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GRADUATES OF EDUCATION FOR AGRICULTURE IN MINNESOTA

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Minnesota has a variety of public educational institutions providing training for individuals wishing to work in the industry of agriculture. These institutions are a source of training for those preparing to engage or already engaged in agricultural work. Educational programs of this kind are geographically distributed throughout the state; they are as diverse as high school vocational agriculture, adult farm management, post-secondary technical agricultural mechanics, and undergraduate and graduate study of soils and agronomy.

Efforts to coordinate these programs have been initiated by the institutions themselves under the auspices of the Minnesota Council for Coordinating Education in Agriculture. Coordination is an appropriate descriptor for their efforts given the variety of agencies funding, regulating, and operating the programs. Coordination is useful to both the producer of services, as a way to avoid duplication and gaps and improve mobility between programs, and consumers of services in using their time and financial resources efficiently.

A necessary ingredient to coordination is information about what is to be coordinated—programs, purpose, size, effect, accessibility, cost, demand and constraints on change.

In an attempt to study the scope of agricultural programs provided in the State of Minnesota in terms of number of program completers and follow-up data on what program graduates' do subsequently, the Division of Agricultural Education, University of Minnesota in cooperation with the Minnesota Council for Coordinating Education in Agriculture prepared a report "Education for Agriculture In Minnesota: Public Institution Programs, Students and Follow-Up." Specifically, the report provides answers to the following questions:

1. What are the agricultural education programs being provided through public educational institutions?
2. How large are these programs in terms of students served?
3. What do program leavers do, particularly in terms of employment and further education?

The institutions analyzed are:

1. University of Minnesota, Colleges of Agriculture, Forestry, and Veterinary Medicine and the Graduate School.
2. University of Minnesota, Crookston and Waseca Technical Colleges.
3. Minnesota Area Vocational Technical Institutes.
4. Community Colleges, only three Community Colleges and State Universities offer programs leading to a degree with majors in Agriculture. Because the number of graduates from these programs in school year 1975-76 was small, no follow-up data was sought for these systems.
5. Secondary Schools.

The information is intended for use of both those producing and consuming education in agriculture. Of particular focus is its use in planning and coordination of programs toward the goal of improving service and reducing costs.

The focus of this article is to provide summaries of the findings by type of institutions.

Graduates of High Schools

Follow-up data on high school students taking vocational agriculture is provided by the Minnesota Secondary School Follow-Up System, a project of the Minnesota Research and Development Center for Vocational Education at the University of Minnesota. Students are followed-up at approximately 10 to 11 months following graduation. School participation in the Secondary School Follow-Up Project is on a volunteer basis, therefore the sample cannot be characterized as random. However, the following observations are provided from data based on about 2,700 graduates:

1. About 65 percent of students are engaged in paid employment after one year; about 47 percent have this as their only activity.
2. About 40 percent continue on to post-secondary education.
3. Only about 4 percent are unemployed (looking for work).
4. Of those pursuing post-secondary

- education, the largest groups were attending vocational schools or four-year colleges and universities. About 15-20 percent in post-secondary education were enrolled in an agriculture program.
- In the sample schools, about 20 percent of students who had taken vocational agriculture were females.
 - About 80 percent of former vocational agricultural students with paid employment were working full-time (more than 30 hours per week).
 - Vocational agriculture students were more likely to come from the lower half of the class in terms of class rank; about 35 percent from upper one-half and 65 percent from lower one-half.
 - The largest percent of former vocational agriculture students entered jobs in firms in the industry categories of agriculture, fisheries and forestry; manufacturing; and wholesale and retail trade.
 - Most common occupations selected were in the categories of craftworker, operative, laborer (non-farm), laborers (farm), and service workers.
 - For those working, the most frequent wage rate was \$2.00-\$3.00 followed closely by \$3.00-\$4.00.

Graduates of Area Vocational Technical Institutes

Minnesota Area Vocational Technical Institutes (AVTI) offer the following agriculturally related programs: Agriculture Technology, Farm Management, Farm Equipment-Mechanic, Agribusiness, Agribanking, Conservation and Forestry, Nursery Landscape Technology, Butcher and Meat Cutter, Farrier, Water Well Drilling, and Retail Florist. Follow-up Data on graduates from AVTI's is provided by the Minnesota Vocational Follow-Up System directed by Educational Management Services, Inc. Graduates from AVTI's are followed-up 10-11 months after graduating. The following selected observations are provided from a return rate of about 80%:

- The number of graduates from agriculture programs has increased from about 450 to 875 between the school year 1972-73 and 1975-76; an increase of almost 100 percent over four years.
- About 85 percent of graduates are engaged in paid employment one year after graduation; about 5 percent have not been employed since graduation.
- About 55 percent of graduates were employed in an occupation closely related to their training; 18 percent were employed in unrelated occupa-

tions and 10 percent were unavailable for employment.

- About 95 percent of those who were employed were working full-time.
- Of those who responded to the job advancement question, about 30 percent received advancement during the first year on the job.
- Most of the graduates were satisfied with their program choice, about 80 percent indicated that they would choose the same program again.

Graduates of University of Minnesota-Technical Colleges, Crookston and Waseca

The University of Minnesota Technical Colleges at Crookston and Waseca offer various programs in agriculture leading to an associate degree in applied science. The following are selected observations from data provided by placement offices:

- The number of graduates from Technical Colleges totaled about 230 in school year 1975-76; the number of graduates has increased by 300 percent over the last four years at Waseca.
- The three largest program areas at Waseca are: Agriculture Production, Animal Health Technology, and Horticulture Technology.
- Average salary for graduates from the Technical College at Waseca for graduates in 1975-76 was about \$6,500.
- About 80 percent of Waseca graduates are employed in agriculturally related jobs, and about 10 percent engaged in further education.
- The largest programs at Crookston are: Agricultural Production and Natural Resources.
- About 45 percent of Crookston graduates are employed in their chosen field of study, and about 33 percent engaged in further education.
- About 60 percent of the graduates from Crookston in 1975-76 reported a salary in the range of \$6,000-\$10,000.

Graduates of College of Agriculture

The College of Agriculture provides undergraduate instruction to prepare professional agriculturists. The College is comprised of 12 departments offering 22 undergraduate majors. The following observations are selected from data provided by the placement office of the College of Agriculture:

- The number of graduates from the College of Agriculture increased from about 280 to 350 between the school year 1974-75 and 1976-77; an in-

- crease of 25 percent over three years.
- The major with the largest number of graduates was Animal Science followed by Agricultural Economics, Horticulture, and Agricultural Education.
 - The largest group of graduates is employed in business or private industry—about 25 percent.
 - About 14 percent of the graduates chose farming as an occupation and about 16 percent enrolled in graduate education.
 - Salaries of the graduates varied by majors reported, with the highest salaries received by Agricultural Education and Food Science and Nutrition majors; about \$12,500 in 1976-77.
 - Average salary of 1975-76 graduates from the College of Agriculture was about \$10,500 which was slightly above the national average salary of \$10,380 for students graduating with a Bachelor of Science in Agriculture.

Graduates of College of Forestry

The College of Forestry conducted several follow-up studies in the last five years in order to determine the employment status of its graduates. Some observations from these studies are as follows:

- Average number of graduates from the College of Forestry is about 125 students per year; about 75 percent graduate with a major in forest resource development.

- About 75 percent of the graduates are employed in forestry related jobs.
- About 50 percent of the graduates are employed in permanent positions.
- Of those who are employed, about 75 percent are employed by federal and public agencies.
- Average salary of graduates is about \$11,000.

Graduates of Graduate School

The Graduate School at the University of Minnesota awards the Master of Science and Doctor of Philosophy degrees in 24 major fields of studies in Agriculture, Education, Forestry, and Veterinary Medicine. While there is no follow-up study on graduates from the graduate school available, the following observation is taken from numbers of graduates by major.

- The Graduate School awards about 50 PhD's and 95 M.S. degrees in agriculturally related majors annually.
- Over the past five years the largest number of PhD degrees was awarded in the major field of Agricultural Economics and Forestry, the lowest number is in the field of Veterinary Medicine.
- Again Forestry and Agricultural Economics were among the highest numbers of M.S. degrees.
- The number of graduates from each major field is almost constant over the years.

CONCLUSIONS AND RECOMMENDATIONS

The purpose of this article was to identify the Agricultural Education Programs being offered through public educational institutions in Minnesota. Specifically, two questions were asked: 1) How large are these programs in terms of students served? and, 2) What do students do after they leave these programs, particularly in terms of employment and further education? The following table provides information on the size of each institution in terms of the number of agricultural program graduates. Number of graduates may be quite different than total enrollment since programs vary in length from a few hours to several years.

Institution	Number of Graduates 1975-76
High Schools	7800*
Area Vocational Technical Institutes	874
Waseca Technical College	157
Crookston Technical College	77
College of Agriculture	334
College of Education, Master of Education	6
College of Forestry	150
College of Veterinary Medicine	74
Graduate School, Master of Science	94
Graduate School, Doctor of Philosophy	53
TOTAL	9619

* Estimated by Minnesota Research and Development Center for Vocational Education, Project Vocational Education and Employment, University of Minnesota.

Adult education in agriculture offers its program mainly through Agricultural Extension Services, Adult Farm Business Management, and the Office of Special Programs at the Institute of Agriculture, Forestry, and Home Economics.

Comparison of data between institutions is very difficult because different institutions collect data in different ways and do not define terms consistently. Thus, there is a severe limitation in the data use for comparisons.

The result of this study, even with its limitation, should be useful to both producers and consumers of agricultural education programs. For the producer, it should be particularly suited for examining the scope of education for agriculture in the state and for coordination to avoid unnecessary gaps and duplication. For the consumer, it provides information to help in choosing an appropriate program, especially in terms of consequences for further education and employment. Overall, the report provides a picture of the delivery system in Minnesota for education needed in the industry of agriculture.

The following recommendations may help improve the data base for use in program coordination and management:

1. Initiate a channel of communication among different institutions to reach an agreement for common definition of terms used by all institutions (e.g., graduate, employed, salary, related occupation).
2. Design data collection procedures that satisfy both the need of institutions and allow for comparison among institutions (e.g., collecting data in same way and at same time).
3. Identify a common set of data elements which will be collected by each institution; this common set should only be viewed at a minimum with institutions going beyond this minimum depending on their needs and resources.
4. Develop a system to identify private schools and industries that provide training in agriculture; data collected from these sources should be included in future reports.
5. Define program purposes and offerings more clearly in comparable terms so that only warranted comparisons will be made, and so they can be properly interpreted.
6. That a repository or centralized storage mechanism be set up to maintain data for acceptable uses and to develop trend information over time.

Copies of the report "Education for Agriculture in Minnesota: Public Institution Programs, Students and Follow-up" are available by writing to the authors at the following address:

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