

1928

An attempt to measure the effectiveness of vocational education in agriculture in the State of Massachusetts.

William Irving Mayo
University of Massachusetts Amherst

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AN ATTEMPT TO MEASURE THE EFFECTIVENESS OF
VOCATIONAL EDUCATION IN AGRICULTURE
IN THE STATE OF MASSACHUSETTS

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AN ATTEMPT TO MEASURE THE
EFFECTIVENESS OF VOCATIONAL EDUCATION
IN AGRICULTURE IN THE
STATE OF MASSACHUSETTS

By

WILLIAM IRVING MAYO

Thesis submitted for the degree of Master of Science

MASSACHUSETTS STATE COLLEGE

1928

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INTRODUCTION

THE NEED FOR MEASURING THE EFFECTIVENESS OF SECONDARY INSTRUCTION IN AGRICULTURE. Secondary instruction in agriculture has always been expensive. Small groups, specially trained teachers, the need for considerable equipment, have all contributed to the expense of this training. Because of its expense, the work has always needed much defense and bolstering up before state legislatures, school boards and tax payers. Its efficiency has often been questioned by its enemies. Even those in charge of the work have often questioned its efficiency and effectiveness in increasing the number of persons actually engaged in productive agriculture. One of the strongest and most harmful criticisms of the work is that only a few of those who take it ever become farmers. The writer of this paper has taught secondary agriculture for ten years. During all of this time the question of how many students actually engaged in farming after taking his courses has always been vital and pertinent. A large group farming makes a strong argument for continuance of the work. Many outstanding instances of successful student farming are available but there is no comprehensive study involving all of the former students who have had one year or more of training in vocational agriculture. This work has been undertaken because a real problem exists. Its answer will be of interest to all

engaged in teaching vocational agriculture in Massachusetts. It will be useful as a basis for comparison in other states and as a basis for further research. On the answer to the problem of how many agricultural students farm, will depend much of the future policy of the state toward this type of work. Shall it be expanded and extended to other communities? If expansion is desirable, to what communities shall it be carried? Are our state legislatures justified in granting support for this type of training? If the work is effectively training farmers, how can its efficiency be increased? These and many other questions may well be raised by such a study as the following.

THE ACCEPTED MEASURE OF SUCCESS OF SECONDARY INSTRUCTION IN AGRICULTURE. The problem of how to measure the success of any kind of teaching is a most difficult one. Many ways have been tried; all are open to question in one or more particulars. It is no easier to measure the success of a piece of teaching in vocational agriculture than in any other branch of instruction. However, several attempts have been made to arrive at some estimate of the effectiveness of this kind of work in the United States. The most notable is the study conducted by the Federal Board for Vocational Education in its Bulletin #82 entitled "Effectiveness of Vocational Education in Agriculture." In this study the author uses as his sole criterion the number of graduates and former students actively

engaged in the agricultural industry. This "yard stick," if it may be so called, has been acceptable as a fair standard by the supervisors of secondary education in agriculture in many states. It is accepted as reasonable by agricultural instructors on the job. It is a just measure to present to legislatures when support for the work is asked. Mr. L. S. Hawkins, formerly head of the Federal Board for Vocational Education, has made this statement: "The ultimate measure of our success in vocational education in agriculture will be the number and efficiency of those who enter the field of actual production." In view of these facts, it would seem justifiable to attempt to measure the effectiveness of the program of instruction in secondary agriculture in the state of Massachusetts by a standard similar to that used by the government and other states; namely, the number of former students and graduates actively engaged in productive agriculture.

THE PROBLEM. Such a measurement and study can, of course, be only a preliminary step toward a much larger and more exhaustive study which should be made of the group in the agricultural industry, once it is counted and sorted. However, before any study at all can be made, we must know how large this group is and how it is divided in the industry and in the state. Thus the object of this study is to ascertain how many former students of vocational agriculture in our secondary

schools and special schools of vocational agriculture are actively engaged in productive farming and, assuming as previous investigators have done, that this is a fair measure of the success of agricultural teaching in the state, attempt to estimate the effectiveness of the instruction.

LEGAL DEFINITIONS LIMITING THIS STUDY. This study attempts to estimate the success of the Vocational Agricultural schools and departments in terms of the primary purpose of Agricultural Education as defined in the basic statutes of Massachusetts in the acts of 1911 and in the federal Vocational Education act of 1917, known as the "Smith-Hughes" act.

Chapter 74 (Section 1) of the General Laws of Massachusetts includes the following definitions:-

"Vocational education", education of which the primary purpose is to fit pupils for profitable employment.

"Agricultural education", vocational education fitting pupils for occupations connected with agriculture, the care of domestic animals, forestry and other wage earning or productive work on farm land.

The Smith-Hughes act of 1917 (in Section 10) requires, among other factors, 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 designed 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.

This study does not inquire as to how well the teaching has been done or as to what other values have been secured, but merely as to the result in terms of the degree in which it has complied with the preceding definitions.

PREVIOUS WORK DONE

LITTLE RESEARCH DONE. No published account of work similar to that undertaken in this study can be found. Several states have undertaken partial studies and a summary of their results appears in Table I of this study. The Federal Government, through the Bureau of Education, has undertaken a study similar to this in all states of the Union. The data, however, was secured by sampling and does not include a record of every student who took the work one year or more. A letter and questionnaire with a stamped, addressed envelope was sent to every state supervisor of vocational agriculture in the United States in an effort to secure such material. All but three replied to the letter. Many states have no follow-up system similar to Massachusetts so that no data could be secured. One state supervisor stated, "Massachusetts has the best follow-up system of any state in the Union." If it were not for this fact the study here undertaken would have been impossible.

TABLE I. TABULATION OF RESULTS SECURED IN OTHER STATES.

STATES INDICATED BY (*) FAILED TO REPLY.

State	Data avail- able?	Whole or Part	No. Stud- ents	% Con. with Ag.	% Not Con.	% Farm- ing	% Ag. Col.
Alabama	No						
Arkansas	No						
Arizona	No						
California	Yes	Part	1728	68			
Colorado	Yes	Part	542			46.3	10.3
Connecticut	No						
Delaware	No						
Florida	No						
Georgia	Yes	Part	39			38.5	
Idaho	Yes	Part	821	51.5	40	43.5	4.9
Illinois	No						
Indiana	Yes	Whole	2531	76			
Iowa	No						
Kansas	No						
Kentucky	No						
Louisiana	No						
Maine	Yes	Whole		66	19	51	15
Maryland	No						
Massachusetts	--	--	--	--	--	--	--
Michigan	No						
Minnesota	No						
Mississippi	Yes	Whole	2850		30	43	17
Missouri	Yes	Whole	3363			70	
Montana	No						
Nebraska	Yes	Part				71	29
Nevada	Yes	Whole			35.8	43.3	2.2
New Hampshire	No						
New Jersey	Yes			70	34.7		
New Mexico	No						
New York	Yes			76.2			
North Carolina	No						
North Dakota	No						
Ohio	Yes	Part				56	4
Oklahoma*							
Oregon*							
Pennsylvania	No						
Rhode Island	No						
South Carolina*							
South Dakota	Yes	Part				61	22
Tennessee*							
Texas	No						
Utah	Yes	Part	324			12.2	
Vermont	No						
Virginia	No						
Washington	Yes	Part	456		54		
West Virginia	No						
Wisconsin	Yes	Whole	1291		8.8	42.9	7.9
Wyoming	No						

DATA FOR 1926 SURVEY OF GRADUATES AND FORMER STUDENTS OF
VOCATIONAL AGRICULTURAL SCHOOLS AND DEPARTMENTS IN
MASSACHUSETTS

II

1.- SCHOOL OR DEPARTMENT_____

2.- NAME OF PERSON TRAINED(From Census Card)_____

First Address_____Home: Farm, City, Present_____
(From Census Card)_____or Village (Which)_____Address_____

3.- PREVIOUS SCHOOLING:Total years in school__Grade Left__Age at Leaving__
(From Census Card or Life Hist. Card or Folder). Reason for Leaving__

VOCATIONAL SCHOOL PERIOD

4.- AGE AT ENTERING Agricultural School or Department_____
(From Census Card or Life Hist. Card or Folder).

5.- YEARS IN AGRICULTURAL PROJECT OR OTHER SUPERVISED AGRICULTURAL WORK_____
(From State Supervisor's Record Slips)

6.- AGE AT LEAVING Ag. School or Department__Reason for Leaving_____
(From Discharge Card or Life Hist. Card or Folder). Effort_____
Progress_____

PRESENT - 1926 - YEAR

To be supplied by School or Department

7.- FOUND_____
(Yes or No)

8.- Deceased_____
(Yes or No)

9.- IN AN AGRICULTURAL VOCATION(State what kind; or simply say, "Yes",
if kind is already recorded on local exhibit mount).

10.- IN A NON-AGRICULTURAL VOCATION (If not following an agricultural
career, state what vocation is followed)_____

11.- SUPPLEMENTARY AGRICULTURAL INTERESTS AND ACTIVITIES
(Avocational or other,- does home gardening, poultry keeping, work
with timberland, etc.)_____

INTERVENING PERIOD

Omit, if already recorded on Exhibit Cabinet Mount

12.- (1) Notes on work done between the end of the vocational schooling
period and the beginning of the 1926 agricultural vocation_____
(2) Notes on agricultural work tried, if any, between end of agri-
cultural schooling and the beginning of the 1926 Non-agricultural
vocation_____

These notes may be finished on the back of this sheet, if more space
is needed.

TALLY SHEET ON DATA FOR SURVEY OF GRADUATES AND FORMER STUDENTS
OF VOCATIONAL AGRICULTURAL SCHOOLS AND DEPARTMENTS IN MASSACHUSETTS

I

SCHOOL OR DEPARTMENT.....	TOWN, CITY OR COUNTY.....	Totals	% of all taught
ITEMS	TALLIES		
	1111 = 5		
1 Found.....			
2 Deceased.....			
3 Not Reached.....			
Total Taught.....			
4 Previous Education	(1) Had 6th Grade..... (2) " 7th " (3) " 8th " Total who entered from El. Schools..... (4) Had 1st yr. H.S..... (5) " 2nd " H.S..... (6) " 3rd " H.S..... (7) High School Grad..... Total who entered from other Secondary Schools.....		
5 Voc. Ag. Education	(1) 1 yr. course..... (2) 2 yrs. " (3) 3 yrs. " (4) 4 yrs. " Total trained in Voc. Ag. Schools and Depts.....		
6 Went to Ag. College	(1) 4 yrs. course..... (2) 2 " " (3) Shorter " Total taking further Ag. Courses.....		
7 Went to Non-Ag. Col. or School			
8 Still in Voc. Ag. S. or Dept.			
9 Engaged in Productive Agriculture	(1) Permanently Established as Owners or Tenants with equities in Productive Ag. Property A. From Farm Homes..... B. " Village " C. " City " D. " Homes Not Known..... Total Perm. Estab. in Prod. Ag..... (2) Probably Permanently In Prod. Ag. (On Home Farms Foremen, etc.) A. From Farm Homes..... B. " Village " C. " City " D. " Homes Not Known..... Total Prob. Perm. in Prod. Ag.....		
10 In Prod. Ag. Part-time + Non-Ag. Work Part-time	(1) From Farm Homes..... (2) " Village " (3) " City " (4) " Homes Not Known..... Total in Prod. Ag. + Non-Ag. Part-time each		
11 Plan to Resume Prod. Ag. Again	(1) From Farm Homes..... (2) " Village " (3) " City " (4) " Homes Not Known..... Total who Plan to Resume Prod. Ag.		
12 In Ag. Ed. as Teacher, Co. Agent, Club Leader, etc.			
13 In Business Allied to Prod. Agr. (Seed, Tool, etc.)			
14 Not in Prod. Ag. or Ag. Ed., but have Ag. Side-lines			
15 Whole number in Prod. Ag. & Ag. Ed. (9(1) + 9(2) + 12)			

METHOD OF SECURING DATA

The Massachusetts State Department of Education requires that careful follow-up records be kept by all state aided schools teaching vocational agriculture. These records have been assembled and a compilation and summary made. They show to what extent the graduates of the several schools and departments are actually farming. The department records also show from what type of home the student entered the school; that is, whether he came from farm, village or city surroundings. The data gathered includes every known graduate and former student of Massachusetts schools and departments since the first one was started in 1908.

METHOD OF GATHERING DATA. The material used in this thesis was gathered by the State Department of Education on a special blank designed for the purpose (see specimen copy I inserted at page 7). A specially designed pick-up sheet was used in compiling the data (see specimen copy II). All of the data sheets were filled in with the names of the pupils by the state department clerks. The data was collected and filled in by the instructors at the various schools.

CHANCE OF ERROR. Some schools undoubtedly furnished more accurate data than others because the instructor in charge was better acquainted with the graduates. Frequent change of instructors makes for inaccurate follow-up data.

CHOICE IN USE OF DATA. No attempt has been made to utilize all of the data collected. There are left many interesting problems to work out and many other studies of value could be made from the material collected. The principal object has been to ascertain the number and types of students actually farming and to judge the effectiveness of the training from these facts. Items one, two, three, five, seven and especially nine to thirteen were of the most use in accomplishing this object.

ASSURANCE OF ACCURACY. All tabulations worked out have been made by two persons and have been carefully checked and rechecked for errors. The writer has taught vocational agriculture for ten years, all but one year of this time in the vocational schools in Massachusetts. He is familiar with all of the schools reporting and with most of the instructors. He was able to interpret much of the data more fairly than would be possible for one unacquainted with the teaching of vocational agriculture in Massachusetts. Personal conferences were held with some instructors concerning doubtful cases whose employment was open to varied interpretation.

TABLE II. A LIST OF COUNTY AGRICULTURAL SCHOOLS AND DEPARTMENTS OF VOCATIONAL AGRICULTURE IN HIGH SCHOOLS IN THE STATE OF MASSACHUSETTS TOGETHER WITH THE YEAR AND MONTH OF ESTABLISHMENT. DEPARTMENTS STARRED HAVE BEEN DISCONTINUED. THIS LIST IS CORRECT TO 1926.

Schools	Date of Establishment	
	<u>Year</u>	<u>Month</u>
Bristol County	1913	September
Essex County	1913	October
Norfolk County	1916	October
Weymouth Branch	1916	September
Smith's Agricultural	1908	October
Departments		
Ashfield	1913	August
Bernardston*	1920	October
Brimfield*	1913	October
Boston (Jamaica Plain)	1918	November
Clinton*	1914	September
Concord*	1913	September
Easton*	1912	August
Falmouth	1920	September
Hadley	1912	January
Hatfield	1921	August
Harwick*	1912	April
Leominster*	1913	September
New Salem	1919	September
Northboro*	1912	February
Oak Bluffs*	1923	September
Orange*	1916	September
Petersham*	1911	September
Plymouth	1917	July
Reading	1915	May
Shelburne Falls	1920	March
Sutton*	1913	August
West Springfield	1920	April
Worcester	1917	May

Survey of 2,157 Graduates and Former Students who Were Trained One Year or more in the Day Vocational Agricultural Schools and Departments of Massachusetts, and whose Present Status is Known.

Other percentages, in columns 8, 10, etc., are of totals in column 3. This method of figuring is for the purpose of making the positive findings of this survey comparable with such findings for the country as a whole published by the Federal Board for Vocational Education in its Bulletin No. 82, May, 1923, it being "assumed that those of unknown or unreported occupational status are distributed occupationally in the same proportions as are shown for those of known status". That is to say, these percentages are based upon the totals of known occupational status (2,157 out of 2,786 former students taught vocational agriculture one year or more).

GENERAL RESULTS OF THE STUDY

TABLE II. shows the schools in Massachusetts from which information on former students was obtained. The list includes practically every school and department ever established in the state with the exception of one very short lived department and two established since the study was begun. It includes a limited number of part time pupils and pupils placed in the schools by the Veteran's Bureau. These make up a very small part of the total number, however. Data was received from thirty schools and departments. Some have been discontinued. These are indicated by a star. The date of establishment follows the name.

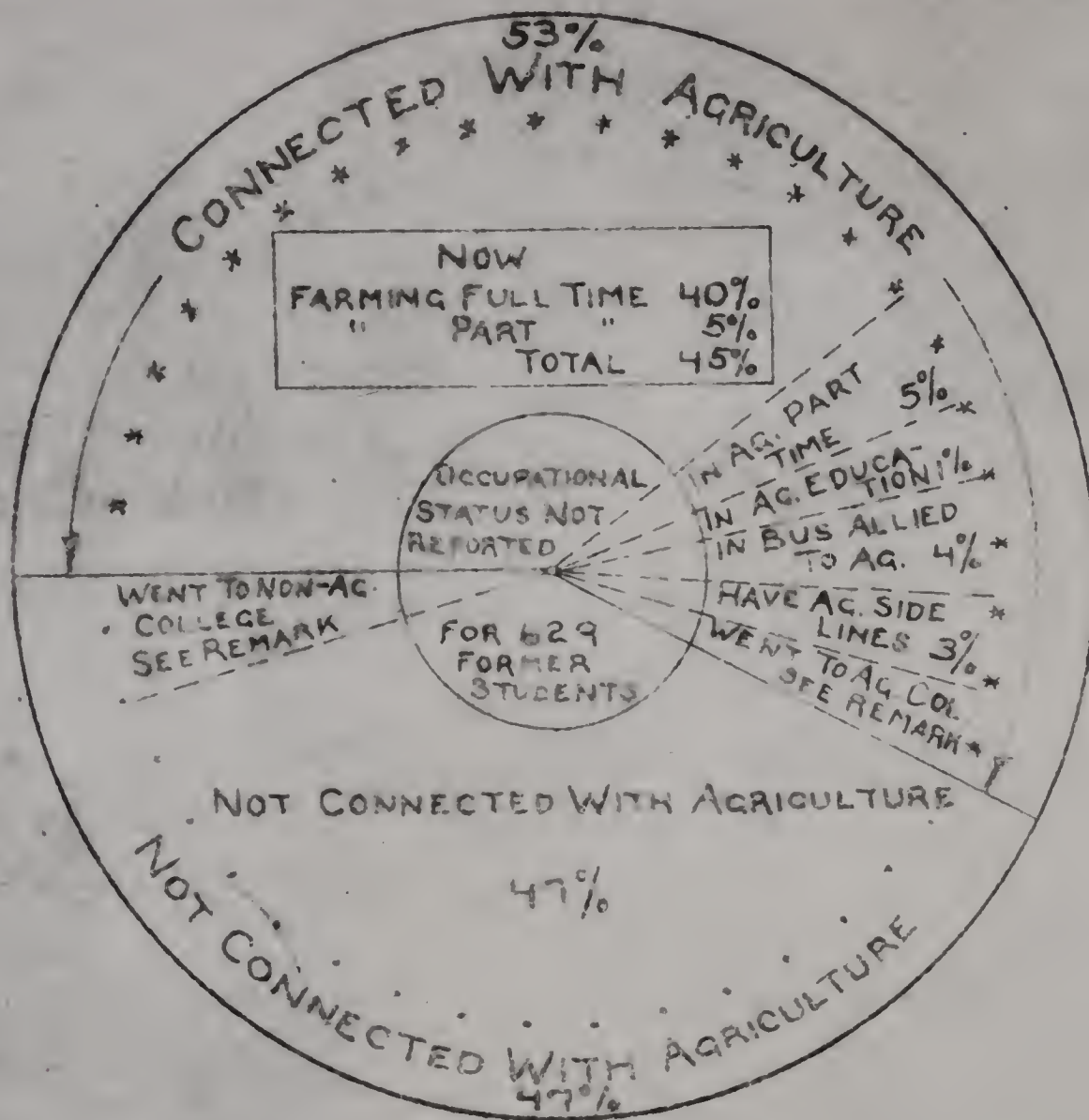
It was found that there were 2786 former students who had attended these various schools and departments a year or more. (See Table III, Column 2.) This study does not include evening school students. No student was counted who attended a school less than one year. It was possible to ascertain the occupational status of 2157 of these students or 77.4% of the total number attending.

The figure 2157 was taken as the working figure and the group not found was not considered further in this study. The total students in school one year or more were divided as follows:

Total students	2786
Found	2157
Attended one year	881

Diagram I Massachusetts Vocational Agricultural Schools and Departments

Graduates in Agricultural and Allied Occupations



Connected with Agriculture	53%
Farming full time	40%
Farming part time	5%
In agricultural education	1%
In business allied to agriculture	4%
Have agricultural side lines	3%
Not connected with agriculture	47%
Total	100%

Less than 5% of the people in Massachusetts are on farms. The above results, with more than 95% of the people in attractive callings which are everywhere competing for boys and drawing them cityward, are remarkable.

Percentages are based on the known Occupational Status of 2,157 persons trained one year or more. Others similarly trained but not found numbered 629.

Went to Ag. College, some of whom are now farming, 7%.
Went to Non-Ag. College, 5%.

Tabulation of a Survey Closed in 1927 of 2,157
Trained one year or more

Attended two years . . .529

Attended three years . .361

Attended four years . . 379

Only 154 went on to agricultural college, or 7.1% of the 2157 total, and, as would be expected, still fewer entered nonagricultural colleges, just an even 100, or 4.6%.

In the interest of accuracy and clearness, it was thought advisable to divide the agricultural occupations in which these former students were found into various types. These types were recorded separately. These divisions are as follows: (See Table III, Columns 19 and on).

First: all former students who owned farms or had substantial equities in them. This group was further subdivided as follows:

- (a) From farm homes
- (b) From village homes
- (c) From city homes
- (d) Homes not known

Second: those former students who were employed on farms either on home farms without financial equity in the business or as farm foremen, farm laborers, herdsmen or poultrymen. This group was likewise subdivided in the same way as the first group according to the original home of the pupil.

Third: other types of agricultural business and connections were grouped as follows:

- (a) Agricultural education
- (b) Business allied to agriculture
- (c) Agricultural side lines
- (d) Productive agriculture part time
- (e) Those planning to resume productive agriculture

It was thought the above divisions would be most useful in showing in just what kind of employment these former graduates had succeeded in placing themselves. Other miscellaneous groups were found to be employed as follows:

Agricultural teaching, club work, etc.	26
In agricultural side lines	65
Part time agricultural work	107
Planning to resume agriculture	13

The above figures give a grand total of 1134 actually connected with agriculture or 52.5% of the 2157 studied. One thousand twenty-three, or 47.5%, of the number studied were definitely not connected with agriculture in any way. A summary of these results appears on Diagram 1. It is assumed, as the Federal Government has done in its Bulletin #82 dealing with this subject that the group not found would be distributed in the same proportion as those who were found. The circular diagram was constructed in order that the results of this study would be comparable to those shown on page 18 of Federal Bulletin #82.

There are several factors affecting the future employment of former students and graduates of departments of vocational

agriculture which are tied up with the effectiveness of the instruction. These are discussed separately, in the following pages. Certain of these factors are not directly influenced by the effectiveness of the work. They are factors over which the instructor or supervisor has no control, yet they must be considered in a discussion of this kind. The factors to be discussed are as follows:

Future employment of former students in vocational agriculture.

The employment of former agricultural students as owners or part owners.

Employment on home farms or as farm foremen.

Employment in agricultural education.

Employment in business allied to agriculture.

Employment in conducting agricultural side lines.

Employment in part time agricultural operations.

Several miscellaneous factors and interesting deductions were made from the figures which did not apply directly to the problem of effectiveness of instruction. These were by-products, as it were, of the complete study and are added because of their general interest and bearing on the problem of secondary education in vocational agriculture. These factors are as follows:

Locations for establishment of agricultural schools and departments.

School mortality in vocational agricultural schools and departments.

Former students who plan to resume agricultural employment.

FACTORS AFFECTING FUTURE EMPLOYMENT OF FORMER STUDENTS
IN VOCATIONAL AGRICULTURE

The chief factors that enter into this problem in Massachusetts are:

1. Economic return
2. Availability and attractiveness of other callings
3. The selectivity of the course in vocational agriculture

Economic conditions constitute the chief reason for a student farming or not farming. The fact that a farm may be available in the family or that capital is available often influences a graduate to enter the farming business. It is felt that it is significant that over 65% of those who own farms came originally from farm homes. Instances can be given where students have taken over the home farm after leaving the agricultural school. It is the experience of those engaged in agricultural teaching that there are very few instances where the student has actually saved up and finally purchased a farm. A few case histories will show how strongly the economic conditions work to urge the student on to the farm or away from it.

(a) A student graduated from a four year course in an agricultural school. He returned to the home farm. On the death of his mother, his father desired to give up farming. The student was able to take over the place on very advantageous terms.

(b) A student graduating from school after three years' work, worked for wages for his father for five years. Finally the father wished to give up active management. B and his brother, who was not agriculturally trained, took over the farm on a very long time payment basis.

In these cases and many more like them, the availability of the farm and the fact that it could be easily financed were the controlling reasons for the student's entrance into the farming business. Undoubtedly many of these former students would have turned to other callings had these opportunities not been available.

(c) In the case of C, a very promising graduate of an agricultural course, farming was carried on successfully in partnership with his father until an attractive offer to sell the place was made. The farm was sold and C took up other work. The father took the funds and invested them in a small place where he retired from active farming. In this case lack of capital and failure on the part of the father to provide it, prevented the son from continuing to farm.

(d) In the case of D, a city boy with an excellent record in a vocational agricultural department, lack of funds forced him into other business. He tested cows for a while on a neighboring estate. Although he was saving, capital did not accumulate and he finally secured work as an automobile

salesman at very much higher wages. He will probably never utilize his agricultural training again.

This brings up the influence of the availability of other opportunities. Massachusetts is an industrial state. Only 5% of its population are farming. Many conditions tend to urge people away from farming. Industrial and trade opportunities abound. In general the majority of such opportunities promise more immediate financial reward than farming. If there is any difficulty whatever in getting funds or if the farming venture is not immediately profitable, it is very easy for the young farmer to switch to some more profitable form of endeavor.

This is illustrated by the case of E, a graduate of an agricultural department. Employment was readily obtained as a tester and herdsman on a large estate. E was farm reared but his other brothers had already settled on the home farm. The death of his employer forced him to seek work elsewhere. Agricultural work was not immediately available. He did secure work with a carpenter for which his farm shop work had somewhat prepared him. He became proficient in carpentry and later became an instructor of carpentry in a vocational school. Here the immediate availability of nonagricultural employment got him out of farm work and into nonfarm work.

F received employment with a cow test association. He enlisted in the Army in 1917. When he returned he became a

substitute mail carrier. Now he is a full fledged carrier earning \$2200 yearly. He would be foolish even though he possessed capital to take up agriculture as a vocation.

Third, the selectivity of the course has a direct influence on the number of men who finally enter farming. In many high schools agriculture is the only vocational opportunity available. This means that many pupils take it who are not interested so much in agriculture as they are in getting vocational training. In some schools other opportunities such as carpentry, automobile mechanics, or printing are available. This means that those who do take agriculture are genuinely interested in it. They are much more likely to follow it than the members of an unselected group. In general, the agricultural department is less selective than the agricultural school.

To summarize:

Lack of capital, availability of other employment and nonselective courses are all factors which work against large numbers of students of vocational agriculture entering farming as a vocation.

A farm or the capital with which to buy one, lack of other lucrative employment and a selective course are factors which work in favor of a return to the farm by the graduate in vocational agriculture.

FACTORS AFFECTING EMPLOYMENT OF FORMER AGRICULTURAL
STUDENTS AS OWNERS OR PART OWNERS

TABLE IV. NUMBER AND PER CENT OF STUDENTS EMPLOYED AS
OWNERS WHO CAME FROM FARM, VILLAGE AND CITY HOMES.

From Farm		From Village		From City		Unknown Homes		Total	
217	10%	58	2.7%	46	2.1%	8	.4%	329	15.1%

Does the farm raised boy have a better chance to become a farmer than the city or village raised boy with the same training? It would seem that the farm raised boy has a much greater chance of becoming a farm owner. This is true in practice and largely so, simply because he has a greater chance to inherit the farm or to purchase it on favorable terms. It is significant that any number of city or village boys have become farm owners under present conditions. It is a tribute to the training these boys have received that 104 of them have successfully achieved farm ownership. The instructors who filled out the questionnaires were asked to indicate with a P all those who owned farms or had substantial equity in farms. This was quite universally done so that the figures in Table IV are substantially accurate and give a true picture of those who actually have achieved farm ownership. Farm ownership would seem to be the highest type of agricultural success possible. That over 15% of these students have achieved it in less than

ten years' time in an industrial state would seem to show that the training they received had functioned excellently.

Lack of capital is undoubtedly a large factor in preventing more extensive farm ownership on the part of former agricultural students. On the other hand, lack of capital may well be a factor which tends to keep the lazy and unfit from owning farms on which they would soon fail.

That the farm raised boy forms the largest group of farm owners is as it should be. He is the one who has had the most practical experience; he is the one best in a position to profit from vocational training. He is the one for which lack of capital is the least handicap.

FACTORS AFFECTING EMPLOYMENT ON HOME FARMS OR AS FARM FOREMEN.

TABLE V. NUMBER AND PER CENT OF STUDENTS EMPLOYED ON HOME FARMS OR AS FARM FOREMEN WHO CAME FROM FARM, VILLAGE AND CITY HOMES.

From Farm		From Village		From City		Unknown Homes		Total	
259	12%	146	6.7%	106	4.9%	15	.7%	526	24.3%

Does the farm raised boy stand a better chance of becoming a farm foreman or laborer? This group includes a large number who were working as farm hands, as herdsmen, poultrymen and gardeners. It included in general the younger group of graduates only two and three years out of school.

Many others in the home farm group will undoubtedly become farm owners as time goes on. The parents either retire and turn active farm management of the farm over to the son or sell out to him on very long and favorable terms. Again the figures are significant in favor of the farm raised boy.

There is also a large group of village and city boys working on various farm jobs open to the worker without experience. This is the only way this group can get a start. If there were more of these positions there would undoubtedly be more graduates in farm employment in Massachusetts. Many are employed on large estates owned by the so-called "gentleman" farmers. These may offer a good opportunity for the

graduate to accumulate capital but the experience obtained is not always the best. Many such positions lack permanence because of change of ownership or policy or because of the owner's financial reverses. Once more we are forced to come to the conclusion that the home farm is the best source of employment for agricultural graduates not only because of its permanence but because it will, in the majority of cases, lead to farm ownership.

FACTORS AFFECTING EMPLOYMENT IN AGRICULTURAL EDUCATION

Do former students of vocational agriculture go into agricultural teaching? A study was made of this factor as it seemed that a considerable number of former students were making good in this field. In general, these are the students who have done the highest grade of work and have been able to go on to agricultural colleges. Some are club leaders, some are Smith Hughes workers, a few are in experiment station work. Few are in agricultural colleges. On the whole, the number in this group is negligible and is not significant other than to show that vocational training has undoubtedly assisted in making certain men better fitted for vocational teaching. The number will undoubtedly increase when better arrangements for vocational school graduates to continue their training in the state agricultural college are made.

FACTORS AFFECTING EMPLOYMENT IN BUSINESS ALLIED
TO AGRICULTURE

Does business allied to agriculture attract many former students of vocational agriculture? Employment of graduates in businesses allied to agriculture is on the increase. Such businesses include dairying and ice cream manufacture, hardware and farm machinery, fertilizer and seed selling and numerous others. Dairy manufacturers take the largest number of graduates, and various forms of salesmanship take the next largest. There is no doubt but that training in vocational agriculture fits a certain group definitely for these positions and many are taking advantage of it.

AGRICULTURAL SIDELINES FOR FORMER STUDENTS OF VOCATIONAL
AGRICULTURE

To what extent do former students of vocational agriculture take on agricultural employment as a sideline? This tabulation was included largely because the statement had been made that many graduates although not actually farming were carrying on sidelines, as, for instance, home gardens, or back yard flocks of chicks. A conscientious effort was made by the majority of instructors to ascertain the number thus employed. It was not great. Many undoubtedly could have carried on nearly as effectively without training in vocational agriculture as they could with it. In Massachusetts, building restrictions and zoning laws are fast putting such activities out of business. It is doubtful if they are beneficial to the agricultural industry as a whole, although the benefit to the individual is unquestioned. To make the statement that vocational training functions along these lines would seem unwarranted in the light of this study.

PART TIME AGRICULTURAL EMPLOYMENT FOR FORMER STUDENTS OF
VOCATIONAL AGRICULTURE

Do former students of vocational agriculture engage in part time agricultural enterprises? This factor differs from that having to do with agricultural sidelines in that it implies a larger use of the student's time, perhaps as much as half or three-quarters of it in some agricultural employment or enterprise. The number thus engaged was found to be relatively small. It is difficult for even the most able person to carry on a part time agricultural enterprise.

Most of our New England agricultural enterprises are such that a man must give all his time or none. Dairying and poultry are particularly exacting in time requirements. Thus less than three per cent of the agricultural graduates are engaged in part time endeavors.

FACTORS AFFECTING LOCALITY FOR ESTABLISHMENT OF
AGRICULTURAL SCHOOLS AND DEPARTMENTS

TABLE VI. A LIST OF THE NAMES OF SCHOOLS AND DEPARTMENTS SHOWING THE HIGHEST PER CENT EMPLOYED IN AGRICULTURAL OCCUPATIONS COMPARED WITH A LIST SHOWING THE LOWEST PER CENT SO EMPLOYED. THOSE SCHOOLS IN THE LOW GROUP ARE ALL IN URBAN LOCATIONS WITH BUT ONE EXCEPTION. THOSE IN THE HIGH GROUP ARE ALL LOCATED IN RURAL SECTIONS.

Clinton	87.5	Oak Bluffs	16.6
Shelburne Falls	83.6	Worcester	21.2
Ashfield	79	Marlboro	21.7
Northampton	73	Boston	23.4
Orange	71.6	West Springfield	23.4
New Salem	70.8	Newton	27.9

Do graduates of agricultural schools and departments located in strictly rural sections show a greater number of former students employed in agricultural pursuits? It was hoped that this study would show something definite about localities in the state in which an agricultural department would prove most successful. The figures seem to show that more former students practice agriculture when the school is located in a strictly rural community. This fact would seem obvious but has often been questioned. Grouping the towns having the highest percentage of graduates connected with agriculture we have the results shown in Table VI.

These results are very striking, especially on the low side, as practically all the localities with the exception of Oak Bluffs are unquestionably urban. The majority of the students in these localities are from city homes. Oak Bluffs operated only a short time with only six pupils. For this reason, figures sent in from there should not carry much weight. As a matter of fact, little farming is done in that vicinity. The place is largely given over to summer residences. Worcester, Marlboro, Boston, West Springfield and Newton are all good sized cities.

On the other hand, Clinton, Shelburne Falls, Ashfield, Northampton, Orange and New Salem may be considered rural localities. The enrollment at Northampton is very selective as there are many vocational opportunities besides agriculture to attract students so that the agricultural department gets only those with a real interest in the work. It does not have to handle a large group who enter because it is the only vocational opportunity open to the secondary school pupil. The fact that Orange and Clinton have been discontinued might seem to be an argument that they were wrongly located. The writer feels that often other factors enter into the discontinuance of a department, such as political conditions or an incompetent instructor. An exceptionally competent instructor will often keep a department going in a poor locality long after it should rightfully have been discontinued. It would seem that the state department might

well urge departments on rural communities with propriety and that there are not enough in localities in the western part of the state. There is some question as to whether the state is justified in continuing departments in strictly urban localities.

FACTORS AFFECTING SCHOOL MORTALITY IN VOCATIONAL AGRICULTURAL SCHOOLS

TABLE VII. THIS TABLE SHOWS THE NUMBER AND PER CENT OF STUDENTS WHO STAYED IN SCHOOL ONE, TWO, THREE AND FOUR YEARS RESPECTIVELY.

One Year		Two Years		Three Years		Four Years	
No.	%	No.	%	No.	%	No.	%
888	41.2	529	24.5	361	16.7	319	17.6

At which year of school in a four year agricultural course do the largest number of students drop out? The difference between the third and fourth year figures is interesting. It checks with experience and shows that a pupil who finishes three years of a four year course will generally stay and finish the last year. Or putting it another way, fewer pupils drop out of school at the end of three years than at the end of one or two years.

Note: No study was made of the relative number farming who were in school one, two, three and four years respectively. It would be interesting to do this.

FORMER STUDENTS OF VOCATIONAL AGRICULTURE WHO PLAN TO
RESUME AGRICULTURAL EMPLOYMENT

Do former students of vocational agriculture engaged in nonagricultural work plan to resume agricultural employment? As lack of capital has often been cited as a reason why more graduates are not farming it was thought desirable to include in this study a tabulation of such graduates who declared their intention of resuming agricultural employment at some future time. But six-tenths of one per cent declared their intention of doing so. It would seem that once a student definitely gets into other employment, he is quite apt to remain in it permanently and not to think of returning to agricultural work where his training would be utilized.

EXTENT TO WHICH FORMER HIGH SCHOOL STUDENTS WHO HAVE NOT
STUDIED AGRICULTURE ENGAGE IN FARMING

Bulletin #82 Federal Board for Vocational Education
states:

The large percentage of high school students who have studied vocational agriculture, and who are now farming, would have less significance if it could be shown that other high school students similarly situated, but without opportunity to study agriculture, engage in farming in about the same proportions. An attempt was made to get extensive data on this question in eight states, but the attempt was successful only in New York and only partially successful in Pennsylvania.

New York and Pennsylvania are the only two states which have any data on this subject. In New York state, where conditions may be considered somewhat comparable to those in Massachusetts, only 3.6% of 2350 high school graduates who had not studied farming were found to be engaged in agriculture. This was found to be a difference of over 40% in favor of the agriculturally trained group. In Pennsylvania 5.4% and 2.1% respectively were found to be farming in two groups of nonagriculturally trained high school students. Thus it would seem that from the Pennsylvania and New York figures nonagriculturally trained high school graduates do not enter farming in any great numbers. A total of 45% entering the industry from the agriculturally trained group shows that the training has a considerable influence on the employment of the graduates. No figures

on the nonagricultural students can be procured for Massachusetts as no follow-up records are available. Such records are kept only on the agricultural students.

COMPARISON OF DATA WITH THAT SECURED IN OTHER STATES

A letter was written to the State supervisor of agricultural education in every state in the Union requesting information which would compare with that secured by this study. Forty-four states replied and the results are tabulated in Table 1. Partial and sampling surveys have been made in many states. Very few states give the number of years over which their study extends. Obviously, the figure will be better for the group just leaving school or out only a year or so than they would be for the group out ten years. A group out ten years has been pretty well sifted down until those who really mean business are the only ones left. It would be interesting to ascertain how many former students began some form of agricultural employment and then gave it up for something which seemed to promise greater reward. In general, the figures, where at all comparable, agree substantially with those secured in Massachusetts, in spite of the fact that Massachusetts is an industrial state with less than 5% of its population engaged in agricultural occupations.

The survey of the entire United States made by the Federal Board for Vocational Education is not comparable entirely with this study because the results were secured through sampling. States were asked to send in results from what were thought

to be typical schools. Neither the poorest nor best were included. In many cases several poor schools would have considerably pulled down the showing of a state. In others, the inclusion of schools with particularly high records would have considerably increased the percentage. In Massachusetts, for instance, the town of Ashfield was reported on as the typical school called for. This school makes a relatively good showing when compared with the remainder of the state; it would tend strongly to raise the figures in the Government publication. The report on the entire state would materially lower the figures. Of course, as long as relatively few states make complete studies such as this, sampling is the only method of getting at the figures for the United States as a whole. In general, it is felt that the figures given in Bulletin #82 are somewhat high because of the method used in obtaining them.

SUMMARY AND CONCLUSIONS

The results of this study may be briefly summarized as follows:

- I. Eleven hundred thirty-four, or 52.5%, of 2157 former students of vocational agriculture in school one year or more in Massachusetts are definitely connected with agriculture.
- II. Eight hundred fifty-five such students, or 39.6%, are actually engaged in productive agriculture.
- III. Five hundred twenty-nine, or 15.2% actually own farms or have substantial equities in them.
- IV. Five hundred twenty-six, or 24.3%, are employed on home farms or on other farms in various capacities.
- V. Two hundred seventeen, or 70%, of those who own farms came originally from farm homes.
- VI. Departments established in schools located in rural surroundings show a much higher percentage of former students farming than departments established in urban sections.
- VII. The ease and terms on which a farm may be secured, are factors which tend to make it easier for the farm raised boy to become a farm owner.
- VIII. Business allied to agriculture forms a source of employment for the vocational graduate unable to obtain placement on his home farm.
- IX. Relatively few graduates of vocational agricultural

departments find employment in agricultural education, 1.2% in Massachusetts.

X. One hundred fifty-four, or 7.1%, of former students of vocational agriculture in Massachusetts went on to agricultural college.

XI. Very few former students of vocational agriculture not employed in agricultural vocations plan to resume agricultural employment.

XII. Sixty-five, or 3%, of the former students have agricultural sidelines.

XIII. One hundred seven, or 4.9%, of these students are engaged in part time agricultural work.

Finally it is concluded that agricultural education in secondary schools and special schools of agriculture is substantially effective in Massachusetts, since a total of 53% of the graduates and former students who took the work one year or more are actively connected with agriculture. It is concluded, too, that since the figures for Massachusetts compare so favorably with those from strictly agricultural states that the agricultural instruction is of a high grade. Since also it has been shown that nonagricultural students in rural communities in New York state and Pennsylvania do not enter farming in very large numbers, it is concluded that a substantial portion of the 53% connected with agriculture in Massachusetts owe their connection with the industry to the effectiveness of the instruction.

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EFFECTIVENESS OF VOCATIONAL EDUCATION IN AGRICULTURE.

Bulletin No. 82. (Agriculture Series No. 13) Federal Board for Vocational Education, Washington, D. C., May, 1923. A study of the value of vocational instruction in agriculture in secondary schools as indicated by the occupational distribution of former students.

This is the only published document dealing with this subject with any degree of thoroughness. The partial studies referred to on pages 5 and 6 are for the most part only type-written and mimeographed issues from a few states.

Vocational Agricultural Teaching is a comparatively new line of endeavor. Nearly all of the books published concerning it are books of method. None of them attempts to measure the effectiveness of the work in other than the most general terms.

Approved by:

Franklin E. Heald.

Rollin H. Barrett.

W. J. Welles

Thesis Committee

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