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TAIWAN VOCATIONAL AGRICULTURAL SCHOOLS AS SOURCES FOR LEARNING: PERCEPTION OF GRADUATES ENGAGED IN FARMING.

by

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ABSTRACT

TAIWAN AGRICULTURAL SCHOOLS AS SOURCES FOR LEARNING: PERCEPTION OF GRADUATES ENGAGED IN FARMING

BY

ALI AHMAD ALMUTAWAKEL

This study was conducted to measure the perceptions of farmers (full-time or part-time) who were farm management (FM), horticulture (Hort), animal husbandry/veterinary (AH), and farm machinery (FMach) 1982 and 1984 vocational agricultural school (VAS) graduates. The measurements covered the following topics: (1) their learning experience at school; (2) VAS teacher as a source of information for their farming practices; (3) their training programs after VAS; (4) their sources of information regarding farming operations; (5) their farm management practices; and (6) the farm management patterns being promoted by the government.

Ninety-nine graduates were interviewed. Sixty-four were FM graduates, fifteen were Hort graduates, another fifteen were AH graduates, and five were FMach graduates. They were placed into two groups for analysis. The first group consisted of FM graduates while the second group included the graduates from the three other curricula. Statistical analysis at the 0.05 level was carried out.

The results showed a significant difference at the 0.05 level regarding the learning experience research hypothesis. The other research hypotheses and questions did not show any

significant differences at the 0.05 level. However, significant differences at the 0.05 level were observed regarding certain questions pertaining to the graduates' perception of their learning experience, training programs, and to their perceptions of the FM patterns promoted by the government. The graduates perceived their learning experience at the VAS positively. They reported several sources of information to get the information they need for their farming operations. They attended training programs after graduation from the VAS. Their management practices were not different among the groups. The perception of recommended FM patterns was known more by FM graduates than by the rest of the graduates.

Further studies should focus on the relationships between the VAS and their respective graduates, and on curricular changes to make the young farmers more aware of the government's agricultural policies and societal needs.

Dedicated to the Memory of

Dr. Abed Al Latif El Zein

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ABBREVIATIONS

AH:	Animal Husbandry/Veterinary
ANOVA:	Analysis of Variance
COA:	Council of Agriculture
EE:	Entrance Exam
FA:	Farmers' Association
FMach:	Farm Machinery
FM:	Farm Management
ha:	Hectare
Hort:	Horticulture
MOE:	Ministry of Education
PDAF:	Provincial Department of Agriculture and Forestry
PDE:	Provincial Department of Education
VA:	Vocational Agriculture
VAS:	Vocational Agricultural School
YFP:	Young Farmers Program

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CHAPTER I

INTRODUCTION

Introduction

Significant changes have occurred in the agricultural sector and especially in the farming sector in Taiwan. The young population is leaving the land to work in the urban areas, where they manage to find jobs that pay better salaries than farming. As a consequence the burden of farm production is falling on the shoulders of the elderly population whose numbers are decreasing as time passes (Lasson 1976). The government officials have observed this situation and have responded with policies and programs designed to improve the situation both in the short term and the long term.

Among the long term objectives, the government has allowed vocational agricultural schools (VAS) to enroll selected junior high school graduates into the farm management (FM) programs by exempting them from taking the regular entrance exams (EE). Instead, these students are given special entrance exams. As a part of the Young Farmers' Project (YFP) the government and Farmers Associations are providing these youths with scholarships during their education, hoping in return that they will become the modern, highly proficient farmers of the future.

The Research Problem

The VAS are playing an important role in Taiwan's agricultural development by providing different fields of agricultural studies. Farm Management (FM), Horticulture (Hort), Animal Husbandry/Veterinary (AH), and Farm Machinery (FMach) are among the fields that the VAS provide as majors for the students. It has been reported that VAS graduates who become farmers consider their respective schools as a source of information for their farming practices.

The current agricultural situation in Taiwan is changing. It is becoming mechanized, has overproduction of certain commodities with government subsidizations, and has a lack of agriculture labor. The majority of the farmers are part-time farmers and their farms are decreasing in size. In addition, the farmers face competition from foreign countries regarding the export of their products, and they are resisting the import of agricultural commodities which compete with local production.

In such a complex situation, the program of vocational education in agriculture is trying to adjust to the changes that are occurring. It is the intent of this research to compare the perceptions of the 1982 and 1984 FM VAS graduates, and these 1982 and 1984 Hort, AH, and FMach graduates who are engaged in farming. The perceptions to be compared deal with: graduates' educational experiences at VAS; teaching staff as a source of information; training pro-

grams; sources of information; farm management practices; farming patterns promoted by the government; and record keeping.

These two groups were selected because of the differences that exist in their entrance to the VAS, as well as to certain differences in the curricula which they followed while attending VAS. It is the intent of the research to compare these groups after their graduation in their current situation.

General Purpose of the Study

The general purpose of the research was to study vocational agricultural schools (VAS) as sources for learning as perceived by their graduates who were engaged in farming.

Specific Objectives

(1) To measure the perceptions of VAS graduates towards their learning experience while they were students.

(2) To determine whether VAS graduates perceive the VAS teaching staff as an effective and continuing source of technical help.

(3) To determine the sources of information for the VAS graduates' farming operations.

(4) To determine whether the VAS graduates seek informal education (training programs) for their farming operations.

(5) To measure the VAS graduates' farming practices.

(6) To measure the perception of the VAS graduates toward the farming arrangement patterns (entrusted farming, joint farming and cooperatives) promoted by the government.

Research Questions

(1) Research Question: Are there significant differences between the Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery graduates regarding their perception of their learning experiences at the vocational agricultural school?

(2) Research Question: Are there significant differences between the Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery Graduates regarding their perception of vocational agricultural school teaching staff as an effective and continuous source of information for their farm management practices?

(3) Research Question: Are there significant differences between the farm management and horticulture, animal husbandry/veterinary, and farm machinery graduates regarding their sources of information for their farming operations?

(4) Research Question: Are their significant differences between the farm management and horticulture, animal husbandry/veterinary, and farm machinery graduates regarding attending training programs for their farming operations?

(5) Research Question: Are their significant differences between the farm management and horticulture, animal husbandry/veterinary, and farm machinery graduates regarding their farm management practices?

(6) Research Question: Are there significant differences between the Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery graduates regarding their perception of the farm management patterns (entrusted farming, joint farming, and cooperatives)?

Importance of the Study

Farming has greatly changed in the last century. Mechanization, chemical applications and improved crop varieties and livestock breeds have all made agriculture production higher than before. These factors for change are not equally available all over the world. But wherever they exist with proper climatic conditions, farmers have a better chance to have an abundant yield. Taiwan in the last 30 years has managed to acquire the technology to become self-sufficient in food production, and to export the excess of certain agricultural commodities (COA 1987).

The problems that the farmers in Taiwan are facing are not different from those that the farmers in the United States are facing. These problems are: excess production; competition from other countries; lack of labor of supply; and technology that is changing at a fast rate.

Before all of this modern technology, farming was practiced through experience and learning handed down from father to son. Market forces, chemical applications and

science were not considered major factors. However, in today's agriculture these factors are considered vital. Nations that try to understand, develop, and manage these factors in harmony with nature will succeed.

The importance of this study is reflected by the significant role of vocational education in agriculture in Taiwan. VAS play an important role in agriculture in general, and in farming in particular. VAS FM departments which were developed in order to encourage the youth to become farmers are an example of how the government has been responding to the farming situation. In the government's continuous quest to overcome the problems that exist in Taiwan's agriculture, questions such as, "Are the FM departments successful in what they are doing?" and "Have they met their objectives?" will need to be answered for long-range policy decisions. However, periodic monitoring and evaluating the VAS can be helpful in determining possible changes to help in meeting the objectives and goals of the government.

VAS play an important role, as do the colleges and universities, in Taiwan. The roles of these institutions provide the nation with educated youth to keep the agricultural sector of the country developing.

The results of this research may help the leaders of VAS understand how the graduates perceive their learning experiences while they were students, and what the VAS can

do to make the students who want to become farmers better able to confront and work in the farming sector more successfully.

Limitations of the Study

Because of time and budget constraints, this study covered only a portion of the total picture of the relationships and effects between farmers and their agricultural education institutions. This study covered only six VAS, and the graduates from four out of nine departments. There are 19 other vocational schools that teach agricultural curricula. There are also four colleges and universities that provide higher agricultural education; and three technical institutes.

The YFP members have different educational backgrounds. Young farmers who are VAS graduates represent 24.6% of all young farmers in the YFP (PDAF 1989).

The researcher is aware that the results and recommendations of this study have limited general implications to the whole picture. They may only help to understand a portion of it.

Overview of the Dissertation

Chapter I of the study covers the research problem, the general purpose, the specific objective as well as the research hypotheses and questions. This chapter also covers the importance of the study and its limitations.

The background of the study is described in Chapter II. This chapter gives information about the VAS, the students' enrollment, the goals of vocational agricultural education in Taiwan, and education in Taiwan.

The literature review is presented in Chapter III. This chapter covers the theoretical base of vocational agricultural education and farm management.

The methodology design of this study is covered in Chapter IV. It presents a picture about identifying the target populations, and the methods used for reaching these groups. The methodology also deals with the questionnaire design, pretest and modification, interviewers training, data collection, and analysis.

Chapter V provides a description of the results from the statistical analysis and the descriptive replies of the interviewees.

Chapter VI contains the conclusion of the study with discussion of the results, recommendation and limitations reflecting the results of this research.

CHAPTER II

BACKGROUND OF THE STUDY

Introduction

Taiwan is an island approximately 13,900 square miles in size (COA 1988). It is about 100 miles off the eastern coast of mainland China. The island is 237.6 miles long and 100 miles wide at the broadest location. The island is characterized by a chain of mountains that exist from north to south of the island. Two-thirds of the island is mountainous (COA 1987). Lasson (1976), reported that the soil of the Western Coastal Region which is a mainly cultivated area, is primarily lateritic or alluvial and is considered the best for agricultural production.

Due to Taiwan's geographical location, the climate is characterized by being subtropical. The island experiences a monsoon season during the summer months; these monsoons are southwest monsoons (Aksel 1976). COA (1987) reported that the population of Taiwan is over 18 million, with a population density of 1,295 per square mile.

Prior to the 17th century the island was under the control of its local inhabitants, who are known now as the Taiwanese aborigines. They are considered to have the same cultural background as the native of the Polynesian islands in the south Pacific. Thompson (1984) reported that the Dutch occupied the southwest of the island in 1624. The Dutch encouraged Chinese peasants to settle the island for

cultivation purposes. However, the Dutch left the island after a defeat from the Ming rebel forces (Thompson 1984). According to the treaty of Shimoneseki at the end of the war between Japan and China, Taiwan was ceded to the Japanese in 1895. At the close of World War II in 1945, the control of the island was returned to the Nationalist government. In 1949, Taipei, Taiwan became the provisional capital of the Republic of China.

Education in Taiwan

Under the Chinese system in Taiwan, the student may spend one to two years in kindergarten, and then a required six years in elementary, and three years in junior high school, followed by three years in senior high school. However, in the last period mentioned, the student's enrollment depends on the score that he/she achieves on the senior high school entrance examination (EE) (Fig. 1). This student may end up either in the regular high school, vocational industrial and agricultural school, commercial vocational school, or agricultural vocational school. There are both public and private schools at all levels. If the student's EE score is too low, he or she will not enroll in school, either public or private.

The percentage of graduates admitted to the next higher level of schooling is relatively high. In 1988-89 about 26 percent of the total population was enrolled as students,

and over 99 percent of the school-aged children (6-12 years) were enrolled. About 80 percent of the elementary school graduates entered the junior middle schools; and 91 percent of the junior middle school graduates entered public and private senior middle schools (academic and vocational) (MOE, 1989).

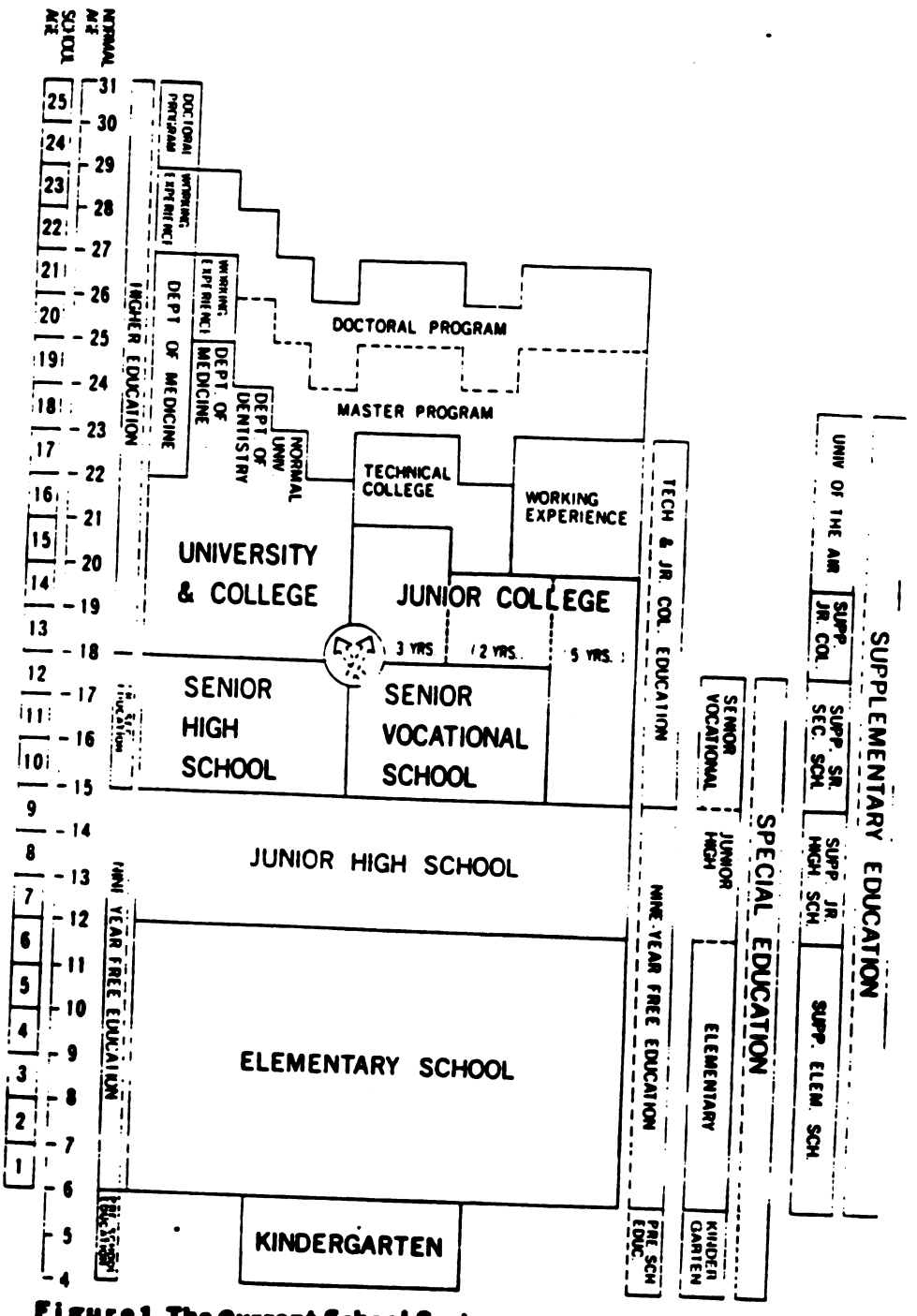

Figure 1. The Current School System
Source: Ministry of Education

The current situation of the education system in Taiwan shows impressive achievements. A Ministry of Education (1988) report indicates these achievements:

(1) Number of schools increased from 1,504 in 1950-51 to 6,628 in 1987-88, 341% increase in a 38-year interval.

(2) Teacher-student ratio decreased dramatically from 1:36.35 in 1950-51, to 1:26.17 in 1987-88.

(3) Number of students in a class also decreased from 51.75 students in a class in 1950-51 to 43.17 students in 1987-88.

(4) Student-population ratio showed an impressive increase from 139.64 students per 1,000 population in the 1950-51 school year to 259.76 students per 1,000 population in the 1987-88 school year.

(5) The percentage of in-school children between the ages of 6 and 12 increased from 79.88% in 1950-51 to 99.89% in the 1987-88 school year.

(6) In the school year 1950-51 the percentage of students enrolled in elementary and junior high schools, senior secondary schools, junior colleges and universities and other educational institutions were respectively as follows: 93.96%, 3.39%, 0.63% and 2.02%. In the school year of 1987-88 significant shifts in enrollment were noticed: Since 1950-51 the percentages of students enrolled in elementary and junior secondary schools dropped to 67.42%, senior secondary students' percentage increased to 12.75%, at junior and college level it reached 9.08%, while

in other educational institutions it reached 10.75%. Li (1988) reported that the ratio of students who were enrolled in senior high school to vocational school (VS) in 1970 was 4 to 6 respectively, in 1986 it was 2.7 to 7.3.

Goals of Vocational Agricultural Education in Taiwan

There have been modifications as well as a radicalization in the agricultural vocational educational system. This is based upon long and short term objectives that the decision makers of the educational system foresee. The government has demonstrated the ability to adapt to the current and emerging situations, and an amazing flexibility in adopting new strategies. Meaders (1977) reported that a change occurred in the enrollment of students in the vocational school system:

> The shift from a majority of the agricultural students at the junior middle school level in 1950 to all of the students at the senior middle school level in 1974.

Modification within the curriculum occurred in 1989, when the number of teaching hours decreased and the total number of hours for the general subjects, professional subjects, professional subject practice, and elective subjects changed.

The major goals for senior level vocational agriculture education has been reported by Meaders (1977):

1. To train students in the knowledge and techniques of modern agriculture to become basic employees in agriculture.

2. To educate the youth to have the ability to farm and the desire to provide services in the rural community.

3. To establish the vocational agriculture school as an educational and training center for improving the farmers' knowledge and skills. (p. 20)

Vocational agriculture education has been changing with time. MOE (1988) report indicates that the number of VAS was six plus 17 other vocational schools were known as Vocational Agriculture and Industry Schools out of 77 vocational schools. Meaders (1966) reported that the number of junior and senior VAS was 45 schools. In 1987-88 vocational agriculture (VA) students represented 4.43% of all students enrolled in vocational schools (MOE 1988). The percentage of students enrolled in VA curricula and the number of VAS has decreased, but this does not mean that the government has neglected agriculture. During the past two decades the industrial sector has taken charge of the economy since it is the major contributor to the Gross Domestic Product (GDP) and is a major source of foreign currency. With the advancement and enlargement of industry, there has been a great demand for industrial workers which meant that there was more need for more vocational industrial schools (VIS). The enrollment of students in VIS out of the total number of students enrolled in VS has increased from 35.4% in 1950-51

to 48.7% in 1987-88 (MOE 1988). In 1950-51 VA students accounted for 35.4% of the total number of students in VS. In 1987-88 VA students accounted for 4.43% (MOE 1988).

In spite of this, the government is still interested in the progress of VAS. The government has encouraged the Farmers Associations to provide scholarships for those who are interested in continuing their education in farm management in the VAS.

Students Enrollment in the Vocational Agricultural Schools

In general, all students should pass an EE to be accepted in a higher level of education in Taiwan. However, this is not the case of those who want to enroll in the FM department at the VAS; they take a special EE. Others who want to enroll in any other department should pass the EE in order to be accepted. This regulation has been set in order to encourage the youth to become farmers.

In Fig. 2, one can notice that there were differences between those who are enrolled in FM and the others who are enrolled in any other department.

The first difference was a special EE for Farm Management (FM) applicants, while there is no special EE for other department applicants. Second, FM applicants can get scholarship money to fund their education through the three-year program (Lin 1989). Third, those who get scholarships can be accepted only in the FM department, while others can enroll in any department, including the FM department (Hung

1989). Finally, the fourth, FM students study at the VAS for five terms and during the last semester they are required to stay at the farm under supervision of the VAS (Hung 1989). Students in other departments study all the three years at the VAS. In addition, the FM program covers a broad range of topics from the various fields of study while the other programs emphasize their respective major fields (Appendix A).

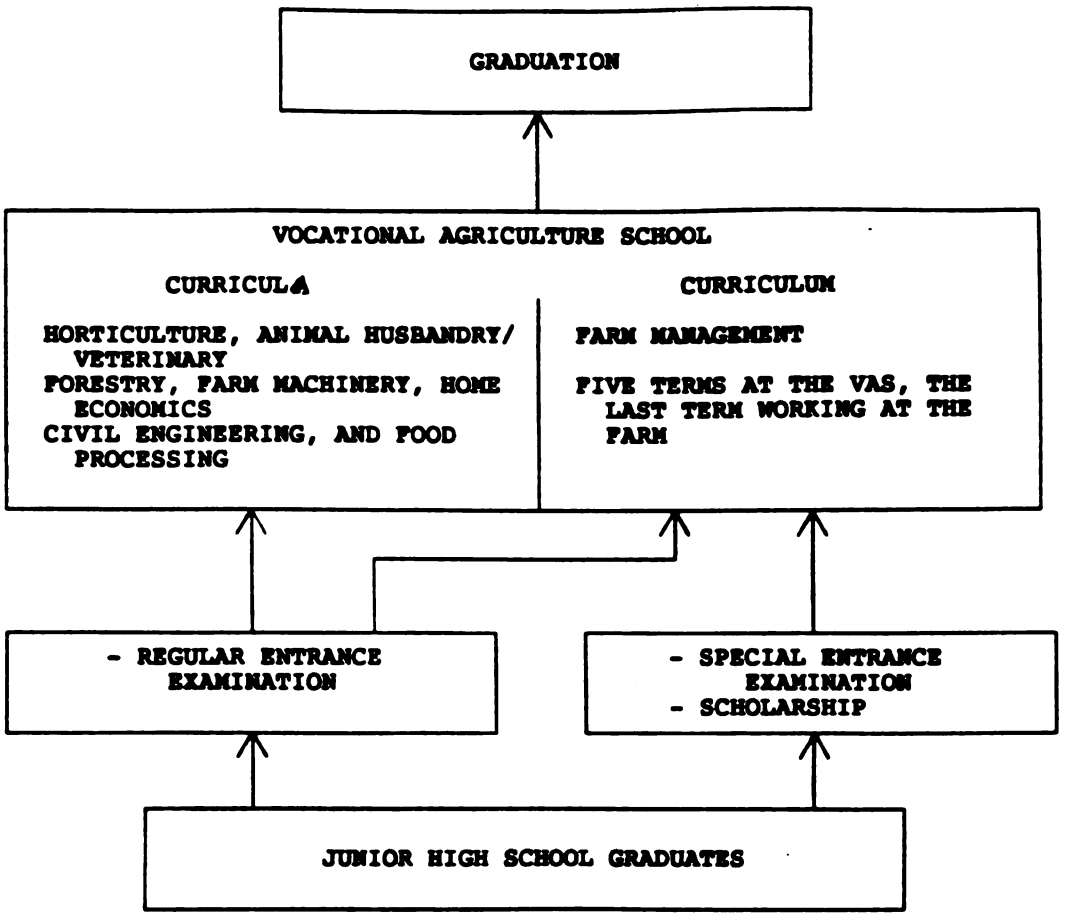

FIGURE 2.--Students Enrollment in the Vocational Agriculture Schools.

All departments have common courses, which are the general and science courses, but they differ in the major courses where each department emphasizes its major curriculum (Appendix A).

General Characteristics of 1982 and 1984 Vocational Agricultural Schools Graduates from Farm Management, Farm Machinery, Animal Husbandry/Veterinary and Horticulture Curricula

Table 1 shows that in 1982 and 1984, 1,877 students graduated in the four curricula from six VAS: Tainan, Chiatung, Taichung, Hualien, Kwansi, and Jenai. Kwansi and Jenai VAS did graduate fewer students than the other schools. Actually, the two schools graduated less than 20% of the total graduates from the four curricula in the six schools.

Jenai and Kwansi VAS, each had graduates in only two of the four selected curricula in 1982 and 1984. However, the schools each had additional agricultural curricula.

Table 1.--Number of 1982 and 1984 Graduates from Four Curricula from Six Taiwan Vocational Agriculture Schools (VAS) by School and by Year

	YEAR OF GRADUATION					
	1982		1984		Total	
SCHOOL	No.	%	No.	%	No.	%
Chiatung	224	25.34	212	21.35	436	23.24
Hualien	188	21.27	221	22.26	409	21.80
Jenai	78	8.82	83	8.36	161	8.58
Kwansi	75	8.60	77	7.75	152	8.10
Taichung	155	17.53	141	14.20	296	15.78
Tainan	163	18.44	259	26.08	422	22.49
TOTAL	833		993		1,876	
%	47.07		52.93			

Source: Vocational Agricultural Schools in Taiwan, March 1989.

Table 2 shows that the graduates from Farm Machinery (FMach) department constituted 32.02% of the total number of graduates. Graduates from Animal Husbandry and Veterinary (AH), FM and Horticulture (Hort) departments are 26.21%, 21.95%, and 19.82% respectively.

Table 2.--Number and Percent of 1982 and 1984 Graduates from Four Curricula in Six Taiwan Vocational Agriculture Schools by Curriculum and by School

	CURRICULA AND GRADUATES					
VAS	FM	AH	Fmach	Hort	TOTAL No.	%
Chiatung	61	141	167	67	436	23.24
Hualien	78	69	177	85	409	21.80
Jenai	75	--	--	86	161	8.58
Kwansi	76	76	--	--	152	8.10
Taichung	59	66	85	86	296	15.78
Tainan	62	140	172	48	422	22.49
Total	411	492	601	372	1,876	
Percent	21.95	26.21	32.02	19.82		

Source: Vocational Agricultural Schools in Taiwan, March 1989.

Tables 3 and 4 show the number of graduates by curriculum. There has been an increase in the number of graduates in 1984 compared to 1984 from all four departments. Percentage wise there was a decrease in graduation from FM and AH, while there was an increase in graduation from FMach and Hort departments (Tables 3 and 4).

These changes appeared to represent minor shifts in student preferences three years earlier when they enrolled in various classes. Each school was authorized to enroll 50 students per class with a possible 10% over enrollment.

However, the size of graduating classes seemed to reflect lower enrollments. For example, at Chiatung VAS there were 80 graduates from FMach in 1982 and 61 in 1984. The class sizes were considerably less than the authorized maximum, since there were two classes enrolled in each of the two years.

Table 3.--Number and Percent of 1982 Graduates from Four Curricula in Six Vocational Agriculture Schools by Curriculum and by School

	DEPARTMENT				TOTAL	
VAS	FM	AH	Fmach	Hort	No.	%
Chiatung	27	80	80	37	224	25.34
Hualien	31	86	29	42	188	21.27
Jenai	36	--	--	42	78	8.82
Kwansi	39	--	36	--	75	8.60
Taichung	38	41	28	48	155	17.53
Tainan	26	87	50	--	163	18.44
Total No.	197	294	223	164	883	
Percent	22.44	33.33	25.28	18.93		

Source: Vocational Agricultural Schools in Taiwan, March 1989.

Table 4.--Number and Percent of 1984 Graduates from Four Curricula in Six Vocational Agriculture Schools by Curriculum and by School

	DEPARTMENT				TOTAL	
VAS	FM	AH	Fmach	Hort	No.	%
Chiatung	34	87	61	30	212	21.35
Hualien	47	91	40	43	221	22.26
Jenai	39	--	--	44	83	8.36
Kwansi	37	--	40	--	77	7.75
Taichung	21	44	38	38	141	14.20
Tainan	36	85	90	48	259	26.08
Total	214	307	269	203	993	
Percent	21.55	30.92	27.09	20.44		

Source: Vocational Agricultural Schools in Taiwan, March 1989.

Table 5 shows that 1,535 (81.82%) graduates from the six VASs were males, and 341 (18.18%) graduates were females. The female graduation was the highest in the Hualien VAS, 102 graduates, and the least in Kwansi, 13 graduates.

Table 5.--1982 and 1984 Vocational Agricultural School Graduates by Gender

	1982		1984		TOTAL	
VAS	Male	Female	Male	Female	Male	Female
Chiatung	196	28	168	44	364	72
Hualien	153	35	154	67	307	102
Jenai	62	16	70	13	132	29
Kwansi	67	8	72	5	139	13
Taichung	121	34	107	34	228	68
Tainan	162	1	203	56	265	57
Total	761	122	774	219	1,535	341
Percent	86.2	13.8	77.2	22.1	81.8	18.2

Source: Vocational Agricultural Schools in Taiwan, March 1989.

Table 6 shows that there was an increase in the number of female graduates from departments that formerly were dominated by males. The FM departments graduated 29 female graduates in the academic year 1984, while during the academic year 1982 only 9 females graduated from FM departments. Another field where females have shown an interest is the AH department. In the academic year 1982 there were no female graduates, but in

the academic year 1984 there were 39 female graduates. In the Hort department, female graduates constitute the majority from these departments. In the 1982 academic year the ratio of female graduates to male graduates from the Hort department was 2.01, while in the 1984 academic year the ratio increased to 2.90. Female graduates for the four curricula increased from 13.8% in the 1982 academic year to 22.05% in the 1984 academic year.

Table 6.--Departments' Graduates by Gender for the Academic Years 1982 and 1984

	1982		1984		TOTAL	
DEPARTMENT	Male	Female	Male	Female	Male	Female
Farm Management	188	9	185	29	373	38
Farm Machinery	294	---	307	---	601	---
Animal Husbandry/Veterinary	223	---	230	39	453	39
Horticulture	56	133	52	151	108	264
Total	761	122	774	219	1,135	341
*R (F/M)	2.01		2.99			

Source: Vocational Agricultural Schools in Taiwan, March 1989.

*R (F/M): Ratio (Females:Males) Horticulture Department

Curricula Modification at the Vocational Agricultural Schools

The flexibility of decision making is evident in Taiwan. Another example which emphasizes the previous statement is the ability of Chinese educators to modify the purpose of the main objectives of vocational agricultural education. It took exactly two years to make the current revision in the objectives of the courses and to make modifications and changes within the system (PDE 1987). Several steps were taken. First, in a 1984 evaluation of the courses that were previously published in 1974, the MOE found that these courses were no longer suitable for the current situation. Second, the process of revising the courses offered at the VAS was conducted through two stages of development. The first stage lasted from 1984 until September 1985. The second stage of revising the courses lasted until December 1986. During the second stage, the Taichung VAS collected and printed the revised drafts. The proposed new courses were sent to the MOE. The new purposes of the courses were to improve the students' personality, ethnical background, professional morality and also to increase basic abilities of adaptation, creation and development (PDF 1987). The former purposes or objectives of the courses were: To teach techniques of modern agriculture; increase agriculture production and to improve the quality of

production; and to make the youth have the service spirit and ability of implementation that are devoted for rural construction and development (PDE, 1987).

The three years curricula at the VAS are divided into three major areas: The first area consists of the basic courses (such as Chinese, the Three Principles of People, and English); the second area consists of the scientific and theoretical courses (chemistry, biology, math, and computer); while the third area comprises the professional courses and the practice (laboratory and field work) for these courses (PDE 1987).

As a result of the VA curricula revisions, the number of hours allocated to general, scientific, practical and elective courses have been changed. As shown in Fig. 3, the new curricula gives more emphasis to the general, science and elective courses. Also, more attention is given to the social science activities.

One can notice that the curricula modifications are a complement to the changes in the purpose of education at the vocational level. In other words, reform has been accomplished at the theoretical or objective level, and it has been accomplished at the administrative and teaching levels.

Figure 3 shows that the new curricula have more hours for science, general, elective, and social science courses. In

addition, the number of hours allocated for professional practice courses have been decreased. The FM curriculum still emphasizes the professional and professional practice courses more than the other curricula.

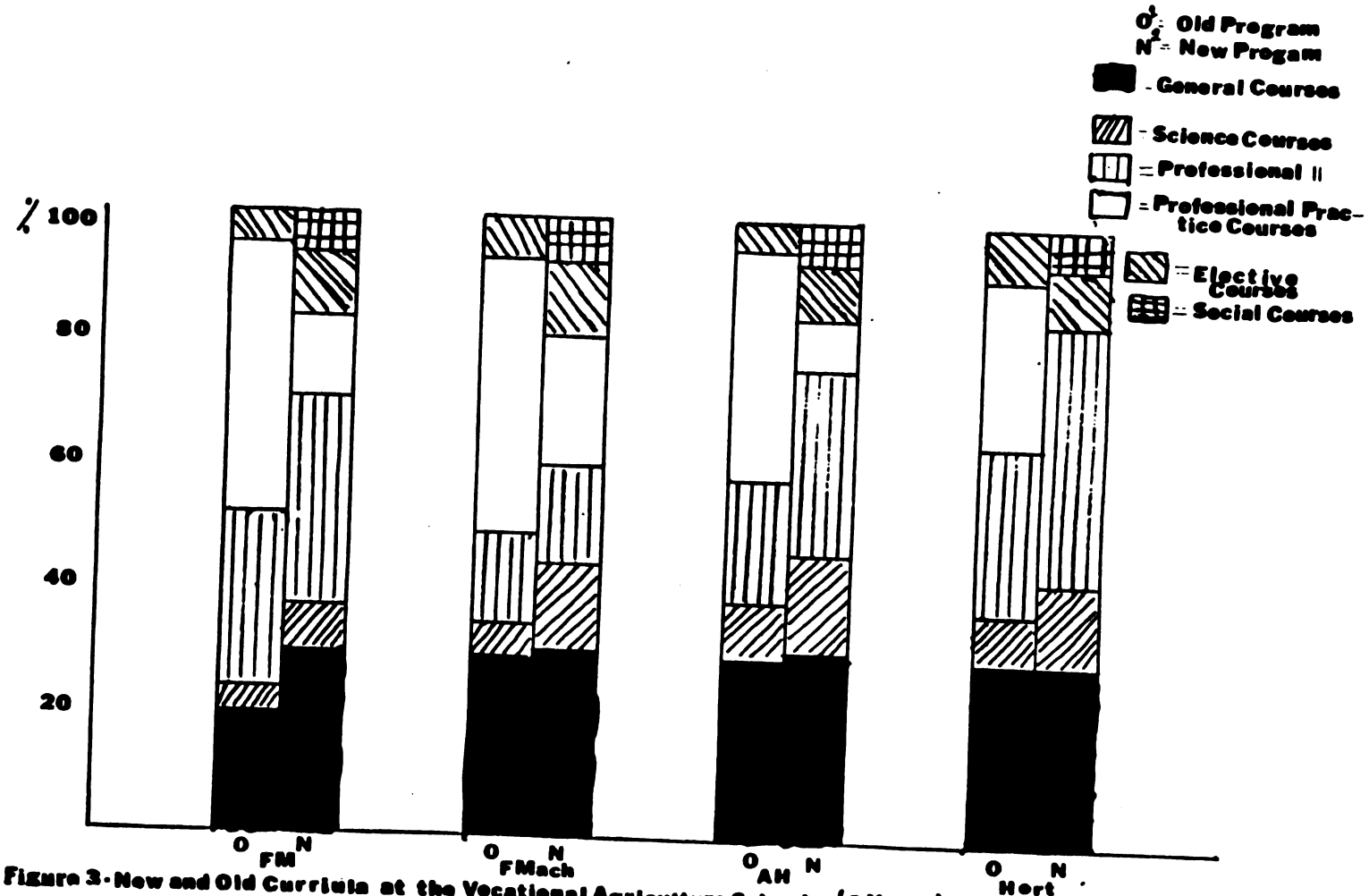

Figure 3- New and Old Curricula at the Vocational Agriculture Schools. (3 Years)

1: Old program 222 hours in 3 years, 37 hours per semister.

2: New program 216 hours in 3 years, 36 hours per semister.

Source: Provincial Department of Education, 1987.

Land Reform

The COA (1987) report indicated that "through the use of peaceful and legal means, the implementation of this program had the full support from the tenants and a minimum of resistance from the landlords."

Among the beginning steps that the government took in order to improve agriculture productivity, was a three-stage land reform program. In this program the first stage was a reduction of the rent of land to 37.5 percent of the annual crop yield; the second stage was when the government sold public land to farmers; and in the third stage the government bought land from the landlords and resold it to farmers in what was called a land-to-tiller program (COA, 1986). Johnson et al. (1987) reported that as a result of the land reform, tenant farmers became owners of 75 percent of public and private leased land. Chen (1986) reported that during that period the government bought 139,000 ha of agriculture land from landowners, and then sold it back to the tenant farmers. The land reform program in Taiwan was considered a success, in part because it took into consideration the characteristics of the Chinese farmers who are well known for their love of land and as well as taking pride in owning land. Li (1988) reported that the land reform succeeded because it attracted the Chinese farmers who have a desire to improve their condition, and that by buying land the farmers worked harder.

Approximately 35 years later another land reform program is underway. The COA (1987) report on the Second Stage Farmland Reform Program, indicated that the present day need for a second stage is:

> To promote land use, labor productivity, and a larger farming scale. (p. 1)

According to the COA (1986) report, the steps for implementing the second-stage farmland reform are:

(a) Direct all-out efforts at improvement of agricultural productivity in the long run, while, in the short run, give the producers a warrantable measure of protection and price support.

(b) Promote joint, entrusted, and cooperative farming; assist in farmland procurement; advance farm mechanization; and continue farm consolidation.

(c) Work out a general plan for effective utilization of land and water resources in coordination with the zoning projects for meeting marketing requirements; strictly enforce the regulations for promoting agricultural development on a regional basis; and improve protection and utilization of lands that have been designated for agricultural uses.

(d) Increase public investment in agriculture; improve production environment; step up research in agricultural science; and push forward with extension of high tech production processes to raise agricultural productivity.

(e) In line with the government's policy of forest conservation taking priority over utilization, promote multi-purpose use of forest resources to fully develop their productive potential; set up efforts at forest conversion, flood control, water and soil conservation, and various other national land protection measures, including construction of dikes and levies. (p. 21-22)

According to Mao (1978), Land Reform in Taiwan has benefited the farm families who farmed nearly 88% of the total cultivated land. Mao reported benefits in the social, econom-

ic, and political areas. The economical benefits are said to be based on the fact that the farmers have more incentive to farm land that they own than when they are tenants. Social and economical benefits are: decreasing the poverty level and having better social status. Mao also mentions that land reform has made farmers more conscious about community activities. Williams (1988) reported that promoting larger scale of farming and different cooperative farming methods are considered among the goals of the second land reform.

Agriculture and its Current Contribution to the Economy in Taiwan

Li (1988) characterized the Chinese farmer as the Chinese peasant with a traditional desire for land. Another comparison of the Chinese farmers is reported by Wittwer, et al. (1987), where he described them as: ". . . more like gardeners than farmers and are adept at ecological, self-sufficient, sustainable agricultural systems." (p. 14). They have accumulated massive experiences regarding multiple cropping; fertilizing the land; symbiotic relations between animals and land; and dealing with drought as well as floodings.

Taiwan is an island in the eastern part of Asia. This region is characterized by a high density of population with limited natural resources. In the early 1950's Taiwan was like many other developing countries: high population growth rate, low industrial output; economy dominated by the agriculture sector; and excellent human resources. The Republic of China in Taiwan built upon agriculture; especially the infra-

structure which the Japanese left. Thompson (1984) indicated how the Japanese during their occupation of Taiwan, provided improved rice varieties that respond to fertilizer applications; provided an irrigation and drainage system; a transport system; and diffused agricultural information. With the land reform (previously explained), better land rent policies, market oriented policies, low inflation and labor intensive agriculture, the government managed to secure lower food prices which helped the economy of the island. Thompson (1984) further reported that agriculture was used as a vehicle to improve the less developed sectors of industry and manufacturing. Li (1988) reported that part of Taiwan's success can be attributed to Japan, which lacked self-sufficiency in food supply, and during 1895-1945 made Taiwan its food basket by building irrigation systems, constructing major infrastructures and roads and encouraging the farmers' organizations. The major factors for better agricultural production are: education; availability of inputs; price policy favoring the farmers; reasonable transportation system; and most important is for farms to be close to urban areas.

Johnson et al. (1987) reported that among the factors that have contributed to Taiwan's development is education where the farmers are well educated. Nearly 58% of the total farm managers had finished the primary school level of education, 16% had finished middle school or higher, and 3% who enrolled in VS (Taiwan Agriculture Yearbook, 1988).

Because of agricultural development, the government managed to drive the industrial sector forward, by providing food and fiber for the people at affordable prices.

CHAPTER III

REVIEW OF LITERATURE

Introduction

This review of literature includes concepts related to education and farming. The topics for review are related to the areas of measurement which are included in this research. Those areas are as follows:

- Education
- Vocational Education
- Education and Agriculture Development
- Perception of Vocational Agriculture School
- Work After School
- Farmers' Sources of Information
- Training Programs
  - Farmers Association
  - Young Farmers Program
- Farm Management
- Farming Systems in Taiwan
- Farming Record Keeping

Education

Among the factors that the education system in any country should take into consideration are the religious, ethnic and socio-cultural backgrounds. MOE (1987) reported the aim of Chinese education is:

> In accordance with the three principles of the people, the purpose of Chinese education is to improve national living, to achieve mutual assistance, to develop national economic life and to prolong the life of the nation, so that we can attain by all means, the independence of the nation, democracy and a higher standard of living, and in the end, advance to an ideal world where harmony and equality prevail. (p. 7)

The World Bank (1980) indicated that investing in education can be achieved where:

- Basic education should be provided for all children and adults as soon as the available resources and conditions permit. In the long term, a comprehensive system

of formal and non-formal education should be developed at all levels.

- Education should be related to work and environment in order to improve, quantitatively and qualitatively, the knowledge and skills necessary for economic, social, and other development. (p. 10)

Meaders (1977) reported the policy adopted for education in Taiwan included five major goals in 1962:

> To establish strong links between economic and educational planning; to enforce science education; to improve the quality of higher education; to reinforce research capabilities; and to modernize social education.

Education is considered to be a major factor for the advancement of nations. Developed countries' successes have depended largely on the availability of proper education systems for their citizens. It is considered as an investment for a better future. Psacharopoulos (1988) cited Adam Smith (1776):

> A man educated at the expense of much labour and time may be compared to one . . . expensive machine . . . the work which he learns to perform . . . over and above the usual wages of common labor will replace the whole expense of his education. (pp. 203-204)

Meaders (1966) reported that the importance of education as an essential source to the growth of economy and advancement is already accepted. Education has an objective which is mainly focused toward preparing as well as providing the people with enough knowledge and skills to be able to face the constraints and problems that will confront them in their lives. The Ministry of Education (1988) summarizes the role of secondary education in Taiwan as a linkage between elementary and higher education. It continues to

stress on developing the ability of the student to think, identify and confirm the basics of citizenship education.

Vocational Education

Vocational agriculture should be a reflection of the current situation where the students interact and live. This will help the youth and the adults who are engaged in vocational learning to be ready for the tasks that will confront them. Prosser and Quigly (1949) developed theories regarding vocational education. These theories are:

1. Vocational education will be efficient in proportion as the environment in which the learner is trained is a replica of the environment in which he must subsequently work.

2. Effective vocational training can only be given where the training jobs are carried on in the same way with the same operations, the same tools and the same machines as in the occupations itself. (pp. 217-218)

Curtis (1978) reported that there are four levels of vocational development. These are: operational, skilled, technical, and professional. Marklund (1988) reported that the levels of vocational education can be considered as its means and ends where the individual should realize his future role in the world of work.

The benefits of vocational education programs are beyond the school limit. Cumming (1988) reported that such benefits can be:

> (a) Reduction of aggregate unemployment below the rates that would otherwise have existed; (b) redistribution of income to low-income groups; (c) external benefits

> such as lower incidents of social deviations; (d) it is often claimed that practical subjects will improve the prospects for self-employment if regular wage earning employment fails to materialize. (p. 142)

The Ministry of Education in Taiwan has set a summary of recommendations for the purpose of vocational education:

> The purpose of vocational education is to provide youths with productive knowledge and skills so that they can engage in actual productive work after graduation. (MOE 1988) (p. xvi)

Perception of Vocational Agricultural School

The perception of vocational agricultural curricula by the graduates is important because it can help the VAS to evaluate the appropriateness of the curricula offered at the school. Graduates' perceptions are vital, especially if they are in a profession that they majored in while they were students at the VAS. Graduates can reflect the need for modification in the curricula as well as emphasize the importance of certain courses that are taught at the school.

Meaders (1966) reported that:

> Most of the graduates in agricultural occupations recommend general training in all divisions of the vocational agricultural school rather than to specialize in one division or to have a combination of specialized training in one division with some training in other divisions. (p. 64)

Arrington (1986) reported that high school graduates who were enrolled in vocational programs had positive attitudes about their experiences in vocational agricultural programs. Wu and Wu (1987) reported that VAS graduates who were interviewed in the study reported that the curricula

should emphasize farm management and marketing agricultural products. Martin (1987) reported that Iowa farmers prefer educational programs that emphasize marketing, credit and financial planning.

Strickland (1987) conducted a study about students' satisfaction in agricultural education programs and reported that:

> Instructional elements proved to be most important in contributing to student satisfaction in agricultural mechanics and agricultural production. (p. 45)

Education and Agriculture Development

Education is considered to be the most important variable among other variables pertaining to the development of a nation. The demand nowadays is for different types of workers who are trained and skilled in highly technical work. Agriculture is a part of this new world.

Shultz (1964) reported that education would be more efficient in an environment that is characterized by development and modernization, than in a traditional environment. An efficient and a modernized environment means that the inputs for better productivity are available. Because if inputs like fertilizers, loans, and market prices which encourage the farms to produce more do not exist, then the effect of the better educated farmer is minimized. As Psacharopoulos and Woodhall (1985) reported:

> There is a two-way relationship between education and other investments to improve agricultural productivity. The effect of education on farmers' output is consider-

> ably greater when complementary inputs such as fertilizers or new types of seed are available. (p. 205)

Heyneman (1983) classified the basic stages of agricultural productivity and their learning requirements. In this classification (as shown in Fig. 4), Heyneman's classification was as follows: (1) According to the technology level of the farmers; (2) agricultural inputs; and (3) minimum learning requirements. According to how the farmers nowadays are operating their farms, in order for these farmers to compete and be efficient they should be at the Level D.

Figure 4. Basic Stages of Agricultural Productivity and Their Learning Requirements

Farmer-Entrepreneurs Technology Level	Agricultural Inputs	Minimum Learning Requirements
Level A: Traditional Farming Techniques Passed From Parent to Child	Local Varieties of Seeds and Improvements	Addition and Subtraction - Not Necessarily Acquired Through Formal Education
Level B: Intermediate Technology	Small Quantities of Fertilizers	Addition, Subtraction, Division, and Rudimentary Literacy
Level C: Fully Improved Technology	High-Yielding Varieties; Proven Seeds; Rate of Application of Seed, Fertilizer, and Pest Control per Acre	Multiplication, Long Division, and Other More Complex Mathematical Procedures; Reading and Writing Abilities, and Rudimentary Knowledge of Chemistry and Biology
Level D: Full Irrigation-Based Farming	All Above Inputs, Tube Well Access During the Off-Season; and Water Rates per Acre	Mathematics, Independent Written Communication, High Reading Comprehension, Ability to Research Unfamiliar Words and Concepts; Elementary Chemistry, Biology, Physics; and Regular Access to Information from Print and Electronic Sources

Source: Heyneman, Stephen. 1983. Improving the Quality of Education in Developing Countries.

Work After School

There are several variables that determine a person's selection of his/her profession. These are family background, personal interest, intelligence, educational competency, social factors, and standard of living. Holland (1966) reported that a person's lifestyle directs this person to choose an occupation out of six occupational environments: artistic; conventional; enterprising; investigative; realistic; and social. Examples of each occupational environment are respectively: musician; clerk; politician; biologist; teacher; and farmer. However, not everyone agrees with Holland. Roberts (1975) reported that a person does not have to fit in a certain environment in order to be able to find an occupation; rather the person takes whatever is available. Roberts indicated that there are two major factors that dictate a person's occupation. First is matching a person's educational qualifications with job availabilities; and second is a reflection of reality where workers adapt themselves to actual job situations even if the environment is harsh.

West and Newton (1983) reported that among the reasons for studying the attitudes between teachers and students is that:

> The relationship between teachers and pupils therefore has implications for pupils' attitudes and expectations both in the short term and in the long term after they have left school and started work. (p. 22)

The educational system in Taiwan is quite special. According to entrance exams at the senior high school level, the future of Taiwan's youth is determined. Either they have to go to vocational school or academic high school. Mainly those enrolled in VS go to work after graduating from school.

One of the characteristics of the Chinese culture is the high value placed on schooling as the avenue for achieving respectable social status, job, and steady income (Kato 1978). However, with the industrial growth that Taiwan has experienced, blue collar jobs provide youths with better standards of living than before. This has encouraged youths to enroll in vocational education. The economy of the island is booming in such a way that most of the vocational school graduates can find jobs instantly after graduation, although the opportunities for career advancement in those jobs may be quite limited.

That is why the government is trying to encourage youths to enroll in farm management in the VAS. The government is doing so by providing these students with scholarships, and facilitating their entrance to the school even though they could not pass the normal exams. Also the government is trying to attract them into the Young Farmers Program (YFP). The members of the YFP can be from any discipline.

Farmers' Sources of Information

Before the twentieth century, farmers used to depend on the experiences and teaching that they received from their fathers. They then used this information to pass along to their own children. In those days the technological change was not as fast as in the twentieth century. The technological change of today has enabled farmers to plant draught resistant crops, high yielding varieties, and raise larger and more productive livestock. It has also enabled the farmers to control weeds, insects, and other diseases. The technological changes have been passed from the research institutes to the academic field, and then to the farmers, sometimes from research institutes directly to farmers.

The technological information has been passed to the farms through several sources of information. These sources of information are television, radio, seminars, field trips, bulletin boards, magazines, newsletters and mail. Lionbergen and Gwin (1982) reported that the effect of mass media messages were:

> (1) It can change or add to the information that the exposed person possesses. This is referred to as cognitive change.
>
> (2) It can change people's attitude, beliefs or opinions about something, including how they feel about themselves. This is sometimes referred to as affective change.
>
> (3) Finally, it can lead to some kind of behavior change. This is least likely, although it is the change that change agents ultimately work for the most. (p. 140)

Meaders (1966) reported that graduates from VAS engaged in farming indicated that sources of help for their farming operations were: (1) other farmers; (2) FA; (3) VAS; (4) mass media (radio, magazines, and newspapers); and (5) extension services. They are ranked in descending order of most reported sources of information. However, further study by Meaders (1968) indicated that other farmers, magazines, and FA were the sources of information cited most frequently by the respondents. Other sources of information cited least frequently by the respondents in 1968 were: academic middle schools; agricultural colleges and institutions; and television.

Johnson, et al. (1987) reported that:

> In both public and private organizations of the mass media, Taiwan has made effective use of broadcasting, newspapers and publications, and a wide variety of audio and visual instructional materials. These provide news, market information, and features for farming. (p. 25)

A person who seeks information outside a school is actually seeking to know more; in other words, he/she is trying to educate themselves by informal means. This informal education can be channeled to an individual, group, or even a mass of learners. Prawl et al. (1984) reported that individual learning is a personal contact that can be done by a visit to a farm or through a telephone. A person can learn through a group meeting or a workshop. Finally, a person can learn though the use of an impersonal method like exhibits, radio, television and newspapers.

Martin (1987), in a study about educational programs for young and adult farmers, reported that:

> Farmers primarily rely on magazines, friends, neighbors and other farmers, and also for information. (p. 63)

Farmers Training Program

Farming today is characterized by frequent changes in technology. These modifications or changes may be related to certain farming operations or even certain management decisions. Farmers who expect to keep up-to-date with new and emerging practices through the flow of new technologies, attempt to do so first by becoming aware of the new technologies through the sources of information available, and second by trying to understand the technologies in order to decide whether or not to adopt them.

Chiang (1978) reported that:

> As more farmers use machines in farm operations, farm management and organization and farm education and training will have to undergo changes and be appropriately adjusted to meet the challenges and needs of farm mechanization. (p. 154)

Meaders (1966) reported that FA and VAS provided extension programs to the farmers, in order to help them solve farming problems. The District Agricultural Improvement Stations (DAIS) provide short courses for farmers and FA agents. The major focus is on subject matter specialization (Johnson et al. 1987).

There are several reports that indicate that training programs and higher literacy rates among the participants in

training programs are considered as a positive factor for the success of the training programs. Psacharopoulos and Woodhall (1985) reported that:

> Training and literacy may be complementary in the sense that the effects of project-related training are greater in countries with a high general level of literacy. (p. 307)

Johnson et al. (1987) reported that there are three organizational components in Taiwan that link agricultural research with the farmers. These are: The DAIS; the university and technical institutes extension teachers; and FAs. These organizations have major roles to disseminate information and to conduct short and long term farming programs. The DIAS are equipped with classrooms, teaching aids, and dormitories for farmers and extension staff. Sing and Ki (1973) reported that:

> The objectives of certificate courses in agriculture of two months or so should be: (1) to teach modern, practical agricultural knowledge and skills to youths; (2) to develop the civic leadership of the local officials; and (3) to extend the modern knowledge of agriculture to farmers. (p. 178)

Farmers Association in Taiwan

Axin (1987) described the agricultural extension education system as either a delivery system (DS) or an acquisition system (AS). DS is where the agricultural information provided to the farmers is mainly through an organization that is part of a Ministry of Agriculture. The objectives and goals of the DS are set by the government.

The AS also provides information and educational programs to the farmers. However, it is stemmed from the grass-roots of the local community. Local farmers organize themselves and initiate it. The staff of the AS are employed by the local community. There is a connection between the communities and the government. There is guidance from the government, and it is not considered centralized as is DS.

The Farmers' Associations in Taiwan provide help to the local farmers of the AS.

Kuo and Lee (1980) reported that the FA has several objectives: (1) improve farmers' knowledge and skills; (2) to make farms have higher productivity; and (3) make farmers have higher incomes. These FAs exist in townships, cities, and counties. They are characterized by having a grassroot mechanism. Johnson et al. (1987) reported that:

> The most widely publicized component in the technology transfer sub-system is the FAs. These are multi-purpose "private" organizations sponsored by and strongly linked to government, which has issued extensive regulations on functions, management, and financial responsibility. (p. 23)

Lin (1989) reported that FA laws state that 60% of the net earnings from marketing and credit services should be set aside for extension education. Also, 4-H club activities in rural areas are promoted and assisted by FAs. FAs also contribute to the implementation of agricultural programs (Chen 1986). Up to 1980 there were 304 FAs with a membership of close to one million (COA 1987).

It is through the extension sections of the FAs that the PDAF is trying to encourage the Young Farmers Program (YFP). The FA extension agents are usually local persons who know everyone, and they can have an influence on the youth to join the YFP. Fig. 5 is a description of the existing agricultural extension system. It is through the extension programs of the FA that agricultural policies are channeled. The FAs are a link between policy makers and those who may be affected by these policies (farm families). The FAs have been trying to deal with the problems of the rural people and mainly the farmers in Taiwan through extension advisers from: home economics, 4-H, and agriculture. These advisors generally carry out programs through the homemakers club, 4-H clubs and farmer discussion groups.

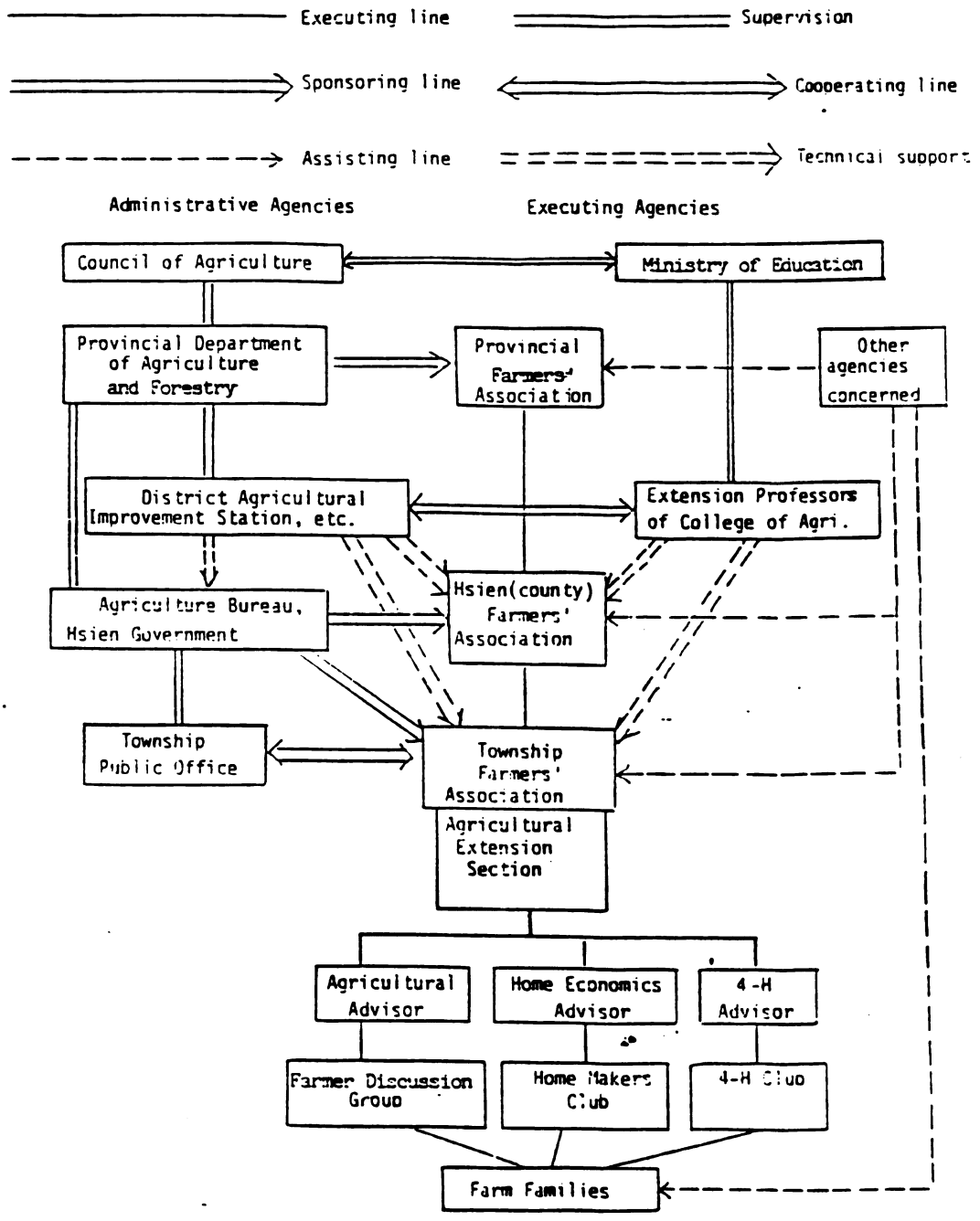

Fig. 5. The Existing Agricultural Extension System.
Source: S.T.Lin(1989). Establishment of an Integrated System for Agricultural Extension Services, COA.

Farmers Associations Extension Personnel

Johnson et al. (1987) reported that the educational background of the FAs extension personnel are as follows: Six percent graduates of academic high schools and junior vocational schools; 19 percent junior college or above; and 75 percent vocational high school.

The extension personnel of the FAs keep up to date with new information and technology through the training programs they take. These training programs are: (1) induction training; (2) in-service training; (3) advanced training; and (4) training abroad (Johnson et al. 1987).

Young Farmers Program

COA (1987) reported that:

> A nucleus farmer must possess certain kinds of production skills or management knowledge and provide strong leadership in assisting neighboring farms to implement rural modernization program. (p. 66)

The government is sponsoring and encouraging a Young Farmers Program (YFP). Another name for the YFP is "Army of 80,000 Nucleus Farmers for Rural Reconstruction" (COA 1987). According to the COA (1987) report:

> Taiwan will need 80,000 modern farms to produce enough food to meet the country's requirement. On average, each nucleus farmer will operate a fully mechanized 10-hectare farm under group farm management. (p. 63)

There were 3,036 young farmers who were enrolled in the YFP in 1988; 24.6% of these farmers were graduates of VAS (PDAF 1989). The main objective of the YFP is to attract

rural youths to continue farming. The COA has done this by having incentives for those who are interested. Young farmers are encouraged to enroll in farm management programs in the VAS. The FAs provide the students with financial assistance and the government decreases the educational fees (Hung 1989). The money given to students differs from school to school. This is because the financial status of the FAs differ. One major facilitative step that the government provides these young farmers, is that they are not obliged to take the regular entrance exams for the farm management department (Hung 1989). The COA made it clear for those who enrolled in the farm management program, that they would be provided with loans for farming operations and capital investments (S. T. Lin 1989). The COA (1987) report indicated that the PDAF and the Provincial Department of Education (PDE) planned to offer full scholarships to the youth of rural areas to study in VAS and agricultural schools. Also the report indicated that there was an intention of increasing the classes and the number of students in farm management and agriculture departments.

The COA involved the local 4-H advisors in the recruitment of potential young people to study farm management in VAS (S. T. Lin 1989).

The YFP encourages the farmers to diversify their production as well as train them to keep and use farm records. Hsiao (1989) indicated that young farmers who raise livestock know a lot about record keeping.

Wu and Wu (1987) conducted a study or evaluation of the young farmers training program through vocational and technical education systems. They reported that most of the 1982, 1983 and 1984 VAS graduates who got scholarships reported that their goal was to get an education and a diploma, while engaging in farming was a second priority.

Farm Management

Farm management deals with various variables which are considered the major inputs for the ultimate goal: output in the form of agricultural product. Most of these variables are out of the control of the farmer in spite of the availability of up-to-date scientific technology. Farmers cannot avoid drought. Farmers cannot eliminate the possibility of the spread of a disease or an infection; the only thing they can do is minimize the damage by following certain methods. Farmers are very susceptible to the local economy and global economy status. Prices of agricultural inputs may prevent the farmers from expanding their farm or even force them to decrease the size of their operation. Inflation, which is an unpredictable index, has the greatest effect on the farmers. It may force farmers out of farming, as well as affect their productivity. Most important, local farmers are very sensitive regarding competition from other areas or countries. In general, farmers cannot compete with commodities produced at lower costs.

Castle et al. (1987) reported the major concerns that confront the farmers are:

1. What should be produced? What crops should be grown? What livestock should be raised?

2. How large should the farm be? How much should be produced? How many acres of land, dollars of capital, and hours of labor should be used?

3. How should the factors of production, land, labor, and capital - be acquired? Should the capital be borrowed? Should the land be owned or rented? Should new or used machinery be purchased? Should the labor be hired or supplied by the farm family?

4. What method of production should be used? What feeding, breeding, tillage, and other practices should be followed?

5. When and where should inputs be purchased and products sold? (p. 3)

A major indicator for proper management of an enterprise is a well organized record keeping system. Record keeping is considered as a fundamental infrastructure, or a base, for a farmer to understand and be able to evaluate his performance. Record keeping is important because it provides information which enables the farmer to make important decisions. Bucket (1988) described the value of records to management as:

> The correct use of accurate records is an essential part of good management. They can be employed to monitor the performance of a plan once it is put into operation and act as a diagnostic tool to highlight strengths and weaknesses which should be exploited or removed as appropriate. Management can learn from experience assisted by records. Benefits can be both short and long term. (p. 52)

Nishimura (1978) reported that:

> The fundamental objective of farm records and accounting is to establish the financial position of the business and to calculate its profit or loss during an accounting period. (p. 80)

Among the goals that the farmers seek to attain are: profit maximization; survival of the farm; social status; and development (Harsh et al. 1981).

Harsh et al. (1981) described field records as:

> The maintenance of appropriate field records provides farmers with valuable information over time on yield levels and various inputs and cultural practices used in the production process. Good field records essentially provide a detailed history of what went in and came out of each field over time. (p. 101)

In the past two decades Taiwan has experienced a radical change in the performance of the industrial, services, and technological sectors. Although these sectors have improved, their performance has affected the farming sector. Taiwan is self-sufficient in food consumption and is also able to export the excess of its agricultural products. The 1986 growth rate index of agricultural production (301) was still ahead of the growth rate index of population (239) (the year 1952 = 100 in the index) (COA 1987 graphic presentation). In spite of these indicators, scholars and scientists in Taiwan are worried about the future of farming.

The COA (1987) reported that part time farmers were 40% of all farmers in 1955, and in 1986 they were 86% of the total farmers. Out of the net farm family income in 1966, 60% was from agriculture; in 1986 it dropped to 39% (COA 1987 graphics).

Mao (1978[2]) reported that certain measures were taken in order to make the social and economic status of the farming community in Taiwan better. Among these measures were the encouragement of the farmers to join certain farming systems or groups which could make their work more productive and rewarding.

Farming Systems in Taiwan

There are three farming systems in Taiwan that the government is promoting. These are entrusted, joint, and cooperatives. The main objective of these systems is to try to encourage larger-scale farming in order to make farming more mechanized and more profitable. The COA (1986) reported that for successful implementation of the second-stage land reform there should be more promotion of joint, entrusted and cooperative farming.

Joint Farming

Joint farming is considered one of the major types of farming that the Government has encouraged the farmers to adopt. Shen (1978) reported the steps that the government took to ensure the success of joint farming implementation are:

a) integrated use of improved techniques where a package of practices including superior rice varieties, healthy seedlings, good transplanting,

proper application of fertilizers, intensified pest control, better irrigation and drainage was available from 1963-65 for joint rice farming in five-hectare units with the participation of five to ten farmers per unit;

b) joint rice farming operations in 15-hectare units with the participation of 30 to 40 farm families per unit in 1964-66;

c) joint farming operations with integrated use of improved techniques in 20-hectare units with the participation of 30 to 40 farm families per unit, for land consolidation areas and productivity areas, in 1967 and 1968;

d) extension of joint farming operations with integrated use of improved techniques to non-rice crops and livestock in 1965-70; and

e) establishment of specialized agricultural production areas to facilitate marketing, input distribution and integration of joint farming operations for specific products since 1970. (pp. 20-21)

The COA (1987) report describes joint farming as 10-20 farmers who own small farms joined together to perform certain farming operations, such as fertilizer application, field preparation, transplanting, weed control, harvesting, drying and transporting. In addition, the farmers can jointly purchase their inputs as well as market their products.

There are other operations or models for farmers to operate together. Hong (1979) reported that farmers may have custom work farming groups, where they hire farm operators to do certain tasks like harvest the crops or maintain the farm equipment. By having better organization and proper scheduling the farmers will benefit most. COA (1987) report on the second-stage farmland reform program defined joint farming as:

> . . . an important arrangement for enlarging the farming scale without affecting existing land ownership. (p. 4)

Lin (1989) indicated that the popularity of joint farming stems from the exchange of technical help and labor. Mao (1978) reported that the advantages of joint farming operations were:

(1) savings in labor for non-farm work;

(2) increasing land capability for capital investment and technical improvement;

(3) increasing labor productivity through better management;

(4) facilitating government investments in public utilities;

(5) increasing the effectiveness of the extension service.

Mao (1978[2]) reported that membership of joint farming operations is on a voluntary basis. Part-time farmers chose joint farming because it saves labor time, saves cost of implements, and improves personal relations (Shiao 1989).

Entrusted Farming

The COA (1987) reported entrusted farming as a practice which can be either for management or cultivation. It is an agreement between two farmers. If there is a need for certain help in a cultivation practice, it is called cultivation entrusted management, where the decision making is still with the land owner.

A significant number of rural people work at non-farm jobs for high pay. However, these people do not move from their homes, and they have kept their land. COA (1987) reported that due to legal protection of tenants' rights, these people do not want to lease their land fearing that they could not reclaim the land when they want it back. The only alternative is to entrust it to someone the person can trust, be it a family member or a close friend, and there is no written contract. According to the COA (1987), the major contributions of entrusted farming are:

(1) To allow small farmers to pursue off-farm jobs to enhance farm family income without jeopardizing their land ownership;

(2) To enable entrusted farmers who are also small farmers to enlarge the scale of their farming operations for more efficient management; and

(3) To maintain a high level of land productivity as entrusted farmers assume the management responsibility for the full utilization of entrusted land. (p. 10)

However, if the form of entrusting is management, this means that the decision making is totally with the entrusted farmer. The reason for the latter form is when the owner of the farm cannot work on his land, because he works off the farm.

Cooperative Farming

Cooperative farming is the third farming system that has been promoted. The cooperatives have been involved mainly

in supply of farm machinery to be used by the cooperative members (COA 1987). Williams (1988) reported that there are two main obstacles to cooperative farming:

> Fragmentation of farmlands, especially on dry uplands, tends to work against cooperative ventures. The individualism of Chinese farmers, centered on the deeply rooted family system, is another obstacle. (p. 35)

Shiao (1989) reported that cooperative farming is not very popular because the farmers need to organize in groups for financial matters and it is very complicated. However, he indicated that among cooperative operations, cooperative marketing is the most popular.

Ong (1980) reported that:

> The adoption of new technology will only be successful if institutional changes occur. Such changes include, for example, land reforms to improve owner-tenant relationships, farmer credit to finance farm improvement programs and group organizations to effectively increase their bargaining power. (p. 3)

Farming Record Keeping

The need for record keeping is important for any business, and farming is not an exception. Record keeping of farming operations require that the farmers have a certain level of education in order to conduct it. However, these days record keeping for modern farms, even small scale farms, requires more than that. This is because farmers today get loans according to the assets they own. All of this is tied to the inflation rate at the time of getting the loan. U.S. farmers learned the hard way that their farm land prices depreciated when the inflation rate decreased

from double digits in the late seventies to low single digits in the mid to late eighties. Interest rates change, and so do inflation rates. Also, prices of all inputs of farming operations change from one period to another. If farmers can keep their farming records in proper condition they will be in a better position to judge when to buy or sell or when to apply for a loan. Johnson (1982) reported that:

> Any record keeping is widely disliked by most farmers but they should realize without records the chances of getting regular, satisfactory profits are much reduced. Up-to-date records test methodically throughout the year and are essential for good management.

Harsh et al. (1981) reported that:

> Today a good record system remains an essential component of a well-managed farm operation. Farm records are often kept with the expectation that there will be several uses made of the records. (p. 70)

Having an up-to-date record system of farming operations is considered a positive factor for the farmer. Herbst (1976) reported that farmers make use of information they get from their record system for: (1) enhancing the farm business; (2) to finance the farm business; and (3) meeting lawful demand. Farm records give the farmer an indication of his farming operations. It also gives him a picture of what he can do or he cannot do in the future. As Harsh et al. (1981) reported, having proper financial records helps the farmer to obtain credit for his farming operations.

Janes and Stoneberg (1974) reported that farm records consist of the following components:

(1) Asset and Liability Account

(2) Receipt and Expense Account

(3) Capital Account

(4) Credit Account

(5) Production and Statistical Records

(6) The Farm Business Analysis

(7) Enterprise Records and Accounts

Barry et al. (1983) reported that:

> A set of coordinated financial statements includes: (1) an income statement, which measures the value of a firm's production during a period of time; (2) a balance sheet, which measures the level and structure of a firm's assets and liabilities at a point in time; and (3) a statement of changes in financial position, which provides a linkage between the income statements and successive balance sheets. (p. 30)

CHAPTER IV

RESEARCH METHODOLOGY AND PROCEDURES

Introduction

This chapter describes the methods of collecting information from selected VAS graduates engaged in farming. It contains the original plan of contacting those VAS graduates, and the revised plan pursued. This chapter also contains a description of the research procedures for questionnaire preparation, survey process and the workshop. In addition, the steps taken to insure the validity and reliability of the research questionnaire are included. Finally, this chapter discusses how the data of this questionnaire was analyzed.

Gathering Information About the Target Population

Original

Because of budget and time constraints, the best alternative method to identify the target population of this research was through Meaders (1989) study. Meaders (1989) conducted survey research which included in the respondents a sample from the 1982 and 1984 VAS graduates from four curricula: Farm Management (FM), Horticulture (Hort), Animal Husbandry/Veterinary (AH), and Farm Machinery (FMach). A low rate of response to the mailed questionnaire

also revealed a limited number of those who responded were engaged in farming. These two factors resulted in a change in strategy for conducting this research.

Revised

An alternative method of identifying the 1982 and 1984 graduates engaged in farming was developed. This method depended on the relationship that existed between the administrators and teachers of each of the six VAS and their graduates. A personal visit from the advisor of the researcher of this study to each of the six VAS facilitated the gathering of the research information.

Each VAS provided names and addresses of their graduates from the target population to be engaged in farming. Each of these lists provided names, year of graduation, majoring department and addresses and some telephone numbers. Also, as shown later, the number of those who were interviewed was increased by asking the interviewees if they knew anyone who was a 1982 or 1984 graduate from one of the four departments and engaged in farming.

Visits to Vocational Agricultural Schools

Field trips to the VAS were considered important steps, because they gave the researcher a more comprehensive understanding of where these graduates studied and what facilities and infrastructures were provided to ensure their education. The researcher visited five out of six of the

VAS. He was accompanied by the director and co-director of the ongoing research. The visits were scheduled in advance to ensure the presence of the principal at the vAS, the dean of studies, and other important faculty members of the VAS. The visits were to Taichung, Tainan, Hualien, Jenai and Chiatung VA schools.

On each of these visits, the research team had the opportunity to meet with the principal and faculty members. They discussed the current situation of the VAS, their long term objectives, and the relationships with the graduates. During the visits the research project team had an opportunity to inspect the facilities and the infrastructure of the schools. During each visit the directors of the research project explained the objectives of the research and emphasized the importance of this study. The director and co-director have conducted several research projects in the past, and this one is considered as a continuation to the previous studies. Each of the VAS principals and their administration teams assured the research team that they were willing to help. Each school provided a list of graduates from each of the four curricula (farm management, farm machinery, horticulture and animal science/veterinary).

When the researcher realized that the responses to the original questionnaire would provide too few graduates who were engaged in farming, the director of research made another trip to each of the six VAS. During that trip, the director explained the situation. The VAS responded by

providing an additional list of the graduates whom they believed were engaged in farming. That action taken by the VAS showed how close the relationship was between the VAS and their graduates.

Preparation of the Questionnaire

The questionnaire was designed as an interview form. Most of the questions were close-ended, but some questions were open-ended. Those questions required the interviewees to explain and to express their answers. Most of the close-ended questions were formed on a Likert type scale, where the interviewees' responses were on a four-point scale. There were a few questions where the interviewee were supposed to choose either yes or no; and other questions where the interviewees were to select the best answer from a series of possible responses. Some of the open-ended question responses were transformed into quantitative form in order to help in the measurement of their responses. The researcher felt that in this form, the responses of the interviewee would better serve the objectives of this research.

The questionnaire was translated from English to Chinese and then back to English. This process was done to assure that the questions, when translated into Chinese, had retained their original meaning in English. This is explained further in the validity and reliability section. After the translation process, the questionnaire was evaluated by a group of Chinese graduate students who frequently

interview farmers for research purposes. Also, the questionnaire was reviewed by the director and co-director of the ongoing research as well as the Deputy Director of the Farmers Service Department in the Council of Agriculture. Because of time constraints and uncertainty about the number of interviewees at a certain period of the research, the researcher took the risk of conducting the questionnaire without pre-testing it with at least three to five members of the population. The major reason for taking this risk was the fear of losing potential interviewees.

The Interviewers

The Department of Agriculture Marketing at National Chung Hsing University provided the research project with the interviewers. There were six interviewers, three males and three females. They were senior students who had previously conducted several surveys. The interviewers were from five counties where five VAS are located. The interviewers were from Chiatung, Hualien, Kwansi, Taichung, and Tainan. Taichung was represented by two interviewers, while each of the other counties were represented by one interviewer. None of the interviewers were from Nanton County, the location of the Jenai VAS.

The interviewers of any research should be able to communicate with the interviewees. Also, they should be aware of the socio-cultural background of the target population. Interviewees should not feel threatened by the inter-

viewers. In other words, interviewees should trust the interviewers. This is a very important factor to take into consideration in order to ensure that the responses will be accurate and not biased by the interviewer. Interviewers should also be knowledgeable about the issues and the objectives of the research. This is essential to be able to clarify these objectives and issues in a manner that the interviewees will understand. Other major factors or characteristics that the interviewer should possess, are being able to be unbiased as well as able to report the replies without any changes or with minimal error.

Babbie (1973) defined the role of the interviewer as:

> The interviewer's presence should not affect a respondent's perception of a question nor the answer given. The interviewer, then, should be a neutral medium through which questions and answers are transmitted. (p. 1972)

With experienced interviewers unintentional errors in recording by interviewers is normally less than with inexperienced interviewers.

Workshop

During the 8th week of the research (first week of May), the training program of the interviewers started. The training program lasted two days. On the first day, the researcher under the supervision of the co-director of the research, presented and discussed three major sections of the research:

(1) Research objectives, background of the study and the questionnaire, duties, and responsibilities of the interviewers; and a token of appreciation for the interviewees.

(2) Interviewing methods and how to record and edit responses. The researcher made sure that the interviewers knew how to record the answers of the interviewees. Also, attention was focused on how to deal with the interviewees when they did not understand the questions. The final step in this section was drawing the attention of the interviewers to editing the response of each individual. A major reason given for editing the responses shortly after finishing, was that it gives tremendous advantage for the interviewer to clarify certain responses. As Jolliffe (1986) reported, the major benefits of editing in the field are:

> There is then a good chance of finding the respondent still available for interview which saves time and travel costs usually associated with a second call. In addition the respondent might be more receptive to continuing the conversation while the first interview is fresh in mind than he would be if the second call were made after a gap of days or weeks. (p. 101)

(3) Revision of questionnaire with discussion. On the second day the researcher answered questions from the interviewers. During this day a strategy plan for contacting the interviewees was also discussed. A plan for coordination among the interviewers to know who is going where and when was decided. At the end, the interviewers were provided with a telephone number that would enable them to reach the researcher in case they needed to do so.

Population

VAS graduates engaged in farming (full-time or part-time) were the target subjects of this research. They were graduates from the six VAS: Chiatung, Hualien, Jenai, Kwansi, Taichung, and Tainan. They graduated from farm management, farm machinery, horticulture, or animal husbandry/veterinary curricula.

The graduates from these four curricula were selected, because it is believed that VAS graduates who are engaged in farming are mainly from those four curricula. The total number of the interviewees was 99. Fifteen interviewees were from the returned mail questionnaire; 43 were from the VAS list; and 41 were through contact with interviewees.

The selection of 1982 and 1984 graduates was based on the assumption that all senior middle school graduates had to serve in the military for two years after graduation. After completion of military service the graduates of 1982 and 1984 would have between 3 to 5 years work experience on farms or in other occupations.

Survey Process

Jolliffe (1986) reported that:

> Usually a survey involves some sampling. When there is no sampling, that is, a complete count or enumeration is attempted, this is called a census. (p. 11)

Survey research is characterized by covering a specific or a target population. It is economical to conduct a

sample survey rather than the whole population. However, this sample must be representative of the total population in order to draw conclusions from the research. Babbie (1985) reported that survey research can be implemented for descriptive, explanatory, and exploratory intentions, and the unit of analysis for such studies is the human being. Allreck and Settle (1985) defined surveys as:

> Surveys can be designed to capture a wide variety of information on many diverse topics. Eight basic topic categories are here: attitudes, images, decisions, needs, behavior, lifestyle, affiliations, and demographics. These categories are not perfectly distinct from one another. (p. 13)

As previously mentioned about the problems faced during the collection of information regarding the target population, the decision was made to interview approximately 100 graduates.

The major concern was that the number of those graduates engaged in farming and willing to be interviewed would not be sufficient if a random sample were drawn from the list obtained from the VAS. As a result the interviewers managed to interview 108 graduates. Nine interviewees were considered ineligible because they were either not VAS graduates, or working in agricultural business and not engaged in farming.

Interview Process

The VAS provided information regarding who was in farming among the graduates of 1982 and 1984 from the spe-

cific departments. The list from each VAS consisted of the names of the graduates, year of graduation, major, and address and telephone number.

The interviewers' first contact with the graduates was by telephone, at which time an appointment was scheduled for the interview. Not all of those who are on VAS list were farmers whether (full time) or (part time). Yet the interviewers managed to get more graduates who were engaged in farming by asking those whom they already interviewed if they knew any of their classmates engaged in farming. More than 41.41% of those who were interviewed were obtained by asking other farmers. The interviewers managed to interview 108, of which 99 interviewees were valid.

At the end of the interview, which on the average lasted for 45 minutes, the interviewees were offered a token present (comb, toothbrush and a small towel).

The time span for collecting data by the interviewers, started May 9th and lasted until June 1st.

The researcher took further steps to ensure that those who were interviewed were graduates of VAS in 1982 or 1984 and from the specific departments. Each questionnaire had the name of the interviewee. The name was checked by the official list provided by the school. Ninety-nine names met all the criteria; the others either had graduated from other institutions or were not farming. To ensure accuracy, the researcher chose twenty names at random, and had the secretary contact them by telephone to ask them certain questions

from the questionnaire. The result was that all were interviewed.

Validity of the Questionnaire

The validity of the research questionnaire is usually met when the objectives of the study are reflected in the questionnaire.

Babbie (1986) defines validity as:

> A descriptive term used of a measure that accurately reflects the concept that it is intended to measure. (p. 56)

Allreck and Settle (1985) define validity as:

> The degree to which the survey data or results are free from both systematic bias and random error. (p. 423)

The final form of the questionnaire was reviewed by the researcher's advisor, who was the director of the ongoing research; the co-director of the ongoing research; and by the Deputy Director of the Farmers Service Department. Their revisions helped the researcher to develop a questionnaire which reflected as much as possible the objectives of the study. After the revision, certain questions were omit ted, modified or added. By taking these steps, the researcher believes that the questionnaire better reflects the objectives of this study.

To insure the validity of the questionnaire of this dissertation, the following steps were taken into consideration:

(1) Translation of the questionnaire to Chinese

(2) Translation of the Chinese version back into English

(3) Compare the original English version to the one from the one translated from Chinese.

Reliability of the Questionnaire

A major concern for any researcher is to meet the concerns of reliability and validity of the research. Babbie (1986) identifies reliability as:

> The quality of measurement method that suggests that the same data would have been collected each time in repeated observations of the same phenomenon. (p. 558)

Berdie et al. (1986) reported that the researcher should be able to transmit his questions in a form that the respondent be able to understand and also to reply according to the question form. Reliability is the ability to be confident of the questionnaire would elicit similar responses if administered to the same individuals at different times. Allreck and Settle (1985) defined reliability:

> The degree to which the survey results are free from random error, as opposed to systematic bias, often expressed in terms of confidence intervals or confidence levels. (p. 418)

To insure the reliability of the questionnaire of this dissertation, the following factors were taken into consideration:

1. Determine that the questions are clear and that one question is asked at a time.

2. Make sure that the questions are about subjects that relate to the respondents.
3. Pretest the questionnaire with a group of graduate students who are experienced in interviewing young farmers.

Because of lack of time and because of the uncertainty of the number of respondents, the researcher did not want to jeopardize the loss of respondents as pretesters.

Data Analysis

Statistical analysis was carried out to measure the differences between the different groups. T-test analysis was used to compare two groups. However, when there were more than two groups one-way analysis of variance (ANOVA) was used to determine the difference between these groups. The level of significance used was 0.05 with a 95% confidence level. The status and analysis was carried out by using the SPSS-X statistical package through the mainframe in the computer center at Michigan State University (MSU) campus. By using this statistical package, the researcher managed to get the interviewees' response frequencies, variance and standard deviation to each of the quantified questions.

CHAPTER V

STUDY FINDINGS

Introduction

The purpose of this research was to compare the perceptions of Farm Management (FM) graduates regarding their curricula and farming matters and the perceptions of Horticulture (Hort), Animal Husbandry and Veterinary (AH), and Farm Machinery (FMach) graduates regarding their curricula and farming matters. The FM graduates were: administered a special entrance examination (EE); a majority were provided with a scholarship; and spent their last term working on farms. On the other hand, the Hort, AH, and FMach graduates were: administered a regular EE; not given scholarships; and spent their last term at the VAS. This study is an attempt to reveal and understand any differences between these groups' educational experience and its influence on their perceptions of farm management.

Interviewees' Characteristics

The interviewees of the research were graduates from the six Vocational Agricultural School (VAS) in Taiwan: Chiatung; Hualien; Jenai; Kwansi; Taichung; and Tainan. They were graduates from the following departments: farm management; farm machinery; animal husbandry/veterinary; and horticulture. The interviewees were graduates of the academic years 1982 and 1984. Table 7 is a summary of the interviewees' characteristics.

Table 7.--Characteristics of Interviewees

Factor	Number	Percent
Vocational Agricultural School		
Chiatung	26	26
Hualien	11	11
Jenai	8	8
Kwansi	10	10
Taichung	25	25
Tainan	19	19
Year of Graduation		
1982	47	47
1984	52	52
Curriculum		
Animal Husbandry/Veterinary	15	15
Farm Machinery	5	5
Farm Management	64	64
Horticulture	15	15
Gender		
Male	92	92
Female	7	8
Age (Average Age: 25)		
23	8	9
24	19	19
25	21	21
26	32	32
27	17	17
28	1	1
NA	1	1
Marital Status		
Single	74	75
Married	25	25
Farming Status		
Part-Time Farmers	69	70
Full-Time Farmers	30	30

Table 7.--Continued

Factor	Number	Percent
Major Enterprises		
Fish	5	5
Fruits	16	16
Livestock	12	12
Livestock and Crops	10	10
Tea and Crops	5	6
Rice and Crops	29	29
Other (vegetables, flowers, cereals)	19	19
Others	3	3
Farming Income as Percent of Total Income		
Less than 25%	29	29
25-49.9%	22	22
50-74.9%	21	21
75% or more	27	27

Approximately 70 of the interviewees were from Tainan, Taichung and Chiatung VAS. Also, 74 of them were single, and 93% were male graduates. Sixty-nine percent of the interviewees reported that they were part-time farmers. Forty-seven of the interviewees were 1982 graduates, while 52 were 1984 graduates. The average age of the interviewees was 25.

The interviewees were grouped into four groups, according to their major at the VAS. Table 7 shows that 64% of the interviewees were farm management graduates.

Both horticulture and animal science/veterinary graduates were 15% respectively, while farm machinery graduates represented 5% of the total interviewees.

Farm Management Graduates

The interviewees who were graduates from the farm management curricula in the academic years 1982 and 1984 constituted 64% of all those who were interviewed (Table 7). Table 8 contains descriptive data about this group of interviewees. The FM graduates who were interviewed were nearly equally divided between the 1982 graduates (31) and the 1984 graduates (33). Taichung and Chiatung provided 19 (29%) and 16 (25%) interviewees respectively, out of the total 64 interviewees. Approximately 60 (93%) were male, and 46 (71%) were single.

Forty-two (65%) interviewees reported that they received scholarships. The scholarship money differed in that: 21 (51%) interviewees received $2,000 NT or less per term; 10 (24%) interviewees received between $2,000 - $4,000 NT per term; and 10 (24%) received the highest amount of between $4,000 - $6,000 NT per term.

This group of FM graduates showed great interest in 4-H. Fifty-four (83%) reported that they were members of a 4-H club. Another 41 (64%) reported that they participated in agricultural activities sponsored by the 4-H Clubs.

Most of the interviewees (70%) were part-time farmers and 34 (53%) reported that their income from farming contributed less than 50% of their total income. A smaller group consisting of 20% (31%) of the interviewees reported

that their farming income was 75% of their total income. Another 19 (30%) interviewees reported that their farming income was less than 25% of their total income.

Out of these 64 interviewees: 22 (34%) operate a farm where the major enterprise was rice plus other crops or animals; 14 (21%) grow flowers and vegetables; 9 (14%) grow fruits; 6 (9%) raise only livestock; another 6 (9%) raised livestock and grew other crops; 5 (7%) grew tea; and the last 2 (3%) raised fish and other marine livestock.

Table 8.--Characteristics of Interviewees who were Farm Management 1982 and 1984 Graduates from the Vocational Agricultural Schools

Factor	Number	Percent
Vocational Agricultural School		
Chiatung	16	25
Hualien	6	9
Jenai	4	6
Kwansi	10	16
Taichung	19	30
Tainan	9	14
Year of Graduation		
1982	31	48
1984	33	52
Gender		
Male	60	94
Female	4	6
Marital Status		
Single	46	72
Married	18	28
Received Scholarship		
Yes	42	65
No	10	16
N/A	12	19
NT$ Per Term		
Less than NT$ 2,000	21	51
NT $ 2,000 - NT$ 4,000	10	24
NT $ 4,000 - NT$ 6,000	11	25
Member of 4-H Club	54	83
Participation in 4-H Club Activities		
Agricultural Activities	41	64
Social Activities	9	14
Recreational Activities	31	48
Other Activities	1	1
Farming Status		
Part-Time Farmer	45	70
Full-Time Farmer	19	30

Table 8.--Continued

Factor	Number	Percent
Major Enterprises		
Fish	2	3
Fruits	9	14
Livestock	7	11
Livestock and Crops	5	8
Tea and Crops	5	8
Rice and Crops	22	34
Other (vegetables, flowers, cereals)	14	22
Farming Income as Percent of Total Income		
Less than 25%	19	30
25-49.9%	15	23
50-74.9%	10	16
75% or more	20	31

Horticulture Graduates

The number of interviewees who graduated from the Hort department at the six VAS was 15 (15%). These interviewees represented five out of the six VA schools. Kwansi VAS had no graduates from Hort department in either the 1982 or 1984 academic years (Table 9). Among the observations drawn from the data gathered on Hort department graduates: 11 (73%) interviewees were 1984 graduates; only 2 (13%) interviewees were female; 13 (87%) interviewees were single; 2 (13%) interviewees were 4-H members; and 4 (27%) interviewees reported that they were full-time farmers.

Thirteen (89%) of the interviewees reported their farms' major enterprise. Five (33%) reported that they grew vegetables, flowers and cereals, while another four (27%) reported that they grew fruits.

Table 9.--Characteristics of Interviewees who were Horticulture 1982 and 1984 Graduates from the Vocational Agricultural Schools.

Factor	Number	Percent
Vocational Agricultural School		
Chiatung	2	13
Hualien	4	27
Jenai	4	27
Kwansi	--	--
Taichung	3	20
Tainan	2	13
Year of Graduation		
1982	4	27
1984	11	73
Gender		
Male	13	87
Female	2	13
Marital Status		
Single	13	87
Married	2	13
Member of 4-H Club	2	13
Participation in 4-H Club Activities		
Agricultural Activities	1	50
Social Activities	--	--
Recreational Activities	1	50
Other Activities	--	--
Farming Status		
Part-Time Farmer	11	73
Full-Time Farmer	4	27
Major Enterprises		
Fish	--	--
Fruits	4	27
Livestock	2	13
Livestock and Crops	1	7
Tea and Crops	--	--
Rice and Crops	1	7
Other (vegetables, flowers, cereals)	5	33
No Response	2	13

Table 9.--Continued

Factor	Number	Percent
Farming Income as Percent of Total Income		
Less than 25%	5	33
25-49.9%	2	13
50-74.9%	4	27
75% or more	4	27

Animal Husbandry and Veterinary Graduates

A total of 15 (15%) interviewees from this research were graduates of the AH program (Table 10).

Seven (47%) out of the fifteen interviewees from this group indicated that they were 4-H members.

Nine (60%) interviewees reported that they farmed part-time. The other 6 (40%) reported that they were full-time farmers.

Six (40%) interviewees reported that their major enterprise was raising livestock or raising livestock and growing other crops. The next largest enterprise reported by 4 (27%) interviews was rice and crops. Other enterprises reported by the interviewees were: fish raising - 2 (13%); and growing fruit - 2 (13%).

Table 10.--Characteristics of Interviewees who were Animal Husbandry/Veterinary 1982 and 1984 Graduates from the Vocational Agricultural Schools.

Factor	Number	Percent
Vocational Agricultural School		
Chiatung	5	33
Hualien	1	7
Jenai	--	--
Kwansi	--	--
Taichung	3	20
Tainan	6	40
Year of Graduation		
1982	9	60
1984	6	40
Gender		
Male	14	93
Female	1	7
Marital Status		
Single	11	73
Married	4	27
Member of 4-H Club	7	47
Participation in 4-H Club Activities		
Agricultural Activities	6	40
Social Activities	--	--
Recreational Activities	1	7
Other Activities	--	--
Farming Status		
Part-Time Farmer	9	60
Full-Time Farmer	6	40
Major Enterprises		
Fish	2	13
Fruits	2	13
Livestock	3	20
Livestock and Crops	3	20
Tea and Crops	--	--
Rice and Crops	4	27
Other (vegetables, flowers, cereals)	--	--
No Response	1	7

Table 10.--Continued

Factor	Number	Percent
Farming Income as Percent of Total Income		
Less than 25%	3	20
25-49.9%	3	20
50-74.9%	6	40
75% or more	3	20

Farm Machinery Graduates

A total of five interviewees out of all those interviewed for this research graduated from the farm machinery program. Three (60%) interviewees graduated from the FMach program at Chiatung, and 2 (40%) interviewees graduated from the FMach program at Tainan (Table 11).

All of the interviewees who graduated from the FMach program were males and four (80%) were single. Only one (20%) interviewee reported to be a participant in 4-H agricultural activities.

The major farm enterprises reported by the five FMach interviewees were: One fish farming; one fruit production; one raised livestock and crops; and two reported rice and other crops.

Four interviewees from this group reported that their farming income was less than 50% of their total income. Two reported farm income to be less than 25% of their total income, and two reported farm income to be between 25-49.9% of their total income. Only one interviewee reported his farming income to be between 50-74.9% of his total income.

Five (33%) interviewees reported that their farming income were less than 25% of their total income. Four (27%) interviewees reported that their farming income was greater than 75% of their total income.

Table 11.--Characteristics of Interviewees who were Farm Machinery 1982 and 1984 Graduates from the Vocational Agricultural Schools.

Factor	Number	Percent
Vocational Agricultural School		
Chiatung	3	60
Hualien	--	--
Jenai	--	--
Kwansi	--	--
Taichung	--	--
Tainan	2	40
Year of Graduation		
1982	3	60
1984	2	40
Gender		
Male	5	100
Female	--	--
Marital Status		
Single	4	80
Married	1	20
Member of 4-H Club	1	20
Participation in 4-H Club Activities		
Agricultural Activities	1	20
Social Activities	--	--
Recreational Activities	--	--
Other Activities	--	--
Farming Status		
Part-Time Farmer	4	80
Full-Time Farmer	1	20
Major Enterprises		
Fish	1	20
Fruits	1	20
Livestock	--	--
Livestock and Crops	1	20
Tea and Crops	--	--
Rice and Crops	2	40
Other (vegetables, flowers, cereals)	--	--

Table 11.--Continued

Factor	Number	Percent
Farming Income as Percent of Total Income		
Less than 25%	2	40
25-49.9%	2	40
50-74.9%	1	20
75% or more	--	--

Interviewees Perception of Vocational Agricultural School Curricula

The interviewees generally perceived their VAS education as a positive influence and an aid to their farming careers. Some of the experiences the interviewees most appreciated from their education were: farm equipment operation; farm management; cooperative environment at the VAS which taught the need and benefit to cooperate with other farmers; and the participation in school work at the VAS helped convey the benefits of working together with other farmers to solve problems (Table 12).

Table 12.--Interviewees Perceptions of Vocational Agricultural Schools Curricula

VARIABLES	NUMBER OF CASES	MEAN	STANDARD DEVIATION
Major courses emphasize theory more than practical studies	99	2.293	.718
Too much emphasis toward general courses	99	2.737	.564
Teacher taught you how to keep farm records	99	2.343	.810
Teacher explained how to prepare a farm project proposal	99	2.141	.756
You learned how to operate farm equipment	99	1.798	.700
You benefited from working in lab shop	99	2.273	.780
You were taught how to maintain farm equipment	99	2.495	.734
Science courses are essential for better understanding the major courses	99	2.162	.662

Table 12.--Continued

VARIABLES	NUMBER OF CASES	MEAN	STANDARD DEVIATION
Teacher of major courses were able to explain material very well	98	2.194	.637
Participation in school work helped you to join other farmers	99	1.929	.593
What is learned at VAS is vital for your farm management	99	1.909	.656
VAS environment made you feel need to cooperate with others at the farm	99	1.929	.759

NOTE: Interviewees responded to questions scaled: (1) strongly agree; (2) agree; (3) disagree; (4) strongly disagree.

Courses Offered at the Vocational Agricultural School

The interviewees felt that the VAS should not decrease the number of courses offered nor should they decrease the number of hours per week allocated to the general, science, major and elective courses (Table 13). In addition, they felt that the number of general courses, number of hours per week of major courses, and number of elective courses should increase.

Table 13.--Perception of Courses Offered at the Vocational Agricultural Schools

VARIABLES	NUMBER OF INTERVIEWEES	MEAN	STANDARD DEVIATION
Number of General Courses	99	2.101	.707
Number of hours per week of general courses	98	2.121	.704
Number of science courses	98	1.602	.670
Number of hours per week of science courses	99	1.727	.682
Number of major courses	99	1.212	.435
Number of hours per week of major courses	99	1.364	.562
Number of elective courses	98	1.439	.627
Number of hours per week of elective courses	94	1.553	.650

NOTE: Interviewees responded to questions scaled: (1) increase; (2) same; (3) decrease

Interviewees Perceptions of Sources of Information for Their Farming Operations

The interviewees reported that they relied on several sources of information for their farming operations. Table 14 shows how the interviewees reported their sources.

Table 14.--Interviewees Sources of Information

VARIABLES	NUMBER OF INTERVIEWEES	MEAN	STANDARD ERROR
Listening to agriculture program on the radio	99	3.677	.998
Watching agriculture program on the television	99	2.778	.840
Reading local newspapers	99	2.596	.914
Reading agriculture magazines	99	2.505	1.101
Reading Farmers Association newsletters	99	3.192	1.209
Reading DAIS newsletters	99	3.384	1.251
Reading PDAF pamphlets	99	2.636	.952
Contacting young farmers	99	2.495	.885
Contacting elder farmers	99	3.626	1.026
Contacting FA agents	99	3.505	1.101
Contacting subject matter specialist	99	4.010	1.174
Contacting professors	99	4.345	1.080
Contacting TSC	99	4.535	.787
Participating in FA meeting	99	1.505	.522

NOTE: Interviewees responded to questions scaled: (1) every time; (2) often; (3) sometimes; (4) rarely; (5) never

The most frequently reported source of information was the FA meetings. The interviewees reported that they contacted young farmers more often than elder farmers, FA agents, subject matter specialists, or professors. In addition, the interviewees relied more on agricultural magazines as a source of information than newspapers, FA newsletters, PDAF pamphlets, or DAIS newsletters. Finally, the interviewees reported that they more frequently got information by watching agricultural programs on television than by listening to agricultural programs on the radio.

Interviewees Perception of Farm Management Patterns Promoted by the Government in Taiwan

The general perception of the interviewees to the farm management pattern being promoted by the government seemed to be indecisive. Table 15 shows that the interviewees in general did not know enough about the management patterns.

Table 15.--Perception of Farm Management Patterns

VARIABLES	NUMBER OF INTERVIEWEES	MEAN	STANDARD DEVIATION
Incooperative farming; farmers work less	95	2.842	.816
Cooperative get better prices	95	2.589	.893
Manager controls farming operations in a cooperative	95	2.684	.878
Joint farming is for part time farmers	96	2.333	.959
Joint farming is popular among family members	96	2.812	.874
Entrusted farming is popular among farmers	95	3.167	.959
Land owners are reluctant to entrust their land	95	2.747	.825

NOTE: Interviewees responded to questions scaled: (1) strongly agree; (2) agree; (3) no opinion; (4) disagree; (5) strongly disagree.

Interviewees Record Keeping

Most of the interviewees reported that they kept records about farm receipts and expenses. In addition, Table 16 shows that the majority of the interviewees reported that they kept records about their assets and liabilities, and about farm labor.

Table 16.--Interviewees' Record Keeping

VARIABLES	NUMBER OF INTERVIEWEES	(1)	(2)
Do you keep record of farm receipts and expenses?	99	82	17
Do you keep record of non-farm operations?	99	44	55
Do you keep record of assets an liabilities of the farm?	99	51	48
Do you keep record of farm labor?	99	54	45
Do you keep record of household expenses?	99	45	54

NOTE: Interviewees responded to questions categorized by: (1) yes; (2) no

Descriptive Responses of the Interviewees

When the interviewees were asked about knowledge of the YSP before they enrolled in VAS, sixty (60%) reported yes while thirty-two (32%) reported that they did not know about YSP. Fifty-eight (90%) of those who reported yes were FM graduates.

The interviewees reported that the major sources of information regarding their knowledge of the YSP were as follows in descending order (most reported to least reported): (1) FA agents; (2) VAS teachers; (3) friends; (4) family; and (5) newspapers. The results are complimentary to what Wu and Wu (1987) reported.

Regarding the factors that encouraged the interviewees to apply for the YSP, they reported the following factors (listed in order of most frequent to least frequent reported):

(1) Enjoy working in the farm
(2) Parents encouragement
(3) Prefer to be your own boss
(4) Only alternative
(5) Self-encouraged after knowing about YSP
(6) Do not work in the city
(7) Land inheritance
(8) Performance of other young farmers
(9) Peers encouragement

The YSP was only offering to those who were FM students at the VAS. Forty-five (70%) FM graduates who responded to the question of receiving a scholarship reported that they had received scholarships. Scholarship recipients reported that they received between $5,000 NT to $750 NT per term.

When the interviewees were asked about which techniques or information they wished had been included in the courses at the VAS, they said the following (listed in order of most frequent to least frequent reported):

(1) Farm investment
(2) Marketing
(3) Better utilization of land
(4) Livestock diseases control

(5) Fish breeding
(6) Landscaping

The explanations which they gave for the responses about additional areas for learning were classified under several headings (listed in order of most frequent to least frequent reported):

(1) Have better farm management
(2) Have better quality
(3) Increase Income
(4) Save capital
(5) Great potential in the future

Thirty-six (36%) of the interviewees reported that they had contacted a VA teaching staff, while 61 (62%) reported that they had not. Table 17 shows the perception of VA teachers as reported by those respondents who reported they had contacted a VA teacher.

Table 17.--Perception of Graduates to the Vocational Agricultural School Teachers as a Source of Information for their Farming Operations

Item	SA	A	D	SD
Teacher visits you at the farm	7	16	9	4
Teacher highly motivated to help you	6	23	7	--
Teacher listens to you before giving his opinion	2	28	6	--
Teacher informs about new practices	6	19	11	--
Teacher reliable source of information	7	7	21	1
Teacher explanation is more informal than formal	--	19	11	2
Teacher is more into theory than practice	1	13	15	7

NOTE: SA: Strongly Agree; A: Agree; D: Disagree; SD: Strongly Disagree

A majority of the interviewees reportedly contacted the teacher of guidance more often than any other VAS staff member.

When the interviewees were asked about the number of total teaching hours, forty-three (43%) did not want to see the number decreased, while twenty-seven (27%) approved of decreasing the number.

Only eighteen (19%) of the interviewees reported that they learned computer at the VAS, while eighty-one (81%) reported that they had not.

One interviewee indicated that he had an overseas training program. His training took place in Japan and it was paid by the PDAF and the county government. The training lasted for three months. He learned about meat marketing and quality control.

Sixty-three (64%) interviewees reported that they had been members of a 4-H Club. The activities that they participated in were as follows (listed in order of most reported to least frequent reported):

(1) Agricultural activities
(2) Social activities
(3) Recreational activities

Twenty-six interviewees reported that they had been officers in the 4-H Club. Also, thirty-one interviewees felt that being a 4-H Club member had helped them to get a scholarship, while twenty-nine said that it had not helped

them. Fifty interviewees indicated that being a 4-H club member had helped them to acquire certain skills which are required in their farming operation.

The interviewees reported several reasons for the way they decided to adopt the variety/breed of the crops/livestock they grow/raise. The reasons indicated were (listed in order of most reported to least frequent reported):

(1) Profit.
(2) Traditional and family did adopt before.
(3) Easy to cultivate and the soil is suitable.
(4) There is good future in what I adopt.

Only twenty-five (25%) interviewees reported that they took what their neighbor grew or raised into consideration. Sixty-nine (70%) reported that they did not take into consideration what their neighbors grew or raised. The main reasons why the twenty-five interviewees took into consideration what their neighbors grew or raised were marketing and the ability to exchange help and information amongst themselves.

Eighty-five (86%) interviewees indicated that they had never entrusted their farming operation land. Another ten (10%) interviewees reported that they had entrusted part of their farming operation land at one time or another.

Thirteen (13%) interviewees reported that they were members of cooperatives, while eighty-one (82%) interviewees reported that they were not members of a cooperative. The types of cooperatives that those interviewees indicated they were members of were (listed in order of most reported to least frequent reported):

(1) Dairy cooperatives
(2) Beef cooperatives
(3) Swine cooperatives
(4) Tea cooperatives
(5) Shrimp cooperatives

When those interviewees who did not join a cooperative were asked about whether they had ever thought about joining one, thirty-seven (37%) reported that they had thought about joining. They also reported that they had thought about it to better enable them to market their products and get loans and technical help. When they were asked about the factors that discouraged them from joining a cooperative, they reported the following reasons (listed in order of most reported to least frequent reported):

(1) No cooperatives in the village
(2) Not a full-time farmer
(3) Do not understand how it functions
(4) Size of land is very small.

Twenty (20%) interviewees reported that they were members of a joint farming group. They also reported the reasons why they joined a joint farming group were (listed in order of most reported to least frequent reported):

(1) Lack of labor
(2) Exchange experience and information
(3) Group work
(4) Help during busy time
(5) Better sales

Seventy-three (74%) reported that they were not members of a joint farming group. The reasons for not joining were (listed in order of most reported to least frequent reported):

(1) Lack of organization
(2) Never heard of a joint farming group
(3) Not enough information
(4) Afraid of procedures complications
(5) Financial problems
(6) No time

Fifty (51%) of the interviewees reported that they had attended FA meetings. Forty-eight (48%) indicated that they had not attended for the following reasons (listed in order of most reported to least frequent reported):

(1) Being busy and part-time farmer
(2) Not enough advertising from the FA
(3) Too far
(4) Not a member of the FA

Fifty-eight (58%) of the interviewees mentioned that their parents agreed with their decision to become farmers. Only eight (8%) interviewees reported that their parents opinion of their farming had changed: four disagreed; two agreed; and two did not report how (if at all) their parents' opinion of their farming had changed.

The interviewees were asked about the size of land that they operated as well as the size of the land they owned out of the land they operated. The average size of operation reported was 1.03 ha, while the average size of land they owned was 0.35 ha.

Comparison of Perception Response Means to the Specific Questions in the Questionnaire by the Two Groups: (1) Farm Management Graduates; and (2) Horticulture, Animal Husbandry/Veterinary, and Farm Machinery Graduates

The results of T-test analysis for the two groups (FM graduates and Hort, AH, and FMach graduates) regarding individual questions indicate that there are significant differences at 0.05 and 95% confidence level for certain questions (Table 18).

Table 18.--T-Test Analysis of the Graduates' Perception Means to All Quantified Questions

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
Age	G1	64	25.3125	1.271	0.159	-0.23	97	0.820
	G2	35	25.3714	1.140	0.193			
Farming Status	G1	64	1.2969	0.460	0.058	-0.18	97	0.859
	G2	35	1.3143	0.471	0.080			
Major courses emphasize theory more than practical studies	G1	64	2.3125	0.710	0.089	0.37	97	0.716
	G2	35	2.2571	0.741	0.125			
Too much emphasis towards general courses	G1	64	2.6875	0.560	0.070	-1.19	97	0.236
	G2	35	2.8286	0.568	0.096			
Teacher taught you how to keep farm records	G1	64	2.2969	0.728	0.091	-0.77	97	0.442
	G2	35	2.4286	0.948	0.161			
Teacher explained how to prepare a farm project proposal	G1	64	2.0625	0.710	0.089	-1.35	97	0.161
	G2	35	2.2857	0.825	0.139			
You learned how to operate farm equipment	G1	64	1.7344	0.672	0.084	-1.23	97	0.223
	G2	35	1.9143	0.742	0.126			

1 = G1: Farm Management graduates who are engaged in farming.

2 = G2: Horticulture, animal husbandry/veterinary and farm machinery graduates who are engaged in farming.

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
You benefited from working in lab shop	G1	64	2.1406	0.687	0.086	-2.33	97	0.022*
	G2	35	2.5143	0.887	0.150			
You were taught how to maintain farm equipment	G1	64	2.3906	0.657	0.082	-1.94	97	0.055
	G2	35	2.6857	0.832	0.141			
Science courses are essential for better understanding the major courses	G1	64	2.1250	0.701	0.088	-0.74	97	0.462
	G2	35	2.2286	0.598	0.101			
Teachers of major courses were able to explain material very well	G1	64	2.2031	0.568	0.071	0.20	96	0.845
	G2	34	2.1765	0.758	0.130			
Participation in school work helped you to join other farmers	G1	64	2.0000	0.617	0.077	1.62	97	0.109
	G2	35	1.8000	0.531	0.090			
What you learned at VAS is vital for your farm management	G1	64	1.9844	0.654	0.082	1.56	97	0.123
	G2	35	1.7714	0.646	0.109			

* : Significant differences at 0.05 and 95% confidence level.

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
VAS[a] environment made you feel need to cooperate with others at farm	G1	64	1.8906	0.737	0.092	-0.68	97	0.496
	G2	35	2.0000	0.804	0.136			
Number of general courses	G1	64	1.9219	0.719	0.090	-3.61	97	0.000*
	G2	35	2.4286	0.558	0.094			
Number of hours per week of general courses	G1	64	2.0156	0.724	0.090	-2.05	97	0.043*
	G2	35	2.3143	0.631	0.107			
Number of science courses	G1	64	1.6094	0.633	0.079	0.15	96	0.883
	G2	34	1.5882	0.743	0.127			
Number of hours per week of science courses	G1	64	1.7344	0.696	0.087	0.14	97	0.889
	G2	35	1.7143	0.667	0.113			
Number of major courses	G1	64	1.1563	0.366	0.046	-1.75	97	0.084
	G2	35	1.3143	0.530	0.090			
Number of hours per week	G1	64	1.3906	0.581	0.073	0.64	97	0.521
	G2	35	1.3143	0.530	0.090			
Number of elective courses	G1	63	1.3651	0.576	0.073	-1.57	96	0.119
	G2	35	1.5714	0.698	0.118			

* : Significant differences at 0.05 and 95% confidence level.
a : Vocational Agricultural School

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
Number of hours per week of elective courses	G1	61	1.5082	0.622	0.080	-0.91	92	0.364
	G2	33	1.6364	0.699	0.122			
Reading local newspapers	G1	64	2.5625	0.852	0.107	-0.49	97	0.625
	G2	35	2.6571	0.027	0.174			
Listening to agriculture program on the radio	G1	64	3.6719	0.960	0.120	-0.07	97	0.948
	G2	35	3.6857	1.078	0.182			
Watching agriculture program on television	G1	64	2.7500	0.797	0.100	-0.44	97	0.659
	G2	35	2.8286	0.523	0.156			
Reading agriculture magazines	G1	64	2.3438	0.963	0.120	-2.00	97	0.048*
	G2	35	2.8000	1.279	0.216			
Reading FA newsletters	G1	64	3.2031	1.157	0.145	0.12	97	0.902
	G2	35	3.1714	1.317	0.223			
Reading DAIS newsletters	G1	64	3.3281	1.222	0.153	-0.60	97	0.552
	G2	35	3.4857	1.314	0.222			
Reading PDAF pamphlets	G1	64	2.6406	0.861	0.108	0.06	97	0.952
	G2	35	2.6286	1.114	0.188			

* : Significant differences at 0.05 and 95% confidence level.

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
Contacting elder farmers	G1	64	3.4531	1.053	0.132	-2.32	97	0.022*
	G2	35	3.9429	0.960	0.153			
Contacting young farmers	G1	64	2.5313	0.816	0.102	0.55	97	0.584
	G2	35	2.4286	1.008	0.170			
Contacting FA agents	G1	64	3.3750	1.148	0.143	-1.60	97	0.112
	G2	35	3.7429	0.980	0.166			
Contacting subject matter specialist	G1	64	4.0313	1.083	0.135	0.24	97	0.810
	G2	35	3.9714	1.339	0.226			
Contacting professors	G1	64	4.3594	1.060	0.132	0.20	97	0.844
	G2	35	4.3143	1.132	0.191			
Contacting TSC agents	G1	64	4.4844	0.836	0.104	-0.87	97	0.386
	G2	35	4.6286	0.690	0.117			
Participate in FA meetings	G1	64	1.4375	0.531	0.066	-1.76	97	0.082
	G2	35	1.6286	0.490	0.083			
Training farming operations	G1	62	1.5806	0.497	0.063	-1.41	93	0.163
	G2	33	1.7273	0.452	0.079			

* : Significant differences at 0.05 and 95% confidence level.

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
Size of land you operate	G1	62	2.9194	2.607	0.331	1.54	92	0.128
	G2	32	2.1250	1.827	0.323			
Major enterprises	G1	63	4.8254	2.076	0.261	1.99	93	0.049*
	G2	32	3.9063	2.226	0.392			
Adoption of farming	G1	60	3.4500	1.294	0.167	0.05	88	0.958
	G2	30	3.4333	1.591	0.290			
Do you take into consideration what your neighbor farmers are doing	G1	62	1.8065	0.398	0.051	2.14	93	0.035*
	G2	33	1.6061	0.496	0.086			
Have you entrusted part of land you operate	G1	64	1.8750	0.333	0.042	-0.94	94	0.350
	G2	32	1.9375	0.246	0.043			
Are you a member of a cooperative	G1	62	1.8710	0.338	0.043	0.30	93	0.764
	G2	33	1.8485	0.364	0.063			
Member of a joint farming operation	G1	61	1.7377	0.444	0.057	-1.53	91	0.129
	G2	32	1.8750	0.336	0.059			
In cooperative farming, farmers work less	G1	61	2.8852	0.819	0.105	0.69	93	0.493
	G2	34	2.7647	0.819	0.105			

* : Significant differences at 0.05 and 95% confidence level.

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
Cooperative gets better prices	G1	61	2.5574	0.222	0.118	-0.47	93	0.641
	G2	34	2.6471	0.849	0.146			
Manager controls farming operation in cooperative	G1	61	2.5246	0.887	0.114	-2.43	93	0.017*
	G2	34	2.9706	0.797	0.137			
Joint farming is for part-time farmers	G1	62	2.2097	0.908	0.115	-1.72	94	0.088
	G2	34	2.5588	1.021	0.175			
Joint farming is popular among family members	G1	62	2.6613	0.829	0.105	-.234	94	0.021*
	G2	34	3.0882	0.900	0.154			
Joint farming saves time	G1	62	2.0484	0.756	0.096	-1.70	94	0.093
	G2	34	2.3235	0.768	0.132			
Entrusted farming is popular among farmers	G1	62	3.1290	1.016	0.129	-0.52	94	0.606
	G2	34	2.2353	0.855	0.147			
Landowners are reluctant to entrust land	G1	61	2.7705	0.864	0.111	0.36	93	0.716
	G2	34	2.7059	0.760	0.130			
Size of land you own out of the land you operate	G1	63	1.9683	1.062	0.134	-0.79	93	0.432
	G2	32	2.1563	1.167	0.206			

* : Significant differences at 0.05 and 95% confidence level.

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
Do you hire laborers	G1	60	1.5833	1.345	0.275	0.19	35	0.847
	G2	33	1.5455	1.198	0.332			
Do you keep record of farm receipts and expenses?	G1	64	1.1719	0.380	0.048	0.01	97	0.996
	G2	35	1.1714	0.382	0.065			
Do you keep records of non-farm operations?	G1	64	1.5781	0.498	0.062	0.61	97	0.546
	G2	35	1.5143	0.507	0.086			
Do you keep records of assets and liabilities of the farm?	G1	64	1.5000	0.504	0.063	0.40	97	0.687
	G2	35	1.4571	0.505	0.085			
Do you keep records of farm labor?	G1	64	1.4375	0.500	0.063	-1.27	97	0.206
	G2	35	1.5714	0.502	0.085			
Do you keep records of household expenses?	G1	64	1.4219	0.498	0.062	1.05	97	0.297
	G2	35	1.3143	0.471	0.080			
Yearly income	G1	64	3.8125	1.332	0.166	0.45	97	0.651
	G2	35	3.6857	1.323	0.224			
Farming income contribution to your annual income	G1	64	2.6406	1.338	0.167	-0.36	97	0.718
	G2	35	2.7429	1.358	0.230			

Table 18.--Continued

Variables	Group	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability
VAS students should have fewer teaching hours per week than you had	G1	54	1.8889	1.076	0.146	-0.05	82	0.959
	G2	30	1.9000	0.662	0.121			
Participate in FA meetings	G1	64	1.4375	0.531	0.066	-1.76	97	0.083
	G2	35	1.6286	0.490	0.083			

There was a significant difference between the two groups regarding their perception of benefiting from working in the lab shop while at VAS. The FM graduates' perception of working in the lab shop was considerably more favorable than the other group.

The graduates perception of the number of hours of general courses differed significantly. The FM graduates tended to prefer an increase in hours, or keep the number of hours the same, while the other group preferred to keep the number of hours the same or decrease the number of hours in general courses.

The FM graduates reported that they read the agriculture magazines significantly more than the other graduates.

As for the contact with elder farmers as a source of information, the Hort, AH and FMach graduates reported that they had significantly had less contact with the elder farmers than the FM graduates.

The FM graduates reported that they took into consideration what their neighboring farmers were growing or raising significantly more than the other group. Also the former group showed that they were aware of the responsibilities of the cooperative manager. This group significantly perceived that cooperative managers had more control over farming operations than the other group.

The FM graduates perceived that joint farming was more popular among family members than did the other groups.

Comparison of Perception Response Means to the Specific Questions in the Questionnaire by the Farm Management, Horticulture, and Animal Husbandry/Veterinary Graduates

There were only five interviewees in the FMach group (see Table 7). Because of the low response from the FMach group, it was excluded from the one way statistical analysis (using the scheffe method) that has been conducted to measure the differences between groups. Statistical analysis was carried out to measure the differences in perception between the three other groups. Table 19 illustrates the significant differences between these groups to certain questions using the Analysis of Variance (ANOVA) method.

Table 19.--ANOVA Analysis for the Perception Response Means of the Farm Management, Horticulture, and Animal Husbandry/Veterinary Graduates to Selected Questions in the Questionnaire

Operating Farm Equipment

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	4.7745	2.3872	5.2791	0.0680
Within Groups	91	41.1510	.4522		
Total	93	45.9255			

Mean	Group	GROUP 2	GROUP 1	GROUP 3
1.6667	2			
1.7344	1			
2.3333	3	*	*	

* : Denotes pairs of groups significantly different at the 0.05 level.

Table 19.--Continued

Benefitting from Lab Shop

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	5.2585	2.6293	4.7472	0.0109
Within Groups	91	50.4010	.5539		
Total	93	55.6596			

Mean	Group	GROUP 1	GROUP 3	GROUP 2
2.1406	1			
2.5333	3			
2.7333	2	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

Table 19.--Continued

Maintain Farm Equipment

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	5.3330	2.6665	6.0813	0.0033
Within Groups	91	39.9010	.4385		
Total	93	45.2340			

Mean	Group	GROUP 1	GROUP 2	GROUP 3
2.3906	1			
2.8667	2	*		
2.9333	3	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

Table 19.--Continued

Teachers of Major Courses
Ability of Explaining

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	2.7091	1.3546	3.4047	0.0376
Within Groups	90	35.8070	.3979		
Total	92	38.5161			

Mean	Group	GROUP 3	GROUP 1	GROUP 2
1.8571	3			
2.2031	1			
2.4667	2	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

Table 19.--Continued

Appropriateness of VAS Environment for Learning

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	2.6387	1.3193	4.6234	0.0122
Within Groups	91	25.9677	.2854		
Total	93	28.6064			

Mean	Group	GROUP 3	GROUP 1	GROUP 2
1.4667	3			
1.8906	1	*		
2.0000	2	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

Table 19.--Continued

General Courses

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	5.2027	2.6013	5.7351	0.0045
Within Groups	91	41.2760	.4536		
Total	93	46.4787			

Mean	Group	GROUP 1	GROUP 3	GROUP 2
1.9219	1			
2.2667	3			
2.5333	2	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

Table 19.--Continued

Reading Local Newspapers

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	6.0195	3.0098	3.7821	0.0264
Within Groups	91	72.4167	.7958		
Total	93	78.4362			

Mean	Group	GROUP 3	GROUP 1	GROUP 2
2.2667	3			
2.5625	1			
3.1333	2	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

Table 19.--Continued

Listening to Agriculture Programs on Radio

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	6.6389	3.3194	3.4810	0.0349
Within Groups	91	86.7760	.9536		
Total	93	93.4149			

Mean	Group	GROUP 3	GROUP 1	GROUP 2
3.1333	3			
3.6719	1			
4.0667	2	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

There were significant differences between the three groups regarding their perception of learning how to operate farm equipment while at the VAS. There was a significant difference at the 0.05 level between the FM and the AH graduates, and between the Hort and AH graduates. In both cases the AH graduates responded less favorably to their programs emphasis on learning to operate farm equipment than the other groups. The Hort graduates responded more favorably to their programs emphasis on learning to operate farm equipment than the FM graduates.

Regarding the response of the interviewees to their experience of benefiting from the lab shop, there was a significant difference at the 0.05 level between the FM and the Hort graduates. The FM graduates perceived more favorably their benefit from the lab shops than the Hort graduates.

When the interviewees were asked to perceive their experience of being taught how to maintain farm equipment, their perception showed that there was a significant difference at the 0.05 level between the FM and the other two groups. The FM graduates responded more favorably to farm equipment maintenance than the other groups.

However, when the interviewees were asked to perceive the appropriateness of the VAS environment for learning, the AH graduates perceived it significantly more favorably at the 0.05 level than the other two groups.

The interviewees were asked to give their opinion about the number of courses offered and the number of hours per week of these courses at the VAS. The only significant difference at the 0.05 level was between the FM and the AH graduates regarding the general courses. FM graduates wanted to increase the number of general courses, while the AH graduates wanted to decrease the number of general courses.

The perception of the interviewees to the sources of information for their farming operations showed two significant differences at the 0.05 level. The first difference was in regard to the reading of local newspapers. The AH graduates read more of the local newspapers than the Hort graduates. The second difference was in regard to listening to agricultural programs on the radio. The AH graduates responded more favorably than the other two groups.

Comparison of Perception Response Means to the Research Questions and Hypotheses by the Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery Graduates

The research questions are the following: experiences of the graduates while they were at the VAS; their training programs after graduation; sources of information for their farming operation; relationship of the graduates with their teachers after graduation; their farm management practices; and their perception of the promoted farming patterns.

T-test analysis was carried out to check if there was any significant difference at the 0.05 level between the two groups: the FM; and Hort, AH and FMach graduates.

Table 20 shows that there was a significant difference between the two groups at 0.05 level regarding the learning experience research hypothesis. There was no significant difference between the two groups at 0.05 level for the rest of the research questions.

Table 20.--T-Test Analysis of Perception Means to the Research Questions

Variable	Groups	Number of Cases	Mean	Standard Deviation	Standard Error	T Value	Degrees of Freedom	2-Tail Probability	
Research Question (Learning Experience)	1	64	1.8237	.162	.020	-2.54	97	.013*	Interviewees responded to questions scaled: 1=strongly agree; 2-agree; 3=disagree; 4-strongly disagree
	2	35	1.9232	.225	.038				
Research Question (Sources of Information)	1	64	3.2873	.546	.068	-1.03	97	.304	Interviewees responded to questions scaled: 1=every time; 2=often; 3=sometimes; 4=rarely; 5=never
	2	35	3.4066	.556	.094				
Research Question (Farm Management Practices)	1	64	3.2044	.660	.083	1.22	96	.226	Interviewees responded to open-ended questions that were quantified
	2	34	3.0098	.901	.155				
Research Question (Farm Management Practices)	1	63	2.7753	.492	.062	-1.30	95	.198	Interviewees responded to questions scaled: 1=strongly agree; 2=agree; 3-no opinion; 4=disagree; 5=strongly
	2	34	2.9016	.385	.066				

Group 1: Farm Management
Group 2: Horticulture, Animal Husbandry/Veterinary, and Farm Machinery
*: Significant differences at 0.05 and 95% confidence level.

Two research questions were not analyzed statistically, because there were not enough interviewees to respond to the questions related to the research question. The first research question dealt with the perception of the VAS teacher as a source of information for the interviewees' farming operations. Twenty-four FM graduates responded and only twelve interviewees from the other three groups combined. The other research question dealt with the interviewees attendance to training programs. Twenty-six FM interviewees responded, while only ten interviewees from the other groups responded. Table 21 shows the responses mean of the two groups to the questions which pertain to the two research questions.

Table 21.--Perception Means of Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery Graduates to the Vocational Agricultural School Teachers as a Source of Information for Their Farming Operations, and to Their Training Programs for Their Farming Operations

Variable	Groups	Number Of Cases	*Mean	Standard Deviation	Standard Error
Teacher visits you at the farm	G1	24	2.1667	0.917	0.187
	G2	12	2.4615	0.877	0.243
Teacher is highly motivated to help	G1	24	2.0000	0.511	0.104
	G2	12	2.0769	0.760	0.211
Teacher listens to you before giving his opinion	G1	24	2.1250	0.338	0.069
	G2	12	2.0769	0.641	0.178
Teacher informs you about new practices	G1	24	2.1667	0.761	0.155
	G2	12	2.0769	0.494	0.137
You consider the teacher as a reliable source of information	G1	24	2.5000	0.834	0.170
	G2	12	2.3077	0.855	0.237
Teacher explanation are more informal than formal	G1	21	2.3810	0.590	0.129
	G2	11	2.7500	0.750	0.218
Teacher does not go beyond principles of teaching in the classroom	G1	24	2.8333	0.702	0.143
	G2	12	2.6923	0.947	0.263

G1 = FM graduates who were interviewed.
G2 = Hort, AH, and FMach graduates who were interviewed.
* = Interviewees responded to questions scaled from (1) strongly agree, (2) agree, (3) disa gree, and (4) strongly disagree.

Table 21.--Continued

Variable	Groups	Number Of Cases	*Mean	Standard Deviation	Standard Error
Attending FA Short Courses	G1	26	3.2593	1.163	0.224
	G2	10	3.1000	1.101	0.348
Attending Taiwan Sugar Company Courses	G1	26	4.4615	0.859	0.169
	G2	10	4.5000	0.850	0.269
DAIS Program	G1	26	4.3462	1.018	0.2000
	G2	10	4.1000	0.876	0.2777
Attending Taiwan Provincial Livestock Research Institute	G1	26	4.6154	0.697	0.137
	G2	10	4.4000	1.076	0.340
Attending Taiwan Provincial Fisheries Research Institute	G1	26	4.6538	0.797	0.156
	G2	10	5.0000	0.000	0.000
Senior VA and I	G1	26	4.3704	1.006	0.194
	G2	10	4.1000	0.876	0.277

G1 = FM Graduates who were interviewed.
G2 = Hort, AH and FMach graduates who were interviewed.
* Interviewees responded to questions scaled from (1) every time; (2) always; (3) often; (4) rarely; (5) never.

The results of the ANOVA test indicate that there is a significant difference at the 0.05 level between the FM and the Hort graduates (Table 22) regarding their learning experiences at the VAS.

Table 22.--ANOVA Analysis to the Perception Mean Score of the Interviewees' Groups to the Research Hypotheses.

Learning Experiences at the VAS

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Square	F Ratio	F Probability
Between Groups	2	.2306	.1153	3.4843	0.0348
Within Groups	91	3.0113	..0331		
Total	93	3.2419			

Mean	Group	GROUP 1	GROUP 3	GROUP 2
1.8237	1			
1.8671	3			
1.9603	2	*		

* : Denotes pairs of groups significantly different at the 0.05 level.

CHAPTER VI

RESULTS SUMMARY, DISCUSSION, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

Introduction

The results of this research consist of two parts: one part is a statistical analysis and the other is a descriptive analysis. The conclusions are not intended to represent the general situation of the VAS and the role that these schools play in preparing the students for many occupational areas. But they can be used to better understand a part of the entire complex situation for preparing students to enter and advance in farming operations.

Summary of Findings

The summary is presented within each frame of the hypothesis or the research question. The data analysis is based on the perception mean of the interviewees to the questions. Certain questions are scaled from one to three, one to four, and one to five (based on the Likert scale). Others are in the nominal form.

The summary of the findings are:

Research Question 1: Are there significant differences between the Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery graduates regarding their perception of their learning experiences at the vocational agricultural school?

The T-test analysis between the two groups (the FM and Hort, AH and FM graduates) showed a significant difference at the 0.05 level. The FM graduates perceived their learn-

ing experience at the VAS more positively than the other groups (Hort, AH & FMach). All the questions related to this hypothesis are scaled from 1 to 4 (1 strongly agree, 2 agree, 3 disagree, and 4 strongly disagree). The analysis of each of the questions related to this hypothesis reveal that there was a significant difference between the two groups at the 0.05 level regarding one question. When the interviewees were asked to comment about their benefit from having worked in the lab/shop, the FM graduates responses were more favorable than the other group.

Also, the ANOVA analysis (Scheffe method) between the FM, Hort and AH graduates was conducted to determine whether there was any significant difference between the groups. The results showed a significant difference between the FM and Hort groups regarding the hypothesis. Upon conducting the ANOVA analysis for each of the questions pertaining to this hypothesis, the results showed that there were significant differences between the groups regarding certain questions. There was a significant difference at the 0.05 level between FM and Hort graduates respectively with the AH graduates regarding their perception of learning to operate farm equipment. FM and Hort graduates were more satisfied than were the AH graduates.

There was a significant difference at the 0.05 level between the FM and Hort graduates regarding benefits from lab shop courses. FM graduates responses were more favorable than the Hort graduates.

As for the question of being taught how to maintain farm equipment, there was a significant difference between the FM graduates and each of the Hort and AH graduates groups. The FM graduates were more satisfied with their experiences than the other two groups.

Research Question 2: Are the significant differences between the Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery graduates regarding their perception of vocational agricultural school teaching staff as an effective and continuing source of information for their farm management practices?

Only twenty-four (38%) FM interviewees and thirteen (37%) interviewees from the other three groups reported that they contacted a VAS teacher as a source of information for their farming operations. The number of responses the latter groups did not permit a statistical analysis since it was less than fifteen. Their perception means were so similar that even without statistical analysis, it appeared that there were no difference between these groups.

Research Question 3: Are there any significant differences between the farm management and horticulture, animal husbandry/ veterinary and farm machinery graduates regarding their sources of information for their farming operations?

There were no significant differences at the 0.05 level between the two groups. Also, the ANOVA analysis between the FM, Hort and AH groups did not show any significant differences at the 0.05 level between any two pairs of these three groups. However, when a T-test analysis was run for the item analysis of these research questions, the results showed significant differences at the 0.05 level between the

FM and the other graduates. Regarding reading agricultural magazines, the FM graduates responses show that they read more in favor than the other group. Also the response mean for contacting the elder farmers indicates that the FM graduates contacted the elder farmers much more often than the other group. The ANOVA analysis between the groups shows that there was a significant difference between AH and Hort graduates regarding their perception of reading local newspapers. The AH read more local newspapers than the Hort graduates. Also, the same results show up for listening to agriculture programs on the radio.

Research Question 4: Are there significant differences between the farm management and horticulture, animal husbandry/veterinary, and farm machinery graduates regarding attending training programs for their farming operations?

Twenty-six (41%) FM graduates who were interviewed and ten (29%) of the Hort, AH, and FMach graduates who were interviewed responded to the questions pertaining to this research question. Statistical analysis could not be run, because the latter group has fewer than fifteen members. The response means indicated that the two groups attended FA short courses quite often, and attended other training programs when needed.

Research Question 5: Are there significant differences between the farm management and horticulture, animal husbandry/ veterinary, and farm machinery graduates regarding their farming practices?

The T-test and ANOVA show no significant differences at the 0.05 level between the two groups. However, the T-test analysis for the items that pertain to this research ques-

tion show that there are significant differences at the 0.05 level regarding their major enterprises, and to the question of whether they take into consideration what their neighbor farmers are growing or raising. For the second question, the Hort, AH and FMach graduates who were interviewed reported more favorably to taking into consideration what their neighbor farmers were doing more than the FM graduates who were interviewed.

Research Question 6: Are there significant differences between the Farm Management and Horticulture, Animal Husbandry/Veterinary, and Farm Machinery graduates regarding their perception of the farm management patterns (entrusted farming, joint farming, and cooperatives)?

The T-test and ANOVA analysis did not show any statistical differences at the 0.05 level between the two groups. The results of the T-test analysis for certain questions pertaining to this research hypothesis, showed significant differences at the 0.05 level regarding the perception of the interviewees to the duties of the manager of a cooperative and to the popularity of joint farming among family members. In both cases the FM graduates who were interviewed perceived them more favorably than the other graduates who were interviewed.

Discussion of the Findings

The findings of this study show that there is a significant differences between the FM and Hort, AH, and FMach graduates to one of the general research hypotheses and questions. However, when the individual questions for the general

research hypotheses and questions are analyzed, there are significant differences at the 0.05 level regarding certain questions.

Research Question 1:

FM graduates perceived their learning experiences at the VAS more favorably than the other graduates, and specifically the Hort graduates.

It appears that the interviewees generally perceived their learning experience at the VAS as positive. The results show that in spite of having the FM students enroll in the VAS without taking the regular EE, (which may have excluded some of them if they had had to take the regular EE), these interviewees perceived their educational experience in a positive manner more than the other graduates from other departments did. The T-test analysis comparing the perception of the two groups regarding the benefits of working in the lab/shop show significant differences at the 0.05 level. The responses of FM graduates who were interviewed indicate that they were more favorable to lab shop learning than the other group of graduates who were interviewed (Hort, AH, and FMach). Further analysis was conducted to check if there was any significant difference at the 0.05 level between the FM and each of Hort and AH graduates. ANOVA analysis indicates that there were significant differences between the three groups at the 0.05 level. There was a significant difference at the 0.05 level between FM and

Hort and AH graduates who were interviewed in regard to learning how to operate farm equipment. This result indicates that the FM graduates have learned how to operate farm equipment as did the Hort graduates. As for the AH graduates, the reason why they did not benefit as much could be due to their curriculum where emphasis was placed on the raising of livestock and very little time was spent on the operation of farming machinery.

The FM program was more comprehensive than the other three programs in that it included instruction in animal science, crop production and farm machinery. The other programs were more focused towards their respective fields.

Research Question 2:

No statistical analysis was run for this hypothesis question, because there were not enough interviewees who responded positively to the question that the interviewee contact was a VAS teacher for information regarding farming operations. However, thirty-seven (37.37%) of all interviewees indicated that they did contact a teacher from their VAS. They represented more than one-third of all those who were interviewed. More FM graduates getting in touch with VAS teachers may be attributed to the one semester that they spent at their farms and VAS teachers had to go and visit them. This may have built a relationship between FM graduates and VAS teachers.

Research Question 5:

Farm management practices among the interviewees were found to be not significantly different at the 0.05 level. The relatively insignificant amount of difference between the interviewees farm management practices can be attributed to their having similar sizes of land operations and types of enterprises.

Research Hypothesis 6:

The results showed that the FM graduates who were interviewed seemed to be more aware of the duties of the cooperative manager and the popularity of joint farming among family members than those interviewees who were graduates from the Hort, AH, and FMach departments.

Summary of Descriptive Data

The descriptive data gathered from the interviewees shows that the FM graduates who were interviewed know more about the YSP than the other graduates who were interviewed. Wu and Wu (1987) reported that 1982, 1983 and 1984 VAS graduates whom they interviewed showed that those who enrolled in FM knew more about the YSP than the rest of the graduates. The FM graduate interviewees also reported that the major source of information regarding the YSP were the FA agents followed by VAS teachers. Among the factors that encouraged the FM graduates to apply for YSP were: enjoy working in the farm; parents encouragement; and preferring

to be their own bosses. As expected, only FM graduates who were interviewed reported that they got scholarships. The money they received differed because they were sponsored by different FA which provided different financial arrangements. The interviewees wished their schools had taught them: more about farm investment; marketing; better utilization of land; livestock disease control; fish breeding; and landscaping. Martin (1987), reported that Iowa farmers prefer educational programs that emphasize marketing and financial planning. Their major reasons for wanting to learn more about the previously mentioned concepts were: better farm management; better quality; increased income; same capital; and great potential in the future. Only 27% of those who were interviewed wanted to see the number of teaching hours decreased. One interviewee even reported that he had an international training program in Japan. Sixty-three (64%) of the interviewees reported that they were members of 4-H clubs. They engaged in agricultural, social and recreational activities. Most of those who were 4-H Club members indicated that the 4-H club activities helped them to acquire certain skills which were required in their farming operations.

The reasons reported by the interviewees for the way they adopted their farming practices were: profit; family traditions; and easy to cultivate. Only ten interviewees reported they farm land entrusted to them. Another thirteen reported that they were members of cooperatives. Also,

twenty interviewees reported that they were members of joint farming groups. Fifty of the interviewees indicated that they attend FA meetings. Fifty-eight of them also reported that their parents agreed with their decision to become farmers. Wu and Wu (1987) reported that 48% of the interviewees in their study indicated that their parents agreed with their decision of engaging in farming. The average size of the land that the interviewees operated was 1.03 ha, while the average size of land they owned out of the land they operated was 0.35 ha.

Summary of Comments by the Interviewees

Although the format of the questionnaire was designed to get simple answers from the interviewees, some chose to give additional information on certain questions. The researcher felt that their additional comments provided additional insight to the simple responses.

Quite a few of the interviewees made a common comment, that the VAS should increase the practical courses and decrease the theoretical courses. However, two of the interviewees mentioned that the VAS should emphasize the theoretical courses, because those courses were as important for learning as were the practical courses. Also one interviewee mentioned that the VAS should emphasize the English language because it is a science language.

The interviewees had several comments regarding their farming practices. One comment was that the government

should quit subsidizing rice because there is a surplus in rice production, and that the government should help the farmers to grow other crops and help them in marketing these crops. Another interviewee mentioned that his parents encouraged him to become a farmer in spite of the low income because it is part of their tradition and culture. Finally, an interviewee mentioned that he did not want to become a farmer, but since he was the only son he had to farm the land in order to inherit it.

Conclusions

The main objectives of this research were to measure the VAS graduates perception of their learning experience at the VAS. Other objectives were: to measure the willingness of those graduates to get more information, and to determine their sources of information; and to determine whether there was a difference in farm management practices used, as well as the perceptions between the graduate groups to the management patterns that were being promoted by the government.

The learning experience that the graduates gained or acquired is found to be different. For certain questions there were significant differences at the 0.05 level between the groups. These differences may be attributed to more emphasis on the learning experience in the FM program than in the other programs. Most of the graduates who were interviewed expressed the desire to see more practical courses and less theoretical courses. Also a majority of

the interviewees did not think that decreasing the number of teaching hours per week was a good idea. The interviewees believed that teaching should be extended toward better farm investments and marketing strategies, which is a reflection of what they are experiencing in their daily lives today.

It appears that the VAS teachers play a significant role in helping the young farmers. Five and seven years after graduation, the interviewees still manage to get in touch with their teachers. This is emphasized when the research found difficulty in getting the desired number of young farmers for the study sample. VA schools have important roles in the preparation of young farmers and in their continuing education.

The interviewees get the information they need regarding their farming operations from many sources. Nowadays they most frequently get that information from television, radio, magazines, newsletters, and from several other sources.

The interviewees attend training programs which interest them. However, more information is needed in advance about the training programs from the FA. Consideration should be given to the time and place of the programs in order to meet the needs of part-time farmers.

There appeared to be no difference in farming practices among the interviewees. This shows that those interviewees who were given the chance to continue their education by enrolling in FM departments across the country were not

different than other graduates from other VAS departments. However, the interviewees who were FM graduates know more about the actual farming patterns that the government is trying to promote than other interviewees. Yet a few graduates reported that they did not know anything about the management practices that the government is promoting. Farmers operated land which was bigger than the average land that they owned.

The final conclusion that the researcher is trying to emphasize is that the VAS are important sources for learning. The graduates were satisfied with their learning experiences.

Limitations of the Study

Because of time and budget constraints this study covers only a portion of the total picture of the relationship and effects between farmers and their agricultural education institutions. Only four curricula out of the nine curricula offered at the VAS were covered in this research. There were farmers who graduated from other educational institutions that were not included in this study. Finally the results and recommendations of this study have limited implications to the whole picture. The results of this research may only help to understand a portion of the whole situation.

Recommendations

Today's educational institutions in Taiwan, like many private businesses, undergo many evaluative studies on the different programs and teaching staffs. Frequently there are reforms or modifications in the curricula. The major recommendation from this study is for the key supporting organizations and the key administrators to periodically evaluate the program for the purpose of strengthening the education outcomes.

The key supporting organizations are at the national, provincial and local levels. At the national level the MOE and the COA should provide both monetary and philosophical support for the reviews and strengthening of the programs. At the Provincial level the Department of Education and the Department of Agriculture and Forestry are the two key administrative units for overview, funding and other supports for the VA programs. At the local level, the principals are the key administrators for leadership and evaluation efforts. The principals should systematically involve the graduates who are engaged in farming, and related agricultural activities, in reviews of the curricula, courses and facilities. In addition, it is crucial for the principal and other school administrators to encourage the teachers to get involved in professional development activities such as research on curriculum and teaching methods; and to regularly obtain technical updating through attending workshops, field days, and similar activities.

Finally, as part of this recommendation for periodic evaluation, the principals should systematically involve key persons from FA, DAIS, research institutes and the private agricultural business organizations. This involvement should be seen as another means for keeping the VAS up-to-date on technical and social developments which should be reflected in courses, laboratory exercises, and other planned educational experiences for students enrolled in schools.

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APPENDIX A

Farm Management, Horticulture and Animal Husbandry/Veterinary Major Courses

FM Major Courses

Agronomy
Horticulture
Animal Science
Agriculture Machinery
Farm Management
Agriculture Extension
Plant Protection
Agronomical Practices
Animal Science Practice
Horticulture Practice
Farm Machinery Practice

Horticulture Major Courses

General Agriculture
General Horticulture
Horticulture Topics
Seedling Production
Gardening
Plant Protection
Soil Fertilizers
Farm Machinery
Farm Management
Horticulture Production Practice
Gardening Practice
Plant Protection Practice
Soil Fertilizer Practice
Agriculture Machinery Practice

Animal Husbandry/Veterinary Major Courses

Animal Science
Pastural Practice
Animal Health
Feeding and Nutrition
Animal Production
Diseases of Livestock
Feed Analysis
Diseases of Poultry
Livestock Production Machinery
Crop Production
Purchase and Selling of Livestock

QUESTIONNAIRE

INTERVIEWER'S INFORMATION:

Code number of interviewee: _____
Sex: _____
Age: _____
Marital Status: _____
Hsien: _____
Vocational Agricultural School: _____
Department: _____
Year of graduation: _____
Farming Status: _____

INTERVIEWER PLEASE INFORM THE INTERVIEWEE ABOUT THE STUDY. "I WOULD LIKE TO START BY THANKING YOU FOR ACCEPTING TO BE INTERVIEWED. THE LETTER THAT YOU RECEIVED INFORMED YOU ABOUT THE RESEARCH THAT IS BEING CARRIED ON. A SUMMARY ABOUT THE RESEARCH IS THAT THERE IS AN INTEREST TO STUDY THE RELATIONSHIPS BETWEEN THE VOCATIONAL AGRICULTURAL SCHOOLS AND THEIR RESPECTIVE GRADUATES. AS WELL AS THE EFFECT OF SKILLS AND TRAINING OF SCHOOLING AND POST GRADUATION ERA TO THEIR ARMING OPERATIONS. YOU HAVE BEEN CHOSEN THROUGH A RANDOM PROCESS, AND THE INFORMATION THAT YOU WILL PROVIDE WILL BE KEPT CONFIDENTIAL. YOU ARE ENTITLED NOT TO ANSWER ANY OF THE QUESTIONS THAT YOU DO NOT FEEL COMFORTABLE IN ANSWERING."

I. YOUNG FARMERS' SCHOLARSHIP PROGRAM

INTERVIEWER: "NOW I WOULD LIKE TO ASK YOU ABOUT THE YOUNG FARMERS' SCHOLARSHIP PROGRAM."

(1) Did you know anything about the Young Farmers' Scholarship Program (YFP) before you have enrolled in VAS?

(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (3).

(2) Whom do you consider was the major source that informed you about the scholarship program for the YF before you enrolled in the VAS? _____

(3) Did you apply for a VAS scholarship?

(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS NO, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS YES, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (5).

(4) Why did you not apply?

INTERVIEWER: IF THE INTERVIEWEE REPLIED TO QUESTION (4), PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (20); OTHERWISE, PROCEED TO THE NEXT QUESTION BY READING THE FOLLOWING STATEMENT: "NOT HERE IS A LIST OF FACTORS THAT ONE OR MORE MAY HAVE INFLUENCED YOUR DECISION TO APPLY FOR THE YFSP. PLEASE INDICATE WHICH ONE APPLIES FOR YOU."

(5) Enjoy working in the farm.
(1) Yes. (2) No.

(6) Prefer to be your own boss.
(1) Yes. (2) No.

(7) Land inheritance reasons.
(1) Yes. (2) No.

(8) Parents encouragement.
(1) Yes. (2) No.

(9) Self encouraged after knowing about the scholarship.
(1) Yes. (2) No.

(10) The only alternative to continue schooling.
(1) Yes. (2) No.

(11) Do not like working in the city.
(1) Yes. (2) No.

(12) Performance of other young farmers.
(1) Yes. (2) No.

(13) Peer group's encouragement.
(1) Yes. (2) No.

(14) Others (specify).

(15) Did you get any scholarship?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (19).

(16) How much did you get each semester while you were in the VAS?

	First Semester	Second Semester
First Year		
Second Year		
Third Year		

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES TO QUESTION (15), PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (21). IF THE INTERVIEWEE'S ANSWER IS NO, PLEASE PROCEED TO THE NEXT QUESTION.

(17) Would you mind telling me why you did not get the scholarship?

(18) Do you think that you deserved to get the scholarship?
(1) Yes. (2) No.

(19) Please explain:

II. VOCATIONAL AGRICULTURE SCHOOL PROGRAMS

INTERVIEWER: PLEASE READ TO THE INTERVIEWEE THIS STATEMENT SO THAT HE/SHE UNDERSTANDS HOW TO REPLY: "THE FOLLOWING STATEMENTS ARE RELATED TO YOUR EXPERIENCE WHILE YOU WERE IN THE VAS. YOU ARE SUPPOSED TO LISTEN TO EACH ONE OF THE STATEMENTS AND THEN CHOOSE. YOUR COMMENTS MAY RANGE FROM STRONGLY AGREE (1); AGREE (2); DISAGREE (3); TO STRONGLY DISAGREE (4).

(20) Your major work courses emphasized more theory than practical work.
(1) (2) (3) (4)

(21) Too much emphasis was focused towards general courses.
(1) (2) (3) (4)

(22) You were taught how to keep farm records.
(1) (2) (3) (4)

(23) Your teachers explained to you how to prepare a farm project proposal.
(1) (2) (3) (4)

(24) You learned how to operate farm equipment.
(1) (2) (3) (4)

(25) You benefited from working in the lab shops.
(1) (2) (3) (4)

(26) You were taught how to maintain farm equipment.
(1) (2) (3) (4)

(27) Science courses are essential for better understanding the major courses.
(1) (2) (3) (4)

(28) Teachers of major courses were able to explain the subject material very well.
(1) (2) (3) (4)

(29) Participation in group work at school made it easier for you now to join other farmers for group work and meetings.
(1) (2) (3) (4)

(30) Now you believe that what you learned at the VAS is vital for farm management operations.
(1) (2) (3) (4)

(31) VAS environment made you realize the need to cooperate with others at the farm.
(1) (2) (3) (4)

(32) You have learned some basic principles at school for management, but others were learned "on the farm".
(1) (2) (3) (4)

(33) In general the VAS environment was appropriate for learning.
(1) (2) (3) (4)

INTERVIEWER: "NOW I WOULD LIKE TO KNOW WHICH OF THE FOLLOWING PRACTICES YOU LEARNED AT SCHOOL, AND WHICH YOU LEARNED AFTER YOU GRADUATED FROM SCHOOL."

	AT VAS	AFTER VAS
(34) Tissue Culture Technique	(1)	(2)
(35) Artificial Insemination	(1)	(2)
(36) Feed Formulation	(1)	(2)
(37) Mechanical Harvesting	(1)	(2)
(38) Machinery Maintenance	(1)	(2)
(39) Aquaculture Planting Technique	(1)	(2)

(40) Are there any techniques or practices you now wish that you learned at the VAS (other than those listed above)?

(41) Why?

(42) Do you think that the VAS students now should have fewer teaching hours per week than you had?
(1) Yes. (2) No.

INTERVIEWER: "HERE IS A LIST OF THE MAJOR CLASSIFICATION OF THE COURSES THAT ARE OFFERED AT THE VAS. I WOULD LIKE YOUR OPINION ABOUT WHAT SHOULD THE VAS DO REGARDING THE QUANTITY OF COURSES AND THEIR HOURS PER WEEK.

	INCREASE	SAME	DECREASE
(43) General Courses	(1)	(2)	(3)
(44) # of hours/week	(1)	(2)	(3)
(45) Science courses	(1)	(2)	(3)
(46) # of hours/week	(1)	(2)	(3)
(47) Major Courses	(1)	(2)	(3)
(48) # of hours/week	(1)	(2)	(3)
(49) Elective Courses	(1)	(2)	(3)
(50) # of hours/week	(1)	(2)	(3)

(51) Did you learn how to use the computer?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (53).

(52) What did you learn using the computer for?

(53) Have you learned (any or additional) computer practices since you have left the VAS?

(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (58).

(54) What did you manage to learn?

(55) Do you use the computer now?

(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (58).

(56) For what purposes do you use the computer?

(57) Do you own a computer?

(1) Yes. (2) No.

III. <u>VOCATIONAL AGRICULTURE GRADUATES AND THEIR RELATIONSHIP WITH THEIR RESPECTIVE MAJOR COURSES TEACHERS</u>

(58) When you have a problem regarding your farming operations, do you contact the teachers of the VAS for advice?

(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (67).

(59) Which teacher do you usually contact?

INTERVIEWER: "NOW I WOULD LIKE TO ASK YOU TO COMMENT TO SEVERAL STATEMENTS ABOUT THE VAS TEACHERS. YOUR COMMENTS MAY RANGE FROM STRONGLY AGREE (1); AGREE (2); DISAGREE (3); TO STRONGLY DISAGREE (4)."

(60) The teacher visits you at the farm?

(1) (2) (3) (4)

(61) The teacher is highly motivated to help you.

(1) (2) (3) (4)

(62) The teacher usually listens to you before giving his opinion.

(1) (2) (3) (4)

(63) The teacher informs you about new practices.
(1) (2) (3) (4)

(64) You consider the teacher a reliable source of information.
(1) (2) (3) (4)

(65) Teacher's explanations are more informal than informal.
(1) (2) (3) (4)

(66) Teachers usually do not go beyond principles of teaching in the classroom instead of applying the principles to the reality of the community.
(1) (2) (3) (4)

IV. SOURCES OF INFORMATION

INTERVIEWER: "I WOULD LIKE TO KNOW HOW FREQUENT YOU USE CERTAIN SOURCES FOR YOUR FARMING INFORMATION. PLEASE COMMENT TO THE FOLLOWING STATEMENTS. YOUR COMMENTS MAY RANGE FROM EVERY TIME (1); OFTEN (2); SOMETIMES (3); RARELY (4); TO NEVER (5).

(67) Reading local newspapers.
(1) (2) (3) (4) (5)

(68) Listening to agricultural programs over the radio.
(1) (2) (3) (4) (5)

(69) Watching agricultural television programs.
(1) (2) (3) (4) (5)

(70) Reading agricultural magazines.
(1) (2) (3) (4) (5)

(71) Reading Farmers' Association Letters.
(1) (2) (3) (4) (5)

(72) Reading Newsletters from DAIS.
(1) (2) (3) (4) (5)

(73) Reading pamphlets published by PDAF.
(1) (2) (3) (4) (5)

(74) Contacting elder farmers.
(1) (2) (3) (4) (5)

(75) Contacting other young farmers.
(1) (2) (3) (4) (5)

(76) Contacting the Farmers' Association extension agent.
(1) (2) (3) (4) (5)

(77) Contacting subject matter specialists of DAIS or research institutes.
(1) (2) (3) (4) (5)

(78) Contacting college/university professors.
(1) (2) (3) (4) (5)

(79) Contacting Taiwan Sugar Corporation extension agents.
(1) (2) (3) (4) (5)

(80) Do you participate in Farmers' Association meetings?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS NO, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS YES, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (82).

(81) Why do you participate in the meetings?

(82) Have you ever been nominated to an elected official position, such as member representative, board director, or board supervisor in the farmer association?
(1) Yes. (2) No.

V. TRAINING PROGRAMS AFTER GRADUATING FROM VAS

(83) Have you had any training regarding farming operations after you have graduated from VAS?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE ASK THE INTERVIEWEE TO COMMENT TO THE FOLLOWING STATEMENTS. HIS/HER COMMENTS ABOUT ATTENDING TRAINING PROGRAMS FOR FARMING OPERATIONS MAY RANGE FROM EVERY TIME (1); ALWAYS (2); OFTEN (3); RARELY (4); TO NEVER (5). IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (102).

(84) The Farmers' Association short courses.
(1) (2) (3) (4) (5)
(85) The Taiwan Sugar Company courses.
(1) (2) (3) (4) (5)
(86) The DAIS programs.
(1) (2) (3) (4) (5)
(87) Taiwan Provincial Livestock Research Institute.
(1) (2) (3) (4) (5)
(88) Taiwan Provincial Fisheries Research Institute.
(1) (2) (3) (4) (5)
(89) Senior vocational agricultural and industrial school.
(1) (2) (3) (4) (5)
(90) What kind of training did you have in these programs?

(91) Could you tell me what were the positive factors of these training programs?

(92) How about the negative factors?

(93) Have you ever had any international training experience?

(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (102).

(94) Where did you travel for your overseas training experience?

(95) What was/were the training programs about?

(96) How long did each one last?

(97) Who sponsored your training program abroad?

(98) Why have you been selected to the overseas training program?

(99) What kind of training do you think that farmers who have similar farming operations to you should get?

(100) Have you benefited from the training programs?

(1) Yes. (2) No.

(101) Could you explain your answer?

VI. <u>4-H CLUB</u>

(102) Have you ever been a member of the 4-H club?

(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (107).

(103) What kind of activities did you use to participate while being a member in the 4-H Club?
(1) Agricultural activities.
(2) Social activities.
(3) Recreational activities.
(4) Other activities _____.

(104) Were you an officer in the 4-H Club?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (107).

(105) Do you think that being a member of the 4-H Club helped you to develop some skills in your current farming operations?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE RECEIVED A SCHOLARSHIP, PLEASE PROCEED TO THE NEXT QUESTION. IF THE INTERVIEWEE DID NOT RECEIVE A SCHOLARSHIP, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (107).

(106) Do you think that being a member of the 4-H Club helped you to get a scholarship?
(1) Yes. (2) No.
(107) Do you think that you did not get a scholarship because you were not a member of the 4-H Club?
(1) Yes. (2) No.

VII. MANAGEMENT PRACTICES

INTERVIEWER: PLEASE INFORM THE INTERVIEWEE THAT THIS IS THE LAST SECTION.

(108) What is the size of land you operate?
(109) What is the size of land you own out of the land that you operate?
(110) Do you hire laborers for farm work?
(1) Yes. (2) No.

INTERVIEWER: IF THE ANSWER OF THE INTERVIEWEE IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (113).

(111) How many?
(112) For what purposes?

INTERVIEWER: IF THE INTERVIEWEE IS MARRIED, PLEASE ASK THE FOLLOWING QUESTION. OTHERWISE, CONTINUE THE QUESTIONNAIRE STARTING FROM QUESTION (114).

(113) Does your wife help you in your farming operations?
(1) Yes. (2) No.

(114) What is/are the major enterprises on the farm?

(115) Would you explain how you decided on adopting the (variety/breed) of (crops/livestock) you (grow/raise)?

(116) Do you take into consideration what your neighbor farmers are growing/raising (crops/livestock)?
(1) Yes. (2) No.

(117) Could you explain your answer?

(118) Have you ever entrusted part of the land you operate?
(1) Yes. (2) No.

(119) Are you a member of a cooperative?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (122).

(120) What kind of cooperative did you join?

(121) What are the factors that encouraged you to join a cooperative?

INTERVIEWER: "NOW I WOULD LIKE YOU TO CHECK WHICH OF THE RECORDS LISTED BELOW YOU KEEP."

		Yes	No
(122)	Receipts and expenses of farm operations.	___	___
(123)	Receipts and expenses of non-farm operations.	___	___
(124)	Assets and liabilities.	___	___
(125)	Farm labors.	___	___
(126)	Household expenses.	___	___

INTERVIEWER: IF THE INTERVIEWEE JOINED A COOPERATIVE, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (129). IF THE INTERVIEWEE DID NOT JOIN A COOPERATIVE, PLEASE PROCEED TO THE NEXT QUESTION.

(127) Have you thought of joining a cooperative?
(1) Yes. (2) No.

INTERVIEWER: IF THE INTERVIEWEE'S ANSWER IS YES, PLEASE PROCEED TO THE NEXT QUESTION. IF THE ANSWER IS NO, PLEASE CONTINUE THE INTERVIEW STARTING FROM QUESTION (131).

(130) What are the factors that encouraged you to join a joint farmers' group?

(131) What are the factors that discouraged you from joining a joint farming group?

INTERVIEWER: "NOW I WOULD LIKE YOUR OPINION ABOUT EACH OF THE FOLLOWING STATEMENTS. YOUR COMMENTS MAY RANGE FROM STRONGLY AGREE (1); AGREE (2); NO OPINION (3); DISAGREE (4); TO STRONGLY DISAGREE (5).

(132) In cooperative farming, the farmer works less.
(1) (2) (3) (4) (5)

(133) Farmers get better prices if they are members of a cooperative.
(1) (2) (3) (4) (5)

(134) A positive factor in cooperative farming is that there is a manager who controls all agreed upon farming operations.
(1) (2) (3) (4) (5)

(135) Joint farming is suitable for part-time farmers.
(1) (2) (3) (4) (5)

(136) Joint farming is popular among family members.
(1) (2) (3) (4) (5)

(137) Joint farming a is time saving operation.
(1) (2) (3) (4) (5)

(138) Entrusting land is popular among farmers.
(1) (2) (3) (4) (5)

(139) Landowners are reluctant to entrust their land.
(1) (2) (3) (4) (5)

(140) Farm management teachers helped you to design a management plan according to the farm management patterns (joint farming, cooperative farming, and contracting land).
(1) (2) (3) (4) (5)

(141) The plan you developed with the help of farm management teacher was considered as a positive factor for getting a loan.

(1) (2) (3) (4) (5)

(142) What was your parents' opinion when you decided to become a farmer?

(143) Did their opinion change?

(1) Yes. (2) No.

(144) How much is your total yearly income?

(1) Below $150,000 NT
(2) $150,000 NT-$200,000 NT.
(3) $200,000 NT-$250,000 NT.
(4) $250,000 NT-$300,000 NT.
(5) Above $300,000 NT.

(145) How much do you estimate is contributed from farming?

(1) Below 10%
(2) 10%-25%
(3) 25%-50%
(4) 50%-75%
(5) Above 75%

THANK YOU VERY MUCH FOR YOUR COOPERATION.