, or on the farm

d. Reviewed by teacher prior to introducing a topic previously requested by adult or young farmers

e. Assisting students in identifying main thoughts, principles, and ideas (conceptualizing)

f. Small-group instruction in the classroom, shop, laboratory, or on the farm

g. Assisting students in the interpretation of tables, charts, graphs, figures, diagrams, and other graphical methods

h. Assisting students in evaluating publications in terms of the date of printing, authority of source or author, and the like

i. Having students list publications as references in their notebooks

j. Application of publications by students in making some decision about their farming programs

k. Encouraging adult and young farmers to do outside reading in the publications

l. Application of the publications by students in making individual reports in the classroom

m. Borrowing by students for out-of-classroom study

n. Assisting students in evaluating publications in terms of the table of contents, index, format or outline

o. Assignment of specific parts of publications to students for out-of-classroom study

p. Reproduction of parts of publications to present to the all-day students

q. Reproduction of parts of publications to present to adult or young farmers (The ranking of this activity agrees with the findings reported by Ridenour)[7]

r. Browsing or leisure-time reading by students.

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[7]Ridenour, loc. cit.

3. Extent of use of publications. Those findings pertaining to the extent to which publications were used in the selected activities are as follows:

a. The differences were highly significant between the composite extent-of-use scores of Class C and Class B, and between Class B. and Class A. These differences indicate that Class C publications were used to a significantly greater extent in all activities than those in Class B. Likewise, those in Class B were used to a significantly greater extent than those in Class A.

As to individual publications, however, there were certain ones in Class A that were used to a greater extent than certain ones in Class C. Likewise, some individual publications in Class B were used more than certain ones in Class C.

b. The individual publications most used were Soils of Michigan and Fertilizer Recommendations for Michigan Crops. Both were used to a significantly greater extent than were any other publications in the sample.

c. Correlation coefficients computed between composite extent-of-use scores of publications and mean raw scores of readability approached zero. A low correlation

indicated that the readability of publications was not associated with the extent to which they were used. Similar results were obtained when correlations were computed between extent-of-use scores of each individual activity and mean raw scores of readability.

4. Importance of features or characteristics of publications. The following features and characteristics of publications were rated as to their importance by the teachers. Listed in descending order of their importance, teachers indicated that publications should:

a. Be up-to-date or timely,

b. Be easy to read and understand,

c. Be adapted to local conditions,

d. Include tables, charts, diagrams, and other graphical presentations as aids to understanding,

e. Be free of cost or relatively inexpensive,

f. Be easy to procure,

g. Contain precautions, safety measures, and limitations with regard to use of the information,

h. Include action pictures showing application of the information,

i. Show importance of the subject to farming, benefits, and economic influence,

j. Suggest sources of additional information or references,

k. Contain conditions which are necessary for the most efficient and effective use of the information,

l. List special tools, equipment, and instruments needed to utilize the information,

m. Contain an adequate table of contents and index,

n. Include a brief, general history of the subject, its origin, and development,

o. Show relationships to closely allied subjects, especially those having reciprocal dependency,

p. List the qualifications of the author(s),

q. Discuss special skills and abilities needed by the reader in order to use the data,

r. Contain picture(s) of the author(s) for identification purposes.

5. Value of agencies in maintaining an awareness of publication existence. Listed here in descending order according to their importance as rated by teachers, are agencies or means by which an awareness of revised and recently released publications is maintained:

a. "Available Publications," list issued three or four times each year by the Bulletin Office of Michigan State University,

b. "Agricultural Education Service Letter," issued quarterly by staff members in the Agricultural Education Service of the College of Education at Michigan State University,

c. Conferences and/or workships held on-campus,

d. The local county extension agent,

e. In-service meetings held off-campus,

f. Other teachers of vocational agriculture,

g. Michigan Agricultural Experiment Station and its branch stations,

h. Vocational agriculture consultant staff from the Vocational Education Division of the Michigan Department of Public Instruction.

C. Implications of the Study

The present study was confined to twenty-five teachers of vocational agriculture in Michigan and to twenty-four agricultural publications which had been published by Michigan State University and made available to the teachers. If application of the findings is made to other situations, detailed consideration should be given to these limitations. Conditions in schools and among teachers vary according to location and time. Likewise, the procurement and use of publications vary with different geographic locations and time. Therefore, it is possible that findings of this study may differ with those found in a similar study, but conducted at a different time and covering a different geographic area. Yet, an analysis of the location of the departments used in this study would seem to indicate that the sample adequately represented the geographic area for which it was chosen.

With the above limitations in mind, the following implications were drawn from the various facets of this study.

1. There were some implications drawn from the findings which dealt with the storage and filing of publications. Those findings which pertained to the degree of accessibility that students have to publications and the maintenance of separate files for teachers and students, prompted the following implication. It may be implied that there is some relationship between the degree with which students are allowed access to publications and the permissiveness of the educational atmosphere that prevails in the classroom.

The finding that dealt with place of storage, whether in classroom, conference room, or laboratory, implies that location of publications within the physical plant area of the department influenced neither the degree of accessibility to publications by students nor the extent to which publications were used.

The finding which dealt with publication classification and indexing methods implies that the AGDEX had met with almost complete approval by those teachers who had adopted it. However, the fact that only twenty per cent of the teachers in this study had adopted the AGDEX seems to imply that some teachers may be reluctant to adopt new and improved practices.

2. One of the significant findings in this study was that publications were used more in the self-improvement and professional growth of teachers than in any other single activity. One implication of such a finding may have relevancy to the teachers' perceptions of their roles as educators. Teachers may perceive as one of their roles that of being able to answer all questions on technical and applied agriculture which may be directed toward them. They may view themselves as needing to become prime sources of agricultural information because they think their communities expect this of them. Hence, teachers may use this type of publication as one means of keeping abreast of new and dynamic changes and advancements in agricultural technology and consequently as a means of enhancing their status in their respective communities.

Another implication of this finding which seems tenable is related to the theoretical communication model mentioned in Chapter II. Since teachers (decoders) use these publications to such a great extent for their self-improvement, this implies that teachers might well be regarded as a primary audience of the agricultural scientists (encoders) who prepare the publications for dissemination.

A final implication of this one finding is that the extent to which teachers use publications for self-improvement may well be regarded as a possible index of the degree to which they contribute to the "two-step," flow of agricultural information in the communication process.

3. Findings indicated that teachers reproduced very little of the information found in publications so that it might be presented to all-day students or to adult and young farmers. One implication of this finding seems to be that, as reproduction of such information is time-consuming, teachers felt that this was not a worthwhile activity. However, it seems to be the consensus among educators that presentation of information in some form that is different from the original will frequently enhance the understandability of the data for the student.

A further implication may be that teachers possessed sufficient copies of each publication so that reproduction of the information contained in them was not warranted. In other words, for many of the publications at least, multiple copies were available for students to use during supervised study periods. This implication presupposes that the information contained in the publications

was such that it could be understood by the students without assistance from the teacher.

Supervised study was an activity in which many of the publications were used extensively. Since teachers afforded their students such close personal supervision during these study periods, they may have felt that reproduction of information for student consumption was not an important activity.

4. Correlation coefficients between extent-of-use scores and mean raw scores of readability approached zero. These correlations imply that publications were used according to the dictates of the subject-matter contained in them, and not according to the ease with which the information could be understood by the students. Yet, teachers ranked "ease of reading," very high in importance as a feature of publications. The implication is that teachers may attach great significance to information that is easy to read and understand, but neither do they perceive themselves as being able to determine readability of publications, nor do they perceive themselves as being capable of determining the reading level of their students.

5. Composite extent-of-use scores for the three publication classifications varied widely. Implications are that this finding tends to support the policy by which the publications were classified for distribution. This finding also tends to validate the procedures by which the policy was applied. The theory behind the distribution classification scheme was that publications place in Class C would be used most, those placed in Class B next, and those placed in Class A would be used least.

6. Extent-of-use scores for individual publications differed somewhat. Certain publications in Class A had larger extent-of-use scores than certain ones in Class C. As a result, implications are that subject-matter contributes in large measure to the extent-of-use scores of individual publications.

7. Timeliness of the information was deemed the most important feature or characteristic of publications by teachers. Yet, the activity of assisting students to evaluate publications in terms of date of printing and the like, was ranked eighth in the extent to which all publications were used in it. The implication of this inconsistency seems to be that teacher perceptions as to timeliness of information are somewhat incoherent.

8. Ease of procurement and the comparatively inexpensive cost of this type of publication to Michigan teachers were ranked almost equal in importance. They also were ranked relatively close to the top with respect to importance. The implication is that the least effort that must be expended in procurement of publications is the most highly desirable. Furthermore, this finding seemed to implicitly express a reluctance on the part of teachers to ask administrators for budgetary allocations for the purchase of this type of publication.

D. Suggestions for Further Study

Based on the findings of this study and the experiences received while conducting it, the following suggestions are made for use as guidelines in future investigations.

1. There is a need for further study on the kinds of assistance that teachers give students in the use of this type of publication. Such a study would be beneficial in defining the teachers' role with respect to the use of such publications. The prevailing consensus among those who work with teachers of vocational agriculture seems

to be that teachers instruct students in the various elements of "problem-solving," or "decision-making." How teachers use this type of publication in such instruction needs additional study.

2. Further study needs to be conducted in detail on the specific aspects of each of the activities treated in the present study and the relationships of these aspects to the various methods by which information is presented in publications. Each of the activities treated in this study has elements that probably are viewed differently by individual teachers. The various subjects that are treated and the way they are treated in this type of publication are likely to affect the manner of utilization in the different activities.

3. Activities, other than those treated in this study, in which publications might be employed need to be discovered and defined. Additional techniques for more effective use of the publications in activities probably would be discovered at the same time.

4. A thorough study needs to be conducted concerning the procedures used by teachers to procure this type of publication. Details as to how these procedures could be improved would be of value.

5. The theoretical communication models which have been postulated by specialists indicate that messages contained in publications should be written with a specific audience in mind. Based on the theory of such models, teachers of vocational agriculture have been using publications which were not specifically designed for their use when they employed the type of publications that were treated in this study. In a sense, teachers have been forced to use these publications because none specifically designed for them have been made available for their utilization. Hence, there seems to be a need to determine how agricultural information can best be arranged and presented for use solely by teachers of vocational agriculture. Heretofore, it seems that too much emphasis was placed on <u>what</u> was prepared for teachers to use, and not enough emphasis was placed on <u>how</u> it should be prepared and presented.

6. Concerning methods used to conduct this study, the following suggestions are made. The main strength of the information presented herein rests in the fact that the depth interview technique was employed to obtain the data. The various reasons as to why teachers performed as they did were discovered as a result of using the interview

technique. Attempts to obtain the same volume of data by mail questionnaire probably would have been less productive. A questionnaire sent by mail to teachers would have had to be exceptionally long and detailed in order to obtain the same information. Therefore, the depth interview technique should be considered for similar studies in the future.

7. Insofar as could be determined, investigators in earlier related studies had not selected samples of publications based on a distribution classification similar to that used in the present study. A suggestion for future studies is that a similar stratified selection procedure be employed such as that used here. In addition, however, the selection procedure might well include various sub-strata in each of the strata. The use of such a sampling procedure to select the publications probably would make the resultant findings relatively more meaningful.

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APPENDICES

APPENDIX A

PLAN FOR DISTRIBUTION OF MICHIGAN STATE UNIVERSITY PUBLICATIONS TO TEACHERS OF VOCATIONAL AGRICULTURE

(Revised June 20, 1957)

Previous agreement between the Department of Information Services and the vocational education section of the College of Education, originally made in 1952 was revised at the suggestion of Raymond Clark, Agricultural Education Service, College of Education.

These are the policies under which agricultural publications of Michigan State University will be distributed to vocational agriculture teachers in the future.

1. All bulletins sent in quantity to teachers of vocational agriculture on their request, for teaching purposes, become the property of the school district and should be used by students of vocational agriculture for reference purposes.

2. Students of vocational agriculture desiring personal copies for their own private libraries, should secure copies of bulletins from the county agricultural agent, on the same basis as for adult farmers.

3. For teaching purposes bulletins have been classified under the following headings:

   Class A - The publications listed in Class A are highly technical or of such nature that a single copy distributed when published will meet all usual needs.

   Class B - One copy for each three students in classes studying the subject covered in the publication.

   Class C - One copy for each student in classes studying the subject covered in the publication.

4. Bulletins will be ordered direct from the Bulletin Office, 10 Agricultural Hall, Michigan State University, East Lansing, Michigan, on school letterhead. EACH REQUEST SHOULD INDICATE THE CLASS OF THE BULLETIN (A, B, C) AND THE SIZE OF THE AGRICULTURE CLASS IN WHICH THE BULLETIN WILL BE USED.

5. Distribution under this plan will apply to new and revised bulletins which have been classified.

6. The Bulletin Office will be supplied by the Vocational Education Office of the State Department of Public Instruction, with information as to the enrollment by classes in agriculture.

7. To expedite service, bulletins for instructional purposes will be sent directly to teachers of vocational agriculture, by the supervisor of the Bulletin Office, Michigan State University.

8. Classification of new and revised bulletins will be announced as indicated under 3 above and also at a later date through the Service Letter, published by the Agricultural Education Service, College of Education, Michigan State University.

9. Schools requiring more bulletins than the classification allows may purchase additional copies from the Bulletin Office at Michigan State University.

10. Departments of Vocational Agriculture approved after November 1, 1952, will be supplied with only those bulletins which are published after November 1, 1952, and subject to other items in this agreement.

11. Re-orders of additional bulletins previously supplied to the school will be filled by purchase only and then on the basis of available supply.

12. Michigan State University is not obligated to meet requests for bulletins from members of a class in vocational agriculture, each of whom submits a request on a card or in a letter.

APPENDIX B

ANNOTATED BIBLIOGRAPHY OF THE TWENTY-FOUR PUBLICATIONS TREATED IN THIS STUDY

The following publications were treated in this study. They are listed as they appeared in the data gathering instrument. Shown with each publication are the number assigned by the Department of Information Services of Michigan State University, its title, author(s), date of release and/or revision, the number of pages, a brief description of the information contained in it, and its grade level of readability.

A. Class C Publications

1. F-157 Field Crop Varieties for Michigan; S. C. Hildebrand, D. L. Clanahan, M. H. Erdmann, L. V. Nelson, and William Cargo; revised April, 1958. 20 pp.

Briefly given here are the bases for recommending, or not recommending, crop varieties of wheat, rye, barley, oats, soybeans, field beans, corn hybrids, alfalfa, clovers, birdsfoot trefoil, grasses, sorghums, and potatoes. Important cultural practices also are stated. Readability: 9th-10th grade.

2. F-161 Rates for Custom Work in Michigan; E. M. Elwood and M. E. Quenemoen; revised March 1960. 4 pp.

Furnished here in tabular form are the rates for custom work as reported by farmers. Given also are usual ranges for rates and the expected common rates for the coming year. Machinery rental rates also are shown. Readability: 9th-10th grade.

3. F-254 Raising Calves To Improve the Dairy Business; Donald Hillman; released October, 1957. 6 pp.

Shown here are practices to follow in preparing the cow for freshening, at calving time, and in feeding calves of various ages. Ten explicit calf management practices are given. Readability; 9th-10th grade.

4. F-291 Fertilizers for Christmas Trees; Donald P. White; revised August, 1960. 6 pp.

Presented herein are the requirements for high-quality Christmas trees, what tree conditions indicate the need for fertilizer, the analysis and amounts of fertilizer to use, the step in application, and other fertilization practices. Readability: 13th-15th grade (college).

5. F-292 Sudan Grass in Michigan; S. C. Hildebrand, released June, 1960. 4 pp.

Listed here are the varieties, uses, pasture management practices, and seed and forage production practices in the production of Sudan grass. Readability: 11th-12th grade.

6. E-159 Fertilizer Recommendations for Michigan Crops; staff members of the Departments of Soil Science and Horticulture; revised June, 1959. 48 pp.

First of all, the publication contains some helpful suggestions for its use. Fertilizer recommendations are made according to soil series and for specific crops. The benefits of soil testing are indicated. Recommendations for the minor elements also are given. Readability: 11th-12th grade.

7. E-342 Handling Milk in Bulk on the Farm; D. L. Murray, Dale E. Butz, Carl W. Hall, and J. M. Jensen; released May, 1957. 24 pp.

Information is presented on the economics of handling milk in bulk tanks, the advantages to farmer and processor, and the estimated costs. Valuable information is presented to aid in choosing, installing, and operating a bulk tank. The importance of cleanliness and sanitation is stressed. Readability: 11th-12th grade.

8. E-345 Poultry Feeding; Philip J. Schaible; released March, 1958. 16 pp.

Presented for the reader is information on rations, both commercial and home-mixed. Included are discourses on nutrients which make up the ingredients of feed, feeding systems, feeding practices and equipment, and storage of feed. Readability: 11th-12th grade.

9. E-355 Charcoal Broiled Chicken; Floyd Hicks; released June, 1959. 16 pp.

Contained herein is information on how to prepare chicken for a large barbecue, the principles of which also apply to a small home barbecue. Adequate physical equipment, its operation, and care is explained. Menus and organizational committees are suggested for a successful barbecue. Readability: 7th-8th grade.

10. S-402 Soils of Michigan; E. P. Whiteside, I. F. Schneider, and R. L. Cook; revised December, 1959. 52 pp.

Information necessary for a basic understanding of Michigan soils is carefully presented. Characteristics and properties used in soil classification are given. Usage of a soil map and how it is made are explained. Twenty-six land divisions are described along with the soil series which make up each division. Readability: 11th-12th grade.

11. FBC-719 Selecting Wood Joists and Beams for Farm Buildings; R. L. Maddex and J. S. Boyd; revised April, 1958. 4 pp.

Presented is information for determining the size of joists for various loads depending on spacing and span. Tables show sizes and spacings of joists and beams which can be substituted for those called for in a building plan. Readability: 9th-10th grade.

B. Class B Publications

12. S-388 Inheritance of Farm Property in Michigan; Harold Ellis, Raleigh Barlowe, and E. B. Hill; revised October, 1959. 31 pp.

Described therein are Michigan laws relating to inheritance of farm property by descent and by will. Also given are certain related laws. Suggestions are included that may help farm families to avoid or lessen certain difficulties encountered in the inheritance process. Readability: 13th-15th grade (college).

13. S-390 High Quality Roughage Reduces Dairy Costs; C. R. Hoglund; released February, 1954. 28 pp.

Reported here are the findings and conclusions from a study of thirty-four dairy farmers. Shown are factors

affecting feeding efficiency. Also shown are feeding practices carried out by the most efficient and those used by the least efficient dairymen. Readability: 11th-12th grade.

14. S-429 Economics of Alternative Pasture Systems; C. R. Hoglund and C. M. Harrison; released June, 1960. 30 pp.

Reported are the findings of a fifty-four dairy farm study. Presented are observations and farmer-experiences on different pasture systems, acreages of forage crops, investments in forage equipment, and management practices followed. Estimates of effect on investment and net income are shown when a new feeding system was adopted on dairy farms of varying size. Readability: 11th-12th grade.

15. CE-8 Lighting Your Home; Coral K. Morris, Donald P. Brown, and Dennis E. Wiant; released September, 1958. 16 pp.

Suggestions are presented to follow in order to get good lighting. Shown are tables of light reflection, footcandles necessary for certain tasks and areas of the home, and lighting practices to follow in the use of lamps for various purposes. Readability: 9th-10th grade.

16. CE-9 Questions and Answers about Home Sewage Disposal; W. F. Shephard, George Amundson, and Walter Sheldon; released June, 1959. 8 pp.

Questions are answered which are commonly asked about home sewage disposal where no public sewer is available. The basic units of a sewage disposal system are presented, as well as how to determine the percolation rate of soil. Readability: 11th-12th grade.

17. FBC-736 Poultry House for 2,000 Layers; Merle L. Esmay and J. M. Moore; released November, 1958. 12 pp.

Information is given on how to keep the laying house dry and details in the construction of a laying house. Data are presented on the facilities and equipment that might be included in the finished unit. Readability: 11th-12th grade.

C. Class A Publications

18. F-229 Automatic Washers and Dryers; Lucile Ketchum and Coral Morris; revised June, 1959. 10 pp.

Presented are factors to consider when shopping for a washer and/or a dryer for clothes. Also given are suggestions for using washers and/or dryers and the advantages and disadvantages of combination washer-dryers.

Readability: 9th-10th grade.

19. S-428 Orientations Toward Occupation and Residence; James Cowhig, Jay Artis, J. Allen Beegle, and Harold Goldsmith; released May, 1960. 34 pp.

The findings of a study of high school seniors in four rural counties of Michigan are disclosed. Contained in the publication are the procedures used in conducting the study, the familial characteristics of the subjects, their attitudes toward present community, and their educational, occupational, and residential plans and preferences for the future. Readability: 11th-12th grade.

20. T-253 Effects of Suburbanization upon Rural Land Use; E. Howard Moore and Raleigh Barlowe; released September, 1955. 36 pp.

Reported are the findings of a study on the impact that the suburbanization movement has had upon the allocation and use of farm land in two areas located beyond the zone of concentrated subdivision development that borders Lansing and East Lansing, Michigan. The study expresses the views of local officials and residents regarding future trends and the possible need for public action to direct these trends. Readability: 13th-15th grade (college).

21. T-263 Farm Practice Adoption in Michigan; James Nielson and R. F. Bittner; released January, 1958. 64 pp.

Contained here are findings on the extent to which 471 farmers in six type-of-farm groups adopted fifty-four generally recommended farm practices in 1953-54. Also given are specific reasons as to why the practices were recommended. Included are reasons why some of the practices have not been more widely accepted. Readability: 13th-15th grade (college).

22. T-264 Farmer's Reactions to New Practices; Charles R. Hoffer and Dale Stangland; released February, 1958. 36 pp.

Even though certain practices have been tested and found to be profitable, it appears that the profit motive is not enough to cause all farmers to adopt a practice. This publication lists and discusses many reasons for the general lag in the adoption of approved agricultural practices, particularly the practices involved in corn production. Readability: 13th-15th grade (college).

23. T-274 Changes in Agricultural Production, Efficiency and Earnings; James Nielson and William Crosswhite; released October, 1959. 48 pp.

One of a series in the final report on the Michigan township extension experiment, this publication contains

information on the impact of an intensive application of extension resources in township areas. Described therein are the methods used, the clientele, the analysis of data, and the inferences drawn. Detailed accounts are given of changes in earnings, in net worth, in farm organization, in enterprise organization, and in soil and crop practices. Readability: 13th-15th grade (college).

24. T-275 The Demand for Farm Machinery and Tractors; William A. Cromarty; released November, 1959. 72 pp.

Contained here are analyses of major factors which affect the purchase rate of farm machinery and tractors. The study was conducted under four general areas: (1) a résumé of the current status of farm machinery in the United States; (2) a framework of economic theory on the producer and consumer markets for farm machinery; (3) statistical results of analysis of farm machinery markets; and (4) statistical results of analysis of farm tractor markets. The information would be most useful to manufacturers in planning production programs and resources needed to supply predicted shipments of machinery. Readability: 16th grade or above (college graduate).

APPENDIX C

INTERVIEW INSTRUMENT

No._____

1. Name _____ 2. Age ___
(last) (first) (m.i.)

3. School _____

4. Total number of years of teaching experience _____

5. Total number of years of vocational agriculture teaching (include veterans teaching) _____

6. Total number of years of teaching vocational agriculture in the present school (call the past academic year a full year) _____

7. Other adult occupational experience of a teaching nature (military, etc.)

TYPE (WHAT KIND?)	NUMBER OF YEARS

8. Academic work completed.

____Bachelor's degree only

____Bachelor's degree plus ____ hours graduate credit

____Master's degree only

____Master's degree plus ____ hours graduate credit

9. How many all-day students do you have in your department?
Total___. Freshmen___. Soph.___. Juniors___. Seniors___

10. How many adult farmers do you have in your program? ___

11. How many young farmers do you have in your program? ___

12. In your out-of-school class a combination of young farmers and adult farmers? Yes___ No ___

13. If "yes," how many members in the class? ___

STORAGE AND FILING

14. By what physical means do you store those publications?

a. In one-letter size, sliding-drawer file cabinet ___

b. In "pigeon-hole" cabinet, with or without doors ___

c. In stacks on open shelves ___

d. In stacks inside some type of cabinet with doors___

e. In "out-corner" pamphlet file boxes ___

f. Other (list) . . . . . ___

15. Are those publications stored in the classroom ___
conference room (office) ___
laboratory ___
or other ___

16. By what filing system do you arrange your publications?

	Check	HOW LONG IN USE? 6 mos.	1 year	1-4 yrs.	5 or more
a. Dewey decimal system					
b. Modified decimal system . . .					
c. According to course outline .					
d. According to publication size.					
e. According to source					
f. AGDEX					
g. Grouped according to vo-ag class					
h. According to subject-matter area					
i. Other (list)					

17. Do you permit your all-day students to have free access ___, limited access___, or no access___, to these publications?

INSTRUCTIONAL ORIENTATION ACTIVITIES

With regard to ALL-DAY STUDENTS, to what extent have you applied these publications in the following instructional orientation activities?

C O D E		Weight
	NE = No Extent	1
	ME = Moderate Extent	2
	GE = Great Extent	3

Publications	18. Do you have the following? YES	18. NO	19. Assisting students in interpretation of tables, charts, graphs, figures, diagrams & and other graphical means NE	19. ME	19. GE	20. Assisting students in identifying main thoughts, principles, & ideas (conceptualizing) NE	20. ME	20. GE
1. F 157 Field Crop Varieties for Michigan								
2. F 161 Rates for Custom Work in Michigan								
3. F 254 Raising Calves To Improve the Dairy Business								
4. F 291 Fertilizers for Christmas Trees								
5. F 202 Sudan Grass in Michigan								
6. E 159 Fertilizer Recommendations for Michigan Crops								
7. E 542 Handling Milk in Bulk on the Farm								
8. E 345 Poultry Feeding								
9. E 355 Charcoal Broiled Chicken								
10. S 402 Soils of Michigan								

INSTRUCTIONAL ORIENTATION ACTIVITIES (CONTINUED) Publications	18. YES	18. NO	19. NE	19. ME	19. GE	20. NE	20. ME	20. GE
11. FBC 719 Selecting Wood Joists & Beams for Farm Buildings								
12. S 388 Inheritance of Farm Property in Michigan								
13. S 390 High Quality Roughage Reduces Dairy Costs								
14. S 429 Economics of Alternative Pasture Systems								
15. CE 8 Lighting Your Home								
16. CE Questions & Answers about Home Sewage Disposal								
17. FBC 736 Poultry House for 2,000 Layers								
18. F 229 Automatic Washers and Dryers								
19. S 428 Orientations Toward Occupation & Residence								
20. T 253 Effects of Suburbanization upon Rural Land Use								
21. T 263 Farm Practice Adoption in Michigan								
22. T 264 Farmers' Reactions to New Practices								
23. T 274 Changes in Agri. Production, Efficiency and Earnings								
24. T 275 The Demand for Farm Machinery & Tractors								

REFERENCE EVALUATION ACTIVITIES

With regard to ALL-DAY STUDENTS, to what extent have you applied these publications in the following reference evaluation activities?

CODE	Weight
NE = No Extent	1
ME = Moderate Extent	2
GE = Great Extent	3

Publications	21. Assisting students in evaluating material in terms of table of contents, index, format, and style			22. Assisting students in evaluating material in terms of authority of author, and date of printing or release (timeliness)		
	NE	ME	GE	NE	ME	GE
1. F 157 Field Crop Varieties for Michigan						
2. F 161 Rates for Custom Work in Michigan						
3. F 254 Raising Calves To Improve the Dairy Business						
4. F 291 Fertilizers for Christmas Trees						
5. F 292 Sudan Grass in Michigan						
6. E 159 Fertilizer Recommendations for Michigan Crops						
7. E 342 Handling Milk in Bulk on the Farm						
8. E 345 Poultry Feeding						
9. E 355 Charcoal Broiled Chicken						
10. S 402 Soils of Michigan						
11. FBC 719 Selecting Wood Joists & Beams for Farm Buildings						

REFERENCE EVALUATION ACTIVITIES (CONTINUED) Publications	21. NE	21. ME	21. GE	22. NE	22. ME	22. GE
12. S 388 Inheritance of Farm Property in Michigan						
13. S 390 High Quality Roughage Reduces Dairy Costs						
14. S 429 Economics of Alternative Pasture Systems						
15. CE 8 Lighting Your Home						
16. CE 9 Questions & Answers about Home Sewage Disposal						
17. FBC 736 Poultry House for 2,000 Layers						
18. F 229 Automatic Washers and Dryers						
19. S 428 Orientations Toward Occupation & Residence						
20. T 253 Effects of Suburbanization upon Rural Land Use						
21. T 263 Farm Practice Adoption in Michigan						
22. T 264 Farmers' Reactions to New Practices						
23. T 274 Changes in Agr. Production, Efficiency, and Earnings						
24. T 275 The Demand for Farm Machinery & Tractors						

METHODS-OF-TEACHING ACTIVITIES

With regard to ALL-DAY STUDENTS, to what extent have you applied these publications in the following methods-of-teaching activities?

C O D E	Publications	Weight	23. Individual instruction in the classroom, shop, laboratory, or on-farm			24. Supervised study in the classroom			25. Small-group instruction in the classroom, shop, laboratory, or on-farm		
		NE = No Extent 1 ME = Moderate Extent 2 GE = Great Extent 3	NE	ME	GE	NE	ME	GE	NE	ME	GE
1. F 157	Field Crop Varieties for Michigan										
2. F 161	Rates for Custom Work in Michigan										
3. F 254	Raising Calves To Improve the Dairy Business										
4. F 291	Fertilizers for Christmas Trees										
5. F 292	Sudan Grass in Michigan										
6. E 159	Fertilizer Recommendations for Michigan Crops										
7. E 342	Handling Milk in Bulk on the Farm										
8. E 345	Poultry Feeding										
9. E 355	Charcoal Broiled Chicken										
10. S 402	Soils of Michigan										
11. FBC 719	Selecting Wood Joists & Beams for Farm Buildings										

METHODS-OF-TEACHING ACTIVITIES (CONTINUED) Publications	23. NE	23. ME	23. GE	24. NE	24. ME	24. GE	25. NE	25. ME	25. GE
12. S 388 Inheritance of Farm Property in Michigan									
13. S 390 High Quality Roughage Reduces Dairy Costs									
14. S 429 Economics of Alternative Pasture Systems									
15. CE 8 Lighting Your Home									
16. CE 9 Questions & Answers about Home Sewage Disposal									
17. FBC 736 Poultry House for 2,000 Layers									
18. F 229 Automatic Washers and Dryers									
19. S 428 Orientations Toward Occupation & Residence									
20. T 253 Effects of Suburbanization upon Rural Land Use									
21. T 263 Farm Practice Adoption in Michigan									
22. T 264 Farmers' Reactions to New Practices									
23. T 274 Changes in Agri. Production, Efficiency, and Earnings									
24. T 275 The Demand for Farm Machinery and Tractors									

INSTRUCTIONAL PROCEDURE ACTIVITIES

With regard to ALL-DAY STUDENTS, to what extent have you applied these publications in the following instructional procedure activities?

CODE	Publications	26. Reproduced parts of publication to present to students			27. Had students list it as a reference in their notebooks			28. Assigned specific parts for out-of-class study		
	Weight: NE = No Extent 1; ME = Moderate Extent 2; GE = Great Extent 3	NE	ME	GE	NE	ME	GE	NE	ME	GE
1. F 157	Field Crop Varieties for Michigan									
2. F 161	Rates for Custom Work in Michigan									
3. F 254	Raising Calves To Improve the Dairy Business									
4. F 291	Fertilizers for Christmas Trees									
5. F 292	Sudan Grass in Michigan									
6. E 159	Fertilizer Recommendations for Michigan Crops									
7. E 342	Handling Milk in Bulk on the Farm									
8. E 345	Poultry Feeding									
9. E 355	Charcoal Broiled Chicken									
10. S 402	Soils of Michigan									
11. FBC 719	Selecting Wood Joists & Beams for Farm Buildings									

INSTRUCTIONAL PROCEDURE ACTIVITIES (CONTINUED) Publications	26. NE	26. ME	26. GE	27. NE	27. ME	27. GE	28. NE	28. ME	28. GE
12. S 388 Inheritance of Farm Property in Michigan									
13. S 390 High Quality Roughage Reduces Dairy Costs									
14. S 429 Economics of Alternative Pasture Systems									
15. CE 8 Lighting Your Home									
16. CE 9 Questions & Answers about Home Sewage Disposal									
17. FBC 736 Poultry House for 2,000 Layers									
18. F 229 Automatic Washers and Dryers									
19. S 428 Orientations Toward Occupation & Residence									
20. T 253 Effects of Suburbanization upon Rural Land Use									
21. T 263 Farm Practices Adoption in Michigan									
22. T 264 Farmers' Reactions to New Practices									
23. T 274 Changes in Agri. Production, Efficiency, and Earnings									
24. T 275 The Demand for Farm Machinery & Tractors									

STUDENT USAGE ACTIVITIES

With regard to ALL-DAY STUDENTS, to what extent have they applied these publications in the following activities?

C O D E	Weight
NE = No Extent	1
ME = Moderate Extent	2
GE = Great Extent	3

Publications	29. Making individual reports in the classroom			30. Making some decision about their farming program			31. Browsing or leisure-time reading			32. Borrowing for out-of-classroom study		
	NE	ME	GE	NE	ME	GE	NE	ME	GE	NE	ME	GE
1. F 157 Field Crop Varieties for Michigan												
2. F 161 Rates for Custom Work in Michigan												
3. F 254 Raising Calves To Improve the Dairy Business												
4. F 291 Fertilizers for Christmas Trees												
5. F 292 Sudan Grass in Michigan												
6. E 159 Fertilizer Recommendations for Michigan Crops												
7. E 342 Handling Milk in Bulk on the Farm												
8. E 345 Poultry Feeding												
9. E 355 Charcoal Broiled Chicken												
10. S 402 Soils in Michigan												
11. FBC 719 Selecting Wood Joists & Beams for Farm Buildings												

STUDENT USAGE ACTIVITIES (CONTINUED) Publications	29. NE	29. ME	29. GE	30. NE	30. ME	30. GE	31. NE	31. ME	31. GE	32. NE	32. ME	32. GE
12. S 388 Inheritance of Farm Property in Michigan												
13. S 390 High Quality Roughage Reduces Dairy Costs												
14. S 429 Economics of Alternative Pasture Systems												
15. CE 8 Lighting Your Home												
16. CE 9 Questions & Answers about Home Sewage Disposal												
17. FBC 736 Poultry House for 2,000 Layers												
18. F 229 Automatic Washers and Dryers												
19. S 428 Orientations Toward Occupation & Residence												
20. T 253 Effects of Suburbanization upon Rural Land Use												
21. T 263 Farm Practice Adoption in Michigan												
22. T 264 Farmers' Reactions to New Practices												
23. T 274 Changes in Agri. Production, Efficiency, and Earnings												
24. T 275 The Demand for Farm Machinery & Tractors												

YOUNG AND/OR ADULT FARMER ACTIVITIES

With regard to your YOUNG AND/OR ADULT FARMER CLASS (ES), to what extent have you applied these publications in the following activities?

C O D E	Publications	Weight: NE = No extent 1; ME = Moderate Extent 2; GE = Great Extent 3	33. Reviewed it in order to introduce topic previously requested by class members			34. Reproduced parts of publication to present to class members			35. Encouraged members to do outside reading in publication		
			NE	ME	GE	NE	ME	GE	NE	ME	GE
1. F 157	Field Crop Varieties for Michigan										
2. F 161	Rates for Custom Work in Michigan										
3. F 254	Raising Calves To Improve the Dairy Business										
4. F 291	Fertilizers for Christmas Trees										
5. F 292	Sudan Grass in Michigan										
6. E 159	Fertilizer Recommendations for Michigan Crops										
7. E 342	Handling Milk in Bulk on the Farm										
8. E 345	Poultry Feeding										
9. E 355	Charcoal Broiled Chicken										
10. S 402	Soils of Michigan										
11. FBC 712	Selecting Wood Joists & Beams for Farm Buildings										

YOUNG AND/OR ADULT FARMER ACTIVITIES (CONTINUED) Publications	33. NE	33. ME	33. GE	34. NE	34. ME	34. GE	35. NE	35. ME	35. GE
12. S 388 Inheritance of Farm Property in Michigan									
13. S 390 High Quality Roughage Reduces Dairy Costs									
14. S 429 Economics of Alternative Pasture Systems									
15. CE 8 Lighting Your Home									
16. CE 9 Questions & Answers about Home Sewage Disposal									
17. FBC 736 Poultry House for 2,000 Layers									
18. F 229 Automatic Washers and Dryers									
19. S 428 Orientations Toward Occupation & Residence									
20. T 253 Effects of Suburbanization upon Rural Land Use									
21. T 263 Farm Practice Adoption in Michigan									
22. T 264 Farmers' Reactions to New Practices									
23. T 274 Changes in Agri. Production, Efficiency and Earnings									
24. T 275 The Demand for Farm Machinery & Tractors									

SELF-IMPROVEMENT or PROFESSIONAL GROWTH

To what extent has each of these publications contributed to or aided you in your own SELF-IMPROVEMENT or PROFESSIONAL GROWTH?

Publications	NE	ME	GE
1. F 157 Field Crop Varieties for Michigan			
2. F 161 Rates for Custom Work in Michigan			
3. F 254 Raising Calves To Improve the Dairy Business			
4. F 291 Fertilizers for Christmas Trees			
5. F 292 Sudan Grass in Michigan			
6. E 159 Fertilizer Recommendations for Michigan Crops			
7. E 342 Handling Milk in Bulk on the Farm			
8. E 345 Poultry Feeding			
9. E 355 Charcoal Broiled Chicken			
10. S 402 Soils of Michigan			
11. FBC 719 Selecting Wood Joists & Beams for Farm Buildings			

SELF-IMPROVEMENT or PROFESSIONAL GROWTH (CONTINUED)

36.

Publications	NE	ME	GE
12. S 388 Inheritance of Farm Property in Michigan			
13. S 390 High Quality Roughage Reduces Dairy Costs			
14. S 429 Economics of Alternative Pasture Systems			
15. CE 8 Lighting Your Home			
16. CE 9 Questions & Answers about Home Sewage Disposal			
17. FBC 736 Poultry House for 2,000 Layers			
18. F 229 Automatic Washers and Dryers			
19. S 428 Orientations Toward Occupation & Residence			
20. T 253 Effects of Suburbanization upon Rural Land Use			
21. T 263 Farm Practice Adoption in Michigan			
22. T 264 Farmers' Reactions to New Practices			
23. T 274 Changes in Agri. Production, Efficiency, and Earnings			
24. T 275 The Demand for Farm Machinery & Tractors			

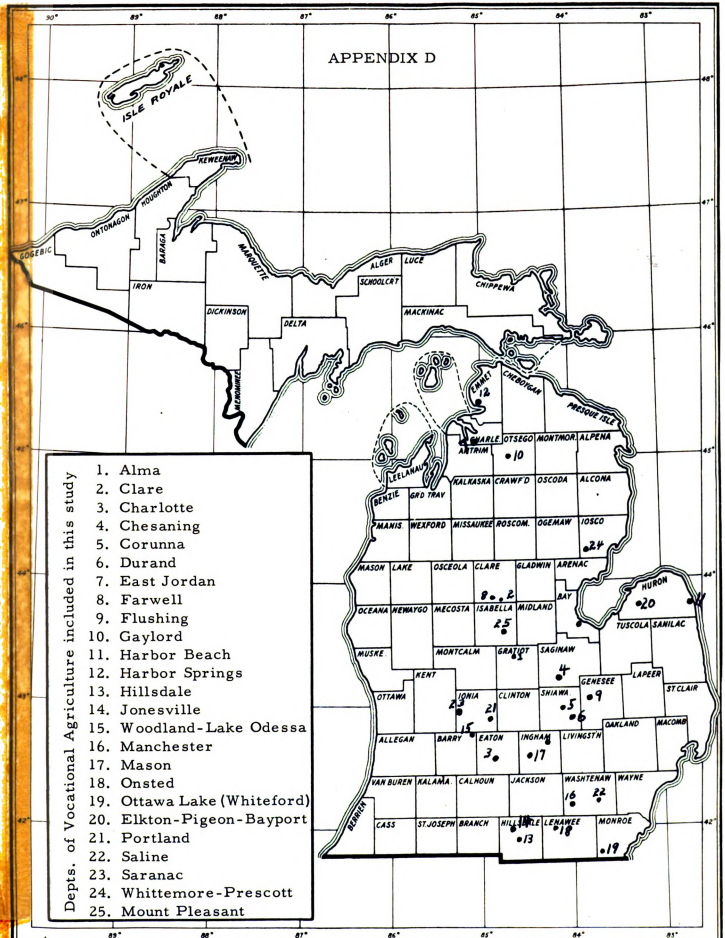
37. Based on your past experience, how important is each of the following features or characteristics in this type of publication with respect to its application in your instructional program? (CODE: NI = Not Important, MI = Moderately Important, EI = Extremely Important.)

		NI	MI	EI
a.	Adaptability to local conditions			
b.	Ease with which the publications can be procured			
c.	Publications free or inexpensive			
d.	Publication up-to-date or timely			
e.	Publication easy to read and understand.			
f.	List of qualifications of the author . .			
g.	Adequate table of contents and index . .			
h.	Action pictures showing application of the information			
i.	Tables, charts, diagrams, and other aids in understanding			
j.	Brief, general history of subject treated, its origin, etc.			
k.	Importance of subject to farming, benefits, economic influence			
l.	List of skills and abilities needed by reader to use the data			
m.	Relationships to closely allied subjects			
n.	Conditions necessary for most efficient and effective use			
o.	Suggested sources of additional information or references			
p.	Precautions, safety measures, and limitations needed in using data			
q.	Picture(s) of the author(s)			
r.	List of special tools, equipment, and other instruments needed to use data . .			
s.	Other (list)			

38. Based on your past experience, to what extent has each of the following been of value in keeping you aware of revised or recently released MSU publications? (CODE: NE = No Extent, ME = Moderate Extent, GE = Great Extent.)

	NE	ME	GE
a. MSU "Agricultural Education Service Letter"			
b. MSU Bulletin Office "Available Publications" list			
c. Your local county extension agent . . .			
d. In-service meetings held off-campus . .			
e. Conferences and/or workshops			
f. State consultant staff of the Michigan Department of Public Instruction			
g. MSU Agricultural Experiment Station or its branches			
h. Other teachers of vocational agriculture			
i. Other (list)			

APPENDIX D



Depts. of Vocational Agriculture included in this study

1. Alma
2. Clare
3. Charlotte
4. Chesaning
5. Corunna
6. Durand
7. East Jordan
8. Farwell
9. Flushing
10. Gaylord
11. Harbor Beach
12. Harbor Springs
13. Hillsdale
14. Jonesville
15. Woodland-Lake Odessa
16. Manchester
17. Mason
18. Onsted
19. Ottawa Lake (Whiteford)
20. Elkton-Pigeon-Bayport
21. Portland
22. Saline
23. Saranac
24. Whittemore-Prescott
25. Mount Pleasant

AUTOBIOGRAPHICAL STATEMENT

Name: James Eugene Wall

Birth: October 28, 1927; Epps, West Carroll Parish, Louisiana, U. S. A.

Education: Elementary and high school, Epps, Louisiana. Colleges: Louisiana State University, B. S., 1950; Iowa State University, M. S., 1954; Michigan State University, Ph.D., 1962.

Employment: Teacher of Vocational Agriculture, Oak Grove High School, Oak Grove, Louisiana, 1950-51; Officer, Army of the United States, 1951-53; Instructor, Iowa State University, 1954-57; Assistant Professor, Stanford University, 1957-60; Assistant Instructor, Michigan State University, 1960-61; Assistant Professor, Michigan State University, 1962-.

Membership in organizations: LSU Collegiate FFA Chapter, La. Education Association, American Vocational Association, Michigan Association of Teachers of Vocational Agriculture, Gamma Sigma Delta, Phi Delta Kappa, American Legion, various church and civic organizations.

Offices: Secretary, Collegiate FFA Chapter; Secretary, Beta Kappa Chapter of Phi Delta Kappa.