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**COMPETENCIES IN FARM LABOR UTILIZATION
NEEDED BY FARMERS**

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STATE OF IOWA
DEPARTMENT OF PUBLIC INSTRUCTION

Department of Education
and

Iowa Agriculture and Home Economics Experiment Station
Iowa State University of Science and Technology

in cooperation with

Vocational Agriculture Section
Division of Vocational Education
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This is an abstract of a thesis submitted to Iowa State University of Science and Technology by Ronald Dean Beaver in partial fulfillment of the requirements for the degree of Master of Science in 1967.

The study is one of a series conducted by the Department of Education of Iowa State University of Science and Technology with assistance of graduate students in agricultural education in cooperation with the Iowa Agricultural Home Economics Experiment Station and the Vocational Agriculture Section, Division of Vocational Education, State Department of Public Instruction.

This study was conducted under the direction of Professor C. E. Bundy.

COMPETENCIES IN FARM LABOR UTILIZATION NEEDED BY FARMERS

by

Ronald Dean Beaver

Purpose of the Study

The main objective of this study was to determine competencies needed by farmers in farm labor utilization. Secondary objectives were to determine (1) the degree of competence farmers needed in the competencies and (2) relationships between the competencies and certain characteristics of farmers and farm businesses.

Method of Procedure

A panel of consultants consisting of four progressive farmers, two vocational agriculture instructors and four Iowa State University staff members was utilized to develop a list of competencies in farm labor utilization needed by farmers. A final list of 49 competencies was included in a questionnaire which was developed to obtain evaluation of the degree of competence farmers needed and possessed in the competencies and information about the farmers and farm businesses.

Questionnaires were mailed to 399 farmers selected at random from 25 counties representing the five agricultural economic areas of the state. Two hundred and fifty farmers recommended by 50 vocational agriculture instructors throughout the state as being top managers of farm labor also were mailed questionnaires. Usable questionnaires were received from 145 recommended farmers and 59 random sample farmers. A check of random sample farmers nonrespondents indicated they were quite similar to random sample farmers who had responded.

Findings

In Table 1, it was observed that fourteen of the 49 competencies were understandings and 35 were abilities. Both selected and random sample farmers indicated degree of competence needed mean scores of 3.0 or higher (much competence needed) for the understandings of (1) the importance of timeliness of operations in crop and livestock production and (2) when farm operator time is more profitably utilized in management activities than as labor.

Other understandings with high degree needed mean scores for both selected and random sample farmers were the understandings of (1) costs and returns from using additional labor in each farm enterprise and (2) the size of volume of farm business necessary to employ full-time the year around the labor available on the farm.

An ability with degree of competence needed mean scores of 3.0 or higher for both selected and random sample farmers was the ability to

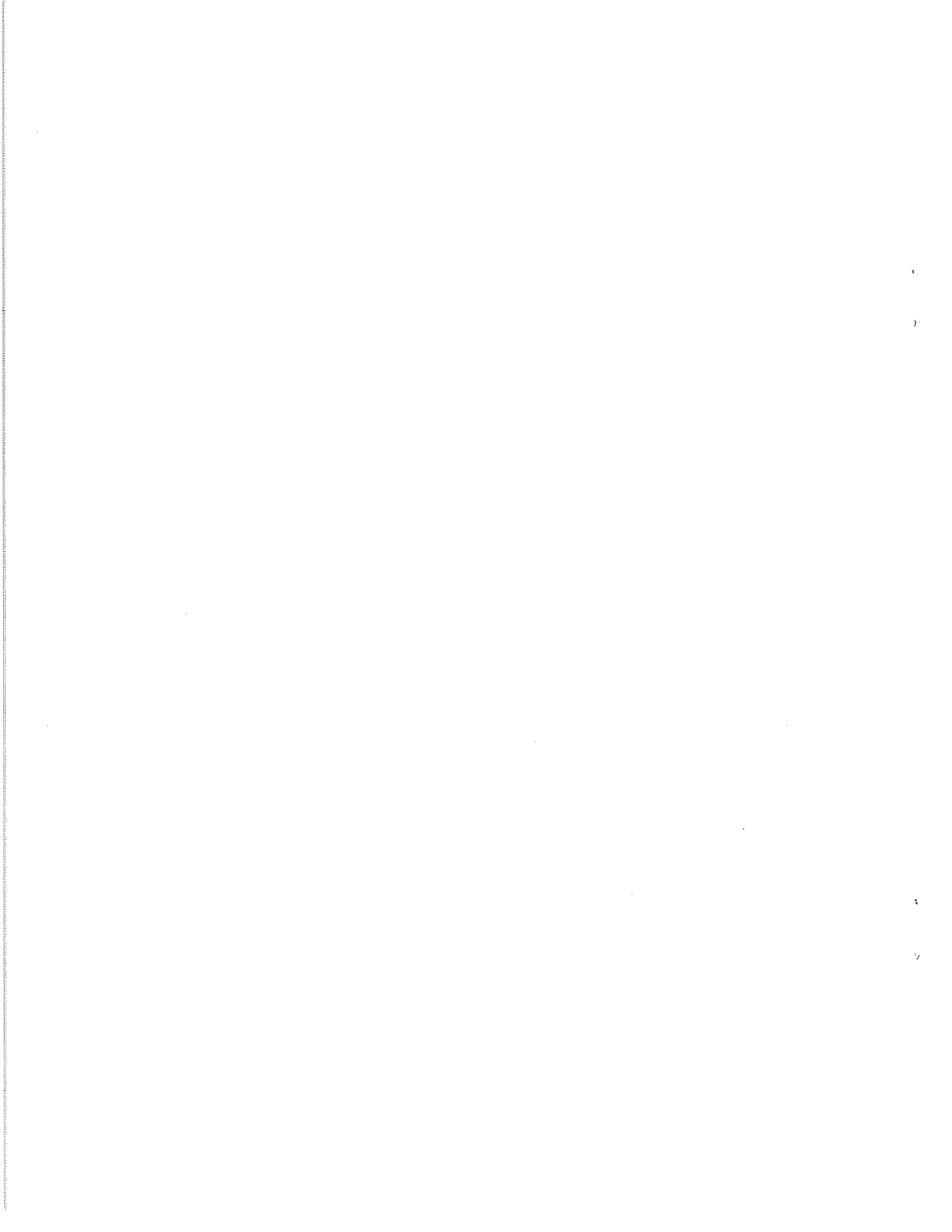


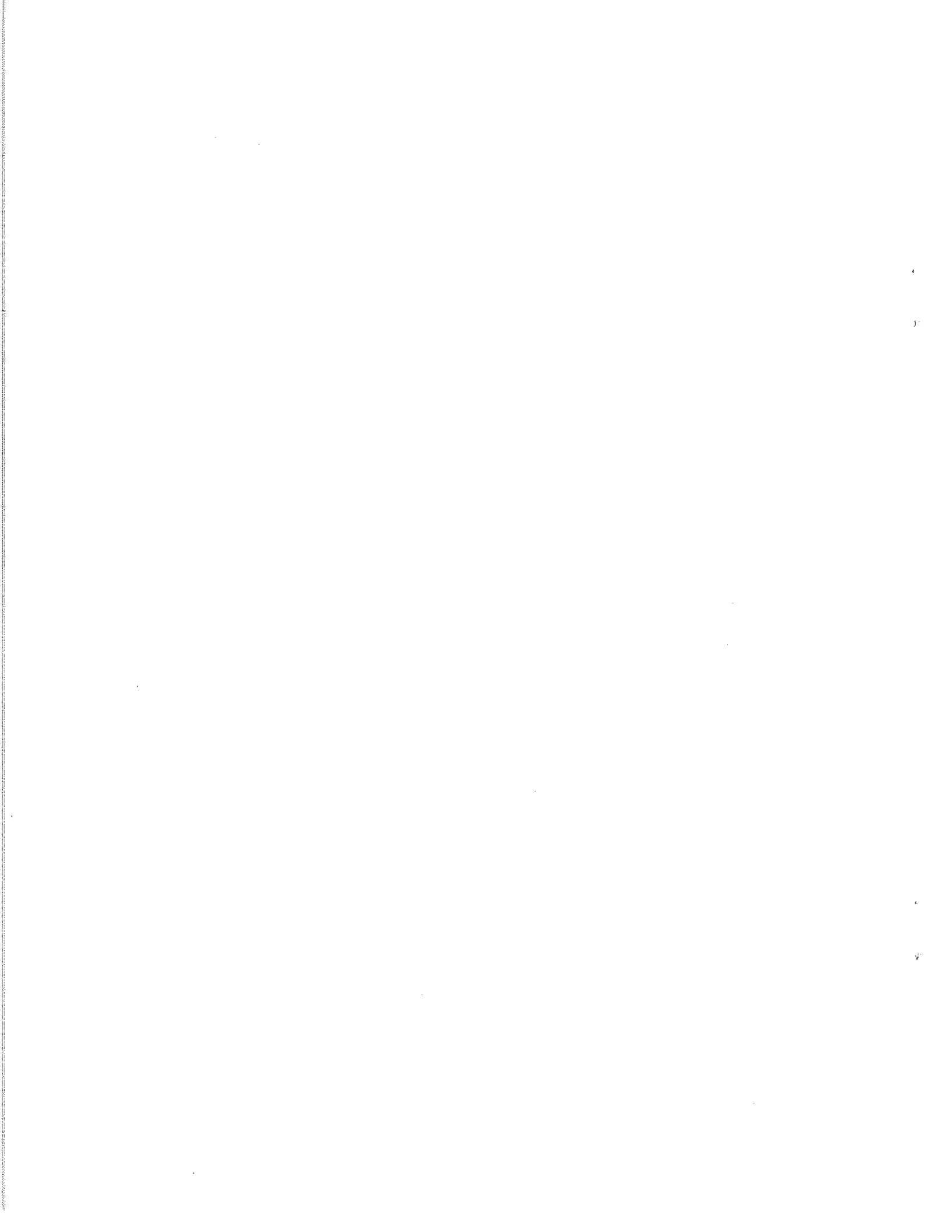
Table 1. Competencies in farm labor utilization needed and possessed by farmers

Competencies	Mean scores ^a			
	Selected N = 145		Random sample N = 59	
	N ^b	P ^c	N ^b	P ^c
<u>Understandings of:</u>				
1. Costs and returns from using additional labor in each farm enterprise (corn, hogs, laying hens)	3.1	2.5	2.7	2.1
2. Relative amount and seasonal distribution of the labor requirement of each farm enterprise	2.7	2.6	2.6	2.2
3. Changes in labor requirements per unit as the size or volume of each farm enterprise increases or decreases	2.9	2.4	2.6	2.1
4. Potential value to the farming operation of labor provided by family members	2.6	2.5	2.5	2.5
5. Size or volume of farm business necessary to employ full-time the year around the labor available on the farm	3.1	2.9	2.7	2.3
6. Importance of timeliness of operations in crop and livestock production	3.5	3.0	3.2	2.6
7. When farm operator time is more profitably utilized in management activities than as labor	3.3	2.6	3.0	2.4
8. Availability and cost of hired labor during the different seasons of the year	2.4	2.4	2.2	1.9
9. Employer responsibilities for social security, withholding taxes, insurance (including liability), and compliance with regulatory laws relating to hired workers	3.0	2.6	2.4	1.9
10. Housing needs of hired workers and their families	2.5	2.3	2.1	1.8
11. Recreation and leisure-time needs of hired workers and their families	2.4	2.0	2.2	1.9
12. Personal goals and values of hired workers	2.6	2.2	2.3	1.8
13. Personal problems of hired workers and the extent an employer should be interested in them	2.6	2.3	2.2	2.0
14. Amount of work to expect of workers in a working day	2.8	2.6	2.6	2.4
Overall mean score for understandings	2.8	2.5	2.5	2.1
<u>Ability to:</u>				
15. Assign appropriate priorities to the farm work to be done	3.2	2.8	2.7	2.3
16. Use labor productively during slack periods of the regular work schedule	3.0	2.7	2.5	2.2
17. Recognize and emphasize the important aspects of a job	3.1	2.9	2.7	2.3

^a0 = no competence needed (or possessed), 1 = little competence needed (or possessed), 2 = some competence needed (or possessed), 3 = much competence needed (or possessed), 4 = very much competence needed (or possessed).

^bDegree competency was needed.

^cDegree competency was possessed.



Competencies	Mean scores			
	Selected N = 145		Random sample N = 59	
<u>Ability to:</u>	N	P	N	P
18. Recognize conditions and circumstances requiring immediate attention and labor	3.3	3.0	3.0	2.4
19. Anticipate and prepare for peak work loads in the farm work schedule	3.4	3.0	2.9	2.3
20. Plan the daily work schedule in advance	3.1	2.7	2.5	2.2
21. Plan the tentative weekly work schedule in advance	2.8	2.5	2.3	2.1
22. Plan the cropping and livestock programs to distribute labor throughout the year	3.1	2.9	2.8	2.5
23. Keep records of labor use and accomplishments	2.7	2.0	2.5	1.7
24. Summarize and analyze labor records to improve efficiency of labor use	2.7	1.9	2.5	1.8
25. Evaluate operator's ability to manage labor in various crop and livestock production enterprises	2.9	2.5	2.7	2.1
26. Figure costs and returns from using farm machinery to save (substitute for) labor	3.1	2.7	2.7	2.1
27. Figure costs and returns from using farm chemicals (herbicides, insecticides) to save (substitute for) labor	3.2	2.8	2.5	2.2
28. Figure costs and returns from custom-hiring work done to release farm labor for other uses	3.0	2.7	2.5	2.2
29. Arrange buildings, facilities, and field layout to save labor and increase profits	3.3	2.9	2.8	2.3
30. Analyze routine tasks to eliminate unnecessary travel and motion	3.0	2.7	2.5	2.3
31. Use tillage and cropping practices and equipment which save labor and increase profits	3.2	2.8	2.9	2.3
32. Use livestock production practices and equipment which save labor and increase profits	3.3	2.8	2.7	2.1
33. Select power and machinery suited to the farm to accomplish work economically and on time	3.3	3.0	2.6	2.5
34. Select adequate electric powered farm equipment	2.9	2.6	2.5	1.9
35. Use telephone and/or two-way radio to save time and communicate widely	2.4	2.2	2.2	1.9
36. Provide for repair and maintenance of farm machinery	3.1	2.8	2.7	2.6
37. Obtain performance of physical labor over extended periods when necessary	2.6	2.4	2.2	2.0
38. Observe safety precautions in general to avoid potential loss of man-hours of labor	3.1	2.9	2.8	2.7
39. Provide for relaxation after regular working hours	2.5	2.1	2.4	2.0
40. Judge qualifications of prospective hired workers	3.0	2.4	2.8	2.1
41. Make definite agreements with hired workers about working conditions (working hours, wages, days off, meals)	3.0	2.6	2.8	2.2
42. Motivate workers	2.8	2.2	2.6	2.1

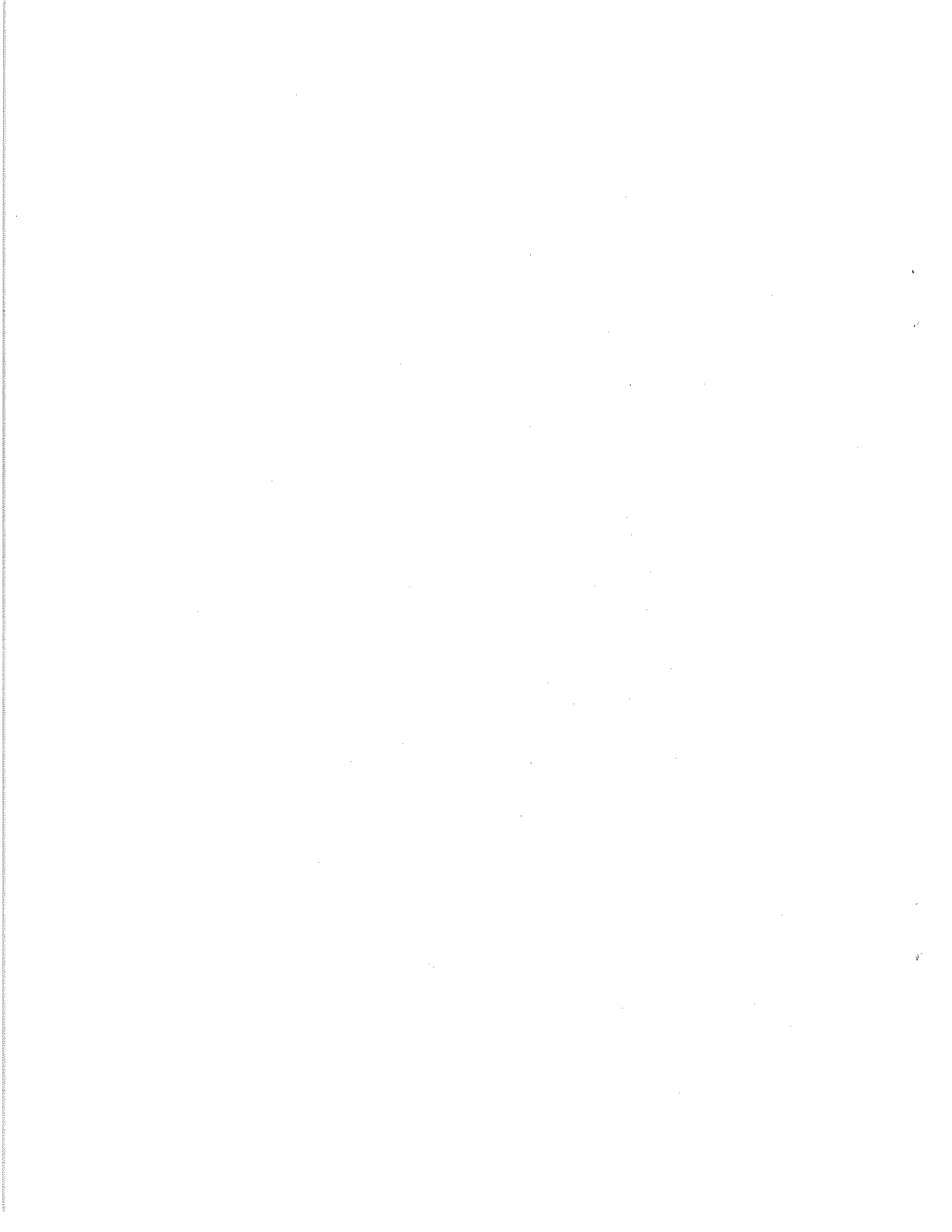


Table 1 continued.

Competencies	Mean scores			
	Selected N = 145		Random sample N = 59	
Ability to:	N	P	N	P
43. Train workers to perform their jobs adequately	3.0	2.6	2.6	2.2
44. Give instructions to workers quickly and clearly	3.1	2.5	2.8	2.2
45. Lead but not needlessly dominate workers	3.0	2.7	2.7	2.4
46. Allow workers to use their own judgment when necessary to complete a job	3.0	2.8	2.6	2.1
47. Be patient with and tolerant of workers	3.0	2.7	2.7	2.1
48. Evaluate worker's ability to perform various jobs	3.0	2.7	2.7	2.3
49. Assign jobs to workers according to their abilities and interests	3.0	2.9	2.7	2.3
Overall mean score for abilities	3.0	2.6	2.6	2.2
Total overall mean score	3.0	2.6	2.6	2.2

recognize conditions and circumstances requiring immediate attention and labor. Other abilities with high degree needed mean scores for both groups were the abilities to (1) anticipate and prepare for peak work loads in the farm work schedule, (2) arrange buildings, facilities and field layout to save labor and increase profits and (3) use tillage and cropping practices and equipment which save labor and increase profits.

Competencies with largest degree needed and possessed mean score differences (0.8 - 0.6) for both selected and random sample farmers were (1) the understanding of when farm operator time is more profitably utilized in management activities than as labor, the abilities to (2) keep records of labor use and accomplishments, (3) summarize and analyze labor records to improve efficiency of labor use and (4) judge qualifications of prospective workers.

Comparisons among farmers classified by various characteristics resulted in the following groups having largest differences between overall degree of competence needed and possessed mean scores: (1) farmers with the most education, (2) farmers with the most farming experience, (3) members of farm partnerships, (4) operators of larger acreages, (5) livestock producers, and (6) employers of larger amounts of hired and total labor.

Mean scores for the degrees of competence needed and possessed in selected labor utilization competencies for both groups of farmers are presented in Table 2. For the selected farmers, total overall degree needed mean scores were highest for the one or more years college group (3.1) and lowest for the 11th grade or less group (2.8). The total overall degree possessed mean scores were identical (2.6) for all three groups. Largest difference between total overall needed and possessed



Table 2. Degree of competence needed and possessed in selected farm utilization competencies by selected and random sample farmers by years of school completed

Competencies ^a	Mean scores					
	11th grade or less		12th grade		Over 12th grade	
	Needed	Possessed	Needed	Possessed	Needed	Possessed
<u>Selected Farmers</u>	N = 23		N = 77		N = 45	
<u>Understandings</u>						
1	3.0	2.5	3.2	2.6	3.0	2.3
5	3.0	2.7	3.1	2.9	3.2	2.9
6	3.3	3.0	3.4	3.2	3.7	2.9
7	3.2	2.6	3.3	2.6	3.4	2.5
Overall mean score for all 14 understandings	2.6	2.4	2.8	2.5	3.0	2.4
<u>Abilities</u>						
18	3.2	3.0	3.3	3.1	3.4	2.7
19	3.0	3.0	3.3	3.1	3.6	3.0
23	2.7	2.3	2.5	1.9	3.0	2.1
24	2.7	2.3	2.6	1.9	3.0	1.8
31	3.0	2.7	3.2	2.9	3.4	2.7
40	2.8	2.6	2.9	2.4	3.3	2.3
Overall mean score for all 35 abilities	2.9	2.7	2.9	2.6	3.2	2.6
Total overall mean score for all 49 competencies	2.8	2.6	2.9	2.6	3.1	2.6
<u>Random Farmers</u>	N = 18		N = 35		N = 36	
<u>Understandings</u>						
1	2.0	1.6	3.0	2.2	3.2	2.7
5	2.1	2.3	2.9	2.3	3.2	2.3
6	2.7	2.6	3.3	2.7	3.7	2.7
7	2.6	2.1	3.1	2.5	3.0	2.3
Overall mean score for all 14 understandings	2.1	2.0	2.7	2.2	2.7	2.3
<u>Abilities</u>						
18	2.1	2.2	3.3	2.5	3.5	2.5
19	2.4	2.2	3.1	2.4	3.1	2.3
23	2.2	1.4	2.7	1.8	2.2	2.2
24	2.1	1.6	2.6	1.8	2.8	2.0
31	2.2	1.9	3.1	2.6	3.1	2.3
40	2.2	2.1	2.9	2.0	3.7	1.8
Overall mean score for all 35 abilities	2.1	2.1	2.8	2.3	3.0	2.2
Total overall mean score for all 49 competencies	2.1	2.1	2.8	2.4	2.9	2.2

^aNumbers used as for the same competencies as in Table 1.



mean scores was for the one or more years college group (0.5) and least for the 11th grade or less group (0.2).

For the random samples farmers, highest total overall degree needed mean scores were for the groups with college and 12th grade educations, with 2.9 and 2.8 respectively. The 11th grade group total overall mean score was 2.1. The total overall degree possessed mean scores ranged from 2.4 to 2.1 for 12th grade and 11th grade or less groups in that order.

Largest difference between total overall competency mean scores for degree of competence needed and possessed was 0.7 for the college education group and 0.4 for the 12th grade group. The 11th grade or less group indicated no difference.

Both selected and random sample farmers with increased formal education indicated a greater overall need for competence in labor utilization than did those farmers with less education. Overall degree of competence possessed by farmers with more education was equal to or slightly less than the degree of competence possessed by those with less education.

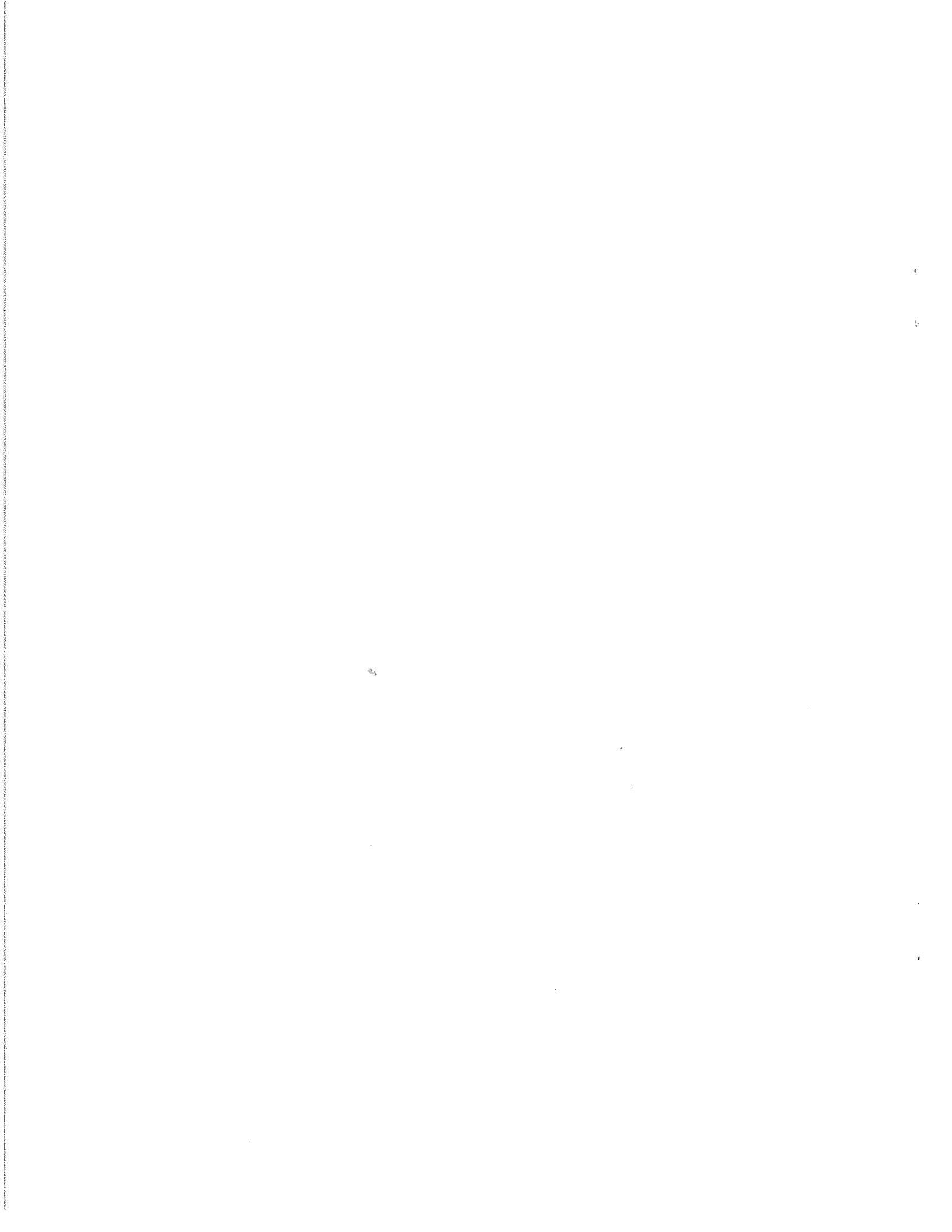
The difference between overall needed and possessed mean scores was largest for farmers with increased education. This indicates that farmers with increased education felt that more competence was needed to manage labor in their farming operations.

Table 3 includes competency mean scores for both farmer groups classified by number of years of vocational agriculture completed. For the selected farmers, the largest difference between needed and possessed overall mean scores for understandings was found for the four years of vocational agriculture group (0.5). Understandings overall mean score differences were identical for both other groups (0.3).

All three groups indicated the same overall degree of abilities needed (3.0). The one to three years of vocational agriculture group had the highest abilities possessed overall mean score (2.7), whereas both other groups were slightly lower with 2.6 each. Differences between overall abilities needed and possessed mean scores were largest and identical for the none and four years of vocational agriculture groups (0.4), whereas the other group had 0.3 difference.

For the random sample group, total overall mean score for competence needed was highest for the four years of vocational agriculture group with 2.9. The one to three years of vocational agriculture group was low for total overall competence needed mean score with 2.3 and the other group had 2.6. The no vocational agriculture group indicated the most total overall competence possessed (2.3) and the one to three years vocational agriculture group the least (2.0). Difference between total overall mean needed and possessed scores was largest for the four year vocational agriculture group (0.8), whereas 0.3 was the difference for the other groups.

The random sample farmer groups with none and one to three years of vocational agriculture both indicated lesser degrees of overall competence needed, and also less difference between competence needed and possessed than did the four years of vocational agriculture group. Although the overall scores for competence needed for the none and one to three years



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Both selected and random sample farmers with increased formal education indicated a greater overall need for competence in labor utilization than did those farmers with less education. Overall degree of competence possessed by farmers with more education was equal to or slightly less than the degree of competence possessed by those with less education.

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The random sample farmer groups with none and one to three years of vocational agriculture both indicated lesser degrees of overall competence needed, and also less difference between competence needed and possessed than did the four years of vocational agriculture group. Although the overall scores for competence needed for the none and one to three years



Table 3. Degree of competence needed and possessed in selected farm utilization competencies by selected and random sample farmers by years of vocational agriculture completed

Competencies ^a	None		1 to 3 years		4 years	
	Needed	Possessed	Needed	Possessed	Needed	Possessed
<u>Selected Farmers</u>	N = 81		N = 31		N = 37	
<u>Understandings</u>						
1	3.1	2.5	3.1	2.5	3.3	2.4
5	3.1	2.9	3.4	3.0	2.8	2.7
6	3.5	3.0	3.5	3.0	3.4	3.1
7	3.3	2.6	3.4	3.7	3.2	2.5
Overall mean score for all 14 understandings	2.8	2.5	2.9	2.6	2.8	2.3
<u>Abilities</u>						
18	3.3	2.9	3.4	3.2	3.3	2.8
19	3.3	3.0	3.5	3.2	3.3	3.1
23	2.7	2.0	3.0	2.2	2.5	2.0
24	2.7	1.9	3.0	2.0	2.6	2.0
31	3.1	2.8	3.3	2.9	3.3	2.9
40	3.0	2.4	2.9	2.5	3.0	2.4
Overall mean score for all abilities	3.0	2.6	3.0	2.7	3.0	2.6
Total overall mean score for all 49 competencies	2.9	2.6	3.0	2.7	2.9	2.5
<u>Random Farmers</u>	N = 37		N = 10		N = 12	
<u>Understandings</u>						
1	2.6	2.1	2.4	2.0	3.2	2.2
5	2.6	2.4	2.7	2.0	2.7	2.3
6	3.1	2.7	3.0	2.2	3.7	2.9
7	2.9	2.4	2.6	2.1	3.5	2.4
Overall mean score for all 14 understandings	2.5	2.3	2.2	1.9	2.8	2.1
<u>Ability</u>						
18	2.8	2.4	3.1	2.8	3.2	2.3
19	2.9	2.3	2.5	2.3	3.2	2.4
23	2.4	1.7	2.3	1.6	2.9	1.8
24	2.4	1.8	2.2	1.9	3.1	1.7
31	2.7	2.2	3.0	2.7	3.2	2.5
40	2.7	2.3	2.9	1.9	2.8	1.8
Overall mean score for all abilities	2.6	2.3	2.4	2.1	2.9	2.1
Total overall mean score for all 49 competencies	2.6	2.3	2.3	2.0	2.9	2.1

^aNumbers used as for the same competencies as in Table 1.



of vocational agriculture groups were not the same, the need for competence as indicated by differences between overall mean needed and possessed scores were very similar for the two groups.

Table 4 contains mean scores for competence needed and possessed by selected and random sample farmers classified by main source of gross cash farm income (50 percent or more from sale of either livestock or crops).

The total overall competence needed mean scores for selected farmers were similar for the two groups with 3.0 for crops and 2.9 for livestock. Total overall competence possessed mean scores were the same (2.6) for both groups. Differences between total overall needed and possessed mean scores were 0.4 for crops and 0.3 for livestock farmers.

The data for selected farmer livestock and crops producers did not indicate that one group needed a greater degree of competence in labor management than the other. Both selected farmer groups indicated much overall competence needed in the competencies and a somewhat greater degree of competence needed than possessed.

The random sample livestock producers group had the higher total overall competence needed (2.6) and competence possessed (2.2) mean scores. Crops producers were lower with total overall mean scores of 2.3 for competence needed and 2.0 for competence possessed. Differences between total overall needed and possessed mean scores were 0.4 and 0.3 for livestock and crops producers respectively.

Random sample livestock producers indicated a higher degree of need for overall competence in labor management than did crops producers. Livestock producers had slightly larger differences between overall needed and possessed mean scores. Considering these comparisons, it appears that random sample livestock producers had greater need for competence in labor management.

Selected farmer livestock and crops producers both indicated a higher degree of overall competence needed and possessed than did random sample farmers. Selected farmers indicated no difference in degree of competence needed and possessed between livestock and crops producers whereas random sample farmers indicated a higher degree of competence needed and possessed by livestock producers.

Significant correlations were found between man-months of hired labor used and man-months of total labor used for both selected and random sample farmers. Total acreage of farms operated was also highly correlated with man-months of hired and total labor used and farming status for both groups.

Years of school completed by random sample farmers was significantly and positively correlated with degree of competence needed scores for ability to recognize conditions and circumstances requiring immediate attention and labor, ability to arrange buildings, facilities and field layout to save labor and increase profits and the ability to use livestock production practices and equipment which save time and increase profits.



Table 4. Degree of competence needed and possessed in selected farm utilization competencies by selected and random sample farmers by main source of gross farm income.

Competencies ^a	Mean scores							
	Selected				Random sample			
	Livestock		Crops		Livestock		Crops	
	N ^b	P ^c	N	P	N	P	N	P
	N = 123		N = 21		N = 47		N = 9	
Understandings								
1	3.1	2.5	3.1	2.4	2.8	2.1	2.2	1.6
5	3.1	2.9	3.0	2.6	2.7	2.5	2.2	1.4
6	3.5	3.0	3.5	3.1	3.2	2.6	2.8	2.6
7	3.3	2.6	3.4	2.7	3.0	2.4	2.7	2.2
Overall mean score for all 14 understandings								
	2.8	2.5	2.9	2.5	2.5	2.1	2.2	1.9
Abilities								
18	3.3	2.9	3.4	3.1	3.0	2.4	2.6	2.4
19	3.3	3.0	3.5	3.1	2.9	2.3	2.7	2.6
23	2.7	2.0	2.7	1.8	2.5	1.7	2.4	1.7
24	2.7	2.0	2.9	1.6	2.4	1.9	2.6	1.4
31	3.2	2.8	3.2	2.9	2.9	2.3	2.4	2.4
40	3.0	2.4	3.0	2.5	2.8	2.2	2.3	1.7
Overall mean score for all 35 abilities								
	3.0	2.6	3.0	2.6	2.7	2.2	2.3	2.1
Total overall mean score for all 49 competencies								
	2.9	2.6	3.0	2.6	2.6	2.2	2.3	2.0

^aNumbers used as for the same competencies as in Table 1.

^bDegree competencies were needed.

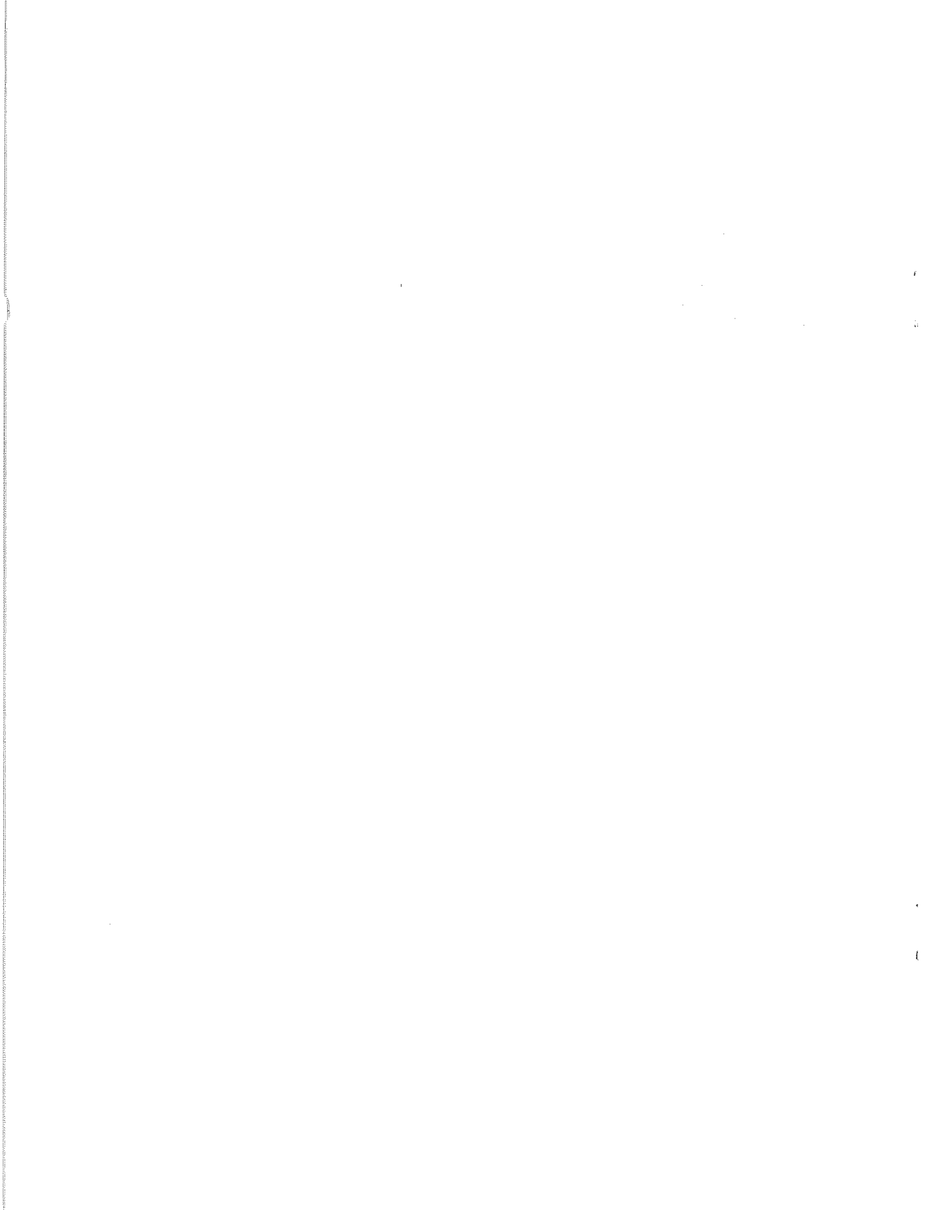
^cDegree competencies were possessed.

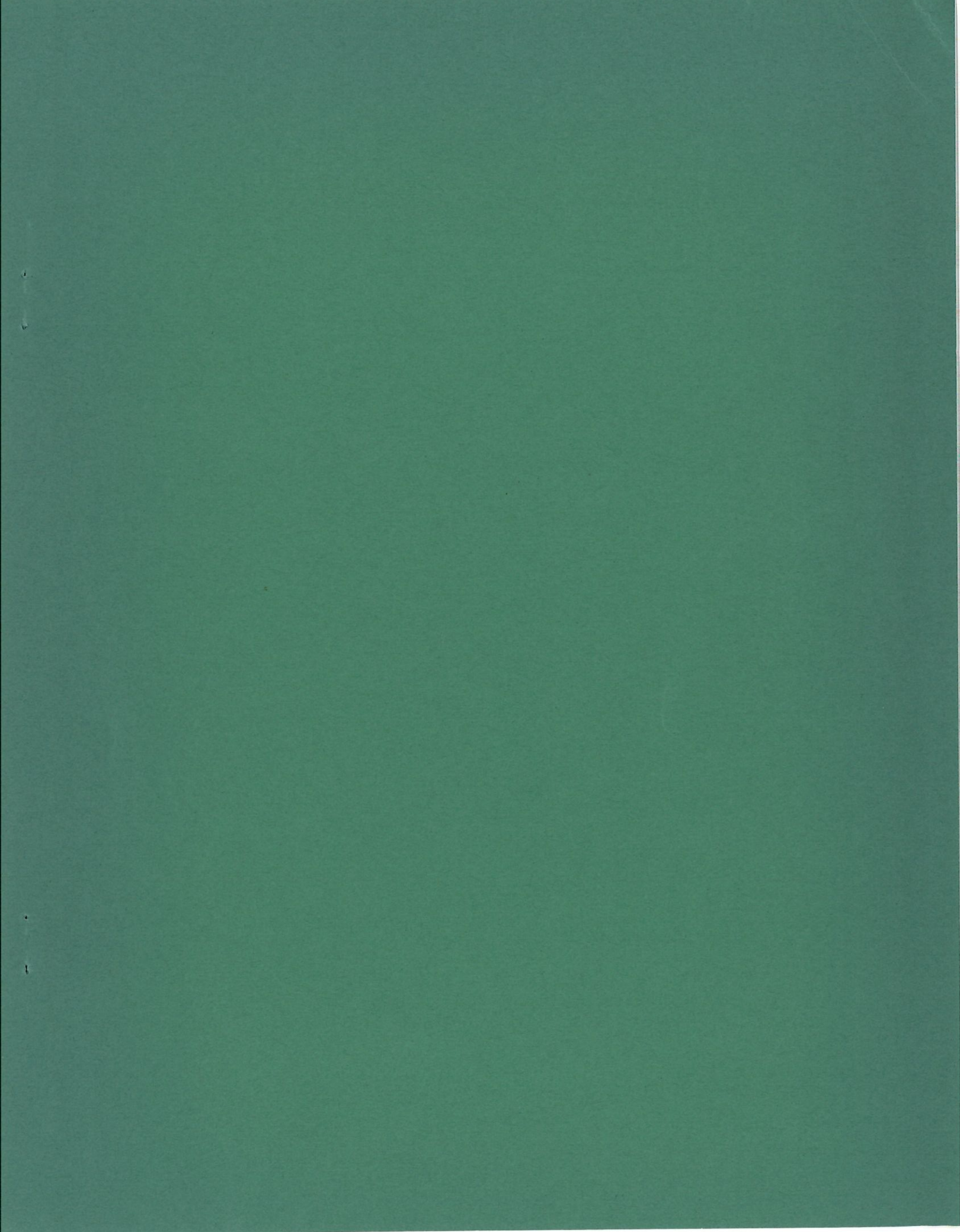


Correlations between degree of competence needed and possessed scores for the same competency, were all found to be significant for both selected and random sample farmers.

Implications

At least 49 competencies were considered necessary for efficient utilization of farm labor. The competencies should serve as the basis for farm labor management instruction in agricultural education programs for vocational agriculture high school students, young and adult farmers, and in curricula in farm production and management in the area vocational schools and the College of Agriculture.





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