

FARM MACHINERY COMPETENCIES NEEDED FOR EMPLOYMENT IN
PRODUCTION AGRICULTURE AND FARM MACHINERY DEALERSHIPS
IN ELLSWORTH COUNTY

by 6781

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Chapter 1

INTRODUCTION

This report was concerned with a study of the competencies required for employment in production agriculture and in farm machinery dealerships. A cost-squeeze on farm products had created a situation in which the size of farms had increased. The number of farms in Kansas had decreased slightly to 86,000 for 1971. Farm numbers were 1,000 less than in 1970 and one fifth fewer than ten years ago. Farm numbers had declined steadily since 1935 when they were double the present numbers. The average size of farms in Kansas for 1971 is 580 acres compared with 575 for 1970. The average farm size had more than doubled since 1935 when they averaged 274 acres. Kansas ranked fourteenth in number of farms and third in acreage of farm land among the 50 states.¹

Larger and more complicated machines had replaced outdated machinery. An increased investment per acre in machinery created a situation whereby the farmer had to know and understand each of his machines. The increased investment per acre in farm machinery which was designed to save the farmer time and labor had an increased effect upon volume of business with farm machinery dealers. The high demand for immediate delivery of new machines, and the service and repairing of old machines had increased the demand for more skilled men in the farm machinery dealerships.

¹Kansas Crop and Livestock Reporting Service, Kansas Department of Agriculture, Statistical Division, January 12, 1971.

With a large number of farm boys unable to return to the farm, several of these boys could be directed toward employment in farm machinery dealerships. Vocational Agricultural instructors needed to find which competencies production agriculture farmers and farm machinery dealers perceived to be important for successful employment. The instructor could then include these competencies in the development of a vocational agriculture curriculum.

STATEMENT OF PROBLEM

The purpose of this study was to investigate the competencies which were needed for employment in production agriculture and in farm machinery dealerships in Ellsworth County. The problem was designed to provide information for the development of a curriculum which would include competencies considered as essential in the areas of production agriculture and farm machinery dealerships.

OBJECTIVES

Three basic objectives were listed for this study:

1. To determine the machines which were serviced and repaired and their relative importance as indicated by the production farmers and the farm machinery dealers.
2. To survey what competencies production farmers and farm machinery dealers perceived to be required for the gainful employment of their employees.
3. To survey which machines should be included in the vocational agriculture curriculum as perceived by production agriculture and farm machinery dealership personnel.

DEFINITION OF TERMS

Certain terms were selected and given special definitions for the purposes of this study. The definitions might or might not be those considered to be of common usage.

Competency. Knowledges, understandings, and abilities needed to perform essential activities for production agriculture and farm machinery dealerships.

Competency Levels.

Ability. Skill in applying knowledges and understandings to farm machinery situations.

Knowledge. The fact or state of possessing mental information.

Curriculum. A prescribed course of study in a high school.

Ellsworth County Young Farmers. Those men who were enrolled in good standing with the Ellsworth Young Farmer Association and who were chartered through the Kansas Vocational Education Division.

Farm Machinery. Mechanical devices used in the production of agricultural products.

Farm Machinery Dealer. A merchant who had the franchise to sell a brand name of farm machinery.

Farm Machine Repair. The reconditioning of a machine used in production agriculture.

Farm Machine Service. The process of making machines ready for one's use.

Farm Power and Machinery Course. A unit of study dealing with engines and machines.

Occupation. A vocation for gainful employment in production agriculture or farm machinery dealerships.

Vocational Agriculture Department. Those departments teaching vocational agriculture and being reimbursed by the Vocational Education Division of the Kansas State Department of Education.

LIMITATIONS

The study had the following limitations:

1. The ability of the production farmers and the farm machinery dealers to respond accurately to the questions as intended by the researcher.
2. The ability of the researcher to interpret the answers of the farmers and the farm machinery dealers as intended by them.
3. The study was limited to the twenty production farmers who were enrolled in the Ellsworth Young Farmer Class and the seven farm machinery dealers in Ellsworth County.

Chapter 2

REVIEW OF SELECTED LITERATURE

A review of studies to identify the competencies for employment in production agriculture and the farm machinery industry was made. The purpose of the review of the literature was to obtain information for the development of a curriculum which included competencies considered as essential in the areas of production agriculture and farm machinery dealerships. The former issues of the Agriculture Education Magazine which were on file in the personal library of the author and the reports of special studies in the library at Kansas State University were found to be very useful. No studies were found to be identical to the one planned.

SCOPE OF FARM MACHINERY INDUSTRIES

Frank Bobbitt, teacher educator at Michigan State University, wrote a report concerned with the "Education for Hired Farm Labor." Developments of recent years indicated a major shift in the amount of labor required on farms. In the past, agricultural educators had been concerned with providing education for individuals who planned to farm. Mr. Bobbitt said that in recent years the emphasis in agricultural education had broadened to provide education for people to enter non-farm agricultural occupations. With the advent of increased mechanization on farms the problem of training and retraining rural

people as workers on farms became important. Currently in Michigan several programs were in operation to assist in retraining rural adults at Michigan State University. One of these programs was designed to assist unskilled migrant laborers to become tractor operators. Individuals who were enrolled in these courses were primarily rural unskilled labor. At present time, there were not enough skilled laborers to meet the needs of displaced farm workers or farmers requiring specialized skills. Bobbitt stated that the challenge to agricultural education appeared to be clear. More programs were needed for retraining displaced farm workers. Emphasis should be placed on developing educational programs that would provide a maximum of transferability of skill from one occupation to another whether it be in farming or in a non-farm occupation. Opportunities must also be provided for the development of skilled farm labor.¹

Marvin J. Cepica, teacher of agriculture at Dimmit, Texas and Elroy Otte, Graduate student at Texas A & M University, wrote a report concerned with the need for trained personnel in the area of mechanics. The Dimmit Texas Schools developed a new program in vocational agriculture in response to the lack of men trained in the area of farm mechanics. An occupational survey of the community's immediate and projected needs for farm machinery mechanics was made. A study was also made of the schools to identify the resources available for a new program. The State Director of Agricultural Education gave the approval for the new vocational program which was termed Pre-Employment

¹Frank Bobbitt, "Education for Hired Farm Labor," Agricultural Education Magazine, June 1971, p. 299.

Laboratory Training in Farm Power and Machinery. The major objective of the new program was to supply farm machinery dealers in the community with competently trained mechanics, mechanic helpers, and machinery repairmen.²

Roy F. Eck, teacher of agriculture at Effingham, Kansas wrote a report concerning a study of the competencies needed by employees of farm machinery dealers in Northeast Kansas. Farm machinery dealers in six towns in Northeast Kansas were interviewed. Each dealer rated a list of competencies as essential, very important, important, of little importance, or of no importance for employment in a farm machinery dealership. The responses given to the questionnaire by the dealers were analysed by assigning a weighted value. Items were rated as "essential" and were assigned 4 points; "Very important", 3 points; "important", 2 points; "little importance," 1 point; "no importance," 0 points. All competencies receiving an average rating of "essential", (3.0 to 4.0 points) were considered to be important in the development of an agricultural mechanics curriculum.³

Harold D. Huber, Dean of Vocational-Technical Education from Spoon River College, Canton, Illinois wrote a report concerning an evaluation of the development and operation of the Farm Machine Technology Program. He reported that the

²Marvin J. Cepica and Elroy Otte, "Pre-Employment Laboratory Training in Farm Power and Machinery," Agri-cultural Education Magazine, May 1969, p. 266.

³Roy F. Eck, "Competencies for Gainful Employment by Dealerships of the Farm Machinery Industry by Northeast Kansas," (Unpublished Master's Report, Kansas, Kansas State University, 1967).

Illinois Retail Farm Equipment Association showed an immediate need for 500 farm equipment service mechanics in Illinois. A two-year curriculum in Farm Machine Technology with a six week on the job experience was held in the summer between the first and second year to make up the complete program. A study of two graduating classes showed that 73 per cent of the graduates were working in a farm equipment dealership or in some related agribusiness on the first of September following graduation.⁴

Wiley B. Lewis, graduate student, and Ralph J. Woodin, Professor of Education at Ohio State University, wrote a report concerned with the "Agricultural Mechanics as Performed on Ohio Farms in Comparison with offering in Vocational Agriculture." The purpose of the study was to determine whether agricultural mechanics curricula in Ohio were appropriate for preparing students enrolled in high school vocational agriculture classes to perform agricultural mechanics activities. It was found that the high school instructional programs were appropriate for preparing students to perform those mechanical activities found in production agricultural occupations.⁵

Kenneth E. Hutchinson, Instructor of Lake County Area Vocational Technical Center at Eustis, Florida wrote a report

⁴Harold D. Huber, "A Post-Secondary Program in Farm Machine Technology," Agricultural Education Magazine, 42;3, September 1969, pp. 64-65.

⁵Wiley B. Lewis and Ralph J. Woodin, "Agricultural Mechanics as Performed on Ohio Farms in Comparison with Offerings in Vocational Agriculture," (Unpublished Graduate Study, Ohio State University, 1970).

concerned with agricultural machinery mechanics. The objective of the program was to prepare personnel for gainful employment in the field of agricultural machinery. Instruction was geared primarily for students who desired employment in farm equipment dealership as a mechanic, a parts clerk, or a salesman of farm equipment. The program consisted of 1200 hours of instruction completed over a ten month period.⁶

Lloyd J. Phipps, Professor of Agriculture Education at the University of Illinois, wrote a book entitled Handbook on Agricultural Education in Public Schools. Professor Phipps discussed a portion of his book on conducting an agricultural mechanics program and developing an understanding of the philosophy supporting the procedures recommended. Programs and courses with vocational objectives were discussed. Professor Phipps stated that supervised agricultural experience programs, which included supervised farming programs, were considered for students who had entered or were preparing for entry into an occupation which required knowledge and skill in agriculture. The primary aim of agriculture mechanics instruction was for the development of the abilities necessary to perform the unspecialized mechanical activities to be done in agriculture with the tools and equipment accessible. He also stated that there are numerous opportunities for character building through the instruction in agriculture mechanics. Agricultural mechanics provided opportunitie

⁶Kenneth E. Hutchinson, "A Program for Agricultural Machinery Mechanics," Agricultural Education Magazine, 42;3, September 1969, p. 68.

to develop habits of industry, carefulness, orderliness, and accuracy.⁷

FARM MACHINERY PROGRAMS AND COMPETENCIES

Joe P. Bail, teacher educator at Cornell University and George A. Robinson, Research Director of the Kansas Association of School Boards, wrote a report on "Planning In-Service Programs in Agriculture Mechanization." The intent of this study was to identify teacher needs for more effective teaching of agricultural mechanization and to recommend a program of in-service education for meeting the needs. The study was limited to the State of New York and included teachers specializing in agricultural mechanization; farm equipment dealers; and teacher educators and state supervisors of agricultural education. Three separate instruments, one for each of the above mentioned groups were used. The following conclusions were arrived from this study: Teachers tended to believe that competencies were used to a greater extent in farm equipment firms than was the case; dealers did not expect mechanics to be extensively trained as teachers perceived they should; and teachers needed more technical knowledge and skill development and less need for professional education.⁸

⁷ Lloyd J. Phipps, Handbook of Agricultural Education in Public Schools, (Illinois: Interstate Printers and Publishers, Inc., 1965), pp. 529-540.

⁸ Joe P. Bail and George A. Robinson, "Planning In-Service Programs in Agricultural Mechanization," Agricultural Education Magazine, May 1971, pp. 276, 277.

Alan Kahler, Instructor at Iowa State University conducted a study of "Competencies in Agriculture Needed by Males Employed in Retail Farm Machinery." In this study a panel of the most progressive dealers and distributors in the retail farm machinery industry identified and listed competencies needed in agriculture by males employed in retail farm machinery distribution. The competencies were listed in questionnaire form and submitted to a selected sample of top dealers and distributors and their employees for evaluation of the degree each competency was required for retail machinery distribution.⁹

Daniel Taylor, Vocational Agriculture Instructor at Cooper Rural School at Lubbock, Texas wrote a report concerned with "Instruction in Farm Power and Machinery." In his report, he stressed that as agriculture became more mechanized, there was an increased need for trained young men to enter the mechanical field of agriculture. Vocational agriculture programs had lagged behind in offering training for these ever-pressing job opportunities. Pre-employment laboratory training in farm power and machinery was one of the new programs offered in vocational agriculture in Texas as a result of the National Vocational Education Act of 1963. In 1966 only four high schools had initiated such programs and by 1969 the state had 33 units. A survey was made to find if there was a need for such a program in the Cooper, Texas area. The survey revealed a definite need for young men to work in the farm power and machinery service industry. In 1969, Cooper

⁹"Competencies in Agriculture Needed by Males Employed in Six Non-farm Occupations in Agriculture", Department of Agricultural Education, Iowa State University.

High School incorporated a program in farm power and machinery. This course was offered in addition to the regular four year production program. The primary objective of the course was to assist students in developing skills and knowledges needed to gain employment in the farm power and machinery industry. In addition to classroom instruction, each student practiced skills under laboratory supervision. Farm equipment dealers and local farmers were responsive to the program and furnished the engines and equipment repaired with no charge for labor.¹⁰

Derrell L. Steakley, research assistant in the Agricultural Education Department and Earl S. Webb, Professor of Agricultural Education at Texas A & M University wrote a report concerned with the "Opportunities and Requirements for Farm Machinery Mechanics". The implement dealers of Texas in 1965 requested that the Vocational Division of the State Department of Education establish a two-year course of study in vocational agriculture for training high school students to become farm machinery mechanics. Two problems were immediately identified: (1) What need existed for mechanics and related personnel, and (2) What knowledge and skill should a person possess to enter the trade with some assurance of satisfactory progress. The purpose of the study was to identify the opportunities and requirements for entry into the farm machinery trade. Vocational agriculture teachers in Texas conducted interviews with owners of farm machinery businesses and with managers of service departments to find the opportunities for employment in the trade and

¹⁰Daniel Taylor, "Instruction in Farm Power and Machinery," Agriculture Education Magazine, January 1971, p. 180.

the other identified competencies needed for successful entry. The major findings of the study included: an acute shortage of farm machinery mechanics existed in Texas, partsmen represented the second greatest need, the average work week was 48 hours, minimum age for hiring was 18, safe work habits were the most important skills a mechanic should possess, ability to use tools was rated as the second most important skill a beginning mechanic should acquire.¹¹

Thomas R. Stitt, Assistant Professor of Agricultural industries at Southern Illinois University, Carbondale, Illinois, and Willard H. Wolf, Professor of Agricultural Education at Ohio State University, Columbus, Ohio wrote a report concerned with "Preparing Employees for Agricultural Machinery Dealerships." They found in a study of agricultural equipment dealerships in Ohio, six job titles were quite characteristic for the industry. The job titles were: set-up man, shop foreman, equipment mechanic, partsman, equipment salesman, and truck driver-delivery man. The competencies needed for those various jobs included abilities and knowledge and were ranked according to their importance. The competencies included: safety and good housekeeping, oral communication, maintaining customers, meeting customers, and job functions of employees. It was found that regardless of the job title, curriculum content should include: safety

¹¹Derrell L. Steakley and Earl S. Webb, "Opportunities and Requirements for Farm Machinery Mechanics," Agricultural Education Magazine, February 1971, pp. 204-205.

and housekeeping, communications, human relations, and understanding job functions.¹²

SUMMARY

Much literature was available and many programs have been conducted. Much success had been reported with farm power and machinery programs although many studies have been conducted which are in the areas of competencies for workers in the farm machinery industry, but none are the same as the one reported by this study.

¹²Thomas R. Stitt and Willard H. Wolf, "Preparing Employees for Agricultural Machinery Dealerships," Agricultural Education Magazine, 42:3, September 1969, pp. 69 & 71.

Chapter 3

METHODS AND PROCEDURES

The purpose of this study was to determine the competencies which were needed for employment in production agriculture and in farm machinery dealerships in Ellsworth County. The problem was designed to provide information for the development of a curriculum which would include competencies considered as essential for this purpose.

To accomplish the objectives set forth in the study, a list of the competencies considered to be essential for employment in production agriculture and in farm machinery dealerships was developed. A survey was prepared which contained three status questions; six competencies which required knowledges of farm machinery; and sixteen competencies which required abilities with farm machinery. The study also included a survey of the 16 most important farm machines in production agriculture and in farm machinery dealerships. The competencies were selected from related readings and from individuals who were knowledgeable in the field. The report of a Masters problem in the Department of Agricultural Education at the Iowa State University under the direction of Professor C. E. Bundy and Dr. D. L. Blake was especially helpful.

Dr. James Albracht, Agricultural Education, Kansas State University, reviewed the questionnaire and his suggestions were

incorporated. To test the questionnaire for proper procedure a trial interview was conducted. After the trial interview, minor adjustments were made.

Twenty farmers and seven dealers in Ellsworth County served as the population for the study. The 20 farmers were enrolled in the Ellsworth Young Farmer Class which was taught by Mr. Lester Crandall, Vocational Agriculture Instructor at Ellsworth. The Production Agriculture questionnaires were distributed and completed under the direction of the author at the close of the class meeting which was held on February 18, 1971.

To the manager of each dealership, a personal letter was sent which explained the purpose of this study and informed him that the author would contact him for a personal interview to complete the questionnaire. The letter was co-signed by Herbert Baker, Principal of School District Number 328 at Wilson, Kansas and mailed out January 14, 1971. (See Appendix)

The responses given to each item of the questionnaire by the farmers and the dealers were analysed by assigning a weighted value to each reply. The weighted averages for the responses were presented in tabular form. Competencies rated as "Essential" were assigned 4 points; "Very Important", 3 points; "Important", 2 points; "Little Importance", 1 point; and "No Importance", 0 points for the determination of the weighted averages.

It was the decision of the author that the competencies which received an average weighted rating of "Important" (2.5 points) or more by the 20 farmers and 7 dealers would be included

in the development of a curriculum for teaching the competencies at the Wilson High School. The competencies with weighted averages between 2.0 and 2.49 would be given consideration for inclusion in the curriculum and that those with a weighted average of less than 2.0 would not be included in the curriculum. After the material was summarized and analysed, conclusions and recommendations were made by the author.

Chapter 4

FINDINGS OF THE STUDY

The results of the study are presented in this chapter. The responses of the twenty Ellsworth Young Farmers hereafter referred to as farmers and the seven farm machinery dealers hereafter referred to as dealers are presented in tabular form. In addition to the responses of general information, specific information on farm machinery service and repair was included.

According to the data in Table I, the average size farm for the twenty farmers was 1101 acres. Of this total, 301 acres was the average number of acres owned and 800 acres was the average number of acres rented. The range in total acres of these farmers was from 465 to 2700 acres. Seventeen farmers owned a part of their acreage ranging from 25 to 1396 acres while 18 farmers rented land ranging from 445 to 1390 acres. Fifteen farmers owned and rented part of their land.

TABLE I
SIZE OF FARMS IN ACRES OWNED AND RENTED AS REPORTED
BY THE TWENTY FARMERS IN ELLSWORTH COUNTY

	Number	Average Size	Range of Acres
Owned	17*	301	25 - 1396
Rented	18**	800	445 - 1390
Total	20***	1101	465 - 2706

*of the 17 who owned, 15 also rented

**of the 18 who rented land, 15 also owned land

***fifteen farmers owned and rented land

The responses in Table II indicated that the major enterprises of the twenty farmers in Ellsworth County were wheat, grain sorghum, alfalfa, soybeans, beef, and swine. All 20 farmers produced wheat while 17 raised grain sorghum and beef. Eight farmers produced swine and 4 produced alfalfa. It was noted that none of the farmers in this study raised sheep. According to Farm Facts, the crop enterprises in Ellsworth County were ranked as follows: wheat, grain sorghum, alfalfa, soybeans, beef, swine, and sheep. The farmers interviewed for this study appeared to be a representative group of farmers for Ellsworth County.¹

TABLE II

MAJOR ENTERPRISES AS REPORTED BY THE TWENTY
FARMERS IN ELLSWORTH COUNTY

Major Enterprises	Number of Farmers	Percentage of Farmers
Crops		
Wheat	20	100
Grain Sorghum	17	85
Alfalfa	4	20
Soybeans	1	5
Livestock		
Beef	17	85
Swine	8	40
Sheep	0	0

¹ Kansas State Board of Agriculture, Farm Facts, 1969-1970, (Robert Sanders, State Printer, Topeka, Kansas), 1970, pp. 20F, 22F, 32F, 44F, 70F, & 72F.

The replies of the 20 farmers as indicated in Table III indicated that they hired an average of .8 persons full-time with 1.1 persons part-time. The range in the number of additional workers employed full-time was 0-3 and part-time from 0 to 4. The seven dealers averaged 3.0 additional persons employed full-time and .9 persons part-time. The range in the number of additional employees needed full-time was one to six while one to four employees were needed part-time. The farmers and dealers considered their major employment season from April to November.

TABLE III

AVERAGE NUMBER OF FULL AND PART-TIME EMPLOYEES WHO WERE
HIRED BY TWENTY FARMERS AND
SEVEN FARM MACHINERY DEALERS

	Full-Time		Part-Time	
	Average No.	Range	Average No.	Range
Farmers	.8	0-3	1.1	0-4
Dealers	3.0	1-6	.9	1-4

The replies in Table IV indicated the machines serviced and repaired by the twenty farmers in production agriculture and seven dealerships in farm machinery. The machines were ranked in the order of the number serviced by the farmers. Most dealers serviced and repaired farm machines. All of the 20 farmers and six or more of the dealers serviced and repaired hay rakes, mowers,

grain drills, and combine harvesters. Tractors were repaired by three farmers while nineteen repaired combine harvesters. Plows were serviced and repaired by 19 farmers and seven dealers while 15 farmers and seven dealers serviced and repaired balers. Sprayers were serviced and repaired by 13 farmers and six dealers while 12 farmers and 6 dealers serviced and repaired cultivators. Nine farmers and one dealer did not service or repair planters. Three farmers serviced and repaired hay conditioners and pesticide and insecticide applicators.

Four dealers wrote in the questionnaire that they serviced and repaired trucks and cars. One dealer indicated that his dealership serviced and repaired chain saws. The small number of machines serviced and repaired by the 20 farmers indicated that these machines were not widely used by the farmers in Ellsworth County.

TABLE IV

THE MACHINES SERVICED AND REPAIRED AS REPORTED BY THE
 TWENTY YOUNG FARMERS AND SEVEN FARM MACHINERY
 DEALERS IN ELLSWORTH COUNTY

Machine	Service Machinery Farmers Dealers				Repair Machinery Farmers Dealers			
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Hay Rakes	20	100*	7	100**	20	100*	7	100**
Mowers	20	100	7	100	20	100	7	100
Grain Drills	20	100	6	86	20	100	6	86
Combine Harvesters	20	100	7	100	19	95	7	100
Tractors	20	100	7	100	3	15	7	100
Plows	19	95	7	100	19	95	7	100
Small Engines	18	90	7	100	14	70	7	100
Balers	15	75	7	100	15	75	7	100
Sprayers	13	65	6	86	13	65	6	86
Cultivators	12	60	6	86	11	55	6	86
Planters	11	55	6	86	11	55	6	86
Ensilage Cutters	6	30	6	86	6	30	6	86
Swathers	5	25	7	100	4	20	7	100
Hay Conditioners	3	15	7	100	3	15	7	100
Pesticide & Insecticide Applicator	3	15	4	56	3	15	4	56
Anhydrous Ammonia Applicator	2	10	5	71	2	10	4	56
Rotary Mowers	1	5	7	100	1	5	7	100
Trucks			4	56			4	56
Cars			4	56			4	56
Chain Saw			1	14			1	14

*Percentage was determined on the basis of twenty farmers.

**Percentage was determined on the basis of seven farm
 machinery dealers.

Mechanical competencies listed as knowledges needed for employment in production agriculture and farm machinery dealerships were included in Table V. The items included in the questionnaire were rated by the 20 farmers and seven dealers as "Essential" (4.0) points, "Very Important" (3.0) points, "Important" (2.0) points, "Little Importance" (1.0) points, and "No Importance" (0.0) points. An average rating was determined by using the above scale and dividing the total by the number responding. A sum average rating for the two groups was determined by adding the weighted average score for farmers and the weighted average score for dealers and dividing by two.

The responses of the farmers and dealers to the competency "Types of machinery used in this farming area," with a sum average of 3.5 for the two groups with a difference of .2 which indicated close agreement of the importance of this competency. The competencies "Wearability of machine parts," and "Various metals used in machinery construction," were given to a sum average of 2.8 and 2.45 respectively. The competency "Types of machinery used in this farming area," received the highest sum average rating in this area of 3.5.

TABLE V

MECHANICAL KNOWLEDGE COMPETENCIES REQUIRED FOR EMPLOYMENT
IN PRODUCTION AGRICULTURE AND FARM MACHINERY DEALERSHIPS
AS REPORTED BY THE TWENTY FARMERS
SEVEN FARM MACHINERY DEALERS
IN ELLSWORTH COUNTY

Competencies	Production Agriculture 20 Farmers	Farm Machinery 7 Dealers	Total
Knowledges of:	(Weighted ave.)	(Weighted ave.)	(Sum Ave.)
Types of machinery used in this farming area	3.4	3.6	3.5
Machines Capabilities	3.3	3.3	3.3
Farm machinery hydraulic systems	2.9	3.6	3.25
Care, handling, and storage of machines on the farm	3.1	3.3	3.2
Wearability of machine parts	3.0	2.6	2.8
Various metals used in machinery construction	2.3	2.6	2.45

The competencies presented in Table VI are placed in the order of importance as they were rated by the twenty farmers and seven dealers. Both competencies "Locate failures and make repairs quickly and efficiently," and "Follow factory instruction in machine assembly and operation," received identical sum average rating of 3.4. The competency "Make adjustments on machines," had a sum average of 3.25. The farmers placed more emphasis on this competency. Dealers ranked the competency "Use of arc and

and oxacetylene welder in special process welds," .5 points higher than the farmers weighted average of 2.9.

The farmers and the dealers rated all the competencies, "Very Important," (3.0 or above) with the exception of the following: "Calibrate farm machines," (2.8); "Use of arc and oxacetylene welder in making special process welds," (2.75); Associate machine parts with machines," (2.75); "Demonstrate farm machinery," (2.65); "Adjustments and repair of carburetors and electrical systems," (2.6); and "Paint farm equipment" (1.75). The competency "Paint farm equipment" received the lowest sum average rating of 1.75 with close agreement among the farmers and the machinery dealers.

TABLE VI

MECHANICAL ABILITY COMPETENCIES REQUIRED FOR EMPLOYMENT IN
PRODUCTION AGRICULTURE AND FARM MACHINERY DEALERSHIPS
AS REPORTED BY TWENTY FARMERS AND
SEVEN FARM MACHINERY DEALERS
IN ELLSWORTH COUNTY

Competencies	Production Agriculture (20 Farmers) (Weighted Ave.)	Farm Machinery (7 Dealers) (Weighted Ave.)	Total (Sum Ave.)
Ability to:			
Locate failures and make repairs quickly and efficiently	3.4	3.4	3.4
Follow factory instructions in machine assembly and operation	3.4	3.4	3.4
Adjust and repair farm machines	3.2	3.4	3.3
Determine when parts need replacing	3.2	3.3	3.25
Make adjustments on machines	3.5	3.0	3.25
Identify working parts of machines	3.0	3.3	3.15
Detect incorrect assembly or adjustment	3.0	3.3	3.15
Locate machine failures (trouble-shooting)	3.0	3.0	3.0
Determine the relationship of ground travel to PTO speeds and capacities of machines	2.9	3.3	3.0
Calibrate farm machines	2.9	2.7	2.8
Adapt machinery size to farm operation	2.9	2.6	2.75
Use of arc and oxacetylene welder in making special process welds	2.5	3.0	2.75
Associate machine parts with machine	2.8	2.7	2.75
Demonstrate farm machinery use	2.4	2.9	2.65

TABLE VI (con't)

MECHANICAL ABILITY COMPETENCIES REQUIRED FOR EMPLOYMENT IN
PRODUCTION AGRICULTURE AND FARM MACHINERY DEALERSHIPS
AS REPORTED BY TWENTY FARMERS AND
SEVEN FARM MACHINERY DEALERS
IN ELLSWORTH COUNTY

Competencies	Production Agriculture (20 Farmers) (Weighted Ave.)	Farm Machinery (7 Dealers) (Weighted Ave.)	Total (Sum Ave.)
Ability to:			
Adjustments and repairs of carburetors and electrical systems	2.6	2.6	2.6
Paint farm equipment	1.8	1.7	1.75

The respondents indicated which machines were to be included in the high school instructional program to prepare workers for employment in production agriculture and in farm machinery dealerships. The information in Table VII ranked the machines in order of importance. Tractors received the highest ranking of all farm machines having a sum average importance rating of 3.55.

Machines with sum average rating of 3.0 - 3.5 in rank order included: tractor (3.55), combine harvesters (3.5), and balers (3.0). Machines with sum average rating of 2.5 to 2.99 were: grain drills (2.85), plows (2.8), swathers (2.7), and pesticide and insecticide applicators (2.7). The cultivator received the lowest sum average rating of all machines listed (1.4). The cultivator may have received a low sum average rating by the respondents because it could have been considered

to be a simple machine to understand. Both the cultivator and the sprayer had weighted averages greater than one point between the farmers and the dealers.

The cultivator had an weighted average rating of 2.1 by the farmers and a 1.9 weighted average by dealers. Most of the machines had small differences in the weighted averages. The author had previously decided that all machines receiving a sum average rating of 2.5 or above would be included in the high school instruction program.

The following machines which received a 2.5 or greater sum average rating would be included in the high school instructional program: tractors, balers, plows, planters, sprayers, combine harvesters, grain drills, swathers, pesticide and insecticide applicators. The following machines which received a 2.0 to 2.49 sum average rating and which could be considered in the development of a high school curriculum: ensilage cutters, mowers, and anhydrous ammonia applicators. The following machines received a sum average rating of less than 2.0 and would not be considered in the development of the curriculum: hay rakes, cultivators, hay conditioners, rotary mowers.

TABLE VII

MACHINES TO BE INCLUDED IN THE HIGH SCHOOL PROGRAM OF
INSTRUCTION FOR EMPLOYMENT IN PRODUCTION
AGRICULTURE AND FARM MACHINERY DEALERSHIPS
AS REPORTED BY TWENTY FARMERS AND
SEVEN FARM MACHINERY DEALERS
IN ELLSWORTH COUNTY

Machines	Production Agriculture (20 Farmers)	Farm Machinery (7 Dealers)	Total
	(Weighted Ave.)	(Weighted Ave.)	(Sum Ave.)
Tractors	3.5	3.6	3.55
Combine Harvesters	3.4	3.6	3.5
Balers	3.1	2.9	3.0
Grain drills	3.0	2.7	2.85
Plows	2.9	2.7	2.8
Swathers	2.4	3.0	2.7
Pesticide & Insecticide Applicators	2.8	2.6	2.7
Planters	2.4	2.7	2.55
Sprayers	3.1	1.9	2.5
Ensilage Cutters	2.4	2.3	2.35
Anhydrous ammonia applicators	2.7	2.0	2.35
Mowers	2.4	1.9	2.15
Hay Conditioners	1.7	2.0	1.85
Hay Rakes	1.9	1.7	1.8
Rotary Mowers	1.9	1.7	1.8
Cultivators	2.1	.7	1.4

Results in Table VIII indicated which machines were rated higher and their differences by the twenty farmers than the seven farm machinery dealers. The machines are ranked in order of importance according to the weighted averages. The machines which were ranked as more important by the twenty farmers than by the seven dealers and their differences were: balers (3.1) (.2); sprayers (3.1) (1.2); grain drills (3.0) (.3); plows (2.9) (.2); pesticide & insecticide applicators (2.8) (.2); anhydrous ammonia applicators (2.7) (.7); ensilage cutters (2.4) (.1); mowers (2.4) (.5); cultivators (2.1) (1.4); and rotary mowers (1.9) (.2).

TABLE VIII

MACHINES WHICH RECEIVED A HIGHER RATING AS REPORTED
BY THE TWENTY FARMERS IN PRODUCTION AGRICULTURE
THEN THE SEVEN DEALERS IN FARM
MACHINERY DEALERSHIPS

Machine	(Weighted Ave.)	Difference
Balers	3.1	.2
Sprayers	3.1	1.2
Grain drills	3.0	.3
Plows	2.9	.2
Pesticide & Insecticide Applicators	2.8	.2
Anhydrous Ammonia Applicators	2.7	.7
Ensilage cutters	2.4	.1
Mowers	2.4	.5
Cultivators	2.1	1.4
Hay rakes	1.9	.2
Rotary mowers	1.9	.2

The five machines which received higher ratings by the seven farm machinery dealers than the twenty farmers and their

differences are listed in Table IX. The machines were ranked in order of importance by the dealers with weighted averages and difference listed. The five machines were: tractors (3.6) (.1); combine harvesters (3.6) (.2); swathers (3.0) (.6); planters (2.7) (.3); and hay conditioners (2.0) (.3).

TABLE IX

MACHINES WHICH RECEIVED A HIGHER RATING AS
REPORTED BY THE SEVEN DEALERS
IN FARM MACHINERY DEALERSHIPS

Machine	Weighted Ave.	Difference
Tractors	3.6	.1
Combine Harvesters	3.6	.2
Swathers	3.0	.3
Planters	2.7	.3
Hay Conditioners	2.0	.3

The findings of this study indicated some interesting facts concerning employment in production agriculture and farm machinery dealerships. The average size of the farms operated by the twenty farmers was 1101 acres. The average number of acres owned was 301 while 800 acres was the average number of acres rented. Fifteen farmers owned and rented part of their farm. The major enterprises of the 20 farmers in Ellsworth County were: wheat, grain sorghum, alfalfa, soybeans, beef, and swine. None of the farmers raised sheep. Wheat, grain

sorghum, and beef were the most common enterprises found on the farms of the twenty farmers.

This study indicated that more persons were employed full-time by the farm machinery dealers than by the farmers. Farmers hired more part-time help than did the dealers. Sixteen farm machines were found to have been serviced and repaired by both the farmers and dealers. These machines included: hay rakes, mowers, grain drills, combine harvesters, tractors, plows, small engines, balers, sprayers, cultivators, planters, ensilage cutters, swathers, hay conditioners, pesticide and insecticide applicators, anhydrous ammonia applicators, and rotary mowers.

Five of six competencies concerned with knowledges of farm machinery received a sum average rating of 2.5 or above by the twenty farmers and seven dealers. The twenty farmers and seven dealers scored 15 or 16 competencies dealing with abilities with farm machinery as 2.5 or above and therefore, all competencies having received a rating of 2.5 or more by the twenty farmers and seven dealers should be included in the vocational agriculture program at Wilson High School.

Eight of 16 farm machines were given sum average ratings of 2.5 or above by the twenty farmers and seven dealers and therefore would be included in the high school program of instruction. Machines which received sum average rating of 2.0 to 2.49 would be considered for inclusion in the development of the high school curriculum. Machines which were rated less than 2.0 would not be included in the high school program of instruction.

Chapter 5

SUMMARY AND CONCLUSIONS

The purpose of this study was to identify the agricultural machinery competencies which were needed for employment in production agriculture and in farm machinery dealerships in Ellsworth County. The problem was designed to provide information for curriculum development which included competencies considered as essential in the areas of production agriculture and farm machinery dealerships.

The instrument was developed which contained three status questions; six competencies concerned with knowledges of farm machinery; and 16 competencies involving the abilities with farm machinery. The study also included farm machines which were used for production agriculture.

Twenty farmers and seven dealers in Ellsworth County were selected as the population for this study. The twenty farmers were enrolled in the Ellsworth Young Farmer Class. The Production Agriculture part of the questionnaire was distributed and completed under the direction of the author at the close of a Young Farmer meeting. A personal interview was made with each owner or manager of the farm machinery dealerships at which time the questionnaire was completed.

The responses of the farmers and dealers to each questionnaire item were analysed by assigning a weighted value to each reply. Competencies rated as "Essential" were assigned

4 points; "Very Important," 3 points; "Important," 2 points; "Little Importance", 1 point; and "No Importance", 0 points for the determination of total value for each competency. The total was divided by the number of respondents to obtain the weighted average.

It was the decision of the author that the competencies which received an average weighted rating of "Important" (2.5 points), by the twenty farmers and seven dealers would be included in the development of the curriculum for teaching the agricultural machinery competencies. The competencies with weighted averages between 2.0 and 2.49 would be given consideration and those under 2.0 would not be included in the curriculum.

The average size of the farms of the twenty farmers included in this study was 1101 acres. The average number of acres owned was 301 while 800 acres was average number of acres rented. The range in total acres was 465 to 2706 for the farmers in this study. Seventeen farmers owned a part of their farm ranging from 25 to 1396 acres. Fifteen farmers owned and rented a part of their land.

The study indicated the major enterprises of the twenty farmers in Ellsworth County were: wheat, grain sorghum, alfalfa, soybeans, beef, and swine. All twenty farmers produced wheat while 17 raised grain sorghum and beef. Swine was produced on eight farms and four farmers produced alfalfa. It was noted that none of the farmers in this study raised sheep.

An average of .8 additional persons were employed full-time with 1.1 persons employed part-time as indicated by the

twenty farmers. The range in the number of additional workers employed full-time was zero to three and part-time from zero to four. The seven dealers averaged 3.0 additional persons employed full-time with 0.9 persons part-time. The range in the number of employees needed full-time was one to six while one to four were needed part-time. From April to November was considered the major employment season for the farmers and the dealers.

The twenty farmers serviced and repaired the following machines: hay rakes, mowers, and grain drills. Combine harvesters and tractors were serviced by all twenty of the farmers while 19 repaired the combine harvesters and three farmers repaired tractors. Six machines were serviced and repaired by six farmers which indicated that these machines were probably not commonly used in Ellsworth County. Another reason may have been that the dealerships serviced and repaired the machines for the farmers.

All seven machinery dealers serviced and repaired the following machines: hay rakes, balers, mowers, combine harvesters, tractors, plows, small engines, swathers, hay conditioners, and rotary mowers. Six dealers serviced and repaired the following machines: grain drills, sprayers, cultivators, planters, and ensilage cutters. Four dealers indicated that they serviced and repaired trucks and cars while one dealer serviced and repaired chain saws.

The respondents indicated which machines were to be included in the high school instructional program to prepare workers for employment in production on agriculture and farm machinery dealerships. Tractors received the highest weighted

average rating of all equipment by both groups. Machines with sum average rating of 3.0 - 3.5 in rank order included: tractors, combine harvesters, and balers. Machines with sum average ratings of 2.5 - 2.99 were: grain drills, plows, swathers, and pesticide and insecticide applicators. The following machines received sum average ratings of 2.0 - 2.5 which included: ensilage cutters, anhydrous ammonia applicators, and mowers. Hay conditioners, hay rakes, rotary mowers and cultivators received sum average rating of less than 2.0 by the farmers and dealers. The largest difference in the sum average rating of the machines was found to be the sprayer and cultivator which had a difference of greater than one point as indicated by the twenty farmers and seven dealers. The differences of the other machines as rated by the farmers and dealers were less than one point.

The following conclusions were reached after considering the results of the findings of this study:

1. The farmers and dealers were in close agreement concerning the competencies needed and the farm machines which should be included in the high school program of instruction for employment in production agriculture or farm machinery dealerships.

2. The farmers and farm machinery dealers were in agreement as to which farm machines should be included in the high school program of instruction.

3. That the following farm machines to be included in the high school program of instruction: tractors, combine

harvesters, balers, grain drills, plows, swathers, pesticide and insecticide applicators, planters, and sprayers.

4. That the following farm machines be considered for the high school program of instruction: ensilage cutters, anhydrous ammonia applicators, and mowers.

5. That the following farm machines be omitted from the high school program of instruction: hay conditioners, hay rakes, rotary mowers and cultivators.

6. It appeared that the process of studying competencies needed for employment in production agriculture and agricultural related occupations was a satisfactory method and could be used to determine competencies in other areas such as: production agriculture and farm chemicals; production agriculture and feeds; and production agriculture and seeds.

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BIBLIOGRAPHY

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Education Section, Department of Vocational Education,
Phoenix and Department of Agricultural Education, University
of Arizona, Tucson.

APPENDIX

LIST OF YOUNG FARMERS

Ronald Zvolanek
R. R. #2
Ellsworth, Kansas 67439

R. H. Doubrava
R. R. #2
Ellsworth, Kansas 67439

Paul Westerman
Star Route
Ellsworth, Kansas 67439

D. H. Brunning
R. R. #1
Ellsworth, Kansas 67439

Ralph Westerman
Star Route
Ellsworth, Kansas 67439

Leon Janzen
Lorraine, Kansas 67459

Wayne Mehl
Lorraine, Kansas 67459

Paul Schrader
Lorraine, Kansas 67459

Henry Buermaster
Holyrood, Kansas

Richard E. Johnson
Bushton, Kansas

Leon Richard
Ellsworth, Kansas 67439

Walter Folk
Ellsworth, Kansas 67439

Stephen Donley
Ellsworth, Kansas 67439

Edward Zvolanek
Ellsworth, Kansas 67439

Alvin Kratzenmeier, Sr.
Ellsworth, Kansas 67439

Jerry Rush
Genesea, Kansas

Kermit Rush
Genesea, Kansas

Jerome G. Jannssen
Lorraine, Kansas 67459

Karl Pflaughot
Ellsworth, Kansas 67439

LIST OF IMPLEMENT DEALERS

Heard's Repair Service
Aaron Heard
Wilson, Kansas 67490

Choitz Brothers Equipment
George & Frank Choitz
Ellsworth, Kansas 67439

Ellsworth Truck & Tractor
Charles Vondra
Ellsworth, Kansas 67439

Helwick Motor Inc.
Charles Helwick
Ellsworth, Kansas 67439

Massey Ferguson Farm Equipment
Bennie Hooker
Ellsworth, Kansas 67439

Lloyd Implement Inc.
Ronald L. Lloyd
Ellsworth, Kansas 67439

Anschutz Implement Company
Elmer Anschutz
Wilson, Kansas 67490

SUPERINTENDENT
NORMAN E. LINTON
PHONE 913-683-5241

PRINCIPALS

ERYL DRUMM - - BUSHTON SCHOOLS
LMEK VECERA - - HOLYROOD HIGH
LIN MCCOOL - - HOLYROOD GRADE

PRINCIPALS

OLIN MCCOOL - - LORRAINE GRADE
HERBERT BAKER - WILSON HIGH
ROBERT KING - - WILSON GRADE

UNIFIED SCHOOL DISTRICT NO. 328

LORRAINE, KANSAS 67459
Ellsworth County Wilson, Kansas 67490

Herbert Baker, Principal

In partial fulfillment of requirements for my Master's Degree from Kansas State University, Manhattan, Kansas, I am making a study to determine the competencies that should be taught in farm machinery in the vocational agriculture classes of our local high schools in Ellsworth County. The training given to students enrolled in such classes is to qualify them for employment upon graduation with Farm Machinery Dealers.

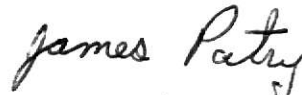
I am asking the cooperation of the Farm Machinery Dealers in Ellsworth County to assist me in my study.

Not all farm boys return to the farm or attend college after their graduation from high school. Thus a number of boys could be employed by Farm Machinery Dealers if they had additional training.

I have selected Farm Machinery Dealers in Ellsworth County to help me in my study. I hope that you will give me one-half hour of your time for a personal interview at which time we will go over the enclosed questionnaire. I will telephone you soon to set a date and time convenient with you for this interview.

You will be of invaluable help to me in this study and your cooperation will be appreciated. All information given to me will be held in the strictest confidence.

Sincerely,



James Patry, Instructor
Vocational Agriculture

Approval



Herbert Baker, Principal

INTERVIEW STATEMENT

This questionnaire will be used to establish guide lines for determining what should be taught in farm power and machinery courses in Vocational Agriculture in high schools of Ellsworth County. It is important that the students receive the kind of training that will qualify them for employment in Production Agriculture.

The questionnaire contains a number of competencies that an employee may be expected to perform and some may be more important than others. You are to determine whether each of the competencies are essential, very important, important, little importance, or not important for the performances of employment in some phase of production agriculture, even though the competency may not be needed by workers on your farm. If you have any comment or cannot decide on your answer, circle the number of the competency and after completing all the competencies, return to the circled numbers for further discussion.

INTERVIEW STATEMENT

This questionnaire will be used to establish guide lines for determining what should be taught in farm power and machinery courses in Vocational Agriculture in high schools of Ellsworth County. It is important that the students receive the kind of training that will qualify them for employment with Farm Machinery Dealers.

The questionnaire contains a number of competencies that an employee may be expected to perform and some may be more important than others. You are to determine whether each of the competencies are essential, very important, important, little importance, or not important for the performances of employment in some phase of the farm power and machinery industry, even though the competency may not be needed by workers in your place of business. If you have any comment or cannot decide on your answer, circle the number of the competency and after completing all the competencies, return to the circled number for further discussion.

PRODUCTION AGRICULTURAL EMPLOYER'S
COMPETENCY QUESTIONNAIRE

Name _____

Address _____

Size of farm _____ Own _____ Rent _____

Major enterprises: Beef _____, Swine _____, Sheep _____,
Wheat _____, Grain Sorghum _____, Others _____

1. How many persons are employed full time? _____

2. How many persons are employed part time? _____

3. What different machines do you service and repair?

Tractors _____, Combine Harvesters _____, Mowers _____,

Rotary mowers _____, Plows _____, Swathers _____,

Ensilage cutters _____, Planters _____, Cultivators _____,

Sprayers _____, Balers _____, Grain Drills _____,

Hay Rakes _____, Hay Conditioners _____, Anhydrous Ammonia

Applicators _____, Pesticide and Insecticide Applicators

_____, Small Engines _____, Others _____

GENERAL WORK COMPETENCIES NEEDED
FOR PRODUCTION AGRICULTURE

The questionnaire is completed by marking (X) in the appropriate column representing your opinion of the importance for the competencies. The general meaning of each of the number value is:

- 4 - Essential, highly necessary, etc.
- 3 - Very important, above average, etc.
- 2 - Important, average moderate, etc.
- 1 - Little importance, low, slight, etc.
- 0 - No importance, none, not valuable, etc.

COMPETENCIES	4	3	2	1	0
	Essential	Very Important	Important	Little Importance	No Importance
A. Knowledge of:					
1. Types of machinery used in this farming area.					

FARM MACHINERY EMPLOYER'S
COMPETENCY QUESTIONNAIRE

Firm: _____

Town: _____

By: _____ (Owner & Manager or Owner or
Manager)

1. How many persons are employed by your firm full time? ____
2. How many persons are employed by your firm part time? ____
3. What different farm machines does your firm service and repair? (If service use (S), if repairs use (R)).

Tractors_____, Combine Harvesters_____, Mowers_____,
Rotary Mowers_____, Swathers_____, Plows_____,
Ensilage Cutters_____, Planters_____, Cultivators_____,
Sprayers_____, Balers_____, Grain Drills_____, Hay
Rakes_____, Hay Conditioners_____, Anhydrous Ammonia
Applicators_____, Pesticide and Insecticide Applicators
_____, Small Engines_____, Others_____

GENERAL WORK COMPETENCIES NEEDED
FOR FARM MACHINERY EMPLOYER'S

The questionnaire is completed by marking (X) in the appropriate column representing your opinion of the importance of each of the competencies. The general meaning of the number values is:

- 4 - Essential, highly necessary, etc.
- 3 - Very important, above average, etc.
- 2 - Important, average moderate, etc.
- 1 - Little importance, low, slight, etc.
- 0 - No importance, none, not valuable, etc.

COMPETENCIES	4	3	2	1	0
	Essential	Very Important	Important	Little Importance	No Importance
A. Knowledge of:					
1. Types of machinery used in this farming area.					
2. Wearability of machine parts.					
3. Care, handling, and storage of machines on the farm.					
4. Various metals used in machinery construction.					
5. Machine capabilities.					
6. Farm machinery hydraulic systems					
Others:					
7.					
8.					
9.					

	4	3	2	1	0
	Essential	Very Important	Important	Little Importance	No Importance
B. Ability to:					
1. Adapt machinery size to farm operation					
2. Demonstrate farm machinery use.					
3. Identify working parts of machines.					
4. Make adjustments on machines.					
5. Locate failures and make repairs quickly and efficiently.					
6. Follow factory instructions in machine assembly and operation.					
7. Adjustment and repair of carburetors and electrical systems.					
8. Paint farm equipment.					
9. Detect incorrect assembly or adjustment.					
10. Calibrate farm machines.					
11. Determine when parts need replacing.					
12. Use of arc and oxyacetylene welding in making special process welds.					
13. Determine the relationship of ground travel to PTO speeds and capacities of machines.					

	4	3	2	1	0
	Essential	Very Important	Important	Little Importance	No Importance
14. Associate machine parts with machine.					
15. Adjust and repair farm machines.					
16. Locate machine failures (trouble-shooting).					
17. Others:					
18.					
19.					

C. Which machines should be included in the high school instruction for employees of the farm machinery business or production agriculture.

1. Tractors					
2. Combine Harvesters					
3. Mowers					
4. Rotary Mowers					
5. Swathers					
6. Plows					
7. Ensilage Cutters					
8. Planters					

	4	3	2	1	0
	Essential	Very Important	Important	Little Importance	No Importance
9. Cultivators					
10. Sprayers					
11. Balers					
12. Grain Drills					
13. Hay Rakes					
14. Hay Conditioners					
15. Anhydrous Ammonia Applicators					
16. Pesticide and Insecticide Applicators					
17. Others: (List below)					
18.					
19.					
20.					
21.					
22.					
23.					

FARM MACHINERY COMPETENCIES NEEDED FOR EMPLOYMENT IN
PRODUCTION AGRICULTURE AND FARM MACHINERY DEALERSHIPS
IN ELLSWORTH COUNTY

by

JAMES DEAN PATRY

B. S., Kansas State University, 1966

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1971

The purpose of this study was to identify the competencies which were needed for employment in production agriculture and in farm machinery dealerships in Ellsworth County. The problem was designed to provide information for the development of a curriculum which would include competencies considered as essential in the areas of production agriculture and farm machinery dealerships. Twenty farmers and seven farm machinery dealers in Ellsworth County served as the population for this study. The farmers were enrolled in the Ellsworth Young Farmer Class, and the dealers operated the retail farm machinery businesses in Ellsworth County.

Two major objectives were listed for this study as follows: to survey which competencies farmers and farm machinery dealers considered necessary for their employees, and to determine the farm machines which were serviced and repaired and their relative importance as indicated by the production farmers and the farm machinery dealers.

The questionnaire consisted of three status questions, six competencies on knowledges of farm machinery, and sixteen competencies on abilities with farm machinery. The responses given to the items in the questionnaire by the farmers and the dealers were analysed by assigning a weighted value to the responses given. Competencies rated as "Essential", were assigned 4 points; "Very Important", 3 points; "Important", 2 points; "Little Importance," 1 point; and "No Importance,"

0 points for the determination of the weighted averages. The sum for each competency was then divided by the number of respondents.

All competencies which received an average rating of 2.5 or above were to be considered as important in the development of a curriculum to prepare workers for employment in production agriculture and farm machinery dealerships. The twenty farmers rated 19 of 22 competencies as important with a rating of 2.5 or more for employment in production agriculture. The seven farm machinery dealers rated 21 of the 22 competencies which received an importance rating of 2.5 or more for employment in the farm machinery industry. The 19 competencies which received an importance rating of 2.5 or more should be included in the curriculum for the preparation of personnel for employment in production agriculture and farm machinery dealerships.

The sixteen most important machines used in Ellsworth County were also ranked by the farmers and dealers. Eight of the 16 farm machines received an importance rating of 2.5 or more by farmers for employment in production agriculture. The machines that farmers considered as important included: tractors, combine harvesters, balers, grain drills, plows, pesticide and insecticide applicators, sprayers, and anhydrous ammonia applicators. The seven farm machinery dealers rated eight of the 16 farm machines as 2.5 or more in importance for inclusion in the high school program of instruction for employment in farm machinery dealerships. The machines were:

tractors, combine harvesters, balers, grain drills, plows, swathers, pesticide and insecticide applicators, and planters.

Machines which received an importance rating of 2.0 to 2.49 by both groups and which could be given consideration for inclusion in the curriculum were: ensilage cutters, mowers, and anhydrous ammonia applicators. Machines which received an importance rating of 2.0 or less by the two groups would not be included in the high school program of instruction. These machines were: rotary mowers, cultivators, hay rakes, and hay conditioners.

The following conclusions were reached after reviewing the results of this study:

1. The farmers and the farm machinery dealers were in agreement concerning the competencies needed for employment in production agriculture and farm machinery dealerships.

2. The farmers and farm machinery dealers were in agreement as to which farm machines should be included in the high school program of instruction.

3. The process for identifying competencies needed for employment in production agriculture and farm machinery dealerships was a satisfactory method and could be used to study competencies needed in other areas such as: production agriculture and farm chemical dealerships, production agriculture and feed dealerships, and production agriculture and seed dealerships.