A BASIS FOR IMPROVING TECHNICAL INSTRUCTION FOR PERSONS PREPARING TO TEACH GENERAL AGRICULTURE IN MICHIGAN

Thesis for Degree of Ed. D.

LEE O. BAKER

1959

MICHIGAN STATE UNIVERSITY

This is to certify that the

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A Basis for Improving Technical Instruction for Persons Preparing to Teach General Agriculture in Michigan

presented by

Lee O. Baker

has been accepted towards fulfillment
of the requirements for

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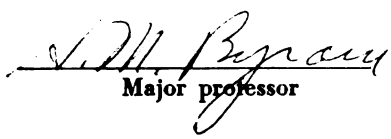

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BY

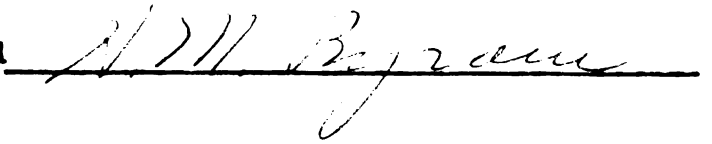
Lee Odin Baker

AN ABSTRACT

Submitted to the School for Advanced Graduate Studies of Michigan State University of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of DOCTOR OF EDUCATION

Department of Teacher Education

1959

Approved 

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A BASIS FOR IMPROVING TECHNICAL INSTRUCTION FOR PERSONS PREPARING TO TEACH GENERAL AGRICULTURE IN MICHIGAN

ABSTRACT

BAKER, LEE O. A Basis for Improving Technical Instruction for Persons Preparing to Teach General Agriculture in Michigan. Thesis, Ed. D., 1959, 156 Pp. Michigan State University, East Lansing, Michigan.

Purpose--(1) To discover a possible basis for improving the technical training programs of present and prospective teachers of general agriculture, and (2) to aid in the planning of courses for general agriculture at the secondary level by providing information on what is believed would constitute a sound basis upon which to develop such a curriculum.

Method--Check lists were sent to 87 schools known, or thought to be teaching general agriculture in Michigan in the 1957-58 school year. The check lists were completed by the teachers of general agriculture. Seventy-two, or 82.7 per cent were returned. Sixteen of the 72 returned were from schools which were not offering general agriculture at this time.

Personal interviews were conducted with 50 high school principals and 50 people engaged in occupations in agriculture in southern Michigan who were chosen at random.

Findings and interpretations--Teachers of general agriculture and people engaged in occupations in agri-

Lee O. Baker

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culture differed significantly at the $P_{.01}$ level of confidence in their judgments of the importance to the teacher of instruction in various areas of study. The teachers considered farm crops more important than did the people in agriculture. On the contrary, people in agriculture considered agricultural economics, agricultural marketing, and farm management more important than did the teachers.

The Spearman rank order correlation between the two above mentioned groups is a positive .61 which is highly significant at the $P_{.01}$ level of confidence on the values of various areas of related instruction to the teacher. Biology, botany, chemistry and mathematics ranked high with both groups.

Teachers of general agriculture, high school principals, and people in agriculture all selected and ranked five suggested topics which they thought should be included in a course in general agriculture at the secondary level. A tabulation of the rankings of all three groups showed the ten most important topics, in order, to be: (1) Soil: its importance and conservation, (2) The important farm animals and how they are grown and marketed, (3) Interdependence of farm and city people, (4) The important farm crops and how they are grown and marketed, (5) The land and agriculture of this community,

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(6) The farmer's economic and political problems, (7) The occupations in and related to agriculture, (8) Growing a home vegetable and flower garden, (9) Farmer organizations: their purposes, functions and problems, and (10) Forests: their importance and conservation.

A large majority of high school principals and people in agriculture recommended that most or all schools should offer more agriculture, and the most desirable relationship between general and vocational agriculture in the high school curriculum would be to offer both for appropriate students.

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ACKNOWLEDGMENT

The writer wishes to express his sincere appreciation to the many persons who have given assistance in the conduct of this study.

The writer wishes particularly to express his appreciation and gratitude to his adviser, Dr. Harold M. Byram, Agricultural Education Service, Department of Teacher Education; to Dr. H. P. Sweany, Agricultural Education Service, Department of Teacher Education, and to Dr. F. J. Vescolani, and Dr. H. D. Foth, members of his committee for their suggestions and encouragement.

Much credit is also due the writer's wife, Myrtle, whose understanding and encouragement contributed materially to the completion of this study.

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CHAPTER I

THE PROBLEM AND ITS SETTING

Statement Of Problem

The hypothesis underlying this study is, "It is possible to find a basis for the training of teachers of general agriculture which may be superior to that presently in existence, from information obtained from teachers of general agriculture, people engaged in occupations in agriculture, and high school principals."

Thus, this study was undertaken to determine which areas of technical agriculture are needed in a curriculum for preparing teachers of general agriculture, and the related areas of instruction which would contribute to such technical training. Another question for which an answer was sought was: "What areas of agriculture are believed to be of greatest importance and should be included in instruction at the high school level by teachers of general agriculture, people in agriculture, and high school principals?"

Assumptions

This study was undertaken with a number of assumptions in mind. These assumptions were:

1. That there is a need for lay people as well as

persons associated with agriculture to have a better understanding of agriculture's place in our total economy.

2. That courses in general agriculture will provide an opportunity for a maximum number of persons to obtain instruction in agriculture.

3. That a great number of occupational opportunities exist in agriculture and agriculturally related fields.

4. That valuable sources of information concerning the needs of teachers of general agriculture are: (1) present teachers of general agriculture in Michigan, (2) people in agriculture, and (3) high school principals.

5. That the people in agriculture and high school principals interviewed are representative of all high school principals and people in agriculture in the state of Michigan.

6. That results of this study would be an aid in designing training programs for prospective teachers of general agriculture.

Purpose of Study

The primary purpose of this study is:

1. To discover a basis for improving the technical training programs of present and prospective teachers of general agriculture.

2. To aid in the planning of courses for general agriculture at the high school level by providing information on what is believed would constitute a sound basis upon which to develop such a curriculum.

Need for Study

Although the total population of the United States

has steadily increased from 1933 to 1957, the farm population has decreased from 25.8 per cent of the total population in 1933 till it now is only 12 per cent in 1957.[1] Even though there were substantial increases in mouths to feed and bodies to clothe, a reduction in farm population has been made possible by mechanization and other advances in agriculture. As a result of these changes a substantial increase in farm output has occurred with less human effort required to produce it. Obviously then, while the number of persons on farms is declining, agriculture's place in our national economy is as important as ever, if not more so.

Certain changes are obviously resulting as increasing numbers of the farm population move to the city, or become part-time farmers and work part-time or full time in the cities. Areas which were once rural are becoming "rurbanized" or urbanized to a large extent as many city residents move out into the country to build new homes. Thus, many high schools which were at one time definitely rural, are changing with the times and find a smaller and smaller number of their students coming from the farm. This in turn means that many schools find less demand for vocational agriculture programs in their schools. An increasing number of pupils, however, want to study agriculture, and many

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[1] U. S. Department of Commerce, Statistical Abstract of the U. S. 1958, 79th Annual Edition, U. S. Government Printing Office, Washington 25, D. C. p. 611.

school boards and administrators take the attitude that no one should be denied the right. The result is that classes in vocational agriculture frequently contain some boys (non-farm) who are misplaced when enrolled in vocational agriculture, and that provision should be made for them and others, that is, girls, in general agriculture.

Thompson[2] in a recent study made in the state of California, found that of a total of 3,466 persons graduating from agriculture training at the high school, junior college and four-year college levels, only 900, or 26 per cent, are expected to enter directly into farming. It should be pointed out also, that of this total enrollment, high school students accounted for the greatest share, being 2,450 of the total, or 71 per cent.

Thompson continued on to say:

> Leaders in the field of agricultural education, as well as agricultural business concerns, should initiate a vigorous program to alert parents, present and potential students, guidance counselors, and others of employment opportunities in agriculture. Accurate information should be disseminated on placement opportunities and entrance requirements for the many jobs in agriculture.

Regarding the need for instruction in general agriculture in the secondary schools, Thompson reported:

> There is evidence that the California program in agriculture in the high school, which for many

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[2]Thompson, Orville E., A Study of Selected Problems of Agricultural Education in the Secondary Schools of California. Report to the Agricultural Section of the American Vocational Association, August 6, 1957, Department of Education, University of California, p. 4.

> years was primarily vocational in nature, is today changing to a combination of the vocational and general program with a rather substantial increase in the latter during the past decade. The exact nature of this increase is not known, however, the 25 schools surveyed reported a 25 per cent increase in students in general agricultural classes during the past three years. Figures compiled by the Bureau of Agricultural Education show that nearly 9,000 students received instruction in general agriculture during the 1955-1956 school year. This includes about 4,000 junior high school students in the Los Angeles City Schools.
>
> It was found that general agriculture had a tendency to become established as the number of students who could qualify for the vocational programs decreased. It complements the vocational course in many schools.

General agriculture courses would be non-vocational in nature, and as such should contribute as much to the general education of the student as the courses with which it competes. If the general agriculture course is properly planned it should easily fit into the curriculum of the secondary schools.

It is believed in California that courses in general agriculture should follow a common core of subject matter and activities, and as here in Michigan, local adaptation is necessary, but that the general objectives of courses in general agriculture throughout the state should be made more uniform. Thus, a definite need exists to determine the basis for this course.

Just what are the objectives of general agriculture and vocational agriculture and how do they differ? According to The National Vocational Education (Smith-Hughes) Act,

(Public Law No. 347, Sixty-fourth Congress--S. 703) Section 10, the objective of agriculture education is stated in part as follows:

> .....That the controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and be designated to meet the needs of persons over fourteen years of age who have entered upon, or who are preparing to enter upon, the work of the farm or of the farm home.

Byram[3] clearly stated the difference between vocational and general agriculture in the following manner:

> Vocational agriculture stresses production, but students who do not intend to enter farming are interested from a general information standpoint. General agriculture should be taught or directed to the understanding stage, not to the doing stage which characterizes vocational agriculture.

The stated differences in objectives of general versus vocational agriculture leads us to the problems then of what areas of technical training should be included in a curriculum preparing teachers of general agriculture and in addition, what related areas are pertinent in their training to best prepare them for their job?

How pressing is the need for persons with agricultural training? An excerpt from a recently completed study points this out in a very vivid fashion.

> Of 65 million employed Americans, 26 million work somewhere in agriculture--8 million on farms, 7 million produce for and service farmers, and 11 million process and distribute farm products. In addition, a half million scientists directly serve

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[3]Byram, Harold M., "Teaching General Agriculture." Agriculture Education Magazine, November 1933, p. 69.

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> About 40 per cent of all jobs are in agriculture, jobs important to everyone, jobs with futures, jobs with financial and personal rewards. You could actually count more than 500 distinct occupations in the eight major fields of agriculture. Recent surveys indicate that these eight fields each year could employ about 15,000 new college graduates, if 15,000 with agriculture college training were available.
>
> At present, our land-grant Agricultural colleges graduate about 7,000 young men and women each year in Agricultural sciences. That means 7,000 trained persons to fill 15,000 jobs, or about two futures for every graduate.[4]

Instruction in general agriculture at the high school level could orient students by giving them a coordinated picture of the place of agriculture in the national economy. It may also help to serve as a basis for recruitment of personnel to help the above mentioned situation.

Aside from general agriculture contributing to the training of personnel for fields of work related to agriculture, what is its place in general education? Byram[5] stated, "Young folks, whether from town or country, boys or girls, should study agriculture of a general or appreciational type. Agriculture as a way of life and the problems and points of views of farmers need to be understood and appreciated by every citizen."

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[4] I've Found My Future in Agriculture. Special Committee of the Resident Instruction Section, Division of Agriculture, Association of Land Grant Colleges and Universities, In Cooperation with the National Project in Agricultural Communications. 1958.

[5] Byram, Op. Cit.

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6 Deyoe
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P. 151.

Deyoe[6] pointed out that nearly one-half of the people in the United States live in rural communities, and that in more than one-half of the states, the majority of the population is rural. He continues:

> Therefore, it is reasonable to assume that most people, if not all, have actual or potential interests in agriculture, although many such interests are non-vocational. Pupils who later become merchants, lawyers, doctors, or bankers or enter upon some other non-agricultural vocation may thereby develop a background for understanding the problems of their clients.

The foregoing statements clearly point out the values to be gained from agricultural education and the part it might play in the general education program. Because of vocational agriculture's dominant role in agricultural education, many studies have been made in the field of vocational agriculture, but few have been made in general agriculture. After extensive search, only three studies have been found that in any way proposed a curriculum for general agriculture at the secondary level, or proposed a training program for teachers of general agriculture at the college level.

Thus, if general agriculture is to be made available to a greater number of students, there is a need for study to determine what the content of a course in general agriculture at the secondary level should include, and what training in technical agriculture at the college level is necessary

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[6] Deyoe, G.P., "Some Possibilities for Non-Vocational Agriculture," Agriculture Education Magazine, April 1934, p. 151.

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Scope of the Problem

Respondents, their numbers and geographical locations:

1. Eighty-seven high schools in the state of Michigan known, or thought to be teaching general agriculture were sent a check list type of questionnaire to be completed by the teacher of general agriculture.
2. Personal interviews were conducted with fifty people engaged in occupations in agriculture and fifty high school principals who were located mainly in the southern one-half of the state of Michigan.

Questions forming the basis of this study were:

1. What areas of technical agriculture are needed in a curriculum for preparing teachers of general agriculture?
2. What related areas could contribute to such technical training?
3. What areas of agriculture are believed to be of greatest importance and should be included in instruction at the high school level?

Limitations of the Study

This study was limited to data secured from the questionnaires returned by the teachers of general agriculture throughout the state of Michigan, and personal interviews

with fifty people in occupations in agriculture, and fifty, of an estimated five hundred high school principals who were chosen at random in the southern one-half of the state.

Although every effort was made to clarify the information desired, the study was limited by the respondents' understandings of the questionnaire and of the difference between general and vocational agriculture. Since general and vocational agriculture have different objectives, the information secured is limited to the extent that these differences are understood.

The interviews were limited by the same factors as the questionnaires, and in addition were limited to the extent that the random sample taken in the southern one-half of the state is representative of the entire state.

Definition of Terms:

Vocational agriculture---Systematic instruction in agriculture of less than college grade conducted in public schools for those persons fourteen years of age or over who have entered upon, or who are preparing to enter upon, the work of the farm or farm home. It is to train present and prospective farmers for proficiency in farming.

General agriculture---The definition as used here is the one formulated by the agriculture sub-committee of the state curriculum committee. "General agriculture is a course or series of courses incorporating information and experience in agriculture and offered to students in schools without regard to sex, farming status or background, or vocational interest. Agriculture may be offered as a unity in another course or as an area in a core curriculum."

Areas of agriculture---This term, as it is used in this study, refers to the broader categories of classification, such as: agricultural economics, animal husbandry, poultry, crop production, farm mechanics, landscaping, conservation, etc.

Subject matter areas---This is used in reference to the units or phases of the broader classifications. For example, in the area of animal husbandry, it would be swine management, beef management, livestock judging, sheep management and other related units.

Related areas---Such courses as Bacteriology, Biology, Botany, Economics, Genetics, Mathematics, etc. Courses that might be included in the training curriculum for teachers of general agriculture fall into this category.

People in agriculture---This refers to people in the various fields of agriculture, such as: the farm service organizations, persons associated with the processing, marketing, or servicing of agriculture in any way.

Teacher of general agriculture---Any teacher teaching a course in agriculture other than vocational agriculture. A vocational agriculture teacher could be teaching a course in general agriculture and thus would be included in this classification also.

CHAPTER II

REVIEW OF THE LITERATURE

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REVIEW OF THE LITERATURE

Many studies have been made dealing with the problems related to the teaching of agriculture. The great majority of these, however, have been associated primarily with the teaching of vocational agriculture. The studies which have been made relative to the teaching of agriculture as a part of the general education program have been very limited. The purpose here then will be to review those studies which have been made in the area of general agriculture and those which are closely related to the topic.

Some of the areas which have been reviewed are: (1) The status of general agriculture, (2) Why students take general agriculture, (3) Content of general agriculture courses at the secondary level, (4) The objectives and purposes of a general agriculture program, (5) Criticisms of the general agriculture program, (6) Proposed content of a course in general agriculture, (7) The qualifications and training of teachers of general agriculture, (8) The training of teachers of general agriculture in related subjects, (9) Suggested improvements for the training of teachers of general agriculture, and (10) Related studies in the field of vocational agriculture.

The Status of General Agriculture

A number of studies have been made to determine how many schools were offering general agriculture, whether it was being offered for one semester or longer, and if it was taught yearly or every other year.

The earliest study encountered was that made by Sharp[7] and limited to consolidated schools of Iowa. In this study it was found that 80.7 per cent of the high schools required agriculture, and that 19.3 per cent made it elective. Sixty-six and two-tenths per cent, required one year or less. Thus, it was revealed that the largest percentage required agriculture, but for only one year. In addition, it was found that there was a very small amount of time given to agriculture in the four years of high school training. Seventy and seven-tenths per cent taught only one year of agriculture with five to seven periods per week.

In a study of Iowa and Nebraska high schools, Clayton[8] determined that many high school students have not had the privilege of studying agriculture. There were 50.9 per cent of the high schools of Nebraska, with 55.6 per cent of the total enrollment, and 34.9 per cent of the high schools of Iowa enrolling 58.3 per cent of the total enroll-

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[7]Sharp, Lloyd P. "Agriculture in the Consolidated Schools of Iowa," (unpublished M.S. thesis, Iowa State College, 1922). p. 46.

[8]Clayton, Harry L. "General Agriculture in the High School," (unpublished M.A. thesis, University of Nebraska 1935). pp. 66-67.

ment that did not offer any courses in agriculture, except a strictly normal training type, for a two year period. It was also revealed that 91 per cent of the Nebraska and 30 per cent of the Iowa high schools allotted only one semester to the subject.

Considerable uniformity in the practices of different high schools with reference to the frequency with which instruction in agriculture was offered was found by Campbell.[9] Eighty-six and nine-tenths per cent offered the course every year. In 12.2 per cent of the cases the course was offered every other year, and one school reported offering the course every third year. The length of the course varied from one semester to four years.

General agriculture was taught in approximately 50 per cent of the high schools of Southwest Missouri studied by Karls.[10] This conclusion was based on the reports of 100 high schools, which responded to the questionnaire sent to all high schools of the Southwest Missouri district. During the school year 1944-45, 27 per cent of the high schools stated they taught general agriculture every other year; and 5 per cent taught it occasionally. Advanced general agriculture was taught in only 11 per cent of the

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[9]Campbell, Julian Morris, "A Survey of Non-Reimbursable Programs of Agriculture in Michigan High School," (Department of Education, Michigan State University, 1952, p. 11.

[10]Karls, Glenn Edward, "Course of Study In Agriculture for the Elementary and High Schools of Southwest Missouri With Suggestions for Teacher Preparation for These Courses," (unpublished Ed. D. Thesis, University of Missouri, 1946). pp. 133-134.

high schools of Southwest Missouri.

A study by Ekstrom[11] of 240 high schools with enrollments under 100 students, revealed there were twenty-three high schools that had departments of vocational agriculture in 1952-53, and general agriculture was offered in eighty-two of the schools.

The grade levels at which general agriculture was being taught has also been included in a number of studies. Iowa high schools were reported by Jerdeman[12] to be retaining general agriculture in their curriculum, and it was being taught primarily in the tenth grade. In fact, 73 per cent of the high schools were found to be teaching general agriculture at this level.

Whereas the previously cited study found that 73 per cent of the Iowa high schools taught agriculture in the tenth grade, Campbell[13] found only 9.3 per cent of the Michigan high schools teaching it at this grade level. A combination of the eleventh and twelfth grades accounted for 17.4 per cent of the total, as did a combination of the tenth, eleventh, and twelfth grades. Next in order of rank

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[11]Ekstrom, G.F., Enrollments and Vocational Offerings in Rural and Village High Schools in Missouri, (non-thesis study) Department of Agriculture Education, University of Missouri, 1953. p. 8.

[12]Jerdeman, Casper M., "The Status of General Agriculture in Iowa Public Schools," (unpublished M.S. thesis, Iowa State College, 1930, p. 57.

[13]Campbell, Op. Cit., pp. 12-13.

was a combination of ninth through the twelfth grade, which accounted for 15 per cent of the total enrollment. The fact that there was considerable variation in the grade levels in which agriculture was being taught was attributed, to a large extent, to the combination of grades in the smaller rural high schools for the teaching of some subjects.

In the matter of grade placement, Clayton[14] stated,

> Boys and girls of the usual chronological age of ninth and tenth grades have not looked upon their life work nor life's economic and social relations seriously enough to be mentally and psychologically ready for the course. It is true that the course can be made very easy, even adaptable to intermediate or junior high school grades.

On the other hand, the view is expressed by Clayton[15] that attitudes and mental set of the pupils of the chronological age of juniors and seniors has progressed to the extent that general agriculture should be offered in either of the last two years of high school.

Information was sought as to who should take general agriculture, and if it should be required, who should be required to take it.

Based on reports of thirty-nine high schools teaching general agriculture during the year 1944-45, Karls[16] learned that enrollment of general agriculture classes consisted of

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[14]Clayton, Op. Cit., p. 88.

[15]Ibid.

[16]Karls, Op. Cit., pp. 133-134.

boys and girls, with the girls having a slight majority. It was found that 50.8 per cent of the agriculture students were girls.

Seventy-seven superintendents responded to a survey made by Starrak and Kneedy[17] as they sought information as to which students should be required to take general agriculture. Forty per cent of the superintendents responding indicated that all boys should be required to enroll in general agriculture; 23 per cent said those interested; 18 per cent, all students; 8.3 per cent, farm boys; 5.2 per cent, none; 2.6 per cent, some; 1.3 per cent rural students.

Sharp's[18] study revealed that 21.8 per cent of the teachers he surveyed believed that agriculture should be required and more time devoted to it. Eight and seven-tenths per cent expressed the opinion that it should be made elective. Only 4.3 per cent thought agriculture should be given less time.

In a later study by Kneedy[19] approximately one-fourth of the superintendents and teachers expressed the opinion that all students should be required to take the course in general agriculture; approximately one-third of the super-

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[17]Starrak, J.A. and Kneedy, Max W., "General Agriculture in the High Schools of Iowa, "(Agriculture Experiment Station, Research Bulletin 327, Iowa State College, 1944). p. 227.

[18]Sharp, Op. Cit., p. 21

[19]Kneedy, Max W., "General Agriculture in the High Schools of Iowa, "(unpublished M.S. thesis, Iowa State College, 1947), p. 61.

intendents and two-thirds of the teachers, that all boys should; none of the superintendents and one-third of the teachers, that all girls should.

Writers in the past and in the present, have been interested in determining whether the number of schools offering general agriculture is decreasing, or if there is any evidence of growth.

The results of Crawford's[20] study led him to conclude, "If the survey of this study is any index to public opinion among farmers and educators of Iowa, there is a preponderance of opinion in favor of retaining the general agriculture course in the high schools."

There is evidence that the California program in agriculture in the high school, which for many years was primarily vocational in nature, is today changing to a combination of the vocational and general program with a rather substantial increase in the latter during the past decade, according to the findings of Thompson.[21] The exact nature of this increase is not known, however, the twenty-five schools surveyed reported a 25 per cent increase in students in general agriculture classes during the past three

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[20]Crawford, George E., "General Agriculture in the High Schools of Iowa, "(unpublished M.S. thesis, Iowa State College, 1925). p. 94.

[21]Thompson, Orville E., "A Study of Selected Problems of Agricultural Education in the Secondary Schools of California," (Report to the Agricultural Section of the American Vocational Association, August 6, 1957, Department of Education, University of California, 1957). pp.7-8.

years. Figures compiled by the Bureau of Agricultural Education show that nearly 9,000 students received instruction in general agriculture during the 1955-56 school year. This included 4,000 junior high school students in the Los Angeles City Schools.

It was found that general agriculture had a tendency to become established as the number of students who could qualify for the vocational program decreased. It was reported as complementing the vocational course in many schools.

The status of general agriculture in California was studied by Seaver[22] also, and it was found that it was first offered within the preceding seven years by all the schools answering his questionnaire, except three. Vocational agriculture was offered by 66 per cent of the schools offering courses in general agriculture. The enrollment in the vocational programs had remained relatively constant for the majority of the schools offering both programs. The enrollment for the general agriculture program had also remained relatively constant, but the current year's enrollment was slightly up. Of the schools offering a course in general agriculture, 60 per cent had it open to both boys and girls, 28 per cent for boys only, and 8 per cent for girls only.

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[22]Seaver, William R., "A Study of the Effect of Establishing a General Agriculture Program on a Previously Established Vocational Agriculture Program," (Graduate Student in Agriculture Education, University of California, 1956). p. 1.

In addition, Seaver[23] discovered that about one-half, 51 per cent, of the schools were trying to expand their general agriculture program. In all cases but one, the instructors who answered the questionnaire believed that the community has accepted the general agriculture program with favor.

Information obtained by Karls[24] showed that some high schools have dropped agriculture because of the shortage of teachers. Some high school administrators have failed to appreciate the value of the agriculture course and had boasted of the fact that they have used the course as a dumping ground for dull and backward students. Karls stated, "Bright or dull, rural or city children alike should be taught to appreciate the agricultural resources of their community, state, and nation."

The value of general agriculture is not disputed by persons associated with agriculture, but relatively few individuals have expressed these values in writing, or have made studies to determine the thinking of others.

"The value of agriculture," according to Clayton,[25] "is that it is a very proper and valuable course for girls to study." It is pointed out that a great number of girls,

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[23] Ibid.

[24] Karls, Op. Cit., p. 7

[25] Seaver, Op. Cit., p. 2

other than those who expect to have a home in the country, are in the professional or business fields, and come in contact with people directly or indirectly associated with the occupation of farming.

Another value which may be attributed to the general agriculture program lies in the findings of Seaver[26] that the majority, 58 per cent, of the instructors expressing their opinion believed that their general agriculture program allowed them to have a more select, uniform, and generally superior vocational agriculture program.

Summarizing the studies of the status of general agriculture, we find that the largest percentage of those schools offering general agriculture, offered it for a rather short period of time, usually from one semester to one year. There was much variation in the grades in which agriculture was taught, and one writer expressed the opinion that the junior and senior year would be the most desirable grade level.

There was no general agreement that general agriculture should be required of all students, but those expressing the view that it should be required, indicated boys more often than boys and girls. Little evidence prevailed as to the increase or decrease in the offerings of general agriculture. What information has been obtained would seem to indicate that it is at least holding its own.

There is value in general agriculture for both boys

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[26]Seaver, Op. Cit., p. 2.

and girls, town or country. Whatever their life's business may be, they will come in contact with people associated with farming and agriculture. In one instance it was pointed out that the general agriculture program makes for a more select and uniform vocational program.

Why Do Students Take General Agriculture?

The influences which have led pupils to choose agriculture as a high school subject was included in Iron's[27] study. In his questionnaire, seven possible reasons were given for studying agriculture. In the eighth place opportunity was provided for the pupil to state any other reason for taking agriculture in high school. A few pupils used this last space, but their reasons had little significance, or they could be classed as one of the first seven reasons. Each pupil was permitted to indicate more than one reason if he so desired. Following is the number for each of the seven reasons in the order of their importance from the standpoint of number: "For General Information" 205; "To Make a High School Credit" 190; "Required by the School" 178; "To Prepare for Farming" 111; "To Prepare for Teaching" 44; "Because I Like the Teacher" 43; "Because it Was Recommended by a Teacher or Superintendent" 25. Thus, it becomes apparent that the greatest majority were taking general

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[27] Irons, Henry E., "Characteristics of Pupils in General Agriculture Courses in Certain Iowa High Schools," (unpublished M.S. thesis, Iowa State College, 1930). p. 75.

agriculture for "General Information", and "To Prepare for Farming" was of much less importance and ranked fourth.

It was pointed out by Irons[28] that in the smaller schools where agriculture was required the pupils took it because it was required more than for any other reason. In reality the pupils in such schools have not had the opportunity to choose any subject. It might be pointed out at this time that a number of states, such as Michigan, Iowa, and Minnesota required by law that agriculture be taught in the high school. As a result, it was concluded that the reasons "Required by the School" and "For High School Credit" were very weak, and the value of the other reasons strengthened. This part of the study particularly, indicates a need for teaching general agriculture to high school pupils.

In the study by Irons[29] it was found that 68 per cent of the parents were farmers, and that 27 per cent of the high school pupils desired agriculture as an occupation. Most of the parents and pupils considered in this study were indirectly interested in agriculture even though they were not farmers.

Another study which was made in a somewhat similar

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[28] Ibid., p. 78.

[29] Ibid., pp. 78-79.

vein, but which dealt with vocational agriculture, was the study made by Portz[30] seeking the reasons why town boys enrolled in agriculture. After a survey of thirty-five instructors, the following results were obtained and are ranked in order of their importance:

1. Genuine interest in farming
2. Interest in related fields--forestry, etc.
3. To get some shop work
4. Few other curriculum opportunities
5. General interest, pre-vocational
6. School or administrative policy
7. Parent or other outside pressure
8. Dumping ground for misfits
9. An easy or snap course

There is a definite lack of studies in this particular area of agriculture, but if the studies which have been made are any indication or criteria from which a conclusion may be drawn, it seems quite evident that most of the students took courses in agriculture because they were seeking general information and were genuinely interested in agriculture.

Content Of General Agriculture Courses At The Secondary Level

One phase of general agriculture which has received considerable attention, and which has been studied to a greater extent than many other areas, is that which pertains to the content of courses in general agriculture as they were being taught. Agriculture as it was being taught when

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[30] Portz, Herbert L., Non-Farm Youth in Vocational Agriculture, (published special problem M.S. degree, Agriculture Education Department, University of Wisconsin, 1951). p. 23.

Sharp[31] made his study did not meet with complete approval on the part of the instructors, as indicated by the 65.8 per cent of the teachers making recommendations for changing the course as it was then being taught. Ten and one-tenth per cent were not satisfied but offered no solution. The remaining 24.1 per cent indicated it should continue as it was.

As a result of the study made by Starrak and Kneedy[32] it appeared that the subject matter of the course consisted largely of rather specific information dealing with production of crops and animals. They also found that the majority of the teachers adhered closely to a text which in most cases was written for the whole United States, and therefore contained much irrelevant material insofar as Iowa agriculture was concerned. While the different texts used contained some material on the economic, social and cultural aspects of agriculture and rural life, by far the greater emphasis was given to more specific information on the characteristics and production of plants and animals.

Starrak and Kneedy[33] obtained what they felt was fairly complete information on the content of courses in agriculture in forty-eight schools in Iowa. Thirty-three, or 68 per cent of the teachers admitted using nothing but the text-book in planning their courses in general agriculture, and only nineteen of these reported that they

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[31]Sharp, Op. Cit., p. 41.

[32]Starrak and Kneedy, Op. Cit., p. 189.

[33]Ibid., p. 203

omitted those portions of the texts which did not apply to Iowa. Twenty-one per cent constructed their own course, using various materials, while 11 per cent followed the Iowa State Course of Study for general agriculture published in 1940, by the Department of Public Instruction.

However, in a later study, Kneedy[34] concluded that information concerning the subject matter included in courses of general agriculture in the various schools was very scanty. He also found that a majority of the teachers followed the textbook in determining the content of general agriculture courses. It was found that almost one-half of the schools were using one of the editions of Modern Agriculture, by Grimes and Holton. Only six of the forty-eight teachers included in the study constructed their own course of study and used no textbook, except as a reference.

"It was found in certain schools that the curricular offering in agriculture was not in line with the agricultural needs of the areas," according to the results of the California study by Thompson.[35] There appeared to be excessive emphasis on animal production in certain schools at the expense of plant science courses. Instruction in horticulture was lacking in several areas where it was believed to be needed. Training in marketing and management was provided in only a few schools when it should have been high-

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[34]Kneedy, Op. Cit., pp. 35-36

[35]Thompson, Op. Cit., p. 7

lighted in most schools.

Although a large majority of the teachers reported using a textbook in teaching agriculture, 88.8 per cent of 107 teachers responding, Campbell[36] reports that a majority were using other materials to supplement the text. A few teachers reported using a textbook only occasionally or as an outline. Only twelve teachers, or 11.2 per cent, indicated that they did not use a textbook at all in the teaching of the course. Eighty-five per cent of the teachers reported that they made much or some use of reference books, farm bulletins, farm magazines, and films in teaching agriculture. Film strips, as well as wall charts and specimens were used less frequently. Over 50 per cent of the teachers reported that they made little or no use of slides and crop mounts.

It was the opinion of Clayton,[37] that there is a need to emphasize other topics than production alone. Much of the time in the past, courses in general agriculture have been devoted to farm crop production, soils, and to livestock production. These topics have always made up the major portion of textbooks, presumably because these are the main sources of financial profit for the farmer. Topics that should be given increased emphasis, according to Clayton[38] are: agricultural economics; farm management and marketing; garden, truck, and fruit crops; farm organiza-

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[36]Campbell, Op. Cit., p. 16.

[37]Clayton, Op. Cit., pp. 86-87.

[38]Ibid.

tions, agricultural colleges and experiment stations and their literature; modern rural living conditions and equipment; the economics and social interrelationships of rural and urban peoples.

Results of the studies made thus far as to the content of courses in general agriculture indicate that the emphasis was being placed on rather specific information dealing with the production of crops and animals. It appeared that textbooks were often used as the basis for formulating a course of study and that the offerings were not in keeping with the needs of the area. There is a need for more ingenuity on the part of the instructor to adapt his course to the needs of the particular areas and to use supplemental materials to round out the program.

The Objectives and Purposes of a General Agriculture Course

The development of a course of study in general agriculture would be somewhat easier if there were more definite objectives and purposes set forth than have been set forth thus far. This is perhaps one of the reasons a number of studies have set out to determine just what these should be.

In order to determine the relative importance of various attitudes as objectives of general agriculture, Starrak and Kneedy[39] questioned superintendents and teachers and obtained the following results, by rank:

1. An appreciation of the important position of agriculture in our national and international economy

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[39]Starrak and Kneedy, Op. Cit., p. 230

and general welfare.

2. An appreciation of the extensive waste of soil and other agriculture resources and of the great and urgent need for conservation and wise utilization of them.

3. An appreciation of the results of the application of scientific methods to agriculture products.

The majority of superintendents in Kneedy's[40] study reported that students in general agriculture classes were developing appreciation of agriculture's importance and an understanding of agricultural problems, and slightly more than one-half were of the opinion that the course was interesting to pupils. Superintendents and teachers ranked information and attitudes somewhat higher than abilities as objectives of the general agriculture course, and it was evident that they were of the opinion that more emphasis should be placed on the development of attitudes, and general information, than on abilities.

After a study of the purposes of secondary school education and a review of the objectives in general agriculture as set up in Missouri and other states, Karls[41] proposed the following objectives for general agriculture in high schools of Southwest Missouri:

1. To develop appreciations and abilities in the major enterprises of Southwest Missouri.

2. To develop appreciations and abilities in certain minor and contributory enterprises of the area, including vegetable gardening and fruit production.

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[40] Kneedy, Op. Cit., pp. 54 and 71.

[41] Karls, Op. Cit., pp. 221-222.

3. To develop appreciations and abilities in the conservation of the soil and other natural resources.

4. To develop appreciations and abilities in the maintenance and improvement of the home and homestead.

5. To develop appreciations of agricultural vocations and rural life.

6. To develop appreciations of the agricultural resources of the area, state and nation.

Karls' proposed objectives for Southwest Missouri that have been set forth, are more like the objectives which are typical of vocational agriculture.

A brief look at the major objectives of vocational education in agriculture[42] seem to bear this out.

1. Make a beginning and advance in farming.
2. Produce farm commodities efficiently.
3. Market farm products advantageously.
4. Conserve soil and other natural resources.
5. Manage a farm business.
6. Maintain a favorable environment.

In a study setting forth the objectives of a course in agriculture in Goshen, New York, Slone[43] stated, "The main purpose of this course is to acquaint pupils with the agriculture of Goshen and the surrounding area and to develop an appreciation and understanding of it." A number of contributory purposes were also stated, and were designed

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[42] Educational Objectives in Vocational Agriculture, U.S. Office of Education, Washington, D.C., Vocational Division Monograph No. 21, 1940, p. 3.

[43] Slone, Harold N., "Agricultural Arts for Grade VIII Goshen Central School, Goshen, N.Y.," (special problem, M.S. degree, Cornell University, 1946). p. 5.

primarily to develop an appreciation and understanding of agriculture, and to stimulate interest and develop attitudes of respect for agriculture.

Not all objectives classify into the categories of appreciations and attitudes to be developed. There were a number of other objectives which writers have found to be prevalent also.

The primary objectives of the course in agriculture as expressed by ninety-nine superintendents covered a wide range of ideas in Campbell's[44] study. In order to simplify things, he classified them into four categories; namely, non-vocational objectives, vocational objectives, agricultural objectives, and vocational guidance objectives. In the words of Campbell, the objectives were classified as follows:

1. Non-vocational objectives (68)

   To acquaint students with the latest scientific methods and techniques of farming. (14)

   To acquaint students with fundamental principles of farming. (13)

   To acquaint students with the importance, need, and techniques used in conserving natural resources. (13)

   To give students a basic understanding and practical knowledge of agriculture in the community. (11)

   To give students a basic understanding of agriculture. (8)

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[44]Campbell, Op. Cit., pp.13-15.

To acquaint students with the importance of agriculture in our everyday life. (6)

To instill students with rural life. (1)

2. Vocational objectives (19)

To help students become established in farming. (9)

To assist students with special farm problems. (4)

To meet the needs of students in part-time farming. (4)

To develop skills in farming. (1)

To teach boys and girls how to landscape a home properly. (1)

3. Agricultural objectives (17)

To provide general information and facts about the production and management of specific crops and livestock. (7)

To meet the agricultural needs in the community. (4)

To improve farming practices in the community. (3)

To develop better farming methods. (3)

4. Vocational guidance objectives (13)

To stimulate interest in farming as a vocation. (7)

To develop the ability to choose agriculture as a vocation. (2)

To acquaint students with advanced courses in agriculture. (2)

To provide basic information and background for students intending to follow farming as a vocation. (2)

Somewhat similar results were obtained by Crawford,[45] as he too, sought the aims and objectives of a high school course in general agriculture. The following results were

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[45]Crawford, Op. Cit., pp. 11-12.

obtained: fundamentals of agriculture was mentioned, 45 times; training in practical agriculture, 49 times; business side of farming, 10 times; appreciation of agriculture, 7 times; to dignify scientific agriculture, 7 times; general information, 5 times; to improve rural life conditions, 4 times; and to prepare rural teachers for agriculture, twice.

Regarding the value and objectives of general agriculture, Clayton[46] states,

> Vocational agriculture has its place and is endorsed by the writer. But he believes that general agriculture is quite indispensible as a general education course to the majority of high school students, especially boys, New objectives are needed and have been worked out. They subtract, to some extent from the old objectives of quantity production, and add new ones that stress production of quality. They also stress economy and conservation. In addition to these, new objectives have been added which aim to meet the new social and economic conditions of the present; to create interest in improvement or rural life; and to call attention to the inevitable relations of urban to rural life.

It is pointed out by Thompson,[47] that by law, the California junior colleges are classified as secondary schools. Thus, the functions of the junior colleges as set forth by law serve as a basis or foundation for all courses. The functions are as follows:

1. To provide technical-vocational education.
2. To provide general education.
3. To give lower division college transfer education.
4. To provide community service education for post high school grade within range agreed upon.

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[46]Clayton, Op. Cit., pp. 101-102.

[47]Thompson, Op. Cit., p. 6.

5. To provide guidance service for students.

An early stated objective of agriculture as reported by Meaders[48] was, ..."To teach people to think straight on all matters pertaining to agriculture production and rural life, and this applies to the city people as well as the country people." He also pointed out that the value of agriculture education was in the thinking of some of the pioneers when he states, "One of the first specific discussions on agriculture in the public school reported through the official publication was by A. C. True in 1897. He pointed out the need for instruction in agriculture in the high schools because many of the farmer's boys and girls go to high school and are unable to go on to college."

Results of the foregoing studies indicate that the objectives and purposes of general agriculture are quite varied. They range from the development of abilities in agricultural enterprises to the development of appreciations and attitudes about agriculture. In the majority of cases, however, the main objectives and purposes seem to be that of developing an appreciation and understanding

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[48]Meaders, Otis Donald, "Practices Advocated by Selected National Agencies and Organizations for Implementing Local Programs of Vocational Agriculture, 1836-1954," (Ed. D. thesis, Michigan State University, 1957). p. 17.

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of agriculture rather than to teach specific skills and abilities. The value of studying general agriculture in general education is also mentioned, as well as its contribution to vocational guidance.

Criticisms of the General Agriculture Program

General agriculture has been taught for many years, but like almost all other subjects, has been criticized in many ways as to course content and methods of teaching. Another area which has come in for a major share of the criticism has been that of the qualifications of the teachers of general agriculture. A number of studies have been made in this area and some suggested improvements proposed.

Teachers with the greatest amount of training in agriculture were using superior teaching methods according to Sharp's[49] study dealing with this matter. Teachers with a small amount of training in agriculture, and who were using superior methods, did so because of training in educational methods. Those with a large amount of training in agriculture were using inferior methods because of their use of college instructional methods of teaching.

It was the belief of Jerdeman,[50] that more time was necessary to teach a subject so general in nature as agriculture, and that one semester or even one year is not suff-

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[49] Sharp, Op. Cit., p. 47.

[50] Jerdeman, Op. Cit., p. 49.

icient time in which to do it justice. It seemed advisable, from Jordeman's point of view, to increase the time given to agriculture and it was also his belief that a need existed for better qualified teachers.

The weaknesses of the present courses in agriculture which were recognized and admitted by teachers and superintendents in the study made by Starrak and Kneedy[51] were concerned chiefly with the methods of teaching practiced, inadequate qualifications of teachers, effect upon communities, and the reactions of students.

Criticisms of high school agriculture as determined by Crawford[52] showed that in 41 per cent of the instances, the criticisms were of the teachers; and that in 39 per cent of the cases they were of factors partly under the control of the teacher; and criticisms of others 20 per cent of the time. Thus, it was concluded that since such a large percentage of the criticisms were of features over which the teacher may exercise some degree of control, improved teacher training must form a considerable part of any successful program of improving work in general agriculture.

Undue emphasis was placed on achievement of abilities rather than on the development of attitudes and general

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[51]Starrak and Kneedy, Op. Cit., p. 189.

[52]Crawford, Op. Cit., p. 94.

information, according to the findings of Kneedy.[53] Teachers and superintendents were asked to check the weaknesses of primary concern to them, which resulted in the following, according to rank:

1. Small use made of field trips and laboratory work.
2. The inadequacy of equipment.
3. The manner in which the course was taught.
4. The length of the course.
5. The inadequate training.
6. The excessive number of duties of the teachers.

The findings of others are substantiated by Karls[54] in that teachers were permitted to teach agriculture without sufficient training and that too little time has been given to the organization and content of the agriculture course.

In a study conducted by Starrak[55] over 50 per cent of the Iowa respondents believed the following criticisms of general agriculture were true:

> (1) Courses too bookish; (2) courses not related to local programs; (3) teachers not well informed on agricultural work; (4) not enough practical application of knowledge; (5) lack of equipment; (6) teachers not having confidence of the farmers; (7) too little emphasis on farm management; (8) too little emphasis on business end of farming; (9) too little emphasis on national and international programs of agriculture; (10) leadership ability not developed; (11) not enough emphasis on feeding and management.

As a result of discovering some of the basic criticisms of general agriculture, a number of writers have set

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[53] Kneedy, Op. Cit., pp. 38 and 53.

[54] Karls, Op. Cit., p. 6.

[55] Starrak, J.A., Current School and College Education in Agriculture for Iowa Farmers, (Agricultural Experiment Station Bulletin P74, Iowa State College, 1945). p. 479.

forth some recommendations in line with their findings.

Sharp[56] as a result of his study, believed that there should be a reorganization of agriculture courses at the high school level, and made the following suggestions and comments:

> (1) nature study and its appreciations should be taught through all grades; (2) good books and magazines on nature, agriculture and improvement of rural life should be abundant for pupils; (3) offer a good vocational guidance program; (4) carry on general agriculture club work and minor projects in the junior high school; (5) vocational agriculture should follow in the senior high school laying stress upon community and farm problems; (6) we must have better trained teachers and they must have considerable work in agriculture and rural life subjects, and should have farm experience.

It was suggested by Crawford[57] that problems concerning the economic side of agriculture and the relationship between rural life and urban or village life, furnish work which is likely to be interesting, as well as profitable, to the pupils. The problems chosen should be selected on the basis of their general interest and their applicability to the community. This line of work which has not been included in the agriculture course should easily hold its place after being introduced.

As a result of the suggestions made by teachers and superintendents and supported by the findings of their investigations, Starrak and Kneedy[58] have made a number of

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[56]Sharp, Op. Cit., p. 37.

[57]Crawford, Op. Cit., p. 37.

[58]Starrak and Kneedy, Op. Cit., p. 190.

recommendations for the improvement of general agriculture.

It was their feeling that the minimum amount of college work in agriculture for teachers of general agriculture should be greatly increased. Laboratory and field work should be included in the instruction to a greater extent also. They advocated less reliance upon a single textbook and more extensive use made of various source materials, such as bulletins and pamphlets. It was also suggested that the course of study in general agriculture would be improved by placing more emphasis upon the agricultural problems and conditions of the state and local community, and relating them to the national and international aspects of agriculture. Less emphasis should be placed upon the study of details of agricultural production and operation and more upon the development of appreciations of, and interests in agriculture and rural life.

The success of a program of general agriculture is dependent upon a number of factors, and it seems that Seaver[59] sums them up well when he suggested that success was dependent upon the following:

1. Only interested students being admitted to the course.
2. The course not being used as a dumping ground for students that do not fit into any program.
3. The instructor being interested in general agriculture and wanting to teach the course.

Reviewing the criticisms of general agriculture which

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[59]Seaver, Op. Cit., p. 3.

have been revealed as a result of these studies, it appears that inadequately prepared teachers, insufficient time being allotted for the course, poor teaching methods, placing stress upon attainment of abilities rather than appreciations and understandings, and failure to adjust courses to the needs of the area are the major basis for criticism. The recommendations for improvement have been aimed at correcting the foregoing criticisms with the greatest emphasis perhaps being placed on the increased training of teachers.

Proposed Content of Courses in General Agriculture

While the number of studies which have been made in the field of general agriculture are relatively few, there is an even more noticeable lack of results insofar as helpful suggestions or ideas for a course of study in general agriculture is concerned. Those which have been made, with their suggested course content follow.

A tentative program was outlined by Crawford[60] for a year's work in general agriculture, and was designed to be in keeping with the season. The following are representative of his proposed program.

For the months of November and December (eight weeks in length) we find the following:

1. Taking survey of community
2. Interpretation of survey results
3. Introduction of improved methods
4. Elimination of waste
5. Planting bulbs in pots and beds

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[60]Crawford, Op. Cit., pp. 64-65.

6. Study of winter blooming house plants
7. Operation and care of cream separator
8. Feeding and care of calves
9. Winter care of poultry
10. Mulching of strawberry beds for winter

For the period of time (six weeks in length) from mid-February, through March we find the following:

1. Agriculture as a lifes work
2. Agriculture experimentation
3. Further education in agriculture
4. Soils from standpoint of field and garden equipment
5. Use of seed catalogs, ordering seed
6. Testing seed
7. Use of hotbed and coldframe
8. Use of incubator
9. Making a windowbox

The most extensive study undertaken in the field of general agriculture, with which this writer has come in contact, and which suggests or proposes a course of study in agriculture at the high school level, was the study made by Karls.[61] Several factors were taken into consideration in planning his course of study. First, he pointed out that the objectives for the general agriculture course in high school help to set the pattern or general nature of the course. The time element is important and is very limited when the whole subject of agriculture is considered in one course. The general plan has been to give more time to the jobs that were poorly done in practice according to his study, and to the jobs that were conducted on the greatest number of farms in the area. Emphasis was given to those things that were called for most surely and often in the work of carrying

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[61]Karls, Op. Cit., pp. 223-225.

on the enterprise.

Relative difficulty of subject matter was also considered in some instances. The more difficult the subject matter, the greater the time required for teaching the job. Finally, some jobs were included because of the importance of the subject matter in appreciating and evaluating the agricultural enterprises and rural life.

The course proposed by Karls[62] was divided into nine units, with a suggested time allotment based on a total of 170 teaching days. The suggested units are as follows:

1. Farm Animals.....29 days
2. Dairy.....24 days
3. Poultry.....24 days
4. Soils.....20 days
5. Farm Crops.....19 days
6. American Agr. and Rural Life.....18 days
7. Vegetable and Fruit.....15 days
8. Farm Engineering.....11 days
9. Farm Home.....10 days

Representative units showing the proposed time allotment and seasonal sequences for the course of study in the high schools of Southwest Missouri as proposed by Karls[63] are as follows:

Week	Job	Days
1--Determining the importance of the poultry enterprise		2
	Feeding for egg production	3
2--Housing the laying flock		3
	Marketing hogs	2
3--Identifying types and breeds of hogs		1
	Selecting hogs	2

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[62] Ibid.

[63] Ibid., pp. 225-231.

Week	Job	Days
	Determining the importance of hog production	1
	Determining the importance of wheat, oats, barley, and rye	1
4--	Selecting good seed and desirable varieties of wheat, oats, barley, and rye	1
	Determining the requirements for wheat, oats, barley, and rye production	2
	Harvesting and storing vegetables	1
	Marketing beef cattle	1
8--	Applying lime to the soil	1
	Saving the soil	4
10--	Housing dairy cattle	2
	Raising the dairy calf	3
17--	Determining the types of farming	1
	Realizing the interdependence of the city and the country	2
	Determining the health and recreational opportunities of farm life	2
22--	Planning and improving the field layout	1
	Growing shade trees	1
	Growing shrubs	2
	Determining the importance of sheep prod...	1
25--	Planting and cultivating the garden	2
	Growing potatoes	1
	Growing strawberries	1
	Growing grapes	1
28--	Maintaining the lawn	2
	Growing flowers	2
	Determining the import. of pasture & hay...	1
32--	Producing and marketing quality milk & cream	4
	Determining the import. of pasture & hay...	1

A breakdown of the various jobs and suggested questions which might provide a basis from which to work was also included in Karls[64] proposed course of study. The following is suggestive of the type of information and

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[64] Ibid., p. 231.

approach which he presented:

Poultry (24 days)

Job I. Determining the importance of poultry enterprises. (2 days)

1. What per cent of the farms of Southwest Missouri keep chickens?
2. What is the total annual value of poultry and eggs produced in this area?
3. Where are the important poultry production centers?
4. What are the leading poultry states?
5. What is the total annual value of poultry products produced in the United States?
6. How does this figure compare with the total annual value of other farm commodities?
7. What is the food value of eggs and poultry meat?
8. What are some of the industrial uses of poultry?
9. What are the advantages and disadvantages of the poultry business?
10. What is the outlook for the poultry business?

One of the few states that in any way suggested a course of study to be used in the teaching of general agriculture was the State of Iowa.[65] The suggested units and time allotments were as follows:

Unit I----What is Agriculture About?	2 weeks
Unit II---Soil and Its Importance to Mankind	6 weeks
Unit III--Useful Farm Crops	10 weeks
Corn	4 weeks
Small grains	2 weeks
Forage crops	3 weeks
Others	1 week
Unit IV---Useful Animals	10 weeks
Chickens	2 weeks
Dairy cattle	2 weeks
Hogs	2 weeks
Beef cattle	2 weeks
Sheep	1 week
Unit V----Fruits and Vegetables	4 weeks
Unit VI---Home beautification	4 weeks

A guide for a course in general agriculture for high

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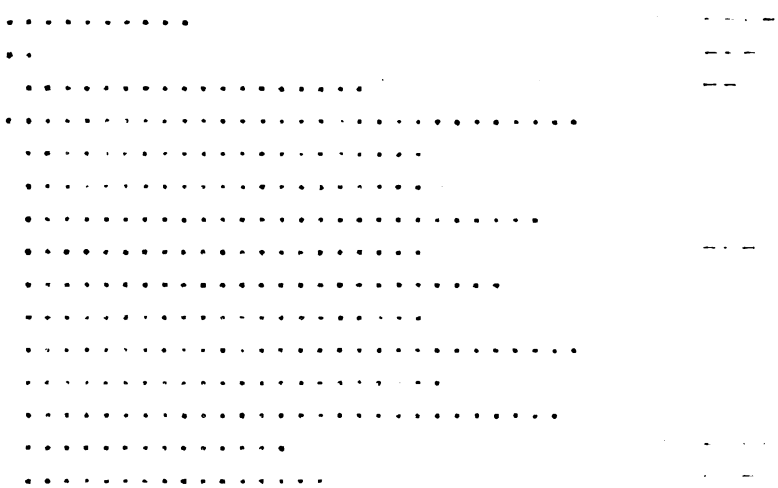
[65] General Agriculture for Secondary Schools, Volume VI, Department of Public Instruction, Des Moines, Iowa, 1948, p. 8.



schools in the state of Maryland was prepared by a class in the Problems of Teaching Vocational Agriculture at the University of Maryland in the summer of 1951.[66] It was pointed out that this guide was not to be interpreted as being the final word on teaching general agriculture, but was to give a little more detail than has been given in the past and serve as a basis for a practical approach to the subject. The proposed units of instruction are:

1. The importance of Agriculture
2. Agricultural Vocations and Occupations
3. Growth of Plants and Their Uses
4. Conservation in Agriculture
5. The Soil and Its Contribution to Life
6. Improving Home Surroundings
7. Development and Improvement in Agriculture
8. Introduction to Home Projects
9. Introduction to Home and Farm Mechanics

While the proposed courses of study may provide something in the way of a basis from which to work in the development of a course in general agriculture, generally they appear to be more vocational in nature than of a general type and not in keeping with the rather generally accepted idea of teaching appreciations and understandings. It becomes more and more evident that there is a need for a basic course of study which is more general in its approach and places less emphasis on the vocational aspects of agriculture.

The Training of Teachers of General Agriculture

Teachers of general agriculture have been the object

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[66] "A Guide for a Course in General Agriculture for High Schools in Maryland," (prepared by the students in the course, Problems in Teaching Vocational Agriculture, University of Maryland, Summer Session, 1951). p. 3.

of considerable study not only for the purpose of determining the extent of their training, but in the hope of learning what type of training is most suitable and necessary to best prepare the teacher for the task of teaching general agriculture. In addition to courses in technical agriculture, related subjects have also been included.

A definite relationship was found by Sharp[67] between the amount of agriculture training on the part of the teacher and the teaching methods used. He found that 86 per cent of those teachers having from one to nineteen hours of training used the text or lecture method in their teaching and only 35 per cent of those having sixty hours or more training in agriculture used the text or lecture method.

Comparable results and conclusions were reached by Crawford[68] when he found that the training of the teacher in agriculture was an important feature in the degree of satisfaction with which he was able to serve his community. In no case was dissatisfaction expressed with a teacher who had graduated in agriculture, but only 38.8 per cent of those with the legal minimum of training were rated as fully satisfactory. Many of the teachers who had a small amount of agriculture training had a poor attitude toward the subject, and regarded it as a somewhat inconsequential sideline in the school.

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[67]Sharp, Op. Cit., p. 33

[68]Crawford, Op. Cit., p. 26.

Studies pertaining to the qualifications of teachers have been quite numerous. Most of the teachers studied by Jerdeman[69] were found to have from zero to twenty-four hours credit in agriculture. He also found that the semester hours credit in agriculture of general agriculture teachers in Iowa high schools for the year 1929-30 ranged from 0 to 111 credits for 690 high schools. The median was found to be 18.61 and the mean 28.62. The result was that the majority of the teachers of general agriculture were teaching the subject with the minimum state requirement, which was twelve credit hours. A number of teachers were still teaching on the old requirement when the state required only six credit hours.

It was pointed out by Clayton[70] that only eight general agriculture teachers in the state of Nebraska had received any training in the subject. The training of these eight averaged 12.4 semester hours, but their training in the sciences and economics was more extensive. These subjects, especially the biological sciences, are also valuable to the agriculture teacher.

In a rather extensive study of the training of teachers of agriculture by Starrak and Kneedy,[71] both as to the present status and the proposed training, it was found that college work in agriculture and related science ranged from zero to ninety-six semester hours. The mean was 17.3

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[69]Jerdeman, Op. Cit., p. 35.

[70]Clayton, Op. Cit., pp. 92-93.

[71]Starrak and Kneedy, Op. Cit., p. 213.

semester hours, the median 14.9 semester hours, and the mode fifteen hours.

Information obtained by Ekstrom[72] on college credits in agriculture for forty-five of the teachers who taught agriculture in 1952-53, revealed that two had only 10 semester hours of training in the subject, and five had 60 or more hours. The majority of the teachers had from twenty to thirty credits in agriculture.

In his study of the teachers of general agriculture in Southwest Missouri, Karls[73] learned that they had been mostly farm reared and a great majority of them had agriculture training from the elementary school through high school and college. Approximately 91 per cent of the general agriculture teachers had studied agriculture in the elementary school; 89 per cent had studied agriculture in high school; and 98 per cent had college credit in agriculture. Yet, it was found that over three-fourths of the general agriculture teachers believed they needed additional training in agriculture.

All but one of the forty-eight teachers interviewed by Kneedy[74] held the bachelor's degree from a college or university. Only three, however, or approximately 6 per cent, had followed the curriculum of agricultural education

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[72]Ekstrom, Op. Cit., p. 15.

[73]Karls, Op. Cit., pp. 135-136

[74]Kneedy, Op. Cit., p. 14.

as their major in collegiate undergraduate study. One had planned his graduate work with a major study in agricultural education. Three-fourths of the forty-eight teachers reported having had at least twelve semester hours of undergraduate collegiate instruction in general agriculture; one had pursued the study of agricultural education as an undergraduate minor.

Using the amount of collegiate work in agriculture and related science as an acceptable criterion of the teacher's ability to teach agriculture, Kneedy[75] regarded their preparation for the job as weak. One teacher was found to have received no instruction at the college level, either as an undergraduate or graduate, in agricultural subjects. His study also showed that the mean number of undergraduate semester hours of work in agricultural subjects was 19.16; the medial number, 15.81; that the first quartile was 12.05; the third quartile, 19.11. The corresponding measurements of academic preparation in related science indicated that the study of science was not a major one for most of the teachers of general agriculture.

Studying the qualifications of teachers of general agriculture in Michigan, Campbell[76] found that the number of semester hours of training in agriculture in Michigan ranged from 0 to 100 hours for the 101 teachers included in

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[75] Ibid., p. 19.

[76] Campbell, Op. Cit., pp. 21-23.

the survey. The mean was twenty-six semester hours, but it was pointed out that this may be a bit misleading due to the fact that a few had had much more work in agriculture than the majority. There were also ten teachers who reported majoring in agriculture but did not indicate the number of credits earned so were not included in the mean. The median was 21.5 semester hours, and the mode, fifteen hours. Forty-six per cent had sufficient college credits for a teaching major and 46 per cent had only teaching minors in agriculture. Eight per cent even lacked the minimum state requirement of fifteen semester hours in collegiate agriculture.

As a result of a study to ascertain the status of the problems of agricultural instruction in non-land-grant colleges in the United States, Brazziel[77] concluded that,

> Generally considered, most non-land-grant departments, divisions or schools of agriculture serve a worthy purpose; that of bringing terminal training for agricultural careers in actual farming and in related occupations to areas remote from the land-grant colleges.
>
> The preparation of teachers for general agriculture secondary programs would seem to constitute a responsibility for these institutions. Many such programs are being initiated in secondary schools. Ohio and Iowa alone had over 115 each when the study opened. In these times of teacher shortages, it will fall the lot of the regional college to train regional personnel for regional enrichment. No other social institution could reasonably be expected to do so.

If the preceding studies can be used as a criterion

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[77]Brazziel, William F., "Teacher Training in Agriculture in Non-Land-Grant Colleges in the United States," Agriculture Education Magazine, November, 1958, p. 116.

by which to judge teachers of general agriculture, it becomes quite apparent that much needs to be done in the way of improving their training programs and adopting or setting forth higher standards of qualifications. Training varied greatly, with some individuals having earned no credits in agriculture at the college level to persons who were majors in agriculture. The fact that many indicated a desire and need for more training is an indication that the training programs as they have existed in the past may not be adequate. It has also been shown that there was a great deal of relationship between teaching success and training received.

The Training of Teachers of General Agriculture in Related Subjects

Training programs for teachers of general agriculture include many related subjects in addition to the courses in agriculture. Just how important are the courses being offered and which ones do the teachers feel contribute most to their teaching? This is another area where very little has been done and the information at hand is very scanty.

Superintendents and teachers were questioned by Starrak and Kneedy[78] on what non-technical agriculture subjects teachers of general agriculture should have training. (non-technical refers to general agriculture subjects other than those of animal husbandry, farm crops, and soils) The

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[78] Starrak and Kneedy, Op. Cit., p. 226.

results showed considerable similarity between the teachers and superintendents with both groups rating agriculture economics number one. Rural sociology, economics, biology, farm shop, and botany also rated high. In a few instances a slight difference of opinion occured as in the case of chemistry and agriculture engineering, but the variations were probably due to the fact that certain types of problems confronted teachers with which the superintendents were not familiar.

In a later study, Kneedy[79] questioned superintendents and teachers on the same matter as that by Starrak and Kneedy in the previously mentioned study and obtained almost identical results.

An examination of the aforementioned studies shows rather clearly that certain related subjects such as economics, rural sociology, botany and the like are mentioned most often as having value in the training of teachers of general agriculture. Information obtained from such studies would seem to be of considerable value in planning training programs for teachers of general agriculture.

Suggested Improvements for the Training of Teachers of General Agriculture

Writers who have studied the training of teachers of general agriculture generally agree that there is a need

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[79]Kneedy, Op. Cit., p. 59.

to make some changes and improve the training programs, if agriculture is to continue and the quality of the programs is to increase in value.

According to Crawford,[80] more training should be required, and one-third of the technical training of the teacher-training course would be a very reasonable requirement for the teacher of general agriculture. Such a requirement would consist of thirty hours of technical agriculture and would vary according to past experience, and desired goals. The thirty-hour requirement would be divided as follows: agricultural economics, 5 hours; horticulture and landscaping, 10 hours; rural sociology, 3 hours; animal husbandry, 7 hours; and soils, 5 hours.

Three criteria were to be used in the selection of teachers of general agriculture according to Clayton's[81] plan. The criteria were: (1) amount of college training in agriculture; (2) rural life experiences, and (3) a healthy philosophy regarding farming and rural life.

Sufficient training to be a successful teacher of agriculture would vary, according to Clayton,[82] with the individual, his experiences, and other training. Also, he advocated some minimum should be set that is high enough to insure that the teachers will be proficient in methods of

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[80] Crawford, Op. Cit., pp. 83-85.

[81] Clayton, Op. Cit., p. 92.

[82] Ibid., pp. 92-93.

teaching the subject and will have organized knowledge of the various phases of farming and rural life. Iowa, at the time of the study by Clayton, required only twelve college hours of preparation in the subject, and Missouri required only fifteen hours of preparation with certain kinds of courses designated. Nebraska accredited schools were to require more training of their teachers of agriculture. Dr. A. A. Reed, Director of Extension, University of Nebraska, announced July, 1935, that the University Committee of Accredited Schools had set certain training requirements for teachers in accredited high schools to become effective September 1, 1936. The requirement in regard to agriculture was as follows:

> Teachers giving the major part of their time to academic subjects and a minor part to non-academic or technical subjects will be expected to have a minimum of 12 semester hours of preparation in the field. The preparation in agriculture shall include; agriculture, three hours; methods in agriculture, three hours; and may include natural science, six hours.

Twelve hours of training was rather low for a subject of such breadth as agriculture in the mind of Clayton.[83] While raising the requirements for one-year subjects usually brings objections, it was Clayton's belief that it would not be out of place. It was pointed out that Iowa had for years required her home economics teachers to have a minimum of thirty hours, and that excellent results have been attained from this requirement. Once the teachers became accustomed

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[83]Clayton, Op. Cit., p. 94

to it there were no objections.

It is interesting to note the curriculum approved in 1928 by Iowa State College for teachers outside the Smith-Hughes system which was included in Jerdeman's[84] study. The curriculum was as follows:

Agriculture (30 semester hours)
- Animal Husbandry 12 2/3 hours
- Crops and Soils 17 1/3 hours

Professional subjects (20 hours)

Other requirements (42 2/3 hours)
- General Biology.....4 hours
- Military Science..... 6 hours
- Constitution & Govt..... 2 hours
- English..... 6 hours
- Mathematics..... 2 2/3 hours
- Physics..... 2 hours
- Economic History..... 2 hours
- Chemistry.....10 hours
- Hygiene..... 2 hours
- Rural Sociology..... 2 hours
- Public Speaking..... 4 hours

Minors (32 hours) Free Elective (12 2/3 hours)

A plan for more efficient training of the teachers of general agriculture in Southwest Missouri was presented by Karls[85] in his study and is as follows:

1. Teachers should elect more college courses in agriculture dealing with the most important or major enterprises of Southwest Missouri. Since the time allotment as worked out for the high school course of study, gives more time to these enterprises, it is logical that the teachers should also be better trained in these fields in order to give proper emphasis to them in the teaching program.

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[84] Jerdeman, Op. Cit., p. 4

[85] Karls, Op. Cit., pp. 302-305.

2. Courses in dairying should receive additional emphasis in the training of general agriculture teachers of this area. General agriculture teachers are not selecting as many courses in dairying as in some other fields of lesser importance. Greater emphasis on dairying is essential because of the importance of the dairy industry in Southwest Missouri.

3. It is highly desirable that teachers of general agriculture in high school have a college major of twenty-five hours or more in the agricultural field. Although the state requirement for the teaching of general agriculture is only fifteen hours for a part-time teacher, the teachers of Southwest Missouri have an average of 19.5 college hours in agriculture. However, 77.3 per cent of the teachers expressed the need for additional training in agriculture in order to teach it successfully.

4. Prospective teachers of general agriculture should do a portion of their practice teaching in the field of agriculture. This is important because of the semi-vocational and practical nature of the agricultural course.

5. A college course in methods of teaching high school agriculture should always precede the practice teaching. The methods course should include such units as, organizing the agriculture course, planning the lessons, planning field trips, equipping the library, setting up laboratory exercises, and planning projects.

6. A college course in rural sociology for teachers of general agriculture is highly desirable. The teachers need information on social problems of farm living.

7. Farm living experience of at least one year should be required of all teachers of general agriculture in the high schools of Southwest Missouri. While 94.5 per cent of the teachers of the area have lived on farms, the remaining 5.5 per cent could improve their status as teachers by having had first hand experience of farm living.

In attempting to determine the minimum amount of college work in agriculture a teacher of agriculture should have,

Starrak and Kneedy[86] questioned 118 superintendents and teachers and found that 34 per cent believed that the minimum number of credits should be between ten and fifteen semester hours; 19 per cent indicated fifteen to twenty semester hours; 20 per cent said twenty to twenty-five semester hours; and 8 per cent expressed the view that a major in agriculture should be the minimum.

Suggestions for improving the training of teachers of general agriculture center primarily on the need for more work in the agricultural subjects. The proposed plans in a few instances have general application but in others are very limited in scope and emphasize the need for additional study to bring them up to date.

Related Studies in the Field of Vocational Agriculture

Studies in the field of vocational agriculture have been much more abundant than those pertaining to general agriculture. Three of these studies which are similar in nature to those which have been reviewed dealing with general agriculture will be briefly summarized at this point.

In a study of teachers of vocational agriculture, Couch[87] questioned them on the value of various areas of study. It was found that agriculture economics ranked

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[86]Starrak and Kneedy, Op. Cit., p. 225.

[87]Couch, Stuart T., "The College Preparation of Teachers of Vocational Agriculture," (M.S. thesis, Cornell University, 1949). pp.27-55.

first with 87.6 per cent indicating that it was of great value. Animal husbandry ranked second; agronomy third; agriculture engineering fourth; poultry fifth; dairy industry, veterinary bacteriology, and vegetable crops tied for sixth. Wild life conservation was indicated to be of least value in this particular instance. A large percentage of the teachers indicated that the courses in many cases should be made more practical.

Instructors of vocational agriculture were questioned by Wiegand[88] as to the value of related courses in their college training program and found economics, chemistry, history, composition, botany and zoology to be considered most valuable.

From this it is readily seen that the teachers of vocational agriculture were inclined to value the various agriculture and related courses in much the same way as teachers of general agriculture. Perhaps, these evaluations tend to reflect their college training to a large extent.

Course offerings and requirements of various colleges and universities have been studied in an attempt to discover their importance or frequency of appearance in the training programs of teachers of agriculture.

Twenty-eight colleges and universities were studied by Wiegand[89] and it was found that Elements of Dairying was offered in all schools studied; Teaching of Vocational

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[88]Wiegand, Walter G., "An Analysis of Content of Preparation of Agriculture Teachers in Selected Universities and Colleges," (M.S. thesis, University of Minnesota, 1936) p. 82.

[89]Ibid., p. 83.

Agriculture and Farm Mechanics in 96 per cent of the schools; Farm Management and Breeds of Livestock by 93 per cent; whereas Soils was offered by 71 per cent; General Horticulture by 70 per cent, and Veterinary Science by 62 per cent of the schools.

In a survey of twenty-two colleges and universities, Matela[90] found that technical agriculture averaged 38 per cent of the total credits required for graduation. In percentage of credits required in technical agriculture, Animal Husbandry, Agronomy, Agriculture Engineering, Farm Management and Horticulture were found to rank in that order.

Physical science was second in relative importance for teachers of vocational agriculture according to Matela[91] with the biological sciences third, and the social sciences fourth.

A very thorough and extensive instrument for evaluation of the training programs for teachers of vocational agriculture was developed by Brunner.[92] While the purpose of the instrument is to evaluate programs of vocational

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[90]Matela, Arcadio G., "Content of Curricula for Teachers of Vocational Agriculture in Separate Land-Grant Colleges," (M.S. thesis, Iowa State College, 1948). pp. 68-75.

[91]Ibid.

[92]Brunner, Henry Sherman, "Criteria for Evaluating Programs of Preparation for Teachers of Vocational Agriculture," (Ph.D. dissertation, Ohio State University, 1943). pp. 85-86.

agriculture, certain phases of it at least, would seem to be applicable for evaluating training programs in general agriculture.

The criteria which would seem appropriate for general agriculture with the substitution of general agriculture for vocational, would be the following: The question, "How well suited is the program of resident college courses to the purposes of preparing trainees to teach vocational agriculture?", would seem suitable as it relates to the training curriculum under the division of resident courses. Under the division entitled "Research", the following question also seems relevant. "To what extent is the teacher-education department contributing through its research program to the development of vocational education in agriculture?"

Reviewing the results of the related studies which have been cited, we see that teachers of vocational agriculture ranked agriculture economics as being of most value to them, with animal husbandry and agronomy following in the order listed. Technical agriculture averaged 38 per cent of the total credits required for graduation in the training programs of teachers of agriculture. Elements of Dairying was found to be offered in all schools studied, with 96 per cent of the schools offering, Teaching of Vocational Agriculture and Farm Mechanics.

Second in importance in the training program for teachers of vocational agriculture were the physical sciences, with the biological sciences third, and the

social sciences fourth.

Summary

Results of the studies which have been made thus far would seem to indicate that there is insufficient evidence to arrive at any definite conclusions pertaining to the over-all status of general agriculture. Work done in the state of California shows that it is perhaps increasing to a certain extent in that particular state. The majority of schools studied were found to offer agriculture for a short period of time, usually for one semester or one year.

Students taking general agriculture were apparently more interested in obtaining general information than they were in taking it with the intention of preparing for farming. With this in mind, the fact that there was criticism of too much emphasis on the production of crops and animals as pointed out by Starrak and Kneedy[93] and Clayton[94] would seem justified. Many instances were cited where the content of the course was based on a particular textbook, rather than being developed in accordance with the pupil's interests, the type of agriculture prevailing in the area in which it is being taught, and the existing home and community activities.

While the objectives and purposes stated vary considerably, it appears that the basic objectives and

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[93]Starrak and Kneedy, Op. Cit., p. 189.

[94]Clayton, Op. Cit., pp. 86-87.

purposes are to teach appreciations and understandings rather than specific information and certain skills and abilities. One of the things that stands out very clearly, is the need for some general agreement on what basic concepts and ideas should be taught and included in a program in general agriculture.

The lack of properly trained and qualified teachers stood out very vividly. Some teachers were teaching with no agriculture training whatsoever, while in some instances they had majors in agriculture. A definite relationship was found to exist between the teaching methods used and the training the individual had received.

Many of the criticisms which were found, were those which could be eliminated if properly trained personnel were employed. A majority of the faults which were under the control of the teacher, could be greatly reduced or eliminated by him.

The courses of study which have been proposed, and which are very few in number, are much too general in nature and very limited in scope. A great need exists for work to be done in this area as well as all areas pertaining to the teaching of general agriculture. Writers to date have failed to set forth any course of study that is really basic in nature and which differs to any marked degree from the normal vocational program.

While the number of studies which have been made is

very small, the greatest share of them were made ten or more years ago. Invariably they have been limited to a particular area and have been designed primarily to meet the needs of one individual or simply to express his opinions on the matter. Information was not obtained which would have helped in the development of a course of study as seen through the eyes of the teachers and educators. It seems quite natural that the majority of the studies have been made in the field of vocational agriculture since the course offerings in the past have been quite similar. Lacking any real basic concepts from which to build a course in general agriculture, it was obvious that the two would be very similar as to course content at least.

It would be virtually impossible to devise a course of study for general agriculture that would meet the needs of the entire nation, yet certain fundamental ideas and concepts would provide a common ground from which to work and develop a course that would teach appreciations and understandings of agriculture and be adapted to any particular area. If general agriculture is to be different from vocational agriculture in its aims and goals, it must also be founded on different principles and course content.

In none of the studies made thus far, have teachers of general agriculture, high school principals, or people in agricultural occupations been questioned on what areas of study they feel should be included in a course in gen-

eral agriculture at the high school level. It would seem that these people should be capable of expressing helpful opinions and ideas to aid in the formation of a course of study in general agriculture at the high school level. It would also seem likely that these people are in a position to give information which would make it possible to evaluate the adequacies and inadequacies of present training programs for teachers of general agriculture.

Teachers and superintendents have been questioned on the value of related subjects, but none was asked what courses in technical agriculture he believed to be most helpful or of lesser value to him, or in what areas he would like additional training. In this respect, it would seem that valid information might be gained from these people if they were surveyed and questioned on the matter.

Successful programs of general agriculture depend on well trained and properly qualified teachers. If this is to be accomplished, training programs at the college level must be reviewed and revised if necessary to meet existing needs. In addition, there is a need for more definite ideas as to what should constitute a high grade course of study at the secondary level from which the teacher could expand according to the needs of the area.

CHAPTER III

METHOD OF STUDY

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Source of Data

Fifty-eight teachers of general agriculture in Michigan, approximately 90 per cent, responded to the questionnaire which was mailed out to all high schools known, or thought to be teaching general agriculture at the time the study was being conducted, which was for the school year 1957-58. A list of the schools in which general agriculture was being taught, in the state of Michigan, and whose teachers responded to the questionnaire are included in the appendix. (appendix VII)

Personal interviews were made with fifty, of an estimated 500, high school principals chosen at random from a selected geographic area. The principals represented schools offering only vocational agriculture, general agriculture only, both vocational and general agriculture, and some which offered no agriculture at all. Whether agriculture was being taught in a particular school or not, was not considered important in consideration of general agriculture being taught as a practical arts subject. A list of the schools represented and their classification in the aforementioned categories is included in the appendix

also. (appendix VIII)

Fifty people engaged in occupations in agriculture were chosen at random from a selected geographic area and interviewed also. These fifty people represented eighteen different types of agricultural occupations common in the state of Michigan. The varied types of occupations were chosen in keeping with the idea that a practical arts course is not to train an individual for a specific vocation, but to provide general knowledge, skills, and attitudes essential to good citizenship. The occupations, number interviewed in each group, and the locations where the interviews were conducted are listed in the appendix. (appendix IX)

Method of Analysis

The results of the data collected are indicated in tabular form. In some instances, these are simply totals or percentages, while in others these represent weighted values. Where comparisons of data for different groups of respondents were possible, rank order correlations were calculated to determine the degree of similarity of judgment. Rank order correlations were required in these analyses since such data were originally obtained through a ranking procedure by the respondents. Chi square analysis was also used to determine whether significent differences in the number of category choices existed between different groups of respondents.

Development of Data Gathering Instruments

Data for this study were secured by means of personal interviews and through the use of questionnaires. The survey forms and questionnaires used were developed with the cooperation of a seminar group at Michigan State University. Preliminary forms were drawn up and were then presented to the group for their review and suggestions which would better secure the desired information. Following the suggested changes, a revised form was prepared and once again presented to the group for their review and suggested alterations to clarify any points which might be confusing in any way. The final review, with suggested changes and alterations were then incorporated and resulted in the forms which were finally used.

Interview and Questionnaire Forms Used

Five different forms were used to secure the data for this study. The forms used are identified as "A", "B", "C", "D", and "E". (See appendix for sample of each form used)

Form "A" was designed to determine in what areas of study in technical agriculture the teacher of general agriculture had received training, the areas believed to be of greatest value to them, the areas of least value, and areas in which additional training is needed. Thus, form "A" was used in conjuction with the teachers of general agriculture only.

Form "B" is a list of suggested areas of study for general agriculture at the high school level. All were asked to select five items and rank them according to their importance from their viewpoint. Provision was made for the addition of other topics if desired. Form "B" was completed by all three groups included in this study.

Form "C" is a list of related courses that are commonly found in a training program for teachers of agriculture. Information was sought on the value of these various courses as to whether they were considered essential, desirable, or immaterial in the performance of the job of teaching general agriculture. This form was used in conjunction with the teachers of general agriculture and people in agriculture.

Form "D" was for the purpose of determining the place of general agriculture in general education. It also includes a check list to discover the opinions of those being interviewed on how well informed the general public is regarding agriculture and its problems. This form was completed by the high school principals and the people in agriculture.

Form "E" is very similar to form "A" in content. Whereas Form "A" was limited to the teacher of general agriculture, Form "E" was used solely with the people in agriculture. Exactly the same areas of study are listed, but the people in agriculture were asked simply to indicate five areas of importance and five which were believed to be

of lesser value in the training of a teacher of general agriculture.

The forms completed or used in conjuction with the various groups are as follows:

Groups	Forms Used
Teachers of General Agriculture	A * B * C
People in Agriculture	B * C * D * D
High School Principals	B * D

Percent of Reply

Questionnaires, with a cover letter, were sent to eighty-seven high schools known or thought to be teaching general agriculture. The first return resulted in responses from forty-six teachers, and the response to a second notice yielded an additional thirty-six replies for a total of seventy-two or 82.7 per cent overall return.

Of the seventy-two replies, however, fifty-six were from schools offering general agriculture in their curriculum. Sixteen returned the questionnaire indicating that they did not offer any agriculture at the present time. No reply was received from fifteen schools. One of the schools included in the study employs three teachers of agriculture, all of whom completed and returned a questionnaire making a total of fifty-eight completed and returned from fifty-six schools.

Geographic Spread of Study

Questionnaires were sent to teachers of general agriculture throughout the entire state of Michigan. The interviews were made in the southern one-half of the lower pennisula. Figure 1 shows the geographic distribution of the three groups involved.

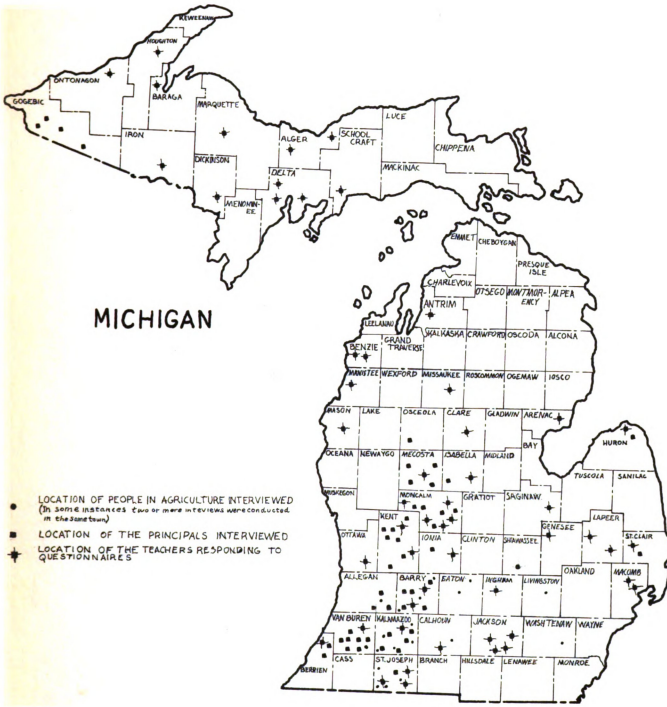

Figure 1.----Geographic spread of study

CHAPTER IV

FINDINGS AND ANALYSIS OF RESULTS

CHAPTER IV

FINDINGS AND ANALYSIS OF RESULTS

The data and some pertinent findings relative to a proposed curriculum for a high school course in general agriculture are summarized and presented in this chapter. The report is organized into the major areas which are emphasized in this study, namely, the technical training which the teachers of general agriculture have received, and the value of this training to the teacher for purposes of instruction. Areas of study in technical agriculture in which additional training is desired, as well as the value of related areas of instruction are also presented

The adequacy of agricultural training, and the relationship which should exist between general and vocational agriculture in the high school curriculum are also shown. An evaluation of the general public's information regarding agriculture and some of its problems, suggested areas of study for general agriculture at the high school level, and a proposed curriculum of study for a course in general agriculture at the secondary level are also presented.

The Current Status of General Agriculture in the High Schools of Michigan

Returns were received from fifty-six high schools teaching general agriculture in the state of Michigan during the 1957-58 school year. Since there were approximately 600 high schools in the state of Michigan at this time, it would appear that about 10 per cent of the high schools were teaching a course in general agriculture.

Results of this study show that none of the high school principals in the schools studied, or people in agriculture believed that agriculture should be eliminated from the high school curriculum.

This study revealed that 27 of the 56 teachers on whom information was obtained, were qualified vocational agriculture instructors, 7 had a major in agriculture, 11 had a minor, and 10 were teaching on special certificates. Thus, it is apparent that about one-half of the teachers teaching general agriculture are qualified vocational agriculture instructors. Not all of them, however, are teaching both general and vocational agriculture.

Technical Training of Teachers of General Agriculture in Michigan

The number of instructional areas of agriculture in which the teachers of general agriculture have received training is shown in figure 2. Twenty-three teachers in all had had training in 15 to 19 of the areas listed in Table 2, with eight of these being teachers not qualified

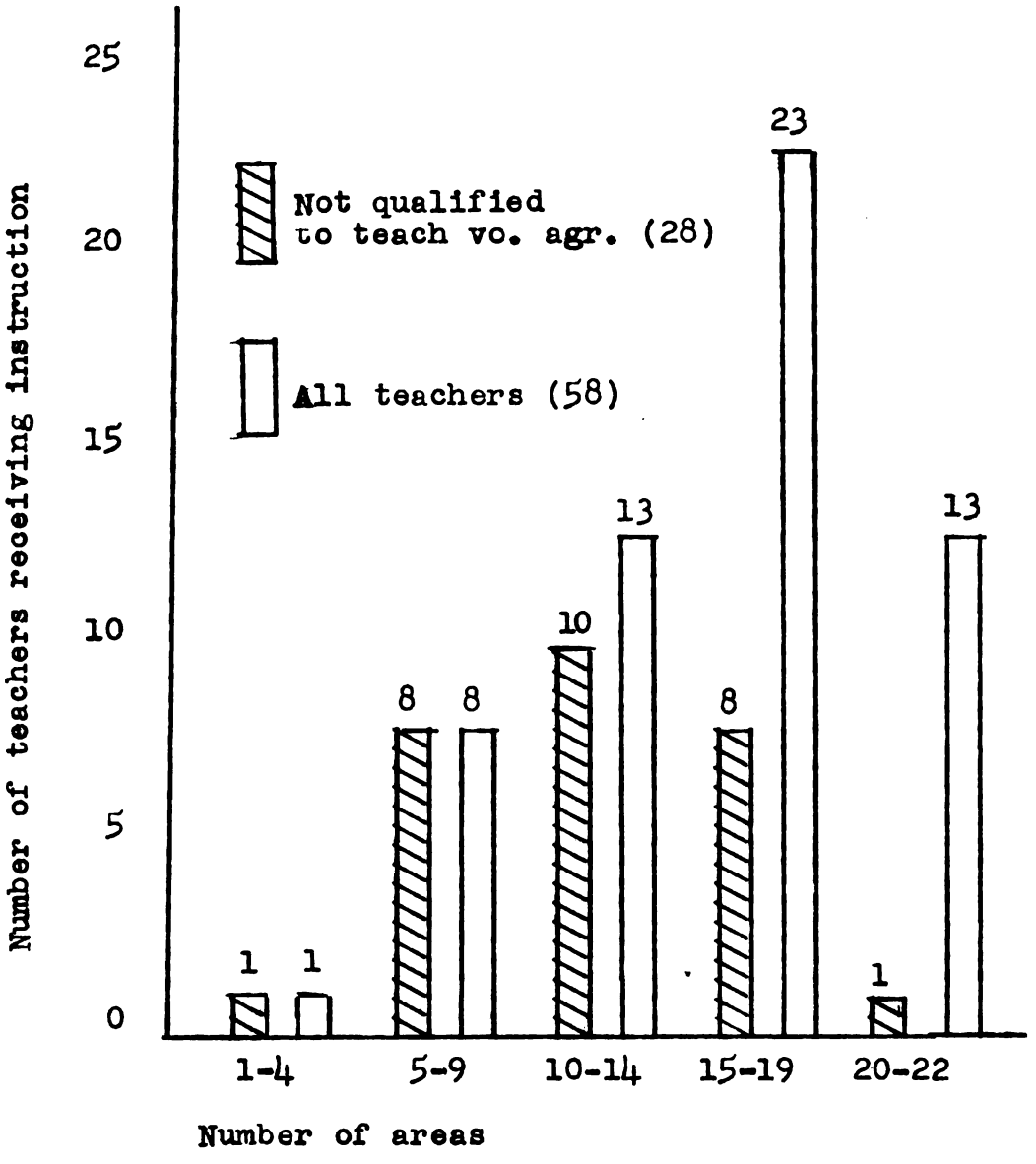

Fig. 2.---The number of areas of agriculture in which the teachers of general agriculture have had training.

TABLE I

TRAINING RECEIVED ON THE COLLEGE LEVEL BY TEACHERS OF GENERAL AGRICULTURE IN MICHIGAN

Areas of Study	Teachers receiving instruction in each area			
	(a) All teachers		(b) Teachers not qualified as Vo. Agr. instructors	
	Number	Per cent	Number	Per cent
Farm Crops	56	96.5	26	92.8
Soils and Fertilizers	51	87.9	21	74.9
Horticulture	50	86.2	21	74.9
Conservation	47	81.0	26	92.8
Dairy Cattle Management	46	79.3	18	64.2
Agricultural Economics	45	77.6	16	57.1
Farm Management	44	75.9	15	53.5
Animal Nutrition	43	74.1	15	53.5
Poultry	42	72.4	15	53.5
Beef Management	42	72.4	15	53.5
Animal Diseases	40	69.0	15	53.5
Forestry	40	69.0	18	64.2
Farm Shop	39	67.3	13	46.4
Landscaping	35	60.3	19	67.8
Marketing (agricultural)	34	58.6	12	42.8
Swine Management	34	58.6	10	35.7
Sheep Management	31	53.4	9	32.1
Farm Carpentry	29	50.0	7	25.0

(Continued on next page)

TABLE I (continued)

Area of Study	Teachers receiving instruction in each area: [a] All Teachers Number	Per Cent	[b] Teachers not qualified as Vo. Ag. Instructors Number	Per Cent
Welding	29	50.0	9	32.1
Farm Power	25	43.1	5	17.9
Dairy Food Industry	24	41.4	12	42.8
Truck Gardening	23	39.7	8	28.6

[a]Total of 58 teachers of general agriculture including those qualified to teach vocational agriculture.

[b]Total of 28 teachers of general agriculture not qualified to teach vocational agriculture.

as vocational agriculture teachers. Thirteen teachers in all had had training in 20 to 22 of the areas, but only one of the teachers not qualified to teach vocational agriculture was included in this category. Three teachers of the fifty-eight reporting were found to have had instruction in all twenty-two areas listed. Thirteen teachers in all were included in the 10 to 14 area grouping, with ten of these being the non-vocationally qualified teachers. All eight teachers in the 5 to 9 grouping were from those not qualified as teachers of vocational agriculture.

Thus, it becomes apparent that the teachers of general agriculture, not qualified to teach vocational agriculture, generally have had less training than those who are qualified vocational agriculture teachers.

A more detailed breakdown of the training received on the college level by teachers of general agriculture in Michigan, as shown by this study, reveals that the greatest percentage had had training in farm crops with 96.5 per cent of all teachers reporting having received instruction in this area. Following, in order, were soils and fertilizers, 88 per cent; horticulture, 86 per cent; conservation, 81 per cent; dairy cattle management, 79 per cent; and agricultural economics, 78 per cent.

The greatest number of teachers not qualified to teach vocational agriculture had had training in farm crops and conservation, with 93 per cent reporting having received instruction in each of these areas. With few exceptions, the training of these teachers followed a pattern very similar to that prevailing for all teachers.

Areas of Study of Greatest Value to the Teacher for Instruction in General Agriculture

Teachers of general agriculture and people in agriculture rated the various areas of study in technical agriculture on the basis of their being of great or little value to the agriculture teacher in the teaching of general agriculture. The results are shown in Table II.

TABLE II

THE AREAS OF STUDY OF GREATEST VALUE FOR INSTRUCTION AS RATED BY 55 TEACHERS OF GENERAL AGRICULTURE AND BY 50 PEOPLE IN AGRICULTURE IN MICHIGAN.

Areas of Study	By Teachers Percentage	By People in Agri. Rank	Accum. Ranking*
Soils and Fertilizers	59	3	127
Farm Crops	47	6	48
Conservation	31	4	91
Dairy Cattle Management	29	7	20
Farm Management	24	2	137
Agricultural Economics	22	1	180
Animal Nutrition	17	-	-
Horticulture	16	11	6
Forestry	10	-	-
Beef Management	5	12	4
Farm Shop	5	9	13
Poultry	5	13	1
Welding	3	11	6
Landscaping	3	11	6
Animal Diseases	3	8	14
Farm Power	2	-	-
Marketing (agricultural)	2	5	82
Swine Management	2	12	4
Farm Carpentry	0	-	-
Dairy Food Industry	0	10	9
Sheep Management	0	-	-
Truck Gardening	0	11	6

*Point total on the basis of weighted values of 5-4-3-2-1 points for a 1-2-3-4-5 place ranking--thus, a first place ranking is worth 5 points; second, 4 points, etc.

Fifty-nine per cent of the teachers indicated soils and fertilizers to be of greatest value; 47 per cent, farm crops; 31 per cent, conservation; 29 per cent, dairy cattle management; 24 per cent, farm management; 22 per cent, agricultural economics; 17 per cent, animal nutrition; 16 per cent, horticulture; and 10 per cent, forestry. Five per cent indicated beef management, farm shop and poultry; 3 per cent, welding, landscaping, and animal diseases; 2 per cent, farm power, agricultural marketing, and swine management. None of the teachers indicated dairy food industry, sheep management or truck gardening as being of greatest value to them in the teaching of general agriculture.

Whereas the greatest percentage of the teachers indicated soils and fertilizers to be of greatest value to them, people in agriculture ranked it number three in importance. Farm crops, second according to the teachers, ranked sixth by people in agriculture. Conservation, third in order by teachers, ranked fourth by people in agriculture. Dairy cattle management, fourth with the teachers, was seventh, and farm management, fifth by the teachers, was second in importance with the people in agriculture. Agricultural economics, sixth according to the teachers, ranked number one with the people in agriculture.

The greatest difference of opinion between the two groups was in the area of agricultural marketing. Only one teacher considered it to be of great value, but with

the people in agriculture, it ranked number five.

A rank order correlation analysis was made of table I, which shows the areas of study in which the teachers have received instruction at the college level, and table II, which shows the areas of study considered to be of greatest value by the teachers. The result was a positive correlation of .92 which is highly significant at the $P_{.01}$ level of confidence. This indicates that there is a very close relationship between the courses in which the teacher has had training, and the courses considered to be of greatest value to him.

While the teachers were asked to select the three areas of instruction of greatest value to them from areas in which they had received instruction, it might be assumed that such a close relationship would be natural. Yet, there were some areas in which more than 50 per cent of the teachers had received instruction, but none indicated it to be of great value to them.

Thus, it seems quite apparent that the training which a teacher has had influences his thinking in terms of the areas that he feels are most important to him. The type of agriculture prevailing in the locality in which the teacher is located would very likely be reflected in his choices also. It would seem quite logical, for example, that localities in which dairying is the major enterprise, would find the teacher placing greater emphasis on dairying, whereas, another teacher in a fruit growing or swine pro-

ducing locality, would place greater emphasis on these phases of agriculture.

A look at the ranking of courses considered to be of greatest value in the teaching of general agriculture by people in agriculture shows that much value is placed on courses pertaining to the economic aspects of agriculture. Agricultural economics was ranked number one by them, farm management was number two, and agricultural marketing was fifth in order.

A rank order correlation analysis of the importance of areas of instruction by teachers of general agriculture and people in agriculture shows that the two groups differ significantly at the $P_{.01}$ level of confidence in the importance attached to agricultural economics, agricultural marketing, farm management, and farm crops. The teachers considered farm crops more important than did the people in agriculture, whereas, the people in agriculture considered agricultural economics, agricultural marketing, and farm management to be more important than did the teachers. There was also a difference in the value placed on dairy cattle management by the two groups. The difference was significant at the $P_{.05}$ level. The teachers of general agriculture considered it to be of much more importance than did the people in agriculture.

The explanation for these differences is not known. It would seem, however, that past and present experiences are probably reflected in their selections. Teachers

seem to select the areas of study stressing the technical side of agriculture, whereas, the people in agriculture seem to favor an understanding of the economic aspects or a more general approach to the subject.

Areas of Study of Least Value to the Teacher for Instruction in General Agriculture

Areas of study considered to be of least value for instruction of general agriculture, according to the teachers of general agriculture and people in agriculture, were also investigated. Because fourteen teachers did not rate any courses as being of least value to them, the data presented here are based on the returns of forty-four teachers.

It should follow, it would seem, that the courses indicated to be of least value should be the opposite of those chosen to be of greatest value. This situation does hold true to a large extent for both the teachers and people in agriculture. Table III shows the areas of study of least value as rated by both groups.

On the percentage basis, 36 per cent of the teachers indicated sheep management to be of least value to them; 32 per cent, horticulture; 23 per cent, dairy food industry; 20 per cent, poultry; 18 per cent, landscaping, farm shop, and farm power. None of the teachers indicated farm crops or conservation to be of least value, and only two teachers indicated soils and fertilizers and beef management to be of least value. Seven per cent indicated farm man-

TABLE III

AREAS OF STUDY OF LEAST VALUE FOR INSTRUCTION OF GENERAL AGRICULTURE AS RATED BY 44 TEACHERS OF GENERAL AGRICULTURE AND 50 PEOPLE IN AGRICULTURE.*

Areas of Study	Per Cent indicating area to be of least value	
	Teachers	People in Agr.
Farm Crops	0	26
Conservation	0	20
Soils and Fertilizers	5	4
Beef Management	5	20
Farm Management	7	6
Marketing (agricultural)	7	16
Swine Management	7	16
Truck Gardening	9	34
Dairy Cattle Management	11	28
Agricultural Economics	11	10
Farm Carpentry	12	38
Animal Nutrition	14	-
Welding	14	40
Animal Diseases	14	42
Farm Carpentry	16	38
Forestry	16	34
Farm Power	18	-
Farm Shop	18	38
Landscaping	18	52
Poultry	20	10
Dairy Food Industry	23	24
Horticulture	32	26
Sheep Management	36	16

*Teachers checked three items and people in agriculture five items as being of least value.

agement, agricultural marketing, and swine management; 9 per cent, truck gardening; and 11 per cent dairy cattle management and agricultural economics.

There was some difference of opinion on the part of people in agriculture as to what courses were of least value to the teacher. The greatest majority, 52 per cent, thought landscaping to be of least value, while 42 per cent indicated animal diseases, and 40 per cent welding. Only 4 per cent indicated soils and fertilizers, 6 per cent farm management, and 10 per cent agricultural economics and poultry to be of least value.

Areas of Greatest and Least Value Compared

A comparison was made of the ranking by teachers of general agriculture and people in agriculture of the courses indicated to be of greatest and least value to arrive at a final overall placing for each group's responses. The final placing for each group represents a weighted value which was derived by subtracting the total number of times an area was mentioned as being of least value, from the total number of times it was indicated to be of greatest value. The teacher's rankings show that the first seven areas are the same seven areas, and in the same order in the final placing as those which were rated as being of greatest value. The only exception was dairy cattle management, changing from fourth to fifth position on the basis of a single point.

The first seven areas of study in importance are:

TABLE IV

A COMPARISON OF AREAS OF STUDY CHECKED AS BEING OF GREATEST VALUE WITH THOSE BEING CHECKED AS BEING OF LEAST VALUE BY 41 TEACHERS OF GENERAL AGRICULTURE.

Areas of Study	Number of times area indicated to be of Greatest Value	Least Value	Weighted value
Soils and Fertilizers	24	2	22
Farm Crops	20	0	20
Conservation	12	1	11
Farm Management	12	2	10
Dairy Cattle Management	13	4	9
Agricultural Economics	12	4	8
Animal Nutrition	8	5	3
Beef Management	2	2	0
Marketing (agricultural)	1	3	-2
Welding	2	4	-2
Farm Shop	3	6	-3
Forestry	4	7	-3
Animal Diseases	1	5	-4
Swine Management	0	4	-4
Truck Gardening	0	4	-4
Farm Power	1	6	-5
Farm Carpentry	0	7	-7
Horticulture	6	13	-7
Landscaping	1	9	-8
Poultry	1	9	-8
Dairy Food Industry	0	11	-11
Sheep Management	0	15	-15

(in order) soils and fertilizers, farm crops, conservation, farm management, dairy cattle management, agricultural economics and animal nutrition. The teacher's final placings are shown in Table IV.

The first six areas in the final placing by people in agriculture are the same as the original ranking of the areas of greatest value by them. The first six areas, in order, are: agricultural economics, farm management, soils and fertilizers, conservation, agricultural marketing, and farm crops. From this point on there are some changes, due to the fact that while a particular area may have ranked higher on the basis of times mentioned as being of greatest value alone, its position is altered in the final ranking because of the number of times it was indicated to be of least value.

A rank order correlation analysis was made of the final placings by teachers of general agriculture and the people in agriculture, with the result that a correlation of only, plus .46 was shown to exist between them. This was as to be expected since, as it was pointed out earlier, there was a significant difference between the two groups in their selection of certain areas.

The final placing by the people in agriculture is shown in Table V.

TABLE V

A COMPARISON OF AREAS OF STUDY CHECKED AS BEING OF GREATEST VALUE WITH THOSE BEING CHECKED AS BEING OF LEAST VALUE BY 50 PEOPLE IN AGRICULTURE.*

Area of Study	Number of times area indicated to be of Greatest value	Least value	Weighted value
Agricultural Economics	44	5	39
Farm Management	41	3	38
Soils and Fertilizers	40	2	38
Conservation	32	10	22
Marketing (agricultural)	29	8	21
Farm Crops	22	13	9
Farm Power	0	0	0
Animal Nutrition	0	0	0
Poultry	1	5	-4
Dairy Food Industry	6	12	-6
Swine Management	2	8	-6
Sheep Management	0	8	-8
Beef Management	2	10	-8
Dairy Cattle Management	6	14	-8
Horticulture	3	13	-10
Farm Shop	8	19	-11
Animal Diseases	7	21	-14
Truck Gardening	2	17	-15
Forestry	0	17	-17
Welding	2	20	-18
Farm Carpentry	0	19	-19
Landscaping	3	26	-23

*Each person checking five items of greatest and least value

Areas in which Teachers Expressed a Need for Additional Training

The teachers participating in this study were asked to indicate those areas in which they believed additional training would be of value to them, from areas in which they had had no instruction. Thus, since three of the teachers indicated that they had received instruction in all of the areas listed, they would have been unable to indicate any areas in which additional training was needed. Whether there was a mis-interpretation of the directions, or if they simply felt a need for more training regardless of having had some instruction, is not known. Since approximately one-half of the teachers did choose to check areas in which additional training was needed from areas in which they had had training, it would seem that perhaps both of the fore-mentioned situations prevailed. The areas, and the number of teachers indicating a need for more training in them, is shown in Table VI.

Five teachers did not indicate a need for any additional training, three teachers checked only two areas, and two checked only one. It might be pointed out that of the five who did not check any areas, only one would have been somewhat limited since he had had training in twenty of the twenty-two areas listed. As a result, this part of the study is based on the responses of fifty-three teachers.

The greatest number of teachers expressed a need for more training in conservation with fifteen teachers,

TABLE VI

AREAS IN WHICH ADDITIONAL TRAINING IS NEEDED BY TEACHERS OF GENERAL AGRICULTURE AS INDICATED BY TEACHERS OF GENERAL AGRICULTURE.*

Areas of Study	Teachers indicating need for additional training	
	Number	Per cent
Conservation	15	28
Agricultural Economics	12	23
Farm Management	12	23
Farm Shop	12	23
Forestry	9	17
Soils and Fertilizers	9	17
Landscaping	8	15
Animal Diseases	8	15
Dairy Cattle Management	8	15
Marketing (agricultural)	7	13
Farm Carpentry	7	13
Welding	7	13
Animal Nutrition	6	11
Farm Power	6	11
Horticulture	6	11
Truck Gardening	5	9
Poultry	4	8
Swine Management	3	6
Farm Crops	3	6
Dairy Food Industry	3	6
Beef Management	1	2
Farm Buildings	1	2
Sheep Management	0	0

* Responses of 53 teachers of general agriculture, 3 teachers checked only 2 areas, and 2 teachers only one.

or 28 per cent of those reporting indicating this area. Of these fifteen teachers, eleven had previous work in conservation and four had had none. Agricultural economics, farm management, and farm shop are next in order, with twelve teachers or 23 per cent selecting these areas. Of the twelve indicating agricultural economics, seven had previous training and five had not. The same numbers apply to farm management. In the case of farm shop, three of the twelve indicating a need for additional training had previous work in this area, and nine had no previous farm shop work. It is interesting to note, that while forty-two teachers have had training in poultry, none indicated a need for additional training. Only one teacher expressed a need for more work in beef management, and none of the forty-two teachers having previous training in this area desired more, and only one of the sixteen not having had any, desired more training in beef management.

While farm crops ranked high as an area of great value by the teachers, only three indicated a need for additional training and these were teachers having had work in the farm crops area. On the other hand, landscaping, which was considered of little value by the teachers was indicated by eight teachers as an area in which they desired further training.

Importance of Related Areas of Instruction in the Training of Teachers of General Agriculture

Teachers of general agriculture and people in agriculture were questioned on the importance of related areas of instruction in the training of teachers of general agriculture. The ten most important related areas of study as ranked by the teachers are: (in order) biology, botany, chemistry, economics, entomology, rural sociology, plant pathology, zoology, genetics, and mathematics.

The ten most important related areas according to the people in agriculture are: (in order) economics, biology, mathematics, business studies, botany, chemistry, plant pathology, genetics, local government, and entomology.

Inspection of the two rankings shows that there is close agreement as to the ten most important areas of related study. Business studies and local govenment, ranked fourth and nineth with the people in agriculture, were ranked twelfth and sixteenth respectively, by the teachers. Zoology, ranked seventh by the teachers, was fourteenth in the ranking by the people in agriculture.

The Spearman rank order correlation between the two groups is a positive .61 which is highly significant at the $P_{.01}$ level of confidence. This indicates that while there are variations in the placement of specific areas, there is substantial agreement in the overall rankings by the two groups.

The final placings by each group is shown in Table VII.

TABLE VII

IMPORTANCE OF RELATED AREAS OF INSTRUCTION IN THE TRAINING OF TEACHERS OF GENERAL AGRICULTURE AS RATED BY 54 TEACHERS OF GENERAL AGRICULTURE, AND 50 PEOPLE IN AGRICULTURE.*

Related Areas	As Ranked by Teachers	As Ranked by People in Agriculture
Biology	1	2
Botany	2	5
Chemistry	3	6
Economics	4.5	1
Entomology	4.5	10.5
Sociology (rural)	7	10.5
Plant Pathology	7	7
Zoology	7	14.5
Genetics	9	8
Mathematics	10	3
Bacteriology	11	13
Business Studies	12	4
Geology	13	16
Sociology	14	12
Physics	15	14.5
Government (local)	16.5	9
Geography	16.5	17

*Rank is based on point total on the basis of 3 points for an essential rating, 2 points for desirable, and 1 point when indicated to be of little value.

Suggested Areas of Study for General Agriculture at the High School Level as Ranked by Teachers of General Agriculture, People in Agriculture, and High School Principals

One of the assumptions upon which this study is based is the assumption that data derived from teachers of general agriculture, people in agriculture, and high school principals would contribute a sound basis for the determination of what should constitute a course in general agriculture at the high school level.

To accomplish this purpose, the three groups were asked to select five of the suggested areas as found listed on the survey form "B", (see appendix) or add others if they wished, and rank in order of importance. The results of the rankings by the three groups is shown in Table VIII. The final rankings in each case were made by weighted values of 5-4-3-2-1 points respectively for first, second, third, fourth and fifth place rankings. Thus, a first place ranking was worth five points, a second place ranking four points, etc.

From a tabulation of the rankings by all teachers who ranked what they considered to be the five most important areas, the ten most important suggested areas of study are:

1. Soil: its importance and conservation
2. The important farm animals and how they are grown and marketed
3. The important farm crops and how they are grown and marketed
4. The land and agriculture of this community
5. The occupations in and related to agriculture
6. Forests: their importance and conservation

TABLE VIII

SUGGESTED AREAS OF STUDY FOR GENERAL AGRICULTURE AT THE HIGH SCHOOL LEVEL AND THEIR RELATIVE IMPORTANCE AS RANKED BY: TEACHERS OF GENERAL AGRICULTURE, PEOPLE IN AGRICULTURE, AND HIGH SCHOOL PRINCIPALS.[a]

Suggested Areas of Study	As ranked by teachers of general agr.		As ranked by people in agriculture		As ranked by high sch. prin.	
Soil: its importance and conservation	1	(165) b	1	(125) b	1	(105)b
The important farm animals and how they are grown and marketed	2	(88)	5	(47)	2	(65)
The important farm crops and how they are grown and marketed	3	(68)	4	(48)	6	(41)
The land and agriculture of this community	4	(61)	7	(43)	4	(46)
The occupations in and related to agriculture	5	(55)	9.5	(23)	12	(26)
Forests: Their importance and conservation	6	(49)	23	(4)	15	(21)
The farmer's economic and political problems	7	(34)	3	(58)	3	(50)
Income that can be expected from the various enterprises	8	(33)	13.5	(17)	18	(16)
The part-time farmer	9	(32)	21.5	(7)	8	(27)
Interdependence of farm and city people	10	(27)	2	(108)	11	(28)
Growing a home vegetable and flower garden	11.5	(26)	19.5	(9)	5	(44)
Home beautification	11.5	(26)	24.5	(1)	17	(17)
What is the subject of agriculture about	13	(22)	13.5	(17)	9	(32)

(continued next page)

TABLE VIII (continued)

Suggested Areas of Study	As ranked by teachers of general agr.		As ranked by people in agriculture		As ranked by high sch. prin.	
Government programs in agriculture	14	(21)	8	(30)	16	(20)
Farm Credit	15	(19)	16	(12)	26	(2)
The source and cost of living of the farm family	16	(17)	16	(12)	7	(33)
Technological advances in agr.	17.5	(16)	12	(21)	19.5	(10)
The farmer's machinery, cost and operation	17.5	(16)	11	(22)	21	(9)
Improving the schools and other instit. for farm people	19	(13)	21.5	(7)	22	(8)
Types of farming in Michigan	20	(12)	16	(12)	19.5	(10)
Relationships to farm safety	21	(10)	(--)	(---)	24.5	(4)
Water supply and waste disposal	22	(9)	24.5	(1)	24.5	(4)
Farm organizations: their purposes, functions & problems	23	(7)	9.5	(48)	13.5	(23)
How to select and process farm products for family consumption	25	(6)	18	(11)	10	(30)
Recreation in rural communities	25	(6)	(--)	(---)	27.5	(1)
Youth organizations in agriculture	25	(6)	19.5	(9)	23	(7)
Agr. & world peace	27	(2)	6	(46)	13.5	(24)
Youth & pets & plants	--	(---)	--	(---)	27.5	(1)

[a]58 teachers, 50 high school principals, and 50 people in agriculture reporting. [b]point totals from 5-4-3-2-1 rating

7. The farmer's economic and political problems
8. Income that can be expected from the various enterprises
9. The part-time farmer
10. Interdependence of farm and city people

Tabulation of the results of people in agriculture who also ranked five areas, shows that their top ten are as follows:

1. Soil: its importance and conservation
2. The interdependence of farm and city people
3. The farmer's economic and political problems
4. The important farm crops and how they are grown and marketed
5. The important farm animals and how they are grown and marketed
6. Agriculture and world peace
7. The land and agriculture of this community
8. Government programs in agriculture
9.5 The occupations in and related to agriculture
9.5 Farm organizations: their purpose, functions and problems

High school principals also ranked five areas they considered to be of most importance, with the following ten areas resulting in the final tabulation:

1. Soil: its importance and conservation
2. The important farm animals and how they are grown and marketed
3. The farmer's economic and political problems
4. The land and agriculture of this community
5. Growing a home vegetable and flower garden
6. The important farm crops and how they are grown and marketed
7. Home beautification
8. The part-time farmer
9. What is the subject of agriculture about?
10. How to select and process farm products for family consumption.

Only in the case of Soil: its importance and conservation, was there complete agreement between all three groups as to rank. The important farm animals and how they are grown and marketed ranked second with the teachers and high

school principals, but was fifth with the people in agriculture. The land and agriculture of this community was fourth by the teachers and high school principals but seventh with the people in agriculture. People in agriculture and high school principals concurred in the placing of the farmer's economic and political problems third in importance in their rankings.

Examination of the ten most important suggested areas of study by each of the three groups shows, that all three groups included the following in the top ten: Soil: its importance and conservation, The important farm animals and how they are grown and marketed, The important farm crops and how they are grown and marketed, The land and agriculture of this community, and The farmer's economic and political problems.

Teachers of general agriculture and people in agriculture both included the following in their top ten. However, these were not included by the high school principals. Interdependence of farm and city people, The occupations in and related to agriculture, and The part-time farmer.

While there is not complete agreement between the three groups, there is very little difference in the rank order correlation between the teachers and people in agriculture and the high school principals. The rank order correlation between the teachers and people in agriculture is a positive correlation of .58; the rank order correlation between the teachers and high school principals is a plus

.70; and between people in agriculture and high school principals a positive correlation of .64 using the Spearman product moment correlation formula $P=1-\frac{6\Sigma d^2}{N(N^2-1)}$. Thus, as can be seen, there is little difference between the various groups, but the greatest correlation existed between the teachers and high school principals.

Combining the rankings of each of the three groups we find the following ten topics, in the order listed:

1. Soil: its importance and conservation
2. The important farm animals and how they are grown and marketed
3. Interdependence of farm and city people
4. The important farm crops and how they are grown and marketed
5. The land and agriculture of this community
6. The farmer's economic and political problems
7. The occupations in and related to agriculture
8. Growing a home vegetable and flower garden
9. Farm organizations: their purpose, functions and problems
10. Forests: their importance and conservation

Following very closely, in order, were: Agriculture and world peace, Government programs in agriculture, Income that can be expected from the various enterprises, What is the subject of agriculture about?, and The part-time farmer.

The Place of Agriculture in the High School Curriculum

People in agriculture and high school principals were asked about the place of agriculture in the high school curriculum. The results are shown in Table IX.

Of the fifty people in agriculture questioned, eighteen believed that most schools should offer more agriculture, sixteen indicated that some schools should offer

TABLE IX

THE PLACE OF AGRICULTURE IN THE HIGH SCHOOL CURRICULUM AS INDICATED BY 50 PEOPLE IN AGRICULTURE AND 50 HIGH SCHOOL PRINCIPALS.

Place of Agriculture in Curriculum	Number of times checked By People in Agr.	By H.S. Prin. in Schools offering Voc. Agr.	Gen. Agr.	Both	No Agr.	Totals for H.S. Prin.
All schools should offer more agr.	13	4	0	0	0	4
Most schools should offer more agr.	18	6	2	1	0	9
Some schools should offer more agr.	16	12	4	4	9	29
No more than is presently being taught is needed	3	2	1	1	1	5
Less agriculture should be taught	0	1	0	0	2	3
None, whatsoever, should be taught	0	0	0	0	0	0

more agriculture, thirteen thought that all schools should offer more agriculture, and none believed that less agriculture or none whatsoever should be taught.

Twenty-nine high school principals said some schools should offer more agriculture; 9 thought most schools should offer more agriculture; 5 indicated that no more than is presently taught is needed; 4 felt that all schools should offer more agriculture; 3 said less should be taught; and none, thought that none, whatsoever, should be taught.

A review of the responses by people in agriculture shows that a majority of them, thirty-one of fifty interviewed, thought that most or all schools should offer more agriculture. Thus, there is a strong feeling on their part that there is a need to increase the amount of agriculture being offered in our schools. This is further supported by the fact that forty-seven of the fifty responses are included in the three categories of some, more or all schools should offer more agriculture. Only three of the people in agriculture interviewed believed that no more agriculture than is presently being taught is needed. Thus, there is a very clear expression on the part of the people in agriculture of their thinking on this subject.

The majority of the high school principals, twenty-nine of fifty, also expressed the view that some schools should offer more agriculture, and thirteen thought that most or all schools should offer more. Three principals indicated that they felt less agriculture should be taught, and none were of the opinion that none, whatsoever, should be taught.

The fact that none of the high school principals thought that no agriculture, whatsoever, should be taught, seems to be a very significant indication that agriculture has a very important place in the high school curriculum. It also seems very important to note that forty-two of the high school principals thought more agriculture should be

taught, and only five were of the opinion that no more than is presently being taught is necessary. Thus, it is readily apparent, that the high school principals included in this study, as a group are generally in favor of more agriculture.

As indicated in Table IX people in agriculture and high school principals expressed their belief concerning the adequacy of agriculture in the high school curriculum, by checking one of the five categories indicating the place of agriculture in the curriculum. When a chi square analysis is made of the numbers of these two groups choosing the various categories, a χ^2 of 15.02, significant beyond the P.02 level of confidence is obtained. This indicates that the number of each group selecting one of these categories differs significantly. A comparison of the choice percentages of each category indicates that these differences lie mainly in the "All schools should offer more agriculture," and secondarily in "Most schools should offer more agriculture." In each of these categories, significantly larger numbers of people in agriculture believed that more training was desirable.

The Relationship that Should Exist Between General and Vocational Agriculture in the High School Curriculum

General agriculture and vocational agriculture, as has been pointed out previously, are different in their scope and content. High school principals and people in

agriculture were questioned as to the relationship which should exist between the two.

The majority of the people in agriculture expressed the view that general agriculture should be taught in addition to vocational agriculture, with forty-three of the fifty people interviewed expressing this to be the most desirable relationship. Three thought it should be offered instead of vocational agriculture, and four thought it should not be offered when vocational agriculture is taught.

High school principals were not quite so emphatic in their feeling that general agriculture should be offered in addition to vocational agriculture. However, a majority of the principals, thirty-one of fifty, did express this view. Ten principals thought it should be offered instead of vocational agriculture, and nine indicated it should not be taught when vocational agriculture is offered. Of the nine principals indicating that general agriculture should not be offered when vocational agriculture is taught, five were from schools offering vocational agriculture. However, twenty principals in schools offering vocational agriculture indicated it should be offered in addition to or instead of vocational agriculture.

A closer look at the responses by high school principals and people in agriculture, as shown in Table X, shows that four principals in schools offering vocational agriculture indicated that general agriculture should be

TABLE X

THE RELATIONSHIP THAT SHOULD EXIST BETWEEN GENERAL AND VOCATIONAL AGRICULTURE AS INDICATED BY 50 PEOPLE IN AGRICULTURE AND 50 HIGH SCHOOL PRINCIPALS

Possible Relationships	Number of times checked					
	By People in Agr.	By H.S. Prin. in Schools offering				
		Voc. Agr.	Gen. Agr.	Both	No. Agr.	Totals for H.S. Prin.
Instead of vocational agriculture	3	4	0	0	6	10
In addition to vocational agriculture	43	16	4	6	5	31
Not offered when vocational agriculture is taught	4	5	3	0	1	9

offered instead, and five principals in schools offering vocational agriculture thought general agriculture should not be offered when vocational agriculture is taught. Sixteen principals in schools offering vocational agriculture said general agriculture should be offered in addition to vocational agriculture.

Combining the responses of the two groups, we find that seventy-four believe that general agriculture should be offered in addition to vocational agriculture, thirteen indicated it should be offered instead of vocational agriculture, and thirteen thought it should not be offered when vocational agriculture is being taught.

An Evaluation of the General Public's Information Regarding Agriculture and Some of its Problems by High School Principals and People in Agriculture

High school principals and people in agriculture were asked to evaluate the general public's information regarding agriculture and some of its problems. Six people in agriculture and three high school principals believed that the general public was well informed about agriculture extension services. The majority of both groups believed that the general public is fairly well to moderately well informed in this area, with eight high school principals and ten people in agriculture believing the general public to be poorly informed. This, by the way, was the only one of the eight items listed in which the majority of the two groups did not feel that the general public was poorly informed.

High school principals generally felt that more of the general public was fairly well informed than did the people in agriculture. Considering the combined responses of the two groups, 63 of the 100 believed that the public was poorly informed about farm subsidies, 61 believed they were poorly informed about farm costs, 55 indicated they were poorly informed about the soil bank, 53 believed they were poorly informed about farm cooperatives, 48 said they were poorly informed on both farm prices and opportunities in agriculture, and 45 thought they were poorly informed about the soil conservation service. The results are shown in Table XI.

TABLE XI

AN EVALUATION OF THE GENERAL PUBLIC'S INFORMATION REGARDING AGRICULTURE AND SOME OF ITS PROBLEMS AS INDICATED BY PEOPLE IN AGRICULTURE AND HIGH SCHOOL PRINCIPALS. *

Items	Very well informed		Moderately well informed		Fairly well informed		Poorly informed	
	H. S. Prin.	People in agri.	H.S. Prin.	People in agri.	H. S. Prin.	People in agri.	H. S. Prin.	People in agri.
Agr. Extension Serv.	3	6	17	18	22	16	8	10
Farm Cooperatives	1	0	9	4	17	16	23	30
Farm Costs	0	0	9	7	18	5	23	38
Farm Prices	0	1	13	11	19	7	18	31
Farm Subsidies	0	0	9	3	17	8	24	39
Opportunities in Agr.	0	0	11	5	19	16	20	29
Soil Bank	1	1	7	3	19	13	22	33
Soil Conserv. Serv.	1	1	11	10	20	12	18	27

*Survey of 50 people in agriculture and 50 high school principals

People in agriculture, as a group, indicated a greater percentage of the public to be poorly informed than did the high school principals. This would tend to be in keeping with previously expressed views, whereby thirty-one of fifty people in agriculture thought that most or all schools should offer more agriculture, while thirteen of the fifty high school principals expressed the feeling that most or all schools should offer more agriculture.

Summary

Thirty-two of the fifty-five teachers of general agriculture on whom information was obtained were either qualified teachers of vocational agriculture or had a major in agriculture. Seventy-five per cent of the teachers studied had received training in farm crops, soils and fertilizers, horticulture, conservation, dairy cattle management, agriculture economics and farm management.

Teachers of general agriculture and people in agriculture differed in their thinking on the areas of study of most value to the teacher of general agriculture. The teachers considered soils and fertilizers, farm crops, conservation, farm management, dairy cattle management, and agriculture economics of most value, in the order listed. People in agriculture considered agricultural economics, farm management, soils and fertilizers, conservation, agricultural marketing, and farm crops of most value in the order listed. Statistically significant differences

existed in relationship to the choices of certain areas, namely, agriculture economics, agricultural marketing, farm management, and farm crops.

The greatest number of teachers indicated a need for additional training in the areas of conservation, agricultural economics, farm management, and farm shop.

The teachers of general agriculture and the people in agriculture were in close agreement on the value of certain related areas of instruction in the training of teachers of general agriculture with biology, botany, chemistry, and economics rating high with both groups. There was a highly significant correlation between the two groups in the overall ranking of the value of the related areas of instruction.

There was a difference of opinion between the teachers of general agriculture, people in agriculture, and high school principals on the suggested areas of study which should be included in a high school course in general agriculture. The ten most important areas to be included in the proposed high school course, found all three groups including the following in their final placing: Soil: its importance and conservation, the important farm animals and how they are grown and marketed, the important farm crops and how they are grown and marketed, the land and agriculture of this community, and the farmer's economic and political problems. There was little difference in

the rank order correlation between any of the two groups, with no high degree of correlation between any of them.

High school principals and people in agriculture were generally agreed that there is a need for more agriculture in the high school curriculum. People in agriculture were more emphatic in their thinking than were the high school principals. Using a chi square analysis of the differences in choice, we find the people in agriculture differed significantly from the high school principals, in the two categories, all schools should offer more agriculture, and some schools should offer more agriculture.

Combining the responses of the high school principals and the people in agriculture, we find that 74 of the 100 believed that general agriculture should be offered in addition to vocational agriculture. Thirteen believed it should be offered instead of vocational agriculture and thirteen believed it should not be offered when vocational agriculture is being taught.

High school principals and people in agriculture were generally agreed that the general public is not very well informed regarding agriculture and some of its problems. High school principals, however, were of the opinion that a greater number was fairly well informed than did the people in agriculture.

CHAPTER V

A BASIS FOR CURRICULUM CONSTRUCTION IN GENERAL AGRICULTURE AT THE HIGH SCHOOL LEVEL AND FOR TRAINING TEACHERS OF GENERAL AGRICULTURE AS DETERMINED BY THIS STUDY

CHAPTER V

A BASIS FOR CURRICULUM CONSTRUCTION IN GENERAL AGRICULTURE AT THE HIGH SCHOOL LEVEL, AND FOR TRAINING TEACHERS OF GENERAL AGRICULTURE AS DETERMINED BY THIS STUDY

The underlying problem of this study is to discover a basis for improving technical instruction for persons preparing to teach general agriculture. Sub-problems to be determined are what areas of agriculture are believed to be of greatest importance and should be included in instruction at the high school level, and what related areas of study could contribute to such technical training.

In order to design an improved training program for teachers of general agriculture, it was deemed necessary to ascertain what should be included in a course in general agriculture at the high school level, and what courses in technical agriculture and related areas of instruction were of most value to the teachers in the teaching of general agriculture.

The findings of this investigation are used as the criteria in formulating a proposed training program for teachers and a proposed course in general agriculture at the secondary level. By having some idea of what should be taught, and what courses are of most value to the teacher, it should be possible to plan a training program

which would be more in keeping with the needs of the teacher.

Previous studies by Sharp[95] and Crawford[96] have shown that there is a definite relationship between the training a teacher of general agriculture has had and the degree of satisfaction with which he is able to serve his community, and the type of teaching methods used. Teachers who had graduated in agriculture were using superior teaching methods and better able to serve their community.

It is not to be implied that agricultural training by itself will assure that all teachers will be equally capable or successful. However, it does seem that a major in agriculture would be a highly desirable qualification for all teachers of general agriculture. In many respects it would be just as desirable for them as it is for teachers of vocational agriculture.

There is a definite limiting factor in setting up a major as a requirement for teachers of general agriculture, and this is that most of them teach only one class of agriculture while the vocational agriculture teacher would be teaching three or four classes. Thus, until general agriculture attains a more prominent place in the high school curriculum, than just one or two classes being offered, it seems quite unlikely that a major in agriculture can be required of the teachers.

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[95]Sharp, Op. Cit., p. 33.

[96]Crawford, Op. Cit., p. 26.

A major in agriculture would consist of approximately 24 to 30 semester hours in the field of technical agriculture, and a minor, would consist of 15 to 18 semester hours of work. The primary difference between a major and a minor would be that in the case of the minor, an individual would receive instruction of a rather general nature in each of the various areas, whereas, the major would permit a broader and more extensive training program according to the needs of the individual.

Since the proposed course of study at the high school level does not include any work in welding, farm shop or farm power, it is not included in the proposed college training program either. The importance of farm machinery and the place it has in agriculture would be considered in the area of study designated as farm finance.

Using the data and results of this study, and giving consideration to the proposed course of study for general agriculture at the high school level, the following areas of study should be included in the curriculum for the training of teachers of general agriculture.

Description of Proposed Courses in Technical Agriculture

*Agribusiness---The overall importance of agriculture in our economy, occupations in and related to agriculture, the interdependence of agriculture and industry, and the problems and status of part-time farming.

Agriculture and World Peace---The effects of prosperous and non-prosperous agriculture on the social and economic aspects of a nation and how this relates to war and peace.

Farm Finance---Farm cost, farm prices, agriculture financing, and government programs in agriculture.

Farmer Organizations---The purposes and activities of the various farmer organizations, such as cooperatives, farm service organizations, such as the Farm Bureau, The Grange, and the Farmer's Union.

Agriculture Services---The activities and services of the U.S.D.A., and land-grant or other agricultural colleges which are available to farmers and the general public.

*Soils---Basic ideas and understandings of the importance of our soils, soil fertility, conservation and management practices, with consideration of desirable land

use and planning.

*Production and Marketing of Farm Crops---General problems related to crop production, new varieties, income that can be expected from the various farm crops, and the methods and problems of marketing farm crops.

*Livestock Production and Marketing---The importance and place of the livestock industry in our national economy, general problems related to livestock production, breeds of livestock, income that can be expected from the various types of livestock enterprises, and the problems of selling and marketing livestock and the methods used.

*Horticulture---The general principles and practices of fruit and vegetable production from the home gardener to that of the commercial fruit farmers. Also, varieties, care, expected income from the different enterprises, and the methods of marketing as well as the problems involved.

Conservation---Basic concepts and understandings of conservation in general, as they pertain to wildlife, water, and other natural resources.

It is not intended, nor is it the purpose of this study to develop in detail the content of the courses which would be included in the training of teachers of general agriculture. Rather, they are discussed here briefly in an attempt to portray the types of courses and the course content which would be in keeping with the needs as expressed in the results of this study. This phase of

the problem would indeed form the basis of another study to develop these courses in much greater detail.

The courses which are starred (*) would be considered as being basic in the training of all teachers of general agriculture, that is, for both majors and minors. The other courses would be the types to be included in a major.

Figure 3, on the following page, shows the relationship between the proposed courses in technical agriculture and the proposed topics for a course in general agriculture at the secondary level.

Related Areas of Instruction

Based on the findings of this study, work in the area of the biological sciences would include such courses as: Zoology and Botany, which in some instances is taught as a two semester course in General Biology. Studies in Entomology, Plant Pathology, Genetics, and Bacteriology would also be of value.

Other courses considered to be of value in the training of teachers of general agriculture are: Chemistry, Economics, Rural Sociology, Mathematics, and Business Studies.

A Basis for Curriculum Construction in General Agriculture at the High School Level

One of the criticisms of general agriculture has been that it is too bookish and that often times the teachers do not relate the course to the type of agriculture

Proposed Topics for a High School Course in General Agriculture	Technical Agriculture Courses Which Would Provide Training for the Proposed Topics
Soil: its importance and conservation	Soils
The important farm animals and how they are grown and marketed	Livestock production and marketing
Interdependence offarm and city people	Agribusiness
The important farm crops and how they are grown and marketed	Production and marketing of farm crops
The land and agriculture of this community	Agribusiness and soils
The farmer's economic and political problems	Farmer organizations and Farm finance
The occupations in & related to agriculture	Agribusiness
Growing a home vegetable & flower garden	Horticulture
Farmer Organizations: their purpose, functions and problems	Farmer organizations
Forests: their importance & conservation	Conservation and soils
Agriculture and world peace	Agriculture and world peace
Government programs in agriculture	Farm finance and agr. services
Income that can be expected from the various enterprises	Farm finance, livestock production and marketing, production and marketing of farm crops, and hort.
What is the subject of agriculture about?	Agribusiness
The part-time farmer	Agribusiness

Figure 3---The relationship between the proposed topics to be included in a course in general agriculture at the high school level and the proposed courses in technical agriculture for training teachers of general agriculture.

prevailing in their community. On the basis of the criticism that it is too bookish, it would seem that there is a need for some basis, more definite than has existed or been available in the past upon which to build a course of study for general agriculture at the secondary level.

It is not possible to suggest or devise a detailed course of study that would be applicable to all parts of the country or completely acceptable to all teachers. The purpose here is to provide something in the way of a foundation upon which to build a course in general agriculture, that would approach statewide application that is not the expressed opinion of a single individual. Rather, it would be derived from the combined thinking of many individuals who are both interested and informed on the subject of agriculture.

It has been stated previously, that one of the assumptions upon which this study is based is that teachers of general agriculture, people in agriculture, and high school principals would be a source of information that should provide a sound basis for the development of a course in general agriculture at the high school level.

Reviewing the data and the results of this study, it would seem that a number of generalizations could be made at this time relative to a proposed course in general agriculture at the high school level.

The ten or fifteen most important suggested areas

of study resulting from a tabulation of the responses of all three groups, would imply that the course should not be of a vocational nature, but should be more in keeping with the general educational objectives of a course in general agriculture. These would be to develop appreciations and understandings of agriculture and some of its problems.

The fact that the general public's understanding is rated low on the various economic aspects of agriculture, would appear to support the idea that there is a need to provide more educational opportunities in these areas. Therefore, a course in general agriculture should be designed to present such information which would at least partially help to overcome these inadequacies.

If it is assumed that the general public is no better informed on the productive phases of agriculture, than it was considered to be on the economic phases by high school principals and people in agriculture, then there is a need to provide some understanding of these problems.too.

The overall results would seem to lend support to the idea that vocational agriculture should provide the training for present and prospective farmers, but that there is need for a general course for those who do not intend to enter the actual business of farming as a career.

Using the results of this study as a criterion, a proposed course for general agriculture at the high school level in the state of Michigan would consist of the most

important suggested areas of study as ranked by teachers of general agriculture, people in agriculture and high school principals.

Proposed Topics to be Included in a Course in General Agriculture at the Secondary Level

1. Soil: its importance and conservation
2. The important farm animals and how they are grown and marketed
3. Interdependence of farm and city people
4. The important farm crops and how they are grown and marketed
5. The land and agriculture of this community
6. The farmer's economic and political problems
7. The occupations in and related to agriculture
8. Growing a home vegetable and flower garden
9. Farmer organizations: their purpose, function, and problems
10. Forests: their importance and conservation
11. Agriculture and world peace
12. Government programs in agriculture
13. Income that can be expected from the various enterprises
14. What is the subject of agriculture about?
15. The part-time farmer

The areas are listed according to their actual ranking from tabulating the final placings by the teachers of general agriculture, people in agriculture, and high school principals. It will be recalled that these rankings resulted from assigning weighted values on a point basis of 5-4-3-2-1 points for a first, second, third, fourth or fifth-place rating respectively.

It should be pointed out that all fifteen topics included in the above list ranked in the first fifteen of two of the three groups' final ranking. Eight of the fifteen were in the first fifteen of all three groups, and seven were

included by two of the three groups. Thus, these are quite obviously the top fifteen whether selected on the basis of a combined point total or otherwise.

While the areas are listed according to their actual ranking, it does not necessarily mean that time must, or should be allotted in exactly the same sequence. It would imply that the first listed, for example, is considered to be of more importance than the last.

It is not intended that all of the fifteen listed topics, would or should be included in a one-year course. Rather, it would seem that eight or ten of the topics would be sufficient for one years work. To include or cover all the topics quite thoroughly, it would seem that two years time would be required and that there is sufficient material for two years of work.

The proposed course seems to be of such a nature that it would lend itself to very general application. Each suggested area would be discussed on the local, state and national level. Each teacher would modify or formulate the course content according to the pupils' interest and the needs of his local community.

In order to eliminate one of the criticisms of general agriculture, that it is oftentimes too bookish, it might be pointed out that field trips, resource persons, and related activities could be used very extensively. There are many desirable experiences which would supplement

the classroom instruction and make it much more meaningful and effective.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

SUMMARY OF STUDY

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

SUMMARY OF STUDY

The Purpose and Problem of This Study

The primary purpose of this study was to gather data to discover a basis for improving the training programs of present and prospective teachers of general agriculture, and aid in the planning of courses for general agriculture at the high school level. It was believed that it would be possible to formulate a program for the training of teachers of general agriculture from information obtained from people in agriculture, high school principals and teachers of general agriculture, which may be superior to that presently in existence.

The problem was to determine what areas of technical agriculture and related areas of study are needed in a curriculum preparing teachers of general agriculture, and to determine what teachers of general agriculture, people in agriculture, and high school principals thought should be included in a course in general agriculture at the secondary level.

Sources and Procedures of This Study

The sources for the data found in this study were:

fifty-eight teachers of general agriculture in the state of Michigan, fifty high school principals, and fifty people in agriculture, also in the state of Michigan.

High school principals and people in agriculture were interviewed personally by the writer. The forms used in both instances are included in the appendix. Information from the teachers was obtained by means of questionnaires which were sent out to all schools known, or thought to be teaching general agriculture in the 1957-58 school year. A total of eighty-seven questionnaires were sent out with an overall response of seventy-two, or an 82.7 per cent reply. Of the seventy-two returned, sixteen were from schools which were not offering general agriculture for one reason or another. The questionnaire used is also found in the appendix.

Summary of Results and Findings

According to the best estimate possible at the time this study was made, about sixty high schools in the state of Michigan were offering general agriculture in the 1957-58 school year.

While the training of the teachers did vary, from those who are qualified as vocational agriculture teachers to those teaching on special certificates, the majority of them would be considered well qualified. Seventy-five per cent or more of the teachers had had training in farm crops, soils and fertilizers, horticulture, conservation, dairy

cattle management, agricultural economics, and farm management. Less than fifty per cent of the teachers reported having had training in farm power, dairy food industry and truck gardening.

Teachers of general agriculture and the people in agriculture differed in their opinions in respect to the value or importance of various areas of study in the training of teachers for instruction in agriculture. Teachers considered soils and fertilizers, farm crops, conservation, dairy cattle management, farm management, and agricultural economics of most value in the teaching of general agriculture. People in agriculture ranked them in the following order: Agricultural economics, farm management, soils and fertilizers, conservation, marketing (agricultural), and farm crops. A rank order correlation analysis of the importance of areas of instruction by teachers of general agriculture and people in agriculture, shows that the two groups differ significantly at the $P_{.01}$ level of confidence in the importance attached to agricultural economics, agricultural marketing, farm management, and farm crops. The teachers considered farm crops more important than did the people in agriculture, whereas, the people in agriculture considered agricultural economics, agricultural marketing, and farm management to be more important than did the teachers.

A rank order correlation analysis comparing the areas in which the teachers have had instruction with the areas

of study considered to be of most value by the teachers, shows a positive correlation of .92 which is highly significant at the $P_{.01}$ level of confidence. This indicates a very close relationship between the courses in which the teachers have had training, and the courses considered to be of greatest value.

On a percentage basis, 36 per cent of the teachers indicated sheep management to be of least value to them, 32 per cent indicated horticulture, 23 per cent dairy food industry, and 20 per cent poultry. None of the teachers indicated conservation or farm crops to be of least value. People in agriculture considered landscaping of least value, with 52 per cent indicating this area of study, 42 per cent indicated animal diseases, 40 per cent indicated welding, and 38 per cent farm carpentry and farm shop.

Teachers expressed the greatest need for additional training in conservation with fifteen teachers indicating this area. Twelve indicated agricultural economics, farm management, and farm shop. None expressed a need for more training in sheep management, and only one each in beef management, and farm buildings.

The importance of related areas of instruction in the training of teachers of general agriculture, found the teachers and people in agriculture to be in very close agreement on the courses considered to be of most value.

A rank order correlation between the two groups is a positive .61 which is highly significant at the $P_{.01}$ level of confidence. Courses rating highest were: biology, botany, chemistry, economics, and entomology.

Teachers of general agriculture, people in agriculture, and high school principals all selected and ranked five suggested areas of study which they thought should be included in a high school course in general agriculture, with the opportunity to add or suggest others if they wished. The suggested areas are found in form "B" which is included in the appendix. There was little correlation between any of the two groups, but there was also little difference in the rank order correlation between any two of the three groups. The rank order correlation between the teachers of general agriculture and people in agriculture was a positive .58; the rank order correlation between teachers and high school principals is a positive .70; between people in agriculture and high school principals a positive .64.

Combining the rankings of each of the three forementioned groups we find the following ten topics to be of most importance:

1. Soil: its importance and conservation
2. The important farm animals and how they are grown and marketed
3. Interdependence of farm and city people
4. The important farm crops and how they are grown and marketed
5. The land and agriculture of this community
6. The farmer's economic and political problems

7. The occupations in and related to agriculture
8. Growing a home vegetable and flower garden
9. Farm organizations: their purpose, functions, and problems
10. Forests: their importance and conservation

Following close in order were: agriculture and world peace, government programs in agriculture, income that can be expected from the various enterprises, what is the subject of agriculture about, and the part time-farmer.

The majority of the people in agriculture thought that most or all schools should offer more agriculture. While the high school principals did not respond quite so emphatically in favor of agriculture, it seems particularly noteworthy that none of the principals expressed the opinion that none should be taught. Only three principals indicated that less agriculture should be taught.

When a chi square analysis is made of the numbers of these two groups, people in agriculture and high school principals, a chi square of 15.02, significant beyond the $P_{.02}$ level of confidence is obtained. This indicates that the number of each group selecting one of these categories, as found in appendix form "D", differs significantly. A comparison of the choice percentages of each category indicates that these differences lie mainly in the "All schools should offer more agriculture," and secondarily in "Most schools should offer more agriculture." In each of these categories, significantly larger numbers of the people in agriculture believed that more training in agri-

culture was desirable.

A large majority of the high school principals and people in agriculture expressed the belief that the most desirable relationship between general and vocational agriculture in the high school curriculum, would be to offer both for appropriate students. The number of the two groups combined expressing the feeling that general agriculture should not be offered when vocational agriculture is taught, was the same as those who believed that general agriculture should be offered instead of vocational agriculture.

Thus, on the basis of 74 of the 100 respondents indicating that both general and vocational agriculture should be taught, this study seems to indicate rather clearly that not only is there a place for a general agriculture course in the high school curriculum, but that it might very well be taught in schools offering vocational agriculture also.

CONCLUSIONS

Based on the summary of the findings, the following conclusions seem appropriate:

1. The hypothesis underlying this study, as stated on page two, seems to be pretty well substantiated in that the proposed program for the training of teachers of general agriculture as has been presented in this study, is in keeping with what is indicated should be included in a

course in general agriculture at the secondary level at the present time.

2. It appears from the proposed topics to be included in a course in general agriculture at the secondary level, as those being of most importance, that the economic aspects of agriculture are of considerable importance and that training programs for prospective teachers of general agriculture might well give special consideration to this aspect also.
3. All of the groups ranking the various topics which might be included in a course in general agriculture at the high school level, placed the study of soils ahead of all other topics. Thus, it seems that a study of soils is of fundamental importance in the teaching of general agriculture at the high school level.
4. Teachers of general agriculture who participated in this study, and who ranked the topics they considered to be of most importance, tended to place greater emphasis on the understandings of the technical aspects of agricultural production than on its economic aspects.
5. The findings of this study indicate that people engaged in agriculture tend to place the greatest importance on those aspects or topics which are related to the economics of agriculture.

6. Based on the responses of the high school principals and the people engaged in agriculture who were interviewed in this study, it would seem that more high schools in the state of Michigan should include agriculture as a part of their curriculum.
7. If the findings of this study relative to the relationship that should exist between general and vocational agriculture are valid, there is a definite place for general agriculture in the high school curriculum even though vocational agriculture is being taught, and the teaching of one does not fulfill the needs of the other.
8. If one assumes that high school principals and people engaged in agriculture are qualified to evaluate the general public's information regarding agriculture and some of its problems, the findings of this study indicate that the general public is poorly informed on matters related to agriculture, especially the economic problems facing farmers.

Based on readings associated with this study, the following conclusions seem appropriate also:

1. A course in general agriculture would differ from a vocational agriculture course in that general agriculture would contribute to the aims

and purposes of general education without placing undue emphasis on the vocational aspects, such as the teaching of specific skills.

2. Studies in the past have shown quite clearly that most persons are of the opinion that the primary purpose of a course in general agriculture at the high school level is to develop appreciations and understandings rather than the learning of certain specific skills.

Recommendations

Based on the findings of this study, the writer believes the following recommendations relative to the teaching of general agriculture are in order:

1. College courses in technical agriculture, as they are presently being taught, should be carefully appraised to determine their adequacy in meeting the needs of those who are preparing to become teachers of general agriculture, to discover if they are in keeping with the idea that the economics of agriculture should be stressed, and that they are designed to teach appreciations and understandings of agriculture rather than specific skills.
2. There should be less emphasis on the teaching of specific skills in technical agriculture courses

for those preparing to teach general agriculture as a full time course or as special units in some other subjects.

3. Units in present special methods courses might include consideration of the differences in instruction, in programs of general and vocational agriculture programs, with the possibility in mind of employing vocational agriculture teachers in the teaching of general agriculture.
4. A course as broad in scope as general agriculture requires a teacher to have as broad a background of knowledge as possible, and thus a minor seems insufficient. A major in the field would appear to be a necessity and would be justified where more than one class is taught.
5. As much work as possible in the biological and other related sciences should be included in the training programs for teachers of general agriculture.
6. More schools should give serious thought to the introduction and inclusion of courses in general agriculture at the secondary level, not only for its educational value alone, but as a means of teaching the practical values of other fields of science as they apply to agriculture.
7. Teachers of general agriculture, in using the

proposed course of study at the high school level, should adapt it to the local community.

Problems for Further Study

1. A study is needed to establish a definite set of objectives and purposes for general agriculture.
2. There is a need for study to ascertain the most desirable grade level at which a course in general agriculture might most profitably be taught at the secondary level.
3. In order to improve the training program at the college level, information is needed as to the types of courses and revisions necessary to make them most practical and useful in the training of teachers of general agriculture.
4. Since a course in general agriculture does not lend itself to the use of a single textbook, investigation of the instructional materials and teaching aids most useful and available would be very helpful.
5. A study should be made to determine the most desirable methods and practices, and other helpful ideas for the teaching of general agriculture.
6. Study is needed to determine why certain courses are considered by teachers to be of much value to them, while others are rated as being of little value.

APPENDIX

Appendix I

SURVEY OF TEACHERS

Form A

The following is a list of areas of study in agriculture, please check in the appropriate columns as follows: In column

(1) Check all those areas in which you have received instruction on the college level,

(2) Check three areas in which you have had instruction that you feel are of greatest value to you in the teaching of general agriculture,

(3) Check three areas in which you have had instruction that you feel are of least value to you in the teaching of general agriculture,

(4) Check three areas in which you have not had instruction but feel that you need additional training and would be of value to you as a teacher of general agriculture.

Areas of study on College Level	(1) Check all areas in which you have received instr.	(2) Check three areas from col.(1) of greatest value to you.	(3) Check three areas from col. (1) of least value to you.	(4) Check three areas in which add. training is needed.
Agr. Economics				
Animal Diseases				
Animal Nutrition				
Beef Management				
Conservation				
Dairy Cattle Mgt.				
Dairy Food Indus.				
Farm Carpentry				
Farm Crops				
Farm Management				
Farm Power				
Farm Shop				
Forestry				
Horticulture				
Landscaping				
Marketing (Agr.)				
Poultry				
Sheep Mgt.				
Soils & Fertilizers				
Swine Mgt.				
Truck Gardening				
Welding				
(Others) specify				

Appendix II

Following is a list of suggested areas of study for general agriculture at the high school level. Please select FIVE of the following, or others that you might wish to add, and rank each in order of importance from your viewpoint.

Form B

_____ 1. Agriculture and world peace
_____ 2. Farm credit
_____ 3. Farmer organizations: their purposes, function, and problems
_____ 4. Forests: their importance and conservation
_____ 5. Government programs in agriculture
_____ 6. Growing a home vegetable and flower garden
_____ 7. Home beautification
_____ 8. How to select and process farm products for family consumption
_____ 9. Improving the schools and other institutions for farm people
_____10. Income that can be expected from the various enterprises
_____11. Interdependence of farm and city people
_____12. Recreation in rural communities
_____13. Relationships to farm safety
_____14. Soil: its importance and conservation
_____15. Technological advances in agriculture
_____16. The source and cost of living of the farm family
_____17. The farmer's economic and political problems
_____18. The farmer's machinery, cost and operation
_____19. The important farm animals and how they are grown and marketed
_____20. The important farm crops and how they are grown and marketed
_____21. The land and agriculture of this community
_____22. The occupations in and related to agriculture
_____23. The part-time farmer
_____24. Types of farming in Michigan
_____25. Water supply and waste disposal
_____26. What is the subject of agriculture about?
_____27. Youth and pets and plants
_____28. Youth organizations in agriculture
_____29. Others (specify) _____
_____30. _____
_____31. _____
_____32. _____
_____33. _____

Appendix III

Following is a list of courses in related areas that might be included in a training program for teachers of general agriculture. From your experiences, how valuable are they in the training of teachers preparing to teach general agriculture? Please check each item in its appropriate column.

Form C

Related Areas	Essential Is absolutely necessary	Desirable Is worthwhile and of some Value	Immaterial Is of little or no value
Bacteriology			
Biology			
Botany			
Business Studies			
Chemistry			
Economics			
Entomology			
Genetics			
Geography			
Geology			
Government (Local)			
Physics			
Plant Pathology			
Mathematics			
Sociology			
Sociology (Rural)			
Zoology			
Others (Specify)			

Appendix IV

Interview Schedule in Regard to Place of General Agriculture in General Education

Form D

Aside from agriculture taught with the objective of training youth for proficiency in farming and other related occupations, what is your opinion with reference to making instruction in agriculture available to all pupils without regard to sex or farm background as a part of their general education?

1. Do you feel that more high schools than are presently teaching general or vocational agriculture should include or offer some agriculture in their curriculum?
   Check ONE of the following:

   a. All schools should offer more agriculture. _____
   b. Most schools should offer more agriculture. _____
   c. Some schools should offer more agriculture. _____
   d. No more than is presently being taught is needed. _____
   e. Less agriculture should be taught. _____
   f. None, whatsoever, should be taught. _____

2. What should be the relationship between general agriculture and vocational agriculture? It should be offered:
   Check ONE of the following:

   a. Instead of vocational agriculture. _____
   b. In addition to vocational agriculture. _____
   c. Not offered when vocational agriculture is taught. _____

3. How well informed is the general public regarding agriculture and it's problems? Please check the following listed items in the column that you feel best describes it.

	Very well informed	Moderately well informed	Fairly well informed	Poorly informed
Agriculture Extension Service				
Farm Cooperatives				
Farm Costs				
Farm Prices				
Farm Subsidies				
Occupational Opportunities in Agriculture				
Soil Bank				
Soil Conservation Service				

Appendix V

Check List of Areas Of Study In General Agriculture

Form E

The following is a list of areas of study in agriculture that are most commonly found in our college training programs. In column (1) select FIVE areas that you feel are of greatest value to the teacher of general agriculture and rank each in order of importance. In column (2) select FIVE areas that you feel would be of lesser value to the teacher of general agriculture. Items selected in column (2) need not be ranked. You may add other areas of study to the list if you wish.

Areas of Study	Select FIVE areas and rank each in order of importance	Select FIVE areas of lesser value Not to be ranked.
Agriculture Economics		
Animal Diseases		
Animal Nutrition		
Beef Management		
Conservation		
Dairy Cattle Management		
Dairy Food Industry		
Farm Carpentry		
Farm Crops		
Farm Management		
Farm Shop		
Forestry		
Horticulture		
Landscaping		
Marketing (agricultural)		
Poultry		
Sheep Management		
Soils and Fertilizers		
Swine Management		
Truck Gardening		
Welding		
Others (specify)		

Appendix VI

Cover Letter Sent To Superintendents Along With Questionnaire For Teachers

I am making a study to determine in what ways it might be possible to improve programs of technical instruction for persons preparing to teach general or non-vocational agriculture. Specifically, I would like to discover what areas of technical agriculture are believed to be needed in a pre-service curriculum for preparing such teachers.

A related question is that of what areas of study in agriculture are felt to be of greatest importance and should be included in a course or courses in general agriculture at the high-school level, and then what related areas of instruction could contribute to the training of persons preparing to teach general agriculture.

I would appreciate your cooperation in making this study, by referring the enclosed survey form for teachers to the person responsible for teaching general agriculture in your school system. The information that I have indicates that your school offers general agriculture and/or conservation yearly or every other year. Whichever may be the case, would you be kind enough to have the enclosed form completed and returned to me?

Enclosed is a self-addressed, stamped envelope for you convenience in returning the completed form. If this information can be returned to me by November 30, 1957, it would be greatly appreciated. Thank you very much for your help and cooperation in making this study possible.

Sincerely,

Lee O. Baker

As advisor to Professor Baker on this research project I would like to endorse this inquiry which he is making. Through it much helpful information should become available that could eventually help in making better qualified teachers available to the schools.

Yours sincerely,

(signed) H. M. Byram
H. M. Byram, Chairman
Agriculural Ed. Service
Michigan State Univ.

Appendix VII

Schools in Which General Agriculture Was Being Taught, and Whose Teachers Responded to the Questionnaire, 1957-58.

1. Arcadia
2. Au Gres
3. Baraga
4. Bear Lake
5. Bellaire
6. Brimley
7. Brooklyn
8. Burr Oak
9. Capac
10. Carsonville
11. Cedar Springs
12. Chatham
13. Coloma
14. Cooks
15. Crystal
16. Custer
17. Dryden
18. Edmore
19. Frakenmuth
20. Gobles
21. Grass Lake
22. Greenville
23. Harrison
24. Hastings
25. Hickory Corners
26. Honor
27. Houghton
28. Howard City
29. Hudsonville
30. Jackson
31. Lapeer
32. Lowell
33. Mecosta
34. Mendon
35. Merritt
36. Montrose
37. Mt. Pleasant
38. Munising
39. Nahma
40. Napoleon
41. National Mine
42. New Haven
43. Norway
44. Okemos
45. Ontonagon
46. Perkins
47. Pewamo
48. Port Austin
49. Republic
50. Richland

Appendix VII cont'd

51. Rock
52. Romeo
53. Stambaugh
54. Tekonsha
55. Vestaburg
56. White Pigeon

Appendix VIII

High School Principals Interviewed In Schools Teaching Vocational Agriculture

1. Bangor
2. Barryton
3. Belding
4. Big Rapids
5. Blanchard
6. Caledonia
7. Decatur
8. Delton
9. Kent City
10. Lawrence
11. Mattawan
12. Middleville
13. Morley
14. Morrice
15. Otsego
16. Paw Paw
17. Plainwell
18. Reed City
19. Remus
20. Rockford
21. Sparta
22. Stanton
23. Vicksburg
24. Wayland
25. Woodland

High School Principals Interviewed In Schools Teaching General Agriculture

1. Coloma
2. Hartford
3. Hickory Corners
4. Howard City
5. Lakeview
6. Mendon
7. Port Austin
8. Richland

High School Principals Interviewed In Schools Teaching Both Vocational And General Agriculture

1. Capac
2. Cedar Springs
3. Edmore
4. Greenville
5. Hastings
6. Lowell

Appendix VIII cont'd

High School Principals Interviewed In Schools Teaching No Agriculture

1. Bessemer
2. Freeport
3. Galesburg
4. Ironwood
5. Kalamazoo Central
6. Lawton
7. Sand Lake
8. Schoolcraft
9. Wakefield
10. Watersmeet
11. Watervliet

Appendix IX

People In Agriculture Interviewed, Occupations Represented And Geographic Locations Where Interviews Were Conducted

Agriculture Occupation	Number Interviewed	Location
Elevator Operator	6	Woodland Schoolcraft Grand Ledge Three Rivers Kalamazoo Saline
Soil Conservation Service	6	Howell Marshall Hastings (2) Kalamazoo (2)
County Agricultural Agent	5	Allegan Charlotte Kalamazoo Marshall Paw Paw
Farm Machinery Dealer	5	Centreville Richland Saline Vicksburg White Pigeon
Farmers	5	Allegan (2) Galesburg Kalamazoo Saline
Production Credit Association	4	East Lansing Kalamzoo Lansing Marshall
Assistant County Agr. Agent	3	Allegan Kalamazoo Paw Paw
4-H Club Agent	3	Allegan Kalamazoo Paw Paw
Farm Organizations	2	East Lansing Marshall

Appendix IX cont'd

Agriculture Occupation	Number Interviewed	Location
Fertilizer Plant Operator	2	East Lansing Kalamazoo
Dairy Plant Manager	2	Delton Sturgis
Manager Milk Producers Coop.	1	Kalamazoo
Woodland Conservationist	1	Howell
ASC	1	Kalamazoo
Farm Adviser (bank)	1	Kalamazoo
Manager Meat Packing Plant	1	Kalamazoo
NFL Association	1	Three Rivers
FHA County Supervisor	1	Marshall

BIBLIOGRAPHY

BIBLIOGRAPHY

BOOKS

Hamlin, Herbert M. Agricultural Education In Community Schools. Danville, Illinois: The Interstate, 1949. 480 Pp.

Hammonds, Carsie. Teaching Agriculture. New York: McGraw-Hill Book Company, Inc., 1950. 353 Pp.

Koos, L.V. The American Secondary School. New York: Ginn and Company, 1927. 489 Pp.

BULLETINS

I've Found My Future In Agriculture, N.P. Special Committee of the Resident Instruction Section, Division of Agriculture, Association of Land Grant Colleges and Universities, In Cooperation with the National Project in Agricultural Communication. __ Pp.

Educational Objectives in Vocational Agriculture. U.S. Office of Education, Washington, D.C., Vocational Division Monography No. 21, 1940.

General Agriculture for Secondary Schools. Volume VI, Department of Public Instruction, Des Moines, Iowa, 1948. 126 Pp.

Starrak, J.A. Current School and College Education in Agriculture for Iowa Farmers, Agriculture Experiment Station Bulletin P74, Iowa State College, Ames, Iowa, 1945. 40 Pp.

Starrak, J.A., and Max W. Kneedy. General Agriculture in the High Schools of Iowa. Research Bulletin 327, Agriculture Experiment Station, Iowa State College, Ames, Iowa, 1944, Pp. 187-232.

Starrak, J.A., and J.B. McClelland, The Expansion of Vocational Education in Agriculture in Iowa. Research Bulletin 360, Agriculture Experiment Station Iowa State College, Ames, Iowa, 1949. 42 Pp.

ARTICLES AND PERIODICALS

Brazziel, William F. "Teacher Training in Agriculture in Non-Land-Grant Colleges in the United States." Agriculture Education Magazine, 31:116, November, 1958.

Byram, Harold M. "Teaching General Agriculture." Agriculture Education Magazine, 6:69,71, November, 1933.

Deyoe, GP. "Some Possibilities for Non-Vocational Agriculture." Agriculture Education Magazine, 6:151, April, 1934.

Hamlin, H.M. "In a Changing Agriculture Here is---The Educational Problem." Better Farming Methods, Pp. 14-29, August, 1957.

Portz, Herbert L. Non-Farm Youth in Vocational Agriculture. Published special problem, M.S. degree, Agriculture Education Department, University of Wisconsin, 1951. 35 Pp.

UNPUBLISHED MATERIALS

"A Guide for a Course in General Agriculture for High Schools in Maryland." Prepared by the Students in Course Problems in Teaching Vocational Agriculture, Summer Session, University of Maryland, 1951. 49 Pp.

Brunner, Henry Sherman. "Criteria for Evaluating Programs of Preparation for Teachers of Vocational Agriculture." Unpublished Ph. D. Dissertation, Ohio State University, 1943. 298 Pp.

Campbell, Julian Morris. "A Survey of Non-Reimbursable Programs of Agriculture in Michigan High Schools." A Problem submitted to the Department of Education, Michigan State University, 1952. 35 Pp.

Clayton, Harry L. "General Agriculture in the High School." Unpublished M.A. thesis, University of Nebraska, 1935, 108 Pp.

Couch, Stuart T. "The College Preparation of Teachers of Vocational Agriculture." Unpublished M.S. thesis, Cornell University, 1949. 75 Pp.

Crawford, George E. "General Agriculture in the High Schools of Iowa." Unpublished M.S. thesis, Iowa State College, 1925. 96 Pp.

UNPUBLISHED MATERIALS

Ekstrom, G.F. "Enrollments and Vocational Offerings in Rural and Village High Schools in Missouri." Non-thesis study, Department of Agriculture Education, University of Missouri, 1953. 25 Pp.

Irons, Henry E. "Characteristics of Pupils in General Agriculture Courses in Certain Iowa High Schools." Unpublished M.S. thesis, Iowa State College, 1930. 82 Pp.

Karls, Glenn Edward. "Courses of Study in Agriculture for the Elementary and High Schools of Southwest Missouri with Suggestions for Teacher Preparation for These Courses." Unpublished Ed. D. thesis, University of Missouri, 1946. 334 Pp.

Kneedy, Max W. "General Agriculture in the High Schools of Iowa." Unpublished M.S. thesis, Iowa State College, 1947. 93 Pp.

Matela, Arcadio G. "Content of Curricula for Teachers of Vocational Agriculture in Separate Land-Grant Colleges." Unpublished M.S. thesis, Iowa State College, 1948. 124 Pp.

Meaders, Otis Donald. "Practices Advocated by Selected National Agencies and Organizations for Implementing Local Programs of Vocational Agriculture, 1836-1954." Unpublished Ed. D. thesis, Department of Education, Michigan State University, 1957. 392 Pp.

Seaver, William R. "A Study of the Effect of Establishing a General Agriculture Program on a Previously Established Vocational Agriculture Program." Graduate Student in Agriculture Education, University of California, 1956. 3 Pp.

Sharp, Lloyd P. "Agriculture in the Consolidated Schools of Iowa." Unpublished M.S. thesis, Iowa State College 1922. 52 Pp.

Slone, Harold N. "Agricultural Arts for Grade VIII, Goshen Central School, Goshen, N.Y." Special Problem, M.S. degree, Cornell University, 1946 90Pp.

Wiegand, Walter G. "An Analysis of Content of Preparation of Agriculture Teachers in Selected Universities and Colleges." Unpublished M.S. thesis, University of Minnesota, 1936. 183 Pp.

REPORTS

Battles, Roy. What Agriculture Expects of Higher Education Prepared for American Council on Education Meeting, Chicago, Illinois, October 11-12, 1956. 7 Pp.

Thompson, Orville E. A Study of Selected Problems of Agricultural Education in the Secondary Schools of California. Report to the Agricultural Section of the American Vocational Association, August 6, 1957, Department of Education, University of California, 11 Pp.

OTHER SOURCES

Personal Interviews with Members of Staff, Office of Vocational Education, Department of Public Instruction, Lansing, Michigan, June 30, 1958.

PUBLIC DOCUMENTS

U.S. Department of Commerce. Statistical Abstract of the U.S., 1958. 79th Annual Edition, U.S. Government Printing Office, Washington 25, D.C. 1040 Pp.

[redacted]