

AN ABSTRACT OF THE THESIS OF

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IN GHANA

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Ghana is an economically developing country with an agricultural sector that does not produce enough food for her people; about ₵20,000,000 (\$56,000,000) worth of foodstuffs is imported annually. The inefficiency in agriculture is due partly to the educated Ghanaian looking upon farming as a lowly job to be pursued only by the uneducated. Hence illiterates who cannot apply scientific principles to farming become established in farming. It is however, essential for Ghanaian agriculture to be efficient if Ghana is to develop a modern economy.

This study was undertaken (1) to isolate the concepts and practices of supervised farming programs in the United States, (2) to find out how these could be adapted to conditions in Ghana, and (3) to draw up supervised farming programs for public schools in Ghana to help orient graduates from these schools to establish careers in farming or in non-farming agricultural enterprises.

Literature on supervised farming programs in the United States was reviewed and, by means of a questionnaire sent to ten high schools in the State of Oregon, specific information on farming programs was obtained.

It was found in this study that supervised farming programs form an essential part of vocational education in agriculture in the United States and are correlated to agriculture in the community. They provide effective motivating forces and afford the student the opportunity to develop attitudes and abilities needed for efficiency in agriculture.

Supervised farming programs with the following five phases were drawn up for public schools in Ghana:

1. Exploratory projects
2. Production projects
3. Cooperative projects
4. Community projects
5. Supplementary skills

Exploratory projects are designed to enable students to explore diverse fields in agriculture in order to find in which spheres their interests lie.

Production projects are to be established in the area of agriculture in which the student is interested and where the projects can be under the full control of the student.

Cooperative projects are to be operated by groups of students and are to help in the establishment of production projects.

Community projects are to help improve the welfare of the school community.

Supplementary skills are skills students should be encouraged to develop in addition to those they acquire in the operation of their production projects. Supplementary skills should help students establish in areas other than those in which their production projects are.

The operation of the proposed farming programs in the Farm Institutes, Agricultural Training Centers and in secondary schools were discussed and it was proposed that community resources and facilities on agricultural experiment stations should be utilized in the conduct of farming programs.

SUPERVISED FARMING PROGRAMS FOR
PUBLIC SCHOOLS IN GHANA

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SUPERVISED FARMING PROGRAMS FOR PUBLIC SCHOOLS IN GHANA

CHAPTER I

INTRODUCTION

Many economically developing countries have inefficient agricultural foundations but are endeavoring to make rapid strides towards industrialization. Ghana is no exception to this situation. In this highly competitive world, industrial growth can only be effected when the economy of a country is supported by an agricultural sector which produces food so cheaply that wages in industry can be kept low. Prices of industrial products can then be maintained at a level at which they can compete favorably in the world market.

The government of Ghana, according to the Ghana Report (43, p. 43), "seems to have accepted the sound principle that development of Ghana's agricultural base is a prerequisite to the ultimate creation of a modern economy." Farming in Ghana, however, is not so efficient as to produce enough for the people. In his statement to the legislative body in November 1962, the President of Ghana intimated that Ghana was importing more than ₵20,000,000 (\$56,000,000) worth of foodstuffs each year, thus placing a strain on the balance of payment and the overall financial position of the country (13, p. 17). The low productivity of agriculture in Ghana

may be attributed in part to farming being looked upon by Ghanaians as a lowly job to be pursued only by the uneducated. Hence generally uneducated people, who are unable to utilize much of the knowledge available from research, choose farming as a career.

Extension services are being depended upon to help the Ghanaian farmer increase his efficiency. But as Swanson (35, p. 198) points out, "the effectiveness of advisory work is directly proportionate to the standard of literacy, since extension work depends to a considerable extent on 'mass' methods with a heavy reliance on the written word." The effectiveness of extension services and productivity in agriculture in Ghana would therefore be heightened, if men well informed in the basic principles and application of agricultural science were induced to establish careers in farming or in non-farming agricultural enterprises.

Statement of the Problem

The problem facing Ghana, and to which we shall in this study attempt to propose a solution, is to provide an educational system whereby people are educated through agriculture in order to create in them attitudes favorable to agriculture.

Purposes of Study

The purposes of this study are as follows:

1. To isolate the concepts and practices of supervised farming programs in the United States.
2. To find out how these concepts and practices could be adapted to conditions in Ghana.
3. To draw up supervised farming programs for public schools in Ghana to help orient graduates from these schools to establish careers in farming or in non-farming agricultural enterprises.

Method of Study

This study was conducted by gathering and analyzing material from the Oregon State University Library, from a questionnaire sent to high schools in the State of Oregon and by drawing on the author's experience and appreciations developed through a series of courses in agricultural education.

Limitations

It is assumed in this study that the supervised farming programs proposed will operate as an essential aspect of agricultural education in Ghana and not as an independent course of study.

The author's own inexperience places some limitations on this study, since he has not supervised farming programs of high school students.

There are also some limitations inherent in the questionnaire method used in this study. Although efforts were made to eliminate

ambiguities in the questionnaire, some of the recipients are likely to interpret the questions differently.

Copies of the questionnaire were sent to schools in Oregon which, it was believed, had good programs in vocational agriculture. This study may therefore reflect standards which are atypical of supervised farming programs in other high schools in the State of Oregon or in other parts of the United States.

Definition of Terms

Supervised farming program. This is a series of farming activities required of all students enrolled in vocational agriculture in the United States and it may be carried out on the student's home farm or on a farm approved by the instructor. A comprehensive supervised farming program consists of production projects, improvement projects, supplementary projects, supervised placement and cooperative activities.

Vocational education in agriculture. This is a "systematic instruction in agriculture of less than college grade conducted in public schools for those persons fourteen years or over who have entered upon or who are preparing to enter upon the work of the farm or the farm home" (Phipps and Cook 28, p. 19).

Future Farmers of America or F. F. A. It is a non-profit,

non-political, non-sectarian organization of boys studying vocational agriculture in public high schools in the United States. The foundation upon which it is built "includes leadership and character development, sportsmanship, cooperation, service, thrift, scholarship, improved agriculture, organized recreation, citizenship and patriotism" (12, p. 5).

Middle Schools in Ghana. These are schools offering courses of instruction for pupils from the seventh grade to the eleventh inclusive.

Livestock "chains" are a system generally used by vocational agriculture students in securing foundation stock for their supervised farming programs. In a chain, stock purchased jointly by students is placed with one student who repays the group in kind with a stated number of the progeny from the stock he received. The stock paid back by the recipient are placed with another student on the same conditions and the cycle continues.

CHAPTER II

HISTORY AND BACKGROUND

Supervised farming programs will operate successfully in public schools in Ghana if they are drawn up to suit Ghanaian conditions. A review of the history and some background information on Ghana will give us a broad impression of conditions in Ghana to enable us to propose effective supervised farming programs.

History of Ghana

The Portuguese, who during the 15th Century traveled to the west coast of Africa in search of gold, spices and ivory, were the first Europeans to make contact with Ghana, which was then referred to as the Coast. They readily established such a lucrative trade with the natives that in 1482 they built a trading post, the Elmina Castle, which is reputed to be the oldest European building in the tropics. Other European powers, mainly the Danes, the Dutch and the Germans, followed the Portuguese. It was, however, in 1553 when Thomas Wyndham led a British expedition to the Coast that the British started to exert some influence on the west coast of Africa. Trade with the various European powers also prospered and many of them, following the example of the Portuguese, built

along the coastal belt trading posts which are currently being used for various purposes.

On March 6, 1844 the chiefs of the Coast acknowledged British jurisdiction and after a series of wars various inland areas were brought under British rule to form the Gold Coast. On March 6, 1957, after 113 years of British rule, the Gold Coast became an independent country called Ghana; the name Ghana recalls an ancient monarchy which existed in West Africa during the 13th Century A. D.

Ghana is approximately 92,000 square miles; about the size of the State of Oregon. It has a population of 6,700,000 and is bounded on the north by the Upper Volta, on the south by the Gulf of Guinea, on the east by Togo and on the west by the Ivory Coast.

Vegetation, Rainfall and Farming

The vegetation of Ghana, the rainfall distribution and the pattern of agriculture have a close correlation and may be discussed together.

Taylor (36) has divided the vegetation of Ghana into four main types, namely,

1. Strand and Mangrove Vegetation,
2. Coastal Scrub and Grassland,
3. Savanna-Woodland,
4. High Forest.

Strand and Mangrove Vegetation. This type of vegetation is confined to the coastal area and to the beds of lagoons. It consists mainly of grasses, succulent, erect or creeping herbs and tufted plants with long spring-like shoots which tend to bind the sands of the lagoons together or float in the lagoon waters. The strand and mangrove vegetation forms patches within the coastal scrub and grassland and has the same rainfall as the latter.

Coastal Scrub and Grassland. This type of vegetation forms a narrow strip seldom extending inland more than 20 miles. It runs along the coast from the eastern tip of the country toward the west where it terminates in the high forest. It consists of either a dense scrub with hardly any grasses or extensive grassland studded with clumps of bush and patches of scrub. Panicum maximum (guinea grass) is the commonest grass found in this vegetation and the most frequently occurring trees are Elaeophorbia dupifera and Adansonia digitata.

The maximum annual rainfall in the coastal scrub and grassland area is 30 inches. The rain falls in two seasons, namely, from April to June and from September to November. The uneven distribution of rain in this area has hampered the utilization of the agricultural potential of the soils, which experiments have shown, can, with irrigation, support tobacco, pineapple, vegetables,

sugarcane, rice and corn and can also produce much-needed grasses for livestock.

Savanna-Woodland. This is the most extensive vegetation type and encompasses 65, 000 square miles of the northern section of the country. It consists of short trees which are widely spaced in a continuous carpet of grass. Some of the grasses may reach a height of 12 feet.

The savanna-woodland area has an annual rainfall of 40 inches with much of the rains occurring from May to October. After the rains in October a dry, desiccating wind, the Harmattan, from the Sahara desert blows into this area leaving most of the vegetation dry and the soils hard. Agricultural activities are suspended except in scattered areas near irrigation dams or where the water table is so high as to make it economic to drill wells to supply water for agricultural purposes.

Livestock, cereals such as rice and sorghum, yams, peanuts, pigeon peas and lima beans are raised in the savanna-woodland area.

Just south of the savanna-woodland is the high forest.

High Forest. The vegetation of the high forest may be divided into four layers, namely,

- a. the ground layer which consists of grasses, shrubs and herbs,

- b. the second layer made up of trees about 60 feet high, with low branches and heavy crowns.
- c. the third layer which comprises trees reaching a height of approximately 130 feet. These have small crowns which form a closed canopy and tend to cut away sunlight from the undergrowth.
- d. the fourth layer consists of tall, straight and slender trees about 200 feet high scattered very widely apart and as such do not form a closed canopy.

The high forest is evergreen and on its fringes the annual rainfall is 60 inches whereas in the innermost section the rainfall may be as high as 120 inches a year. Much of the rains occur from April to June and from September to November.

The agricultural potential of the high forest is immense. Many of the species of trees in the high forest are exportable timber. Cacao, which contributes over 60 percent of Ghana's revenue, coffee, rubber, oil palm, maize and bananas are raised in abundance in the high forest zone. The minerals of the country, such as gold, diamond, bauxite and manganese, and much of the economic wealth of Ghana which support the rapidly expanding educational services are derived from the high forest area.

The System of Education

Education in public schools in Ghana is the responsibility of the Ministry of Education. Policies in education are therefore

defined at the national level and in all the seven regions of the country, administrative officers of the Ministry of Education share responsibility for implementation of the policies. Every region is divided into districts with supervisory staffs who not only coordinate educational activities within the districts but also ensure that sound classroom instructions are offered.

The educational system in Ghana may be broadly divided into the following four categories:

1. Primary Education
2. Middle School Education
3. Secondary Education
4. University Education

It may be stated at this stage that education in agriculture of less than university level is restricted and is the responsibility of the Ministry of Agriculture, the Ghanaian counterpart of the United States Department of Agriculture. Education in agriculture of less than university grade will be discussed after a general review of the four major phases of the educational system listed.

Primary Education. There are six grades in primary schools and children start school at the age of six, completing their primary education when they are 12 years old. A sound basic education with emphasis on writing, arithmetic and reading of English and the vernaculars is offered.

By 1958 there were at least 3500 primary schools (14, p. 6). There has since been a tremendous increase and primary schools may now number well over 5000. In 1958 primary education became free and in 1961 compulsory.

Middle School Education. Almost all pupils who receive primary education enroll in the middle schools; drop-outs are rare at this stage.

Middle schools are made up of four grades and systematic compulsory courses of instruction are offered in English, Arithmetic, Civics, History and Nature Study. After two years in the middle schools students may gain admission to secondary schools. A substantial number of students, however, continues through all the middle school grades.

According to the Ghana Report (43, p. 209), prior to 1959 middle schools in Ghana were turning out yearly between 23,000 to 25,000 boys and girls aged 15 or 16 and that by 1965 these schools will turn out approximately 60,000. About ten percent of the middle school leavers enter secondary or high schools. Government offices and businesses which are able to absorb about 2000 middle school leavers as clerks, the Ghana Report continues, "would not consider middle school leavers for these jobs. There are now enough graduates of secondary schools who possess four additional years of

education looking for jobs and they would get preference over the middle school leaver. "

Secondary Education. Schools offering secondary education may be divided into three categories, namely,

1. Technical institutes of which in 1959 there were four offering courses of widely varying duration in automobile mechanics, building construction, surveying and related subjects.
2. Teacher training colleges offering four year courses for middle school graduates and two year courses for high school graduates who intend to teach in the primary and middle schools.
3. Secondary or high schools. In 1959 there were 30 high schools in which students received four year instructions in liberal arts and the sciences. After a successful four year course, some students seek employment in various services, others may gain admission to universities in Ghana and in foreign countries and others may continue in the high schools for an additional two year university credit-earning course in arts or science.

Secondary schools in all the three categories may be fully or partly residential or fully non-residential. Many of these institutions are financially supported by the government. There is, however, a number of secondary schools supported by private organizations.

University Education. There are two fully residential universities in Ghana where students study for degrees in liberal arts, general science, agriculture, engineering and other subjects.

Most of the graduates from the universities seek employment

in government departments and a few become established in various businesses. Graduates with degrees in agriculture almost invariably are employed in the Ministry of Agriculture as extension officers or, after further training, choose occupations in agricultural research.

Agricultural Education of Less than University Level

Agricultural education of less than university level which, it may be emphasized, is the responsibility of the Ministry of Agriculture, may be divided into two categories:

1. Training designed for prospective farmers.
2. Training designed for technical staff.

Training for prospective farmers. The Ministry of Agriculture was, prior to 1960, training technical officers almost exclusively for Divisions of the Ministry. On February 13, 1960, however, a Farm Institute was founded as a pilot scheme to offer two year courses for middle school leavers interested in farming as a career. Thirty middle school leavers were admitted. This institute was a joint project between the Ministry of Agriculture and the United States Operations Mission, now known as the Agency for International Development. It was hoped that if this proved a success other institutes would be established in the seven administrative regions of Ghana. From personal correspondence with the Principal

Agricultural Officer who is responsible for agricultural education in Ghana, the author learned that a second agricultural institute had been established and that plans were being formulated for a third.

In the Farm Institutes, courses are organized in Crop Production, Poultry Production, Farm Shop and in other related subjects. About one-third of the instructional time is devoted to class discussion and the remaining two-thirds is for field work designed to help students acquire modern skills for efficient farming.

It is anticipated that after completion of training at the Farm Institutes, students will farm on their own and make use of the scientific knowledge they acquire at the institute.

Training of Technical Staff. There are two schools namely, The Agricultural Training Centers at Kwadaso and at Nyankpala, which are responsible for the training of technical officers for agricultural offices.

The school at Kwadaso trains graduates from high schools to work as extension officers or as assistants to research staff of the ministry.

The course offered is of three years duration; two years are spent in residence during which both theoretical and practical instructions are given and the third year is devoted to practical work on agricultural experiment stations. While in training, students

receive a thorough grounding in Chemistry, Botany, Zoology, Crop Husbandry, Animal Husbandry, Economics, Surveying and Field Experimentation.

The Agricultural Training Center at Nyankpala trains middle school leavers to work as agricultural extension officers with the District Councils or County Governments in the Northern and Upper Regions of Ghana. District Council extension officers, after serving successfully for some years, may be eligible for further training at Kwadaso to qualify them for employment with the Ministry of Agriculture.

The course at Nyankpala is of three years duration and the first and third years are spent at the center. The second year is devoted to practical work on agricultural experiment stations. Instruction is offered in Crop Husbandry, Animal Husbandry, Surveying and Economics.

The two Agricultural Training Centers have for decades trained many citizens who are performing important agricultural services in Ghana. In recent years great emphasis has been placed on training in these schools with corresponding increases in the trainees.

In 1960 two groups of students were admitted to the Agricultural Training Center at Kwadaso. The second group of students

Table 1. Numbers of Students Trained in the Agricultural Training Centers from 1948 to 1960.

| Year | Kwadaso Training Center | | Nyankpala Training Center | |
|-------|-------------------------|--------|---------------------------|--------|
| | Intake | Output | Intake | Output |
| 1948 | 23 | -- | 13 | 12 |
| 1949 | 19 | -- | 13 | 9 |
| 1950 | 38 | 23 | 10 | 8 |
| 1951 | 41 | 15 | 10 | 8 |
| 1952 | 30 | 27 | 8 | -- |
| 1953 | 26 | 33 | 7 | 8 |
| 1954 | 48 | 25 | 6 | 6 |
| 1955 | 80 | 23 | 12 | 5 |
| 1956 | 56 | 46 | 21 | -- |
| 1957 | 32 | 62 | 32 | 4 |
| 1958 | 40 | 48 | 26 | -- |
| 1959 | 122 | 34 | 16 | -- |
| 1960 | 133 | -- | 45 | -- |
| 1960 | 139 | -- | | |
| Total | 827 | 336 | 219 | 78 |

Table 1 was compiled from a publication by the Ministry of Agriculture (15, p. 12-15).

was admitted in October when the period of admission was changed from February to October.

From the brief survey of the system of education in Ghana, it may be inferred that education in agriculture is offered in Farm Institutes, the Agricultural Training Centers and in the Universities and that training towards establishment in farming is offered only in the Farm Institutes. Judging from the output of the Training Centers which have within twelve years successfully trained less than 50 percent of their total intake and the fact that a Farm Institute will admit about 30 boys each year, it is apparent

that Ghana cannot rely solely on the Farm Institutes to provide that vital core of farmers who will readily use modern scientific knowledge to increase efficiency in agriculture. It cannot be overemphasized that immense difficulties are involved in having boys commit themselves to training for establishment in farming when they have had ten years of education without any agricultural bases; only boys with very fervent love for rural life are, after leaving middle schools, likely to enroll in the Farm Institutes.

Education in the middle schools is too general for instructions in agriculture to be incorporated in it. Many students are, however, now enjoying secondary education and if during their period in secondary schools, they are introduced to agriculture as part of the broad general education they receive, it is likely that many of the secondary school graduates will develop favorable attitudes to agriculture and be prone to pursue careers related to agriculture or to become established in farming.

It is worthwhile at this stage to give a resumé of vocational education in high schools in the United States to enable us to get a broad perspective of what may be extracted from the system in the United States and adapted to the needs of Ghana.

Vocational Agriculture Education in High Schools in the United States

Between 1890 and 1900 a few public high schools in the United States started teaching agriculture. It was not, however, until the turn of the century that many public schools initiated the teaching of agriculture and by 1916, True (39, p. 355) states that there were 3181 public high schools in the United States teaching agriculture. Great impetus was given to the teaching of agriculture in high schools when on February 23, 1917 the United States Congress enacted the Smith-Hughes Act which provided federal aid to schools teaching agriculture and federal assistance in studying and promoting the teaching of agriculture in secondary schools. No school is, however, obligated to receive federal aid. But the state and the federal government share responsibility in agricultural education in all schools receiving federal aid. Teaching of agriculture in high schools became so popular that, as Hamlin (19, p. 424-425) reports, "in 1949-50 approximately 9,300 schools were teaching vocational agriculture, about 60 percent of the rural high schools in the United States. "

Vocational education in agriculture was designed primarily to meet the needs of persons over 14 years of age who were engaged in or preparing to enter upon the work of the farm or farm home (40, p. 13). This objective has, however, been broadened. In recent

years "emphasis is placed on the development of specific knowledge and skills necessary for successful participation in agricultural occupations and on the development of understandings, attitudes, and ideals necessary for successful participation in rural life" (26, p. 61).

Training is provided for (1) high school boys interested in agriculture, (2) young boys who are out of school and are endeavoring to become established in farming and (3) for adult farmers who are desirous of increasing their efficiency.

The vocational agriculture program for in-school youths may be divided into three phases, namely,

1. Classroom instruction,
2. FFA, and
3. Supervised Farming Programs.

Classroom instruction. Formerly it was customary to teach different agricultural subjects in each of the four years of high school. These days, however, many teachers subordinate subject lines in determining the content of each year and build the classroom instructions around the developing farming programs of the student. Generally in the first year the student is introduced to the whole field of agriculture to enable him to select projects for his supervised farming program. The final year is devoted to rounding out and summarizing the four years work and to helping the boy become

firmly established in farming.

Classroom instructions in the four years generally cover subject matter and activities in the areas of Livestock Production, Crops, Farm Management, Farm Shop, Rural Electrification, Farm Power and Machinery, Soil and Water Management, Farm Buildings and Conveniences.

FFA. Prior to 1928 a number of departments of vocational agriculture in high schools in the United States had established agricultural clubs composed of students of vocational agriculture. These clubs later developed into state-wide organizations. In the summer of 1928 the state-wide organizations of students of vocational agriculture formed a national association known as the Future Farmers of America (FFA). On August 30, 1950, the United States Congress approved an act to incorporate the FFA. Today the FFA embraces 49 of the 50 states in the Union and Puerto Rico.

The FFA is "designed to supplement the training opportunities of boys who are progressing toward the goal of establishment in a farming business" (12, p. 8). Many of its activities center on citizenship, the development of agricultural leadership and cooperation in the development of individual supervised farming programs.

Supervised Farming Programs. Supervised farming programs form an integral and essential part of vocational agriculture.

When properly established, farming programs constitute a cross-section of the farming in a local community and form the basis from which evolve problems of common interest used for effective classroom teaching. They make classroom work more interesting and meaningful, provide the student with an opportunity of putting into practice what he learns in school and also help him towards establishment in farming or in non-farming agricultural occupations.

Vocational education in agriculture in high schools in the United States has been operative for about half a century and a great deal of knowledge and experience has been accumulated. It cannot be gainsaid that Ghana can adapt to her benefit some aspects of the educational program which has proved of immense value in providing many agricultural workers and efficient and educated farmers who are applying to farming much of the scientific knowledge placed at their disposal by research. By confining ourselves to one aspect of vocational agriculture in High Schools in the United States, namely supervised farming program which is often referred to as the basis of vocational agriculture, we can gather much valuable knowledge to enable us to draw up supervised farming programs for public schools in Ghana.

CHAPTER III

REVIEW OF RELATED LITERATURE

Although supervised farming programs in Ghana may of necessity be organized and operated differently from the pattern in the United States, the basic concepts and practices of the United States may be used to serve as a foundation for possible courses of action in Ghana. In the Oregon State University library, publications on supervised farming programs in the United States were therefore studied and in order to review systematically the material gathered, the latter would be divided into the following sections:

1. The Values of Supervised Farming Programs
2. The Phases of Supervised Farming Programs
3. The Selection and Planning of Supervised Farming Programs
4. The Financing of Farming Programs
5. The Initiation of Farming Programs and Establishment in Farming
6. The Keeping of Records
7. The Supervision of Farming Programs

The Values of Supervised Farming Programs

John Dewey (9) formulated the following five step approach in problem solving or critical thinking:

1. The occurrence of a felt difficulty which has to be overcome in order to reach a goal.
2. Definition of the difficulty as a problem to be solved.
3. Analysis of the problem to find out how it can be solved. This process entails the gathering of facts on the probable solutions to the problem.
4. Analyses of the probable solutions in view of the known facts to find a tentatively accepted solution to the problem.
5. Verification of the tentative solution, often by subjecting it to experiment.

This problem solving procedure is recognized as an effective method in teaching. It is adopted in agricultural education mainly because supervised farming programs present students with felt needs or goals. To satisfy these needs or attain the goals set students encounter problems which they are guided in solving through purposeful activity.

In discussing the values of supervised farming programs, Schmidt (31, p. 66) states that "growth in power to cope intelligently with managerial and business problems should be one of the most important outcomes of project work in vocational agriculture." Students enrolled in vocational agriculture maintain in their supervised farming programs projects in which they become involved in real-life farming operations. They make many managerial decisions and are confronted with some of the problems they are likely to meet

when they become established in farming. Through the solution of these problems the students acquire knowledge and skills which become highly valuable assets to them when in the future they become farmers or enter on a non-farming agricultural enterprise, such as the selling of insecticides or fertilizers.

Deyoe (10, p. 17-19) asserts that farming programs afford the student an opportunity for making money. This value may be thought of as too materialistic. Its value however, lies in its motivating force as well as in establishment in farming. Through supervised farming programs students save money and progressively acquire the capital necessary for establishment in the business of farming or in non-farming agricultural occupations. This objective of making money should not be discouraged unless, as Deyoe (10, p. 19) states, "it overshadows or displaces others which are also important."

Farming programs involving a number of projects of considerable scope lead toward establishment in farming. The validity of this statement is borne out by many studies. In Louisiana for instance Welborn (42) reports that 44.2 percent of the Marryville High School graduates in vocational agriculture are established in farming or in occupations closely related to farming. Wald (41) conducted a study of how graduates of Idaho departments of vocational agriculture

became established in farming. Of 87 who were listed as having carried on supervised farming programs, 74 checked supervised farming as being a contributing factor, while 13 checked it as being the sole factor which had led to their establishment. Wald concluded that the most important means of establishment in farming was partnership with the students father, usually in conjunction with supervised farming.

Because of the importance of this value of farming programs relative to the purpose of this study additional material gathered on it will be presented in a later section.

Through supervised farming programs students may jointly own boars, buy feeds, brood chicks or form a credit cooperative for securing money for financing projects. In these various phases of group activities they imbibe the ethics, and develop attitudes and abilities, for cooperation. Clark (5) reports of how the Montrose F. F. A. chapter formed a cooperative among its members to directly help them finance their supervised farming programs. This cooperative launched a sheep "chain" of a breed, Montadale, new to Montrose, which they successively established in the locality. By 1951, five years after the establishment of this chain, the Montrose chapter had over three thousand dollars worth of livestock in this program. Clark (5, p. 282) states that "through these cooperatives

boys cannot only work together in financing and managing the program, but can be influential forces in developing more and better livestock in their community. "

Farming programs contribute to improvement in the home farm and in the farms in the community. Deyoe (10, p. 22) states that "improvements in the home farm and on the home grounds and increased contributions of the farm to the family food supply are phases of farming operations which have been given considerable emphasis during recent years. " Under the supervised farming program a student is expected to carry out improvement projects such as mending fences and old barns. These projects raise the real estate value of the home farm. In addition to this, if the student's farming enterprise is well managed, his work on the farm may become a model of interest and emulation for the community.

A well-balanced farming program, Gray (16, p. 52) writes "provides unusual opportunities to develop pride of ownership, self-confidence, initiative and responsibility which will be invaluable later in life. " Through supervised farming students develop their own projects and have the opportunity of putting into practice what they learn in school. This sense of accomplishment and the carrying on of the classroom instruction to the doing stage inspire confidence in the student, nurture his interest in agriculture and help

increase his sense of responsibility. Hansel (21, p. 195) maintains that

a well planned supervised farming program will promote attitudes of dependability and reliability by giving the boy a definite responsibility. He will have a definite job to do and must assume the responsibility that the job demands. By working with a project of his own he can gain a feeling of pride in doing a job that is challenging and worthwhile.

A supervised farming program Gray (16, p. 52) asserts "provides exploratory experiences that will assist in deciding what type of farming to enter. " A student can try on his farm new enterprises to find out their economic feasibility. By the time he graduates from high school he might have tried a number of new enterprises and new crops and might have found out which were the most profitable on his home farm. He could then as a farmer be able to make sound decisions on the combination of his farming enterprises.

Supervised farming programs have many values. But a student will derive maximum benefit from his farming program if the latter is so comprehensive as to embrace many phases.

The Phases of Supervised Farming Programs

Supervised farming programs are divided by Deyoe (10, p. 59) into the following phases:

1. Ownership projects
2. Improvement projects
3. Supplementary projects
4. Supervised placement for farm experience
5. Group or cooperative activities

Ownership projects. These are variously described as productive projects, productive enterprise projects, productive enterprises and enterprise projects.

Dayoe (10, p. 62) lists the following as the distinguishing features of ownership projects:

- a. Complete or partial ownership by the boy.
- b. Nearly always involves carrying a crop or livestock enterprise through one or more production cycles.
- c. A business venture taken for profit.
- d. Complete or major responsibility on the part of the boy.
- e. Provides for development of important abilities.

Phipps and Cook (28, p. 241) divide ownership projects into major projects, minor projects and contributory projects. They define a major project as "a production project which normally yields the major income in a pupil's farming program" and a minor project as "a production project which ordinarily yields less income than a major project in a supervised farming program, but which may be fitted into the program so as to utilize and balance labor more

effectively and yield a quick cash return on a small investment. " A contributory project Phipps and Cook (28, p. 242) describe as "a production project in a pupil's supervised farming program, the products of which are consumed or utilized in the conduct of major or minor projects. " A project which solely provides feed for a live-stock enterprise is an example of a contributory project.

An ownership project Phipps and Cook (28, p. 240-241) maintain is a business venture for profit and experience and should be managed as such. They add that if the student solely owned the project then he should be allowed to enjoy all the profit that accrues from the undertaking and that if the project is a joint ownership then the boy should enjoy just the proportion of the profit due to him after all expenses have been defrayed.

Improvement projects. An improvement project involves a number of related jobs which contribute towards the improvement of the home, the farm enterprise and the comfort and convenience of the farm family. Unlike ownership projects, the student owns no part of the improvement projects and he does not enjoy any direct financial reward from them.

Improvement projects must be carefully and systematically planned and Deems (7, p. 75) states that "the plan should include a list of the jobs to be performed, procedure or method to be used in

accomplishing each job, estimated cost and the results to be expected." These projects should be large enough to challenge the student.

Supplementary projects. A supplementary project is a job within an enterprise and Phipps and Cook (28, p. 247) assert "is an undertaking for experience or for the development of a skill in addition to the practices included in a pupil's production and improvement projects."

Supervised placement for farm experience. This is mainly applicable to students with limited facilities and is a form of apprenticeship under a skilled farmer. While the boy is undergoing the apprenticeship Jones (23) states that the teacher in cooperation with the employer periodically evaluates the student's work. The teacher's part cannot be a passive one and Jones maintains that it is the active planning, direction, supervision and evaluation of the student's work which make the latter a genuine educational activity.

Jones brings out the following important differences between supervised placement for farm experience and farm labor:

1. In supervised placement the place where the student will train is subject to the approval of the school as a place which will provide the desired experience, both as to kind and quality.
2. The placement program is jointly planned by the teacher, the student and employer and is subject to the approval of the student's parents.

3. The employer is made to understand clearly the purpose of the placement program and to express his willingness in providing the planned opportunities for the student and in helping in evaluating the latter's work.
4. The teacher capitalizes on the student's experience to promote his learning by relating his experience to his classwork and by providing special assignments pertaining to the farm operations.

Group or cooperative activities. These are usually carried out by the Future Farmers of America and they often contribute a great deal to the success of the farming programs of individual students. Hammonds (20, p. 177) states that "many teachers make good use of them as an aid in motivating instruction and for developing abilities that cannot be completely developed in the classroom." They also assist in developing cooperation and leadership - goals of the FFA.

The Selection and Planning of Farming Programs

Horne et al. (22) report that in Blacksburg, Virginia, in order to assist students select their farming programs, teachers attached great importance to two main factors, namely, the farming opportunities available on the student's home farm, including land, buildings, equipment and facilities and secondly, the type of farming followed and the needs of the student, the farm, the family and the community.

Guidance is of great importance in assisting students in selecting their farming programs and Binkley (2, p. 270) stresses the need for the teacher to analyze carefully each student's home farm conditions, the factors limiting success on the home farm and how they can be eliminated. Binkley adds that with such a knowledge on the background of the student "the teacher must visualize where he should like this individual to be in farming, two, three, four or five years hence. The lack of a sound decision pertaining to this matter has prevented teachers from assisting the development of many good farming operations. The failure on the part of the teacher to make a decision", Binkley concludes, "leaves a question and doubt which fail to result in action."

The beginning students should be oriented to develop in them interest and understanding of the objectives of vocational agriculture with emphasis on farming programs. In a study conducted in Texas to find out the methods used by teachers of vocational agriculture to stimulate and maintain the interest of their students in farming programs, Timmerman (38) reports that 95 percent of the teachers surveyed used field trips, 91 percent employed discussions concerning opportunities for profit, 83 percent encouraged students to show at fairs, 83.3 percent discussed opportunities for learning in connection with farming and 83.3 percent discussed the accomplishments of other students.

With the help of the teacher and the parents the student must be guided to select as comprehensive a farming program as the facilities on his home farm would allow. In selecting the various projects due consideration must be given to the opportunities on the home farm in terms of the present resources and the future development of the farm.

The Financing of Farming Programs

In selecting his supervised farming program the student should diligently and as accurately as possible estimate the receipts and expenses his projects, especially ownership projects, would entail; he should draw up a budget. This budgeting process should precede the decision on whether or not a particular project shall be undertaken. In addition to enabling the student to make a firm decision, budgeting, Cline (6, p. 68-69) states has the following values:

- a. A budget gives the boy a complete overview of the undertaking, including its relation to other learning activities.
- b. An accurate and complete budget forms the basis for a sound business agreement.

- c. A budget provides the essential data for procuring sound credit.
- d. The budget provides standards against which the teacher and student may check the project when it progresses.
- e. The budget supplies data to be used in making a calendar of activities for the farming program.
- f. Budgeting makes use of data from farm records in ways which contribute to the improvement of the farm business.

The necessity for the teacher helping the student in budgeting cannot be over-emphasized since a student's interest in his supervised farming program may flag if the teacher hastily introduces him to budget-making. Phipps and Cook (28, p. 287) state that "students usually need assistance in developing the arithmetical skills required and help in locating feed, seed and other supplies that will be needed." They conclude that "when understandings and skills are developed and adequate sources of information supplied, boys enjoy budget-making."

After a pupil has drawn up a budget showing the estimated receipts and expenses it is advisable for the teacher to check the budget. A meeting could then be arranged for the teacher, the student and his parents to examine the various ways by which the student's projects could be financed. In a large community many sources of finance are usually available and it is important for the student to utilize the most economic source to finance his farming

program. In a study of three counties in Oklahoma, Miller (25) found that the students used 8 major financial sources, namely:

1. They, the students
2. Parents
3. Banks
4. Businessmen
5. Civic Clubs
6. Relatives
7. F. F. A. Chapters.
8. Farmers in the community

He noticed further that students with the most adequate productive enterprises used large credits and that contributions students received from their parents to finance their productive projects decreased as the students progressed in their training, acquired wide experience and developed a balanced and broad farming program.

The merits of all possible methods of securing finances should be assessed and a decision should be made by the student and his parents with the advice of the instructor relative to the financial source to be utilized. Students often obtain loans from their parents and it is important that all loans should be supported by agreements.

Although some parents prefer to make verbal agreements with their sons, it is imperative for the instructor to aim at securing written father-and-son agreements wherever possible. In a study of father and son farming agreements, Gridley (17)

admonishes instructors to use tact in developing business agreements between farmers and their sons and to refrain from adapting a prepared agreement form to individual situations. Gridley offered the following helpful suggestions:

1. The purposes of the agreement should be clearly stated.
2. The effective period of the agreement should be stipulated.
3. The agreement must contain a provision for its dissolution.
4. Limitations upon independent actions of the parties involved should be clearly defined.
5. Contributions such as labor, management and farm property that each partner is to make to the joint enterprise must be listed.
6. The manner of dividing the farm profits must be stated in the agreement and must be on a businesslike basis.
7. The agreement should make provision for the son to increase his equity.
8. The agreement must contain a clause showing how to dispose of the assets of any partner who wishes to withdraw.
9. The agreement should provide for the arbitration of any differences which cannot be settled by mutual consent.

The Initiation of Farming Programs and Establishment in Farming

After a student's farming program has been planned and the means of financing the projects have been secured, the student should be encouraged to establish short-term and long-term goals consistent with the standards of production in the community. The goals defined

by the student should then be analyzed to bring each objective to a level specific enough so that an effective instruction could be built around it. It has been observed that functional organization of course material - the cross sectional method - is being employed effectively by many instructors in helping their students achieve their goals. Deyoe (10, p. 352) confirms that "in recent years, wide acceptance has been given to coordinating course content with the important jobs and problems in carrying out the various phases of the farming programs. "

Guidance from the instructor will be greatly needed and much class time may be utilized to ensure that the student is well started in his farming program. Instructors use diverse methods to achieve this objective. In Tennessee, for instance, King (24) noticed that teachers with students having good programs (1) made their students use class time for filling out record books and for studying improvement and supplementary practices; (2) provided class instruction in setting up productive, supplementary and improvement enterprises; (3) instructed students on determining the possibilities of various enterprises and the requirements of a good farming program. Hamilton (18) reports that in Audubon, Iowa, instructors used the following six steps in helping boys initiate sound supervised farming programs:

1. They acquainted themselves with the boy, his parents and home farm.
2. They interested the student and his parents in the future of farming for the boy.
3. They worked with the boy and his parents in setting up goals for the farming program and for the future establishment of the boy in farming.
4. They helped the boy start his complete program by cooperating directly or indirectly to (a) plan the program; (b) obtain livestock and/or crops of the proper quality and quantity; (c) obtain finances; (d) obtain information and develop skills necessary to carry out the program; and (3) market the product.
5. They encouraged the student to enlarge the program each year and suggested proper changes as needed in the long-term plan.
6. They helped to secure the land, partnership agreement and other provisions.

Students who have expressed a preference to become established in farming need constant and unfailing attention from the instructor in order to broaden and improve the quality of their programs. The goals of the instructor would be clear if he had in mind the findings reported by Snyder (33) in a study he conducted in Pennsylvania to develop and validate criteria of farming programs which contribute to establishment in farming. After using a final population of 180 former students of vocational agriculture, Snyder laid down the following criteria:

1. The goal of the individual at the time he plans his long-time farming program is establishment.

2. The productive enterprises of the individual are associated with the type of farming in which the individual wishes to become established.
3. The main productive enterprise of the farming program is an enterprise which is of major importance on farms in the community.
4. The main productive enterprise is continued every year, and its size is increased year after year.
5. A variety of farm enterprises is included in the farming program.
6. A large number of supplementary practices is included in the supervised farming program.

Although Snyder's criteria may not be strictly applicable to areas outside Pennsylvania, they may serve as tentative guidelines for the instructor in a locality for which such a set of criteria has not been evolved. Students can be encouraged to broaden and balance their supervised farming programs in order to attain the standards listed above. It is essential that a broadening of a student's program should be coupled with an improvement in the quality of the projects. If the student puts into effect the approved practices taught at school, much qualitative improvement could be achieved.

In a study on the use of approved practices in farming programs, Ruble (30) laid stress on the following as some of the methods employed by teachers in securing the adoption of approved practices:

- a. teaching approved practices as a definite part of each unit of instruction.

- b. developing abilities and skills for applying practices.
- c. home farm visits with emphasis on practices.
- d. incorporating approved practices in projects and plans, and
- e. studying the relationship of approved practices to increased income.

Binkley (2, p. 270) also states that immediately after the instructor has dealt with an approved practice with a class and has arrived at a good sound group decision, then is the best time for him to guide the students to use the decision in carrying out their farming programs. "This is the time to get a commitment", Binkley stresses, "and to nail the practice down in the plan. "

A student with a well-balanced and good quality farming program will need a substantial investment in his projects in order to become established in farming. Angerer (1) advises that vocational agriculture teachers should encourage their pupils to invest their profits in stock, tools and feed during high school days. If the enterprising student invested much of his profits in his program, he would cut down much of the financial support he would need from other sources. His interest in his supervised farming program would increase and he would be on the way to making an enviable start in farming as a career.

The Keeping of Records

To operate a farming program successfully the student will have to make numerous decisions at various stages in the development of the program. The soundness of these decisions and the ease with which they are made will be greatly influenced by the records which are kept on the farming program. There are therefore good reasons for keeping records and the following are the over-riding ones given by Snell (32, p. 195):

1. To enable the student to know the results of his work and the degree of success achieved.
2. As a means of teaching good practices and some important concepts.

Accurate records can be used by the industrious student to determine the strong and the weak aspects in his farming program. Fairly simple financial records will serve this purpose. These may include an opening inventory, a record of sales and other income, a record of expenses incurred in operating the farm, record of crops and livestock produced and a closing inventory.

Records can be gainfully used only when they are accurate and it is therefore essential for the instructor to encourage students to keep accurate records. In a study of how to obtain accurate farm records, Denny (8) revealed the following practices as being most widely used by selected vocational agriculture teachers in North

Carolina:

1. Teaching record keeping just prior to making entries in record books.
2. Encouraging students to record data accurately.
3. Summarizing and analyzing records on each enterprise immediately following the completion of the enterprise.
4. Using the information gained from the analyses of records in improving and expanding future farming programs.

Phipps (27, p. 8), however, asserts that "frequent and continuous use of records to measure progress toward standards and goals is the key to success in obtaining an appreciation of the values of the mechanics of record keeping." He maintains that records should be analyzed not only when a project is completed but also while the project is in progress. Students, Phipps states, will derive much useful knowledge from record keeping, if they are for instance encouraged to compare the birth weights and weaning weights of piglets in their projects, the labor requirement per piglet weaned, and such factors while their projects are in progress.

Instructors too will find much useful teaching material in records kept by students. Snell (32, p. 199) advises teachers to use records as much as possible to develop in students an understanding of the following concepts:

1. A good business management requires records. Farming must be conducted today as a business and therefore certain records are essential to successful farming.

2. Only records that are to be used should be kept. If records have no value they are a waste of time.
3. Good records are not difficult to keep. They should not be more complicated than necessary.
4. To be useful records must tell the truth. This means that they must be complete and accurate.

Good records are accurate, honest, complete, neat and simple and it is worthwhile for instructors to encourage students to keep good records. In maintaining accurate, honest, complete, neat and simple records, students gradually develop in themselves the virtues of accuracy, honesty, completeness, neatness and simplicity.

The Supervision of Farming Programs

Teachers must never assume that once a student's farming program has been planned and a good classroom instruction is provided, students would successfully carry on their farming programs. Success in supervised farming programs, however, depends on the quality of the classroom instruction as well as the quality and frequency of the on-farm visits made by the instructor.

It is important for the teacher of vocational agriculture to visit the home farms of students with farming programs as Clanin (4, p. 203) states "to follow-up classroom instruction with additional instruction relating to crucial jobs encountered seasonally in a

student's farming program; to motivate a student to practice improved farm-job methods which he has studied at some previous time; and to evaluate the effectiveness of his teaching. "

If supervisory visits are to justify the purposes for which they are made then their frequency must be determined by the needs of the student. Bundy (3, p. 249) reports that "it is assumed in many states that a minimum of six to eight visits per student must be made each year to maintain an effective program. To meet these standards", Bundy continues, "it is necessary for a teacher of vocational agriculture to spend about 25 percent of his time during the regular school year and about 75 percent of his time during summer months in farm visitation. " During the freshman year many students may need few visits since they may start their farming programs during the second half of the freshman year. As their programs expand in subsequent years, however, they may need frequent attention. Spence (34) noticed that in Modesto High School, California, from 1949 to 1955 teachers of vocational agriculture made an average of 5.6 home visits to freshmen, 6.2 to sophomores, 4.6 to juniors and 4.6 to seniors. Spence explains that the average number of visits increased for the sophomores because during the second year in school most students became enthused with their programs, encountered many problems and as

such needed much help. In the third and fourth years, however, students became well established and solved many of their problems.

The frequency of home visits, it has been observed, has a positive correlation with the scope and quality of farming programs of students. At Staples, Minnesota, Raine (29) studied the effect of the number of home visits on ninth grade boys studying vocational agriculture. He reported that seven visits as compared to three visits (1) had a marked effect on the attitude and persistence of ninth grade boys to attend school and continue to study vocational agriculture; (2) increased the scope of the supervised farming program; and (3) increased the labor income of students.

The findings of Thomason who studied the supervised farm training programs of seventy departments of vocational agriculture in Northwestern Oklahoma, confirm Raine's report. Thomason (37) found 50 percent more projects per student and more than twice the total labor income in departments with the most visits compared to those with the least farm visits.

Apart from the frequency the type of visit also influences the effectiveness of the vocational agriculture program. A study conducted by the United States Department of Education showed that in departments which were classified "very superior" 60 percent of

the home visits made were functional, that is they had some learning value for the student, 27 percent were inspectional and 13 percent were for other purposes.

Farming programs cannot be successful if they are not supervised. The classroom instruction must be coupled with effective on-farm visits in order to ensure that desirable changes, which students can later in life adapt to new situations, are created in them while they are in school.

Supervised farming programs are of great value both to the student and the instructor. They provide important avenues for cooperation between parents and their sons and their initiation and operation entail a lot of planning both in the school and in the student's home.

CHAPTER IV

FINDINGS OF THE STUDY

A study was conducted to supplement the material gathered from relevant publications and to help develop a clear understanding and appreciation of supervised farming programs. In this study the questionnaire method was used.

After the questionnaire had been drawn up it was submitted to the staff of the Department of Agricultural Education, Oregon State University, who checked it to help eliminate any ambiguity.

160 copies of the questionnaire were sent out; 16 to the Vocational Agriculture instructor in each of the following ten schools which, it was believed, had good supervised farming programs:

1. Albany High School
2. Scappoose High School
3. Amity High School
4. Nyssa High School
5. Gervais High School
6. McLoughlin High School
7. Enterprise High School
8. Molalla High School
9. Eagle Point High School
10. Malin High School

The instructors were entreated to distribute four copies of the questionnaire in each of the four grades in their schools. To help eradicate any bias, they were requested to give out the questionnaire

to students with varying scopes of supervised farming programs so that the replies to the questions would reflect a variety of standards in each grade.

A copy of the questionnaire and of the covering letter may be found in the appendix.

The following table is an analysis of the returns from the schools:

Table 2. The Returns of the Questionnaire from the High Schools and from the Various Grades.

| High School | Number of Freshmen Reporting | Number of Sophomores Reporting | Number of Juniors Reporting | Number of Seniors Reporting | Total Number Reporting | Percentage Reporting |
|-------------|------------------------------------|--------------------------------------|-----------------------------------|-----------------------------------|------------------------------|-------------------------|
| One | 4 | 4 | 4 | 4 | 16 | 100 |
| Two | 4 | 4 | 4 | 4 | 16 | 100 |
| Three | 4 | 4 | 4 | 4 | 16 | 100 |
| Four | 3 | 2 | 3 | 2 | 10 | 65 |
| Five | 4 | 4 | 4 | 4 | 16 | 100 |
| Six | 4 | 4 | 1 | 2 | 11 | 69 |
| Seven | 4 | 4 | 4 | 4 | 16 | 100 |
| Eight | 0 | 4 | 4 | 2 | 10 | 65 |
| Nine | 4 | 4 | 4 | 4 | 16 | 100 |
| Ten | 4 | 4 | 4 | 4 | 16 | 100 |
| Total | 35 | 38 | 36 | 34 | 143 | |

The order in which the returns have been tabulated does not correspond with the list of schools given above.

143 out of the 160 copies of the questionnaire were returned; this makes up 89.4 percent returns. All the replies were usable either in part or wholly. Eighty-five and one-half percent freshmen, 95 percent sophomores, 90 percent juniors and 85 percent

seniors responded. From one of the schools, however, there was no response from the freshmen since, the instructor stated, they had not initiated their programs.

The copies of the questionnaire returned furnished a lot of data on some salient facets of supervised farming programs.

The data will be presented in the following order:

1. Ages of the Respondents
2. Home Farm Acreages of the Respondents
3. Financing of Projects by the Respondents
4. Skills Acquired by Respondents
5. Crop Projects of the Respondents
6. Livestock Projects of the Respondents
7. Supplementary Practices of the Respondents
8. Improvement Practices of the Respondents
9. Marketing of Produce by the Respondents
10. Occupational Preferences of the Respondents

The Ages of the Respondents

It may be noted from the following table that over 70 percent of the respondents were between 15 to 17 years of age.

Table 3. The Ages of the Students Who Answered the Questionnaire.

| Age | Numbers of Freshmen | Numbers of Sophomores | Numbers of Juniors | Numbers of Seniors | Total | Percent of Total |
|-------|------------------------|--------------------------|-----------------------|-----------------------|-------|---------------------|
| 14 | 19 | -- | -- | -- | 19 | 13.3 |
| 15 | 15 | 10 | 4 | -- | 29 | 20.3 |
| 16 | -- | 26 | 14 | -- | 40 | 28.0 |
| 17 | 1 | 2 | 18 | 15 | 36 | 25.1 |
| 18 | -- | -- | -- | 18 | 18 | 12.6 |
| 19 | -- | -- | -- | 1 | 1 | 0.7 |
| Total | | | | | 143 | 100.0 |

The percentages calculated are based on the total number of students reporting.

Home Farm Acreages of the Respondents

As shown in Table 4, about three percent of the students surveyed come from homes which have no farms. About 33 percent of the students come from farms between one to 20 acres and 60 percent are from farms which are between 20 to 500 acres.

Table 4. The Acreages of the Home Farms of the Students.

| Size of Home Farm in Acres | Number of Freshmen | Number of Sophomores | Number of Juniors | Number of Seniors | Total | Percent of Total |
|-------------------------------|-----------------------|-------------------------|----------------------|----------------------|-------|---------------------|
| 0 | 1 | 1 | 2 | 0 | 4 | 2.8 |
| 1-5 | 3 | 3 | 5 | 2 | 13 | 9.1 |
| Over 5-10 | 4 | 2 | 1 | 6 | 13 | 9.1 |
| Over 10-20 | 3 | 6 | 6 | 2 | 17 | 11.9 |
| Over 20-50 | 3 | 3 | 5 | 7 | 18 | 12.6 |
| Over 50-100 | 8 | 8 | 4 | 3 | 23 | 16.0 |
| Over 100-200 | 7 | 8 | 4 | 6 | 25 | 17.5 |
| Over 200-500 | 5 | 2 | 7 | 6 | 20 | 14.0 |
| Over 500-750 | 1 | 1 | 0 | 1 | 3 | 2.1 |
| Over 750-1000 | 0 | 0 | 1 | 1 | 2 | 1.4 |
| Over 1000 | 0 | 4 | 1 | 0 | 5 | 3.5 |
| Total | | | | | 143 | 100.0 |

Financing of Projects by the Respondents

The students drew upon diverse sources to finance their projects and the table following shows how the sources listed were used.

Table 5. The Various Sources Used by Students to Finance Their Supervised Farming Programs.

| | <u>Freshman</u> | | <u>Sophomore</u> | | <u>Junior</u> | | <u>Senior</u> | |
|--------------------------|-----------------|---------------------|------------------|---------------------|---------------|---------------------|---------------|---------------------|
| | Number | Percent of Total | Number | Percent of Total | Number | Percent of Total | Number | Percent of Total |
| Loan from a bank | 4 | 9.5 | 4 | 6.8 | 2 | 4.4 | 4 | 7.7 |
| Loan from father | 11 | 26.2 | 20 | 33.9 | 11 | 24.0 | 10 | 19.0 |
| Chapter chain | -- | ---- | 6 | 10.2 | 6 | 13.0 | 8 | 15.4 |
| Money earned by working | 27 | 64.3 | 28 | 47.5 | 27 | 58.6 | 28 | 54.0 |
| Sources other than above | -- | ---- | 1 | 1.6 | -- | ---- | 2 | 3.9 |
| Totals | 42 | 100.0 | 59 | 100.0 | 46 | 100.0 | 52 | 100.0 |

In many cases a student utilized more than one source to finance his projects, hence the total of students who used the sources listed exceeds the numbers of students who reported in each grade. The percentages are based on the sum of sources used in each grade and not on the number of students reporting.

It would be appreciated from the percentages computed that in all grades a majority of the students financed their projects from their earnings. Although loans from parents formed a large proportion of the sources students used, it is note worthy that few students relied solely on this source; five freshmen, two sophomores, one junior and one senior financed their projects solely with monies they

borrowed from their parents.

Students who checked "Sources other than above" specified that they financed their projects by borrowing from cooperatives or from a local cannery.

Skills Acquired by the Respondents

In studying the following table relative to the time the students surveyed acquired the skills listed, it will be helpful to remember that the table was compiled from replies submitted by 35 freshmen, 38 sophomores, 36 juniors and 34 seniors.

The table shows that one freshman could not drive a tractor. This student comes from an 18 acre farm on which crops were not raised. The use of a tractor on such a farm is likely to be restricted. The table further shows that all the seniors who reported have, by the senior year, acquired the following skills:

1. Tractor Driving
2. Arc Welding
 - a. fillet
 - b. butt
 - c. vertical
 - d. horizontal
3. Electrical Wiring

One senior had not learned how to castrate animals, although he was from a farm on which many swine and sheep were raised.

Table 6. The Year in High School in which Students Acquired Various Skills.

| Skill | Year Acquired-1st | Number of | Number of | Number of | | | Number of | | | |
|--------------------------|-------------------|-----------|------------|-----------|-----|-----|-----------|-----|-----|-----|
| | | Freshmen | Sophomores | Juniors | | | Seniors | | | |
| | | 1st | 2nd | 1st | 2nd | 3rd | 1st | 2nd | 3rd | 4th |
| 1. Tractor driving | 34 | 36 | 2 | 34 | 2 | -- | 33 | 1 | -- | -- |
| 2. Dehorning | 16 | 22 | 2 | 20 | 2 | -- | 16 | 8 | 3 | 1 |
| 3. Castration | 23 | 28 | 6 | 23 | 5 | 3 | 16 | 7 | 7 | 3 |
| 4. Use of tap and die | 17 | 21 | 10 | 17 | 14 | 1 | 17 | 12 | 1 | -- |
| 5. Arc welding | | | | | | | | | | |
| a. Fillet | 22 | 25 | 6 | 21 | 9 | 1 | 18 | 10 | 6 | -- |
| b. Butt | 22 | 24 | 7 | 22 | 10 | 1 | 18 | 8 | 6 | 2 |
| c. Vertical | 10 | 20 | 10 | 10 | 16 | 6 | 12 | 7 | 12 | 3 |
| d. Horizontal | 13 | 23 | 12 | 11 | 16 | 5 | 9 | 4 | 14 | 7 |
| e. Overhead | 3 | 1 | 7 | 6 | 7 | 8 | 2 | 6 | 12 | 6 |
| 6. Oxy-acetylene welding | | | | | | | | | | |
| a. Fillet | 8 | 14 | 11 | 10 | 13 | 4 | 9 | 13 | 4 | 4 |
| b. Butt | 10 | 14 | 11 | 6 | 17 | 4 | 9 | 13 | 3 | 2 |
| c. Vertical | 3 | 5 | 9 | 1 | 9 | 4 | -- | 13 | 6 | 3 |
| d. Horizontal | 3 | 7 | 9 | 3 | 11 | 2 | 2 | 12 | 6 | 2 |
| 7. Electrical wiring | 4 | 10 | 15 | 6 | 7 | 11 | 3 | 7 | 12 | 12 |
| 8. Shearing | 4 | 5 | 3 | 4 | 4 | 2 | 2 | 5 | 6 | 1 |
| 9. Pruning | 11 | 13 | -- | 14 | 3 | 5 | 9 | 6 | 4 | 3 |

It could be inferred from Table 7 that the percentage of students who acquired the skills listed increased as students progressed from one grade to another. It was, however, in dehorning, castration, the use of tap and die and in horizontal arc welding that the percentages of sophomores were higher than those of juniors; the maximum difference being 11.2 percent in horizontal arc welding and the minimum being 0.6 percent in the use of tap and die. The percentages of sophomores, juniors and seniors who could shear sheep were the smallest compared with percentages in other skills. The probable reason for these low percentages is that sheep were the least popular

Table 7. The Percentages of Students Who Have Acquired Various Skills.

| | Percent of Freshmen | Percent of Sophomores | Percent of Juniors | Percent of Seniors |
|--------------------------|------------------------|--------------------------|-----------------------|-----------------------|
| 1. Tractor driving | 97.3 | 100.0 | 100.0 | 100.0 |
| 2. Dehorning | 45.8 | 63.3 | 61.2 | 81.5 |
| 3. Castration | 65.8 | 89.5 | 86.2 | 97.0 |
| 4. Use of tap and die | 48.6 | 81.6 | 81.0 | 88.3 |
| 5. Arc welding | | | | |
| a. Fillet | 63.0 | 81.6 | 86.2 | 100.0 |
| b. Butt | 63.0 | 81.6 | 91.8 | 100.0 |
| c. Vertical | 28.3 | 79.0 | 81.0 | 100.0 |
| d. Horizontal | 37.2 | 92.2 | 81.0 | 100.0 |
| e. Overhead | 8.6 | 21.0 | 58.3 | 76.5 |
| 6. Oxy-acetylene welding | | | | |
| a. Fillet | 22.8 | 65.8 | 71.2 | 88.3 |
| b. Butt | 28.3 | 65.8 | 71.2 | 79.5 |
| c. Vertical | 8.6 | 36.9 | 38.9 | 64.8 |
| d. Horizontal | 8.6 | 42.1 | 44.5 | 64.8 |
| 7. Electrical wiring | 11.4 | 65.8 | 67.8 | 100.0 |
| 8. Shearing | 11.4 | 21.0 | 27.8 | 41.2 |
| 9. Pruning | 31.5 | 34.2 | 61.2 | 64.8 |

livestock among the students who responded to the questionnaire.

Crop Projects of the Respondents

The acreages of the crop projects of the students who reported were studied in relation to the acreages of crop enterprises on their home farms. The findings in this study are presented in the following table.

This table indicates that 68.6 percent, 65.8 percent, 38.8 percent and 61.8 percent of the reporting freshmen, sophomores, juniors and seniors respectively had no crop projects. There were,

Table 8. Acreages of Crop Projects of Students in Relation to the Acreages of Their Home Farms under Crops.

| Home Farm Acreage | 0 | | | | 1-50 | | | | 50-100 | | | | 100-250 | | | | 250-500 | | | | 500-1000 | | | | 1000-2000 | | | | Totals | | | |
|-------------------------|-----|-----|-----|-----|------|-----|-----|-----|--------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|----------|-----|-----|-----|-----------|-----|-----|-----|--------|-----|-----|-----|
| Year in High School | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Crop Project Acreage | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 10 | 17 | 2 | 7 | 7 | 2 | 5 | 10 | 2 | 5 | 2 | 1 | 3 | 1 | 4 | 3 | 2 | | | | | | | | | 1 | 24 | 25 | 14 | 21 | | |
| 1-2 | 2 | | | | 3 | 2 | 5 | 3 | 1 | 1 | | 1 | 2 | | 1 | | | | | | | | | | | | 8 | 3 | 6 | 4 | | |
| 2-4 | | | | 1 | | | 2 | 1 | | 2 | 4 | | | | | | | | | | | | | | | | 1 | 2 | 6 | 1 | | |
| 4-6 | | | | | | 1 | 1 | | 1 | 2 | | | | 1 | | | | | 1 | | | | | | | | 2 | 3 | 2 | | | |
| 6-8 | | | | | | | 3 | 1 | | | | | | | | | | | | | | | | | | | | | 3 | 1 | | |
| 8-10 | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| 10-15 | | | | | | 1 | | 1 | | | | 1 | | | | | 1 | 1 | 1 | | | 1 | | | | | 2 | 1 | 4 | | | |
| 15-20 | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | | | | | | 2 | | |
| 20-30 | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| 30-40 | | | | | | 1 | 1 | | | 1 | | | | | | 1 | | | | | | | | | | | | 2 | 1 | 1 | | |
| 40-50 | | | | | | | | 1 | | 1 | | | | | | | | | | | | | | | | | | | 1 | | 1 | |
| Totals | 12 | 17 | 2 | 7 | 11 | 7 | 19 | 18 | 4 | 12 | 6 | 3 | 6 | 1 | 5 | 4 | 2 | 1 | 3 | 1 | | 1 | | | 1 | 1 | 35 | 38 | 36 | 34 | | |

however, 40 percent of the freshmen reporting, 21 percent of the sophomores reporting and 41 percent of the seniors reporting who had no crop projects despite the fact that crops were raised on their home farms.

The high percentage of freshmen without crop projects shows that most freshmen started their projects with animals. It is probable that most freshmen show a tendency to start their programs with animals because the latter are easier to manage than crops. A second reason may be that in the freshman year many students are not competent in handling farm implements and so their parents would not allow them to use the machinery they would need to cultivate crops.

The percentages of students without crop projects would be expected to decline when students advance from one grade to the other since as students progress in vocational agriculture, they are encouraged to develop balanced programs. There is, however, a tremendous increase in seniors without crop projects. The probable reason for this increase is that seniors would be winding off their programs and so most of them would convert their projects into forms that can readily be disposed of. Animals are readily sold, hence the tendency among seniors to have more animal projects than crops.

Freshmen with crop projects had on the average two to four acres, sophomores 10 to 15 acres, juniors six to eight acres and seniors ten to 15 acres. Juniors, on the average, cultivated smaller acreages than sophomores because, since many juniors had both crop and livestock projects, they might have cultivated small acreages to enable them to manage both crops and farm animals.

The students who reported raised different kinds of crops and in Table 9 some data on these crops are presented.

Table 9 shows that with none of the crops listed did a freshman establish a project larger than four to six acres. One senior, however, had a 40 to 50 acre project. Apart from crops such as onions, beet and berries which have been grouped under the heading miscellaneous, small grains were the most popular crops among students; small grain projects formed 24.7 percent of the total crop projects.

Livestock Projects of the Respondents

As seen in Table 10, all juniors who responded had animal projects and two freshmen, one sophomore and two seniors owned farm animals although there were no animals on their home farms.

When the head of stock owned by the students, as shown in Table 10, was studied in conjunction with the numbers of stock on their home farms, it was found that the sizes of the family's farm animal

Table 9. The Numbers of Students with Varying Acreages of Different Crops.

| | Vegetables | | | | Fruit Trees | | | | Nut Trees | | | | Small Grains | | | | Seed Crops | | | | Miscellaneous | | | | Totals | | | |
|---------------------|------------|-----|-----|-----|-------------|-----|-----|-----|-----------|-----|-----|-----|--------------|-----|-----|-----|------------|-----|-----|-----|---------------|-----|-----|-----|--------|-----|-----|-----|
| Year in High School | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Less than 1 acre | | 1 | | | | | 1 | | | | | 1 | | | | | | | | 3 | | | | | 3 | 1 | 1 | 1 |
| 1-2 acres | 1 | | 1 | | 1 | 2 | 2 | 1 | 1 | | | | 2 | | 1 | 2 | 1 | | | | 3 | 7 | 3 | 6 | 5 | 11 | 6 | |
| 2-4 acres | | | | | | | | | | | 1 | | | | | 1 | | 1 | 1 | | 2 | 1 | 1 | 0 | 3 | 3 | | |
| 4-6 acres | | | | | | | | 2 | | | | | 1 | 1 | 1 | | 1 | | | 1 | | | | 3 | 1 | 1 | 2 | |
| 6-8 acres | | | 1 | | | | | | | | 1 | | | | | | | 1 | | | | 1 | 0 | 0 | 2 | 2 | | |
| 8-10 acres | | | 1 | | | | | | | | | | | 2 | | 1 | | | | | | | 0 | 2 | 1 | 1 | | |
| 10-15 acres | | | | | | | | | | | | | 1 | | 1 | | | 1 | | | | 1 | 2 | 0 | 1 | 2 | 3 | |
| 15-20 acres | | | | | | | 1 | | | | | | 1 | | | | | | | 1 | | | 0 | 1 | 2 | 0 | | |
| 20-30 acres | | | | | | 1 | | | | | | | | | | 1 | | 1 | 1 | | 1 | | 0 | 3 | 1 | 1 | | |
| 30-40 acres | | | | | | | | | | | | | | | 1 | | | | | | | 1 | 0 | 0 | 2 | 0 | | |
| 40-50 acres | | | | | | | | | | | | | | | | 1 | | | | | | | 0 | 0 | 0 | 1 | | |
| Totals | 1 | 1 | 3 | | 1 | 3 | 4 | 3 | 1 | 2 | 1 | 3 | 5 | 3 | 7 | 2 | 1 | 2 | 2 | 5 | 4 | 12 | 7 | 13 | 14 | 26 | 20 | |

Table 10. Numbers of Animal Units Owned by Students in Relation to Those on Their Home Farms.

| Animal | 0 | | | | 0-5 | | | | 5-10 | | | | 10-25 | | | | 25-50 | | | | 50-100 | | | | 100-150 | | | | 150-200 | | | | 200-300 | | | | Totals | | | |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-------|-----|-----|-----|-------|-----|-----|-----|--------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|--------|----|----|----|
| Units on Home Farm | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | | | | |
| Year in High School | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Animal | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Units in Projects | 1 | | | | 1 | 1 | 1 | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | 0 | 3 | | | |
| 0-1 | | | | | 1 | 4 | 2 | 7 | 3 | 4 | 1 | 2 | | | | 2 | | 1 | 1 | | | | | | 1 | | | | | | | | | 9 | 3 | 10 | 7 | | | |
| 1-5 | 1 | 1 | | | 1 | 3 | 4 | 6 | 2 | 3 | 4 | 3 | 3 | 2 | 2 | 2 | 5 | 3 | 1 | 1 | 3 | 2 | | | 1 | 2 | | | 1 | | | | | | 18 | 14 | 12 | 12 | | |
| 5-10 | 1 | | | | | | | | | 1 | 2 | | | 1 | 1 | 4 | 1 | | 2 | | 2 | 1 | | | 1 | 1 | | 2 | | 1 | 2 | 1 | 1 | 4 | 10 | 7 | 4 | | | |
| 10-20 | | | | | | | | | | | | | | 2 | 3 | | 1 | | 3 | 3 | 1 | | 1 | 1 | 1 | | | 1 | | | | | | 2 | 7 | 4 | 4 | | | |
| 20-30 | | | | | | | | | | | | | | | | | 1 | | 1 | 1 | | | | | | 1 | | | | 1 | | 1 | 1 | 2 | 1 | 2 | | | | |
| 30-40 | | | | | | | | | | | | | | | | | | | 2 | | | | | | | 1 | | | | | | | | | 2 | 1 | | | | |
| 40-50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50-60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | |
| Totals | 2 | 2 | 0 | 3 | 8 | 7 | 13 | 7 | 7 | 6 | 7 | 3 | 5 | 6 | 6 | 9 | 4 | 5 | 8 | 6 | 3 | 4 | 1 | 2 | 1 | 2 | 0 | 2 | 3 | 3 | 0 | 0 | 2 | 3 | 1 | 2 | 35 | 38 | 36 | 34 |

One animal unit is equivalent to one cow, bull, steer or horse over two years, or two young of the above, or seven sheep or 14 lambs, or five hogs or ten piglets, or 100 hens or 200 chicks or 50 turkeys or 100 poults.

enterprises had no correlation with the sizes of animal projects of the students.

A study of the livestock projects presented in the following table shows that beef cattle were the most popular stock among the students who reported; 38 percent of the projects tabulated were made up of beef cattle. Poultry were the least popular; poultry projects formed 2.9 percent of the total.

The average head forming livestock projects increased as students advanced in grades. This is brought out in Table 12.

The average size of dairy projects of seniors was smaller than those of sophomores and juniors. The author could not find any reasonable explanation for this situation.

Table 11. The Numbers of Students with Various Sizes of Animal Projects.

| Year in High School | Beef Cattle | | | | Dairy Cattle | | | | Swine | | | | Sheep | | | | Poultry | | | | Totals | | | |
|---------------------|-------------|-----|-----|-----|--------------|-----|-----|-----|-------|-----|-----|-----|-------|-----|-----|-----|---------|-----|-----|-----|--------|-----|-----|-----|
| | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th | 1st | 2nd | 3rd | 4th |
| Size of Project | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-2 head | 14 | 8 | 6 | 3 | 4 | 3 | 4 | 4 | 3 | 5 | 3 | 2 | 1 | | | | | | | | 22 | 16 | 13 | 9 |
| 3-4 head | 3 | 2 | 2 | | 2 | 1 | | 4 | 2 | | | 3 | 1 | | | | | | | | 8 | 3 | 2 | 7 |
| 5-6 head | | 4 | 2 | 2 | 1 | | 1 | 1 | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 | | | | 2 | 6 | 5 | 5 |
| 7-8 head | | 4 | 2 | 1 | 1 | 1 | | 2 | 1 | 1 | 1 | 3 | | 1 | 1 | | | 1 | | | 2 | 8 | 4 | 6 |
| 9-10 head | | 2 | 2 | 2 | | | | 1 | 1 | 3 | 2 | | | | | | | | | 1 | 1 | 5 | 4 | 4 |
| 11-15 head | | 1 | | | | 1 | | 1 | 2 | 3 | 2 | 1 | 1 | 1 | | | | | | 1 | 3 | 6 | 2 | 3 |
| 16-20 head | | | | 1 | | 1 | | | 1 | | 1 | | 1 | | | 1 | | | | | 2 | 1 | 1 | 2 |
| 21-30 head | | | | 1 | | | | | 1 | 1 | | 1 | | | 1 | 1 | 1 | | | | 2 | 1 | 1 | 3 |
| 31-40 head | | | 1 | 1 | | | 1 | | | | 1 | 1 | | 1 | 1 | | | | | | 0 | 1 | 4 | 2 |
| 41-50 head | | | | 1 | | | | | 1 | | | | | 1 | | 1 | | | | | 0 | 1 | 1 | 2 |
| 51-60 head | | | | | | | | | | | | | | | | 1 | | | | | 0 | 0 | 0 | 1 |
| Totals | 17 | 21 | 15 | 12 | 8 | 7 | 6 | 13 | 11 | 14 | 12 | 12 | 4 | 5 | 4 | 5 | 2 | 1 | 2 | | 42 | 48 | 37 | 44 |

Table 12. The Average Sizes of Students' Livestock Projects.

| | Freshmen | Sophomores | Juniors | Seniors |
|--------------|-----------|------------|------------|------------|
| Beef Cattle | 2-3 head | 5-6 head | 7-8 head | 11-15 head |
| Dairy Cattle | 3-4 head | 7-8 head | 9-10 head | 5-6 head |
| Swine | 9-10 head | 9-10 head | 11-15 head | 11-15 head |
| Sheep | 9-10 head | 16-20 head | 16-20 head | 30-35 head |

The average sizes of poultry projects were not computed because few poultry projects were reported: two by freshmen, one by a sophomore, and two by seniors.

Supplementary Practices of the Respondents

The supplementary practices reported may be divided into three categories, namely,

1. Practices related to farm shop.
2. Practices related to crop production.
3. Practices related to animal production.

In the following table the farm shop practices are numbered from one to four, crop production practices from five to 11 and animal production practices from 12 to 17.

Table 13. The Numbers of Students Who Performed Various Supplementary Practices.

| | Freshmen | Sophomores | Juniors | Seniors |
|------------------------------|----------|------------|---------|---------|
| 1. Wood work | 4 | | 6 | 3 |
| 2. Metal work | 4 | | | |
| 3. Tractor maintenance | | | 2 | 4 |
| 4. Electrical wiring | | | 3 | 6 |
| 5. Plowing | | 6 | 2 | 4 |
| 6. Harrowing | | 5 | 3 | 1 |
| 7. Planting | | 1 | 2 | 2 |
| 8. Combining | 1 | | 6 | 5 |
| 9. Hay baling | | | 3 | |
| 10. Silage making | | 2 | | 3 |
| 11. Irrigation | 3 | | | |
| 12. Milking | 4 | 2 | | |
| 13. Clipping of needle teeth | | 2 | 4 | 3 |
| 14. Notching ear of stock | | 2 | | |
| 15. Branding stock | 2 | | | |
| 16. Tattooing stock | | | 1 | |
| 17. Vaccination | 6 | | | 4 |

It was observed that the supplementary practices listed by the students who reported were in many instances related to their production projects; students with crop projects generally reported practices bearing on crop production.

Improvement Practices of the Respondents

Building of fences and barns were the improvement practices most popular with the students who reported. This is shown in Table 14.

Table 14. Numbers of Students Who Performed Various Improvement Practices.

| Year in High School | Freshmen | Sophomores | | Juniors | | | Seniors | | | |
|------------------------|----------|------------|-----|---------|-----|-----|---------|-----|-----|-----|
| Practice Was Performed | 1st | 1st | 2nd | 1st | 2nd | 3rd | 1st | 2nd | 3rd | 4th |
| Cementing ditches | 6 | 3 | 2 | | 1 | 2 | 3 | | 5 | 1 |
| Graveling driveway | | | 2 | | | | 2 | | | |
| Building fences | 21 | 14 | | 14 | 6 | | 16 | 13 | | 12 |
| Painting | | | | 1 | 2 | | | | | 1 |
| Light fixture | 2 | | | | | | | | | |
| Plumbing | 1 | 1 | | | | | 8 | 12 | 9 | 9 |
| Building barns | 6 | 15 | 2 | 4 | | | | 1 | | 4 |
| Roofing buildings | 2 | | 1 | | | 3 | | | 2 | |
| Mowing | | 1 | | 2 | 1 | | | | | |
| Planting trees | 2 | | | | | 1 | | | | |

Marketing of Produce by the Respondents

From Table 15 it could be seen that most of the students who reported disposed of the produce from their projects to more than one of the specified purchasers hence the total number of students

in each grade exceeded the total number in each grade who responded to the questionnaire. A majority of the respondents sold their produce to buyers other than cooperatives, contractors or local cannery. These students mainly dealt with individuals or the auction market. Students with dairy projects mainly dealt with contract buyers.

Table 15. The Numbers of Students Who Disposed of the Produce of Their Projects to Various Agents.

| | <u>Freshmen</u> | | <u>Sophomores</u> | | <u>Juniors</u> | | <u>Seniors</u> | |
|------------------------|-----------------|---------|-------------------|---------|----------------|---------|----------------|---------|
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent |
| Cooperative | 2 | 5.1 | 10 | 23.8 | 4 | 10.2 | 7 | 13.7 |
| Contract Buyer | 8 | 20.5 | 14 | 33.3 | 9 | 23.1 | 13 | 25.5 |
| Local Cannery | 4 | 10.2 | 1 | 2.4 | 2 | 5.1 | 5 | 9.8 |
| Buyer not listed above | 25 | 64.2 | 17 | 40.5 | 24 | 61.6 | 26 | 51.0 |

Occupational Preferences of the Respondents

In every grade a majority of the students reporting indicated that they would continue their studies in college after they have graduated from high school. Except in the case of seniors, the percentages of students who intend to become established in farming were greater than those who intend to pursue non-farming occupations. These preferences are shown in Table 16.

The students who indicated they would establish careers in farming after graduation come from homes with acreages varying

Table 16. The Responses of Students Relative to Occupations They Intend to Pursue.

| | Freshmen | | Sophomores | | Juniors | | Seniors | | All Grades | |
|-----------------|----------|---------|------------|---------|---------|---------|---------|---------|------------|---------|
| | No. | Percent | No. | Percent | No. | Percent | No. | Percent | No. | Percent |
| Farm | 7 | 17.0 | 12 | 29.2 | 7 | 18.9 | 9 | 20.5 | 35 | 21.4 |
| College | 30 | 73.2 | 25 | 61.0 | 25 | 67.6 | 23 | 52.3 | 103 | 63.3 |
| Work | 4 | 9.8 | 4 | 9.8 | 5 | 13.5 | 12 | 27.2 | 25 | 15.3 |
| Total Responses | 41 | 100.0 | 41 | 100.0 | 37 | 100.0 | 44 | 100.0 | 163 | 100.0 |

In some cases students gave more than one response; hence the totals of responses, on which the percentages in each of the four grades are based, exceed the numbers of students who reported in the four grades.

from 5 to 1000. Their projects were of diverse sizes and qualities and no correlation could be found between the scope and quality of students' projects and their decision to farm after graduation.

The total percentage of students who indicated they would farm after graduation was 21.4. This value is higher than that reported by Fanzier (11) who found out that 14.4 percent of 1926 to 1952 graduates of vocational agriculture from Adrian High School, Georgia, were actually farming. The value of 21.4 percent was made up of boys who were in school and there is the probability that some of them, especially those in the lower grades, would by the time they graduate, change their occupational preferences.

The questionnaire study has facilitated the assembling of specific data on supervised farming programs. It has helped us, among other things, to know the background of the students surveyed, their ages, the skills they have acquired and how they financed their

programs. This information would be highly valuable in drawing up supervised programs for public schools in Ghana.

CHAPTER V

PROPOSED SUPERVISED FARMING PROGRAMS FOR
PUBLIC SCHOOLS IN GHANA

It is only with a strong and efficient agriculture that an economically developing country, such as Ghana, can establish a modern economy. When the educated citizens of a country regard farming as a lowly way of life and those who farm as victims of circumstances, then it is high time the educational system was molded to develop in the educated understandings, attitudes, and ideals favorable to farming. Such an orientation is greatly needed in Ghana.

Education in agriculture in Ghana can help produce rural workers and scientists who understand rural life and will help improve rural communities. It will also orient some of the educated to establish careers in farming and form a vital core of progressive farmers who will apply modern scientific principles to farming.

Development of skills and understanding favorable to farming is greatly facilitated when students study agriculture in situations that are true to life. Since supervised farming programs present true-to-life situations, it is proposed, with the knowledge gathered on such programs in the United States, to draw up supervised farming programs which should form the basis of agricultural education in

public schools in Ghana.

A broad supervised farming program applicable to the Farm Institutes, the Agricultural Training Centers and the Secondary Schools will be proposed. It will later be shown how this program can be adapted to each of the three types of institutions.

Supervised farming programs for Ghana may be divided into the following five phases:

1. Exploratory Projects
2. Production Projects
3. Cooperative Projects
4. Community Projects
5. Supplementary Skills

Each of the phases listed will be discussed in turn.

Exploratory Projects

Exploratory projects may be defined as projects organized in various fields of agriculture to enable the student to select production projects ecologically and economically suited to the district in which he intends to work and which are in his natural line of interest. When these projects are organized at the threshold of a systematic course of instruction in agriculture, they will give the student a broad view of the diverse facets of agriculture. Through exploratory projects and continuous guidance from the instructor the student

will have the opportunity to find out where his interest really lies and which type of farming or agricultural services he should enter after school.

Exploratory projects, it is recommended, should be pursued for a maximum period of six months. A student may spend a maximum of six weeks on a project; some students may participate in two projects in six weeks. An industrious student could in a six month period have the opportunity to explore six projects.

Students should not be expected to develop competence in any skill associated with projects to which they have been assigned. They should, however, be encouraged to "get the feel" of the spheres of agriculture they explore.

If the interest of the student is to be maintained during the period he is being introduced to a series of agricultural activities, then he must be constantly motivated. Developing of the pupil's understanding relative to the objectives of exploratory projects, reviewing of opportunities in agriculture, and field trips are some of the factors that can be used to kindle the student's interest.

Classroom instructions should be organized around exploratory projects, if the latter are to have any educational value. Instructions in production and marketing problems involved in various exploratory projects will enable the student to get a broad perspective

of the challenges and opportunities in different phases of agriculture. The experiences of the pupil will be enriched if he is required to collect marketing data relating to his project and to present them to the class.

Assignment of exploratory projects to students must be recorded lest a student is made to perform one project twice or more. It would be helpful to the instructor if he could maintain a list of exploratory projects students should perform within six months. He could then go through the list continuously in selecting projects for his students.

Exploratory projects may be organized on approved farms or on production projects which are broad in scope. Students may be apprenticed to skilled operators on the approved farms or to senior students on production projects. They should be required to maintain records on the production projects in which they become engaged. The records should contain production data which will be of value in assessing the economic worthiness of the relevant type of agriculture; hours of work, cost of feed or fertilizers are some of the important items on which records must be maintained.

The following is an example of an exploratory project in which a student could become involved:

Incubation of eggs. The student should participate in the

selection of eggs, cleaning and disinfection of the incubator. He should help in setting the eggs and in operating the incubator throughout the period of incubation. The student should help candle the eggs and transfer the chicks, when they arrive, to the brooder.

On this project the student should maintain a record on (1) the number of eggs set; (2) the number of eggs hatched; and (3) time spent on the project.

As a supplement to the record should be a short account of his activities on the project and his likes and dislikes.

The exploratory project described should take a student less than four weeks to complete.

Production Projects

Production projects are undertakings organized in the field of agriculture in which the student is interested and wishes to become established. They must be adaptable to the conditions of the community the student wishes to live in after graduation and must be carried through at least one production cycle.

A knowledge of the pattern of farming in the home communities of the students is important if students are to select suitable projects. Students should be encouraged to interview resource people or conduct surveys to find out the major types of agriculture in their

communities. It is only after such knowledge has been acquired and the pupil has executed a series of exploratory projects, that production projects should be established.

The primary objective in conducting production projects should be to acquire skills needed for proficiency in the type of farming that interests the student or is related to the agricultural occupation he intends to pursue.

Managerial decisions on the project should be the responsibility of the student. The instructor's role should be supervisory and he should guide the student towards sound decisions.

In institutions where facilities are liberal, a pupil should be required to operate at least one project. This will give him unfettered responsibility. Where resources are limited, however, healthy partnerships should be encouraged among small groups of students. If all students forming a partnership are to learn from their projects then they should be encouraged to participate actively in all operations, mental and physical, connected with their projects.

Before production projects are embarked upon project plans should be written out. These plans should include:

1. The name and scope of the project.
2. Location of the project.
3. Production goals to be reached at the end of the current production cycle.

4. Reasons for selecting the project.
5. How and where to secure animals, seeds or crops.
6. How and where to secure feed or fertilizers.
7. When to start the project.
8. Improved practices to use.
9. How to market the produce.
10. Probable returns from the project.
11. Use of the returns from the project.

While students are carrying out their production projects, they should be encouraged to keep records. It should be remembered that production records are essential if weaknesses are to be eliminated and production goals attained. The form in which records are kept influences greatly the interest of students in maintaining records. Simple records are easy to keep and students will enjoy record keeping if instructors devise simple forms of records suitable for specific projects.

The following are examples of production projects that students should be able to manage:

1. A flock of 100 pullets.
2. A gilt and a litter of pigs.
3. A two-acre vegetable farm.
4. A three-acre farm made up of one acre of peanuts, one acre of corn and one acre of tobacco.

Cooperative Projects

These are projects designed to help students establish and expand their production projects and involve all the students in a class or school which is offering agriculture. Cooperative projects should lead to the provision of foundation animals, seeds and fertilizers and the marketing of produce from students' production projects.

If cooperative projects are to be carried out successfully then students should form an association with committees responsible for specific projects. A committee could be elected to manage the provision of foundation animals, another for bulk purchase and distribution of feeds. Such an association should have a well defined constitution if students are to work harmoniously and learn from group activities.

The education of students will be enriched if they are entrusted with the writing up of the constitution under the guidance of the instructor. The following outline may serve as a source of ideas:

1. The name of the association.
2. The object or objectives.
3. Membership. Under this heading may be defined people who qualify for membership. Membership could be broadened to include interested graduates.

4. Dues.
5. Voting rights of members.
6. List of officers
7. Duties of officers.
8. How officers may be elected.
9. When or how often meetings could be held.
10. Committees that could be formed within the association. Committees could be elected for the following projects: (a) Poultry Distribution; (b) Swine Distribution; (c) Purchase and distribution of feeds; (d) Purchase and distribution of seeds; and (e) Marketing. The duties and obligations of all committees should be clearly defined in the constitution.
11. Who should audit the books of the association. It is advisable to include the instruction on any auditing group that is appointed.
12. How the constitution should be amended.
13. Rules and by-laws.

Committees could, with very little cost to students or without draining the resources of the school, provide students with foundation animals by adapting to Ghanaian conditions a fairly common method of financing projects in the United States. This method is generally referred to as a "chain".

In a chain an association of students of vocational agriculture may purchase an animal, for instance a gilt, and place it on contract with a member. This student agrees to turn back to the

association a specified number of gilts, maybe one or two, at a stated age from the first litter. After the student has fulfilled the terms of the contract the original gilt and the remaining litter become his own. The gilts received from the first litter will be placed with other students on the same contract terms. Gilts received from these students will be placed with others and so the chain continues.

In Ghana where poultry production is a popular enterprise a committee responsible for the organization of a poultry chain will render a highly invaluable service to its members. A poultry committee could operate an incubator and place day-old chicks with its members. The recipients could be required to turn back to the committee the same number of hatching eggs as they received. To this could be added a small number of eggs to make up for probable losses during incubation and the cost of paraffin or electricity used in incubation.

Swine chains with some modifications on the lines proposed for poultry could be established. Sheep and cattle chains have great limitations because of the low reproductive rates of these species.

If a chain committee is to function successfully, it should give due consideration to the following points:

1. Qualifications of students receiving stock.
2. Agreement concerning management of stock placed with students. The committee should approve the sires used on

the chain-owned stock and it should also ensure that sound management principles are employed by recipients. Students should be required to enter into written agreements to ensure the above.

3. Procedure concerning sale of surplus stock owned by the committee.
4. Delegation of responsibility.
5. Policies concerning students who moved from the school or community before or after earning their stock.

It is proposed that committees should be organized for cooperative marketing projects. Such committees should help dispose of the produce from students projects and pay them after deducting small fees to cover overhead.

The purchasing of feeds and fertilizers should be entrusted to students. This will offer the pupils the opportunity to participate in business transactions. Compounding and distribution of feeds and fertilizers will provide ample training for students contemplating or becoming salesmen of agricultural supplies.

The educational values of cooperative projects should not be overlooked. Cooperative projects would provide true-to-life problems common to many of the students. Such problems should form important subjects for group instruction. They would also provide students with experiences in cooperative effort. Cooperative marketing projects would afford much invaluable training in marketing, a vital aspect of a modern economy. The accounts and records of such

committees should form useful materials for instruction. The formation of committees should provide many students the opportunity to develop their potentialities in group discussions and deliberations.

Community Projects

These are undertakings which improve the community. They may have the objective of increasing the efficiency of agriculture in a community or improving the living conditions in the community. Community projects are necessary if students are to offer not only examples in good farming but also leadership in rural communities.

Community projects, it is recommended, should be operated by groups of students and also on an individual basis. Group projects should help develop confidence in the diffident pupil. After a series of group projects students should be required to select individual projects which must meet the approval of the instructor.

Development of a health program for poultry in a community could form an enriching group project. Students could be required to vaccinate poultry in the community against New Castle disease or conduct a survey to find out factors impairing the health of stock in a community and the possible ways to eradicate these factors. Draining of stagnant water to arrest mosquito breeding and the planting of shade trees are examples of community projects students should

undertake.

Community projects should provide ample training opportunities for prospective rural workers. They should be a potent means by which a school could help provide the needs of its community.

Supplementary Skills

These are skills students should acquire in addition to those they develop through their production projects. Although students may be expected to establish careers connected with their production projects, acquisition of supplementary skills should help make their training opportunities so flexible that in later years they will be able to establish in spheres of agriculture different from their production projects.

There are some crops which take so long a time to come into production that students may not within their period in school manage important phases of these crops if they, the students, were to initiate their establishment. Cacao, coffee and the oil palm (Elaeis guineensis) which take more than three years to come into production are examples of such crops. Cattle are too expensive and their reproductive rates so low that very few Ghanaian students can afford to own a cow or a bull. However, on a school farm where perennial crops or expensive stock and equipment are located, students can

acquire some supplementary skills.

It is proposed that to acquire supplementary skills, students undertake work on school farms or on other approved farms. Students should be required to write out their objectives in conducting an assigned work. On completion of the work, they should submit a report on it. Such a report should contain a systematic description of the skills acquired, the problems encountered and how they were solved.

Students should be assigned to work in order to acquire specific skills in various areas of production. They should be encouraged to develop competence in supplementary skills. The compilation by the instructor of skills that students should acquire will facilitate the assignment of work to learners.

The following is a list of some of the skills that students should be encouraged to acquire:

Skills in Animal Production

1. Vaccination
2. Incubation
3. Brooding of chicks
4. Assistance during parturition
5. Casting of animals
6. Dehorning
7. Castration
8. Dipping

Skills in Crop Production

1. Seedbed preparation
2. Germination test
3. Determination of the purity of seeds
4. Fertilizer placement
5. Application of insecticides
6. Fermentation and drying of cacao beans
7. Pruning of coffee bushes
8. Grafting and budding

Skills in Farm Shop

1. The setting of plows
2. Tractor driving
3. Plowing
4. Simple tractor maintenance operations such as the changing of engine oil, cleaning of a carburetor and the changing of a fan belt.
5. Welding of a plowshare
6. Inter-row cultivation
7. Maintenance of power-operated sprayers
8. Repair of irrigation pumps.

The five phases of the proposed farming programs should receive varying emphasis in the three kinds of institutions, namely the Farm Institutes, the Agricultural Training Centers and the secondary schools. It is therefore appropriate to discuss how supervised farming programs could operate in these schools.

Operation of Supervised Farming Programs in the Farm Institutes

We may reiterate at this stage that students enrolled in the Farm Institutes have elected to establish careers in farming. The supervised farming programs in which they become involved should therefore help prepare them specifically for farming.

To find out where their interests in farming lie, students should carry out exploratory projects. It is proposed that facilities at the agricultural experiment stations on which the Farm Institutes are located as well as the farms of the institutes should be utilized to provide projects for students. This should enable the pupils to carry out many projects during a relatively short period before they embark on their productive projects.

Due emphasis should be placed on production projects and where facilities are liberal students should be encouraged to operate more than one production project. After the two-year training period, the learners should be helped to transfer their production projects to the areas in which they intend to farm; poultry, pigs, seeds, seedlings and plantings like banana suckers can, with care, be transferred without many losses. These graduates should then enroll in two-year non-residential courses which should help them expand their production projects in their home communities.

The two-year non-residential training will also widen the scope of cooperative projects and enable many students to receive stock through cooperative chains. It is recommended that cooperative committees should be permitted to use stock on the farms of the institutes in furnishing students with foundation animals. Such a procedure will enable many enterprising students to complete their training with economic units of stock. They could then establish their own farms without making fruitless efforts at raising loans from sparsely available lending institutions.

While students are in residence efforts should be made for them to acquire as many supplementary skills as possible so that little emphasis need be placed on the acquisition of supplementary skills during the two-year non-residential training period. Facilities on the experimental stations could again be used to help students acquire the needed skills.

Community projects should receive due emphasis. The villages surrounding the Farm Institutes should provide ample scope for community projects.

Operation of Supervised Farming Programs in the Agricultural Training Centers

In the training centers a comprehensive supervised farming program should have four phases, namely,

1. Production projects
2. Cooperative projects
3. Community projects
4. Supplementary skills

Students trained in these schools should have a broad background in agriculture to enable them to work efficiently as extension officers or research assistants. They need not carry out exploratory projects since their special interests have to be subordinated in order to give them a general grounding in agriculture. They should therefore be encouraged to undertake, apart from their animal production projects, crop production projects with short production cycles. Crops like peanuts, corn, vegetables and tobacco with production cycles of about three months could be used in such projects. This will give students the opportunity of managing many projects during the two-year training period. Annual crops such as yams (Dioscorea spp.) should be raised in the school farms where students can work on them to acquire supplementary skills.

The guidance given for the operation of cooperative projects, community projects and for the acquisition of supplementary skills in the Farm Institutes should be helpful in the Agricultural Training Centers.

Operation of Supervised Farming Programs in Secondary Schools

Supervised farming programs will have limited application in secondary schools in urban areas. In the suburban and rural districts, however, farming programs with sufficient scopes could be developed in secondary schools to help provide a good background for students interested in pursuing degrees in agriculture, in becoming rural workers, or in seeking careers in farming.

It is proposed that secondary schools in suburban and rural areas should establish school farms, as was done in Achimola School, to provide students with exploratory projects. Schools in the vicinities of agricultural experiment stations could make ample use of facilities on these stations to complement opportunities on their own farms.

Production projects, it is recommended, should be broad in scope and students should be encouraged to cultivate annuals as well as seasonal crops. Non-residential students in schools in the rural areas could be helped to establish their production projects on communal lands. Instructors who maintain good public relations with the school community should have little difficulty in soliciting the help of local chiefs in negotiating for farming land for his pupils.

Cooperative projects in secondary schools should have a very

wide scope since the students will normally be enrolled in these schools for four years. The opportunities for providing many students with the benefits of cooperative projects will also be widened. Constant vigilance has to be maintained, however, if a high rate of inbreeding is to be avoided in the provision of foundation stock through livestock chain.

Students interested in social service should find ample training opportunities in community projects. In suburban secondary schools many of the community projects are likely to be non-agricultural in nature. In rural areas, however, instructors should endeavor to maintain an even balance of agricultural and non-agricultural projects. The importance of community projects in improving public relations could not be overemphasized. Instructors who encourage students to initiate worthwhile projects in the school community, could have ample facilities for non-residential students to establish farms.

Private farms with approved standards in rural areas should be used to help students to acquire supplementary skills. Facilities on such farms as well as those on the school farms and on neighboring agricultural stations should be fully utilized.

The proposed supervised farming programs could form the basis of agricultural education in public schools in Ghana; they could

provide ample and diverse opportunities for practical training as well as problems for classroom instruction. It is hoped that through agricultural education attitudes favorable to agriculture could be created in Ghanaians.

CHAPTER VI

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study was undertaken to find out the concepts and practices of supervised farming programs in high schools in the United States and, by adapting these concepts and practices to Ghanaian conditions, to draw up supervised farming programs for public schools in Ghana. It is hoped that supervised farming programs, as a basis of agricultural education in public schools in Ghana, will help students to develop favorable attitudes to agriculture in order to seek employment in farming or in non-farming agricultural occupations. Such a change in attitudes of the educated Ghanaian will contribute immensely in increasing efficiency in agriculture in Ghana and lead to the production of enough foodstuffs for the population.

Information on supervised farming programs in high schools in the United States was gathered by studying the literature and by sending out a questionnaire to ten high schools in Oregon.

It was found out that supervised farming programs of students form a cross-section of the farming in the community and the basis from which evolve common problems for classroom instruction. Supervised farming programs in high schools in the United States have five aspects, namely, Ownership or Production projects,

supervised placement, Improvement projects, group or cooperative activities and supplementary skills. From the schools surveyed in Oregon it was found that most students used money they earned by working in financing their projects and that through farming programs students have the opportunity to put into practice what they learn in school and to acquire the capital and skill needed for proficiency in farming or in non-farming agricultural enterprises.

Supervised farming programs were drawn up for Farm Institutes, Agricultural Training Centers and Secondary Schools in Ghana.

This program is made up of the following phases:

1. Exploratory projects in which students should become involved in order to select projects in the field of agriculture in which they are interested.
2. Production projects which are in the area of farming or are related to the non-farming agricultural occupation in which the student wishes to become established.
3. Cooperative projects. These are group projects primarily designed to help the student establish and operate his production project.
4. Community projects which should contribute to the general welfare of the school community.
5. Supplementary skills. These are skills other than those acquired in production projects and should enable the student to establish efficiently in many agricultural occupations.

Guidelines for the operation of the proposed farming programs in the Farm Institutes, Agricultural Training Centers and in the Secondary Schools were given.

Conclusions

From this study the author arrived at the following conclusions on the concepts and practices of supervised farming programs in the United States:

1. Supervised farming programs form the basis of vocational agriculture in high schools in the United States.
2. Supervised farming programs of students are correlated with agriculture in the community.
3. Students have complete financial and managerial responsibility on their farming programs.
4. Supervised farming programs provide many motivating factors for students studying agriculture.

Recommendations

The author recommends the following:

1. That a program of agricultural education, with the proposed supervised farming programs as a basis, be drawn up and initiated in public schools in Ghana.
2. That agricultural education which should be exploratory in nature be offered in middle schools in Ghana.
3. That graduates with degrees in agriculture be trained to teach agriculture in Secondary Schools in Ghana.
4. That graduates from secondary schools be given further training to enable them to teach science and exploratory agriculture in middle schools in Ghana, and
5. That further study be made of methods and programs which could be adapted to Ghana to provide impetus to the improvement of the agricultural economy.

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APPENDIX

Department of Agricultural Education
Extension Hall
Oregon State University
Corvallis, Oregon
April 19, 1962

The enclosed questionnaire is from Thomas Biney, a Graduate Student from Ghana who is working in our department. Thomas is interested in our supervised farming programs and is gathering information which will enable him to draw up a similar program for his country. Please give him your full cooperation by having the questionnaire filled in and mailed back in the self-addressed stamped envelope. Thomas's program would be expedited if you could send back the completed questionnaire by May 7.

Kindly select in each class four students who have supervised farming programs of varying size and scope and have each student fill in a copy of the questionnaire. This would make a total of 16 completed copies of the questionnaire to be returned.

Yours sincerely,

(Henry TenPas)

Head of Department

(Thomas Biney)

SUPERVISED FARMING PROGRAM INFORMATION SHEET

- A. (1) _____ School.
 (2) Class in School: Freshman _____ Junior _____
 Sophomore _____ Senior _____
 (3) Age: _____ Years.

B. INFORMATION ON HOME FARM

- (1) The size of my home farm is _____ acres.
 (2) The following are the major enterprises on my home farm:

CROPS

LIVESTOCK

| | | | |
|-------------------------|-------------|------------------|------------|
| Vegetable Crops | _____ acres | Beef Cattle | _____ head |
| Fruit Trees | _____ acres | Dairy Cattle | _____ head |
| Nut Trees | _____ acres | Swine | _____ head |
| Small Grains | _____ acres | Sheep | _____ head |
| Seed Crops | _____ acres | Poultry | _____ head |
| Others (please specify) | _____ acres | Others | _____ head |
| _____ | _____ acres | (please specify) | _____ head |
| _____ | _____ acres | _____ | _____ head |
| _____ | _____ acres | _____ | _____ head |

C. INFORMATION ON MY SUPERVISED FARMING PROGRAM

- (1) Kindly fill in the box below for all the years you have been developing your Supervised Farming Program.

| | Number of Animals or Acreages of Crops Each Year | | | |
|------------------|--------------------------------------------------|---------------|-------------|-------------|
| | Freshman Yr. | Sophomore Yr. | Junior Yr. | Senior Yr. |
| Vegetable Crops | _____ acres | _____ acres | _____ acres | _____ acres |
| Fruit Trees | _____ " | _____ " | _____ " | _____ " |
| Nut Trees | _____ " | _____ " | _____ " | _____ " |
| Small Grains | _____ " | _____ " | _____ " | _____ " |
| Seed Crops | _____ " | _____ " | _____ " | _____ " |
| Others | _____ " | _____ " | _____ " | _____ " |
| (please specify) | _____ " | _____ " | _____ " | _____ " |
| Beef Cattle | _____ head | _____ head | _____ head | _____ head |
| Dairy Cattle | _____ " | _____ " | _____ " | _____ " |
| Swine | _____ " | _____ " | _____ " | _____ " |
| Sheep | _____ " | _____ " | _____ " | _____ " |
| Poultry | _____ " | _____ " | _____ " | _____ " |

(2) Kindly list the improvement projects you have performed since you enrolled in vocational agriculture and briefly describe the scope of each.

(a) Freshman Year.

(b) Sophomore Year.

(c) Junior Year.

(d) Senior Year.

(3) Kindly check the appropriate column to indicate whether or not you have acquired the skills listed. If you have acquired a particular skill, please check the year in which you acquired it.

| | | | Fr. Yr. | Soph. Yr. | Jr. Yr. | Sr. Yr. |
|----------------------------|-----|----|---------|-----------|---------|---------|
| (a) Tractor driving | Yes | No | | | | |
| (b) Dehorning | Yes | No | | | | |
| (c) Castration | Yes | No | | | | |
| (d) Use of tap & die | Yes | No | | | | |
| (e) ARC welding | | | | | | |
| Fillet | Yes | No | | | | |
| Butt | Yes | No | | | | |
| Vertical | Yes | No | | | | |
| Horizontal | Yes | No | | | | |
| Overhead | Yes | No | | | | |
| (f) Oxy-Acetylene welding: | | | | | | |
| Fillet | Yes | No | | | | |
| Butt | Yes | No | | | | |
| Vertical | Yes | No | | | | |
| Horizontal | Yes | No | | | | |
| (g) Electrical wiring | Yes | No | | | | |
| (h) Shearing | Yes | No | | | | |
| (i) Pruning | Yes | No | | | | |

(4) Kindly list any supplementary farm practices that were not included in item 3 above.

(a) _____ (b) _____ (c) _____

(d) _____ (e) _____ (f) _____

(g) _____ (h) _____ (i) _____

(5) I financed my supervised farming program (check as many as apply)

(a) by borrowing from a bank _____

(b) by borrowing from my father _____

(c) through chapter chains _____

(d) through money I earned by working _____

(e) by other means _____ Please specify: a. _____

b. _____

c. _____

(6) I sell the produce from my farm to:

(a) a cooperative _____

(b) a contract buyer _____

(c) a local cannery _____

(d) buyers not listed above _____

(7) After graduation I intend to:

(a) farm _____

(b) go to college _____ Please specify college _____

(c) work _____ Kindly specify nature of work _____