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COMPETENCIES IN FARM BUSINESS ANALYSIS

NEEDED BY FARMERS

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STATE OF IOWA
DEPARTMENT OF PUBLIC INSTRUCTION

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by

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Purpose of Study

The purposes of this study were: 1) to determine the competencies needed by farmers to be successful in farm business analysis, 2) to determine the degree of competence needed and possessed by the members of the sample studied, and 3) the implications for future planning of educational needs of farmers.

This study is one of a series of studies conducted by graduate students in agricultural education at Iowa State University of Science and Technology in cooperation with the Vocational Agriculture Section: Division of Vocational Education, State Department of Public Instruction as a part of the Iowa Agricultural and Home Economics Experiment Station Project No. 1253.

Method of Procedure

A panel of farm business analysis consultants, composed of seven progessive farmers, all members of the Central Iowa Farm Business Association, and nine others who were staff members of Iowa State University, bankers, farm business association fieldmen and professional farm managers, compiled a list of 40 competencies needed by farmers for success in farm business analysis. The list was included in a questionnaire which was sent to 197 Central Iowa Farm Business Association members and 333 random sample farmers in a 15 county area of North Central Iowa, served by the association.

Farmers included in the sample were asked to evaluate the degree of competence they needed and possessed in each competency to be successful in farm business analysis. Ratings of degree of competence were made using a five point scale (1 to 5) from none to very much.

Personal information was requested for use in stratifying the respondents. The response from the Central Iowa Farm Business Association members was 144, or 73 percent of the sample, compared to 128, or 38.4 percent from the random sample of farmers. The useable questionnaires totalled 142 from the association members and 110 from the random sample operators. The information obtained from the questionnaires was coded by the author and placed on data processing cards and machine tabulated at the Iowa State University Computation Center.

Checks were made to determine if the returns from the random sample

were representative of the entire sample. Five percent of the non-respondents were sent another questionnaire and were contacted personally by phone to insure receiving a return. The findings from the study of these returns indicated that they were quite similar to the random sample of 110 farm operators.

Findings

Overall mean scores for degree of competence needed were higher for the association members (4.2) than for the random sample farmers (3.9) as is revealed in Table 1. The overall mean score for degree of competence possessed by association sample members was 3.7 as compared to 3.3 for the random sample operators. The difference in overall mean scores between degree of competence needed and possessed was .5 for the association members, whereas the difference was .6 for the random sample group.

The association members had a mean score range of 3.6 to 4.6 for degree of competence needed, with 33 of the 40 competencies rated 4.0 or higher (much competence needed). Twenty-two of the 40 competencies were rated 4.0 or higher (much competence) by the random sample farmers, with the range from 3.1 to 4.5 for all the competencies. The range in mean scores for degree of competence possessed was 3.1 to 4.4 for association members. Only three of the competencies were scored 4.0 or over (much competence) by the association operators. A range of 2.3 to 4.4 was found for the random sample group in degree competence was possessed. Two competencies were rated 4.0 or above (much competence) in degree of competence possessed by the random operators, and five of them were rated 2.9 or lower (very little and some competence).

The highest score for degree of competence needed was for the same ability for both the association and random sample farmers. This was the ability to file accurate annual income tax returns, (4.6 for association members and 4.5 for random sample farmers). In both cases this ability was also scored highest for degree competency was possessed (4.4 for both groups) indicated little difference between competency possessed and needed scores (.2 and .1).

Two of the highest degree needed mean scores for abilities as indicated by the association members and randomly selected farmers were found to be the same. They were 1) the ability to take time for bookkeeping and analyzing your business, and 2) the ability to recognize the probability of profit from various feeding and cropping programs. Other high ability needed mean scores for association members were the ability to distinguish between actual needs and mere desires, and the ability to be willing to change managerial practices on their farms. The random sample farmers rated the ability to figure cost of borrowing money as one of their high need competencies.

Several of the high mean scores for competence possessed were the same for both groups studied. These were 1) the ability to figure cost of borrowing money, 2) the ability to recognize source of income (family,
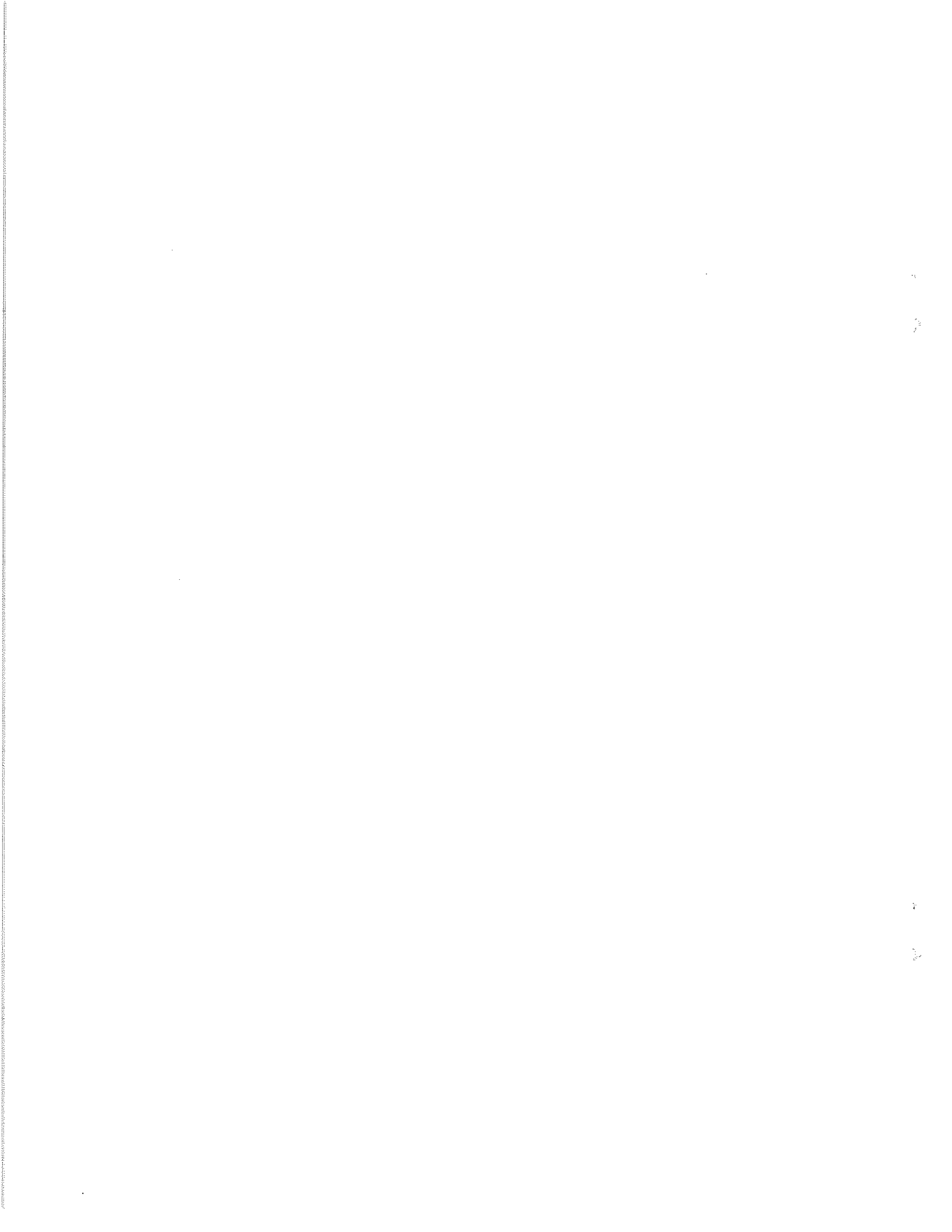
Table 1. Degree farm business analysis competencies were needed and possessed by association members and random sample farmers.

	Mean scores			
	CIFBA N = 142		Random sample N = 110	
Competencies	Needed[a]	Possessed[b]	Needed[a]	Possessed[b]
Ability to				
1. Take an accurate inventory	4.2	3.9	4.0	3.5
2. Take time for bookkeeping and analyzing your business	4.5	3.7	4.2	3.4
3. Gather and use agricultural outlook information	3.8	3.4	3.8	3.2
4. Determine net worth	4.1	3.9	3.9	3.7
5. Share your business information with your banker	4.2	3.7	3.7	3.4
6. Figure depreciation schedule	4.0	3.7	4.0	3.6
7. Recognize service offered by farm business association	4.0	3.9	3.2	2.6
8. Know educational programs of extension service and vocational agriculture	3.8	3.2	3.6	2.9
9. Figure cost of borrowing money	4.2	4.0	4.3	4.0
10. Know economic principle of diminishing returns	4.1	3.4	3.9	3.1
11. Figure management return	4.3	3.6	4.1	3.4
12. Know percentage of income used for family living	3.8	3.1	3.7	2.9
13. Figure feed fed to each livestock enterprise (hogs, beef, etc.).	4.1	3.3	4.0	3.4
14. Figure livestock feed returns per $100 feed fed	4.3	3.8	3.9	3.0
15. Figure rate of return per dollar invested on each enterprise	4.3	3.4	3.9	3.0
16. Determine labor used in various enterprises	3.9	3.1	3.7	3.0
17. Know capital requirements per enterprises	4.2	3.5	3.8	3.3
18. Recognize the probability of profit from various feeding and cropping programs	4.5	3.8	4.2	3.7

[a] 5 = very much competence needed, 4 = much competence needed, 3 = some competence needed, 2 = very little competence needed, 1 = no competence needed.

[b] 5 = very much competence possessed, 4 = much competence possessed, 3 = some competence possessed, 2 = very little competence possessed, 1 = very little competence possessed.

Table 1 continued.

Competencies	Mean scores			
	CIFBA N = 142		Random sample N = 110	
	Needed[a]	Possessed[b]	Needed[a]	Possessed[b]
Ability to				
19. Measure financial progress	4.3	3.8	4.2	3.6
20. Set up a farm record system and center in the home	4.2	3.7	4.1	3.4
21. Plan short and long term goals for your farm and family	4.1	3.5	4.0	3.4
22. Use records as aid in measuring your goal achievement	4.1	3.6	4.0	3.3
23. Recognize wife's importance in business decisions	4.2	3.9	4.1	3.9
24. Figure crop and livestock budgets	3.9	3.2	3.7	3.1
25. Figure power and machine cost per acre	4.1	3.6	3.7	3.0
26. Determine whether a machine should be rented, hired, or owned	4.2	3.7	3.9	3.5
27. Figure costs of gain on feeding livestock to heavier weights	4.2	3.6	4.0	3.4
28. Be willing to change managerial practices	4.4	3.8	4.0	3.5
29. Determine cash value of insurance policy	3.6	3.2	3.7	3.0
30. Determine net farm income on cash or accrual basis	4.3	3.9	4.1	3.7
31. Prepare an income (profit and loss) statement from current year's business	4.2	3.7	4.1	3.5
32. Recognize difference between highest yield and most efficient yield.	4.3	3.8	4.2	3.8
33. Recognize effect of government legislation on your business	4.1	3.7	4.2	3.6
34. Recognize source of income (family, crops, off-farm, etc.).	4.2	4.0	4.2	3.8
35. Determine per acre crop expense	4.2	3.9	3.9	3.3
36. Compare your records with other farm business records	4.2	3.9	4.0	3.6
37. Recognize volume required for a successful farm business	4.3	3.9	4.0	3.6

Table 1. continued.

	Mean scores			
	CIFBA N = 142		Random sample N = 110	
Competencies	Needed[a]	Possessed[b]	Needed[a]	Possessed[b]
Ability to				
38. File accurate annual income tax returns	4.6	4.4	4.5	4.4
39. Recognize use of electronic machines for farm records and planning	3.8	3.5	3.1	2.3
40. Distinguish between actual needs and mere desires	4.5	3.7	4.1	3.9
Total overall mean score	4.2	3.7	3.9	3.3
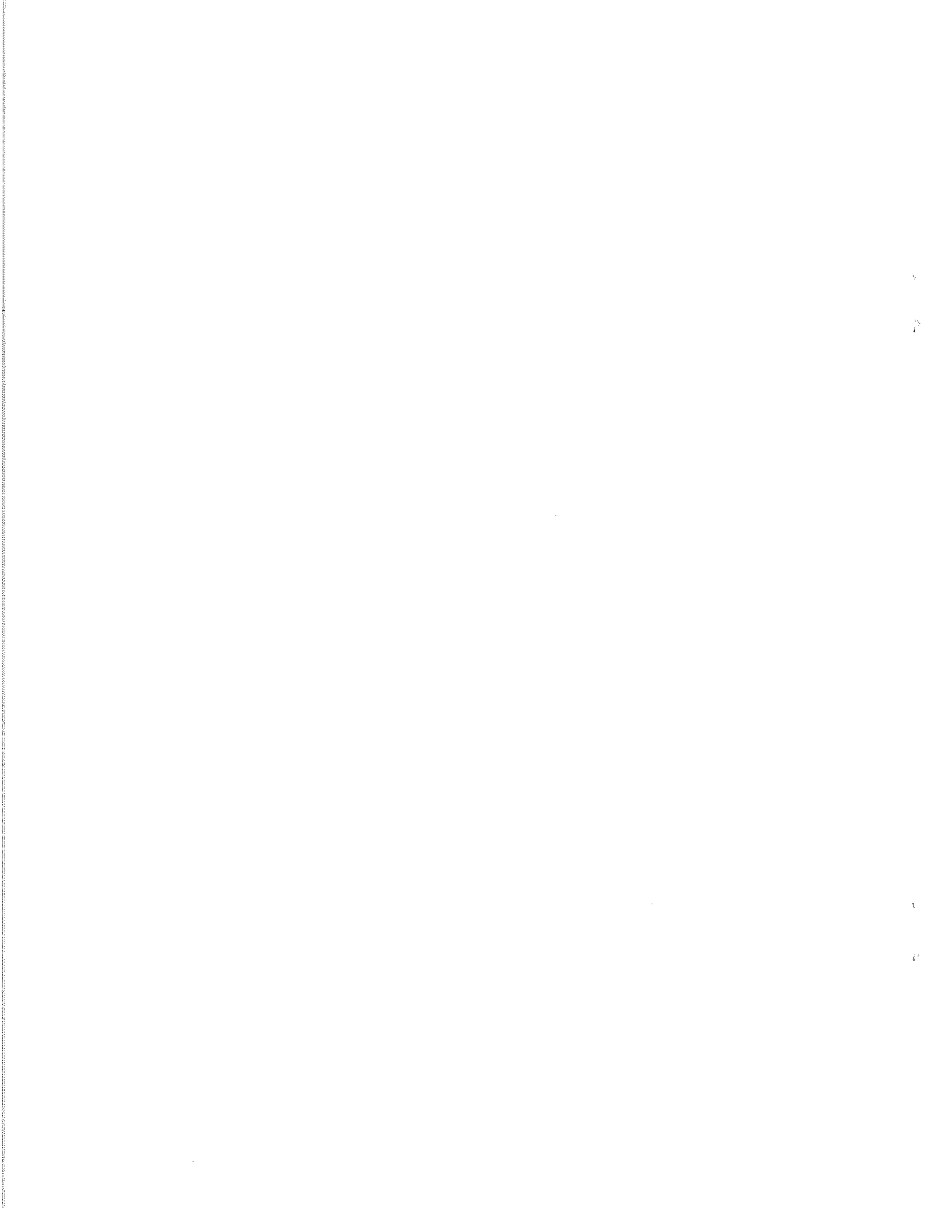
crops, off-farm, etc.), 3) the ability to recognize wife's importance to the business, 4) ability to determine net income on cash or accrual basis, and 5) the ability to determine net worth.

The lowest mean scores for competency needed by association members were ranked as follows: 1) the ability to determine cash value of insurance policy, 2) the ability to recognize use of electronic machines for farm records and planning, 3) the ability to know educational programs of extension and vocational agriculture, 5) the ability to gather and use agricultural outlook information, 6) the ability to figure crop and livestock budgets and 7) the ability to determine labor used in various enterprises. The range for the lowest mean scores was 3.6 to 3.9.

The range of lowest mean scores for competencies needed by random sample farmers was 3.1 to 3.6. The competencies in that range ranked from low to high as follows: 1) the ability to recognize use of electronic machines for farm records and planning, 2) the ability to recognize service offered by farm business association, 3) ability to compare your records with other farm business records, and 4) the ability to know educational programs of extension service and vocational agriculture.

A list was made of the competencies having differences between degree of competence needed and possessed of .7 or greater. Seven of the competencies were the same for both groups. They were the abilities to 1) figure rate of return per dollar invested on each enterprise on the farm, 2) take time for bookkeeping and analyzing your farm business, 3) figure feed fed to each livestock enterprise, 4) determine labor used in various enterprises, 5) know economic principle of diminishing returns, 6) figure management returns, and 7) know percentage of income used for family living. Other abilities for the association with a mean score difference of .7 or more between needed and possessed scores were: 1) know capital requirement per enterprise, 2) recognize the probability of profit from various feeding and cropping programs, and 3) figure crop and livestock budgets.

Seven additional competencies were observed to have a difference of .7 or more for the random sample farmers. These were the abilities to 1) compare your records with other farm business records, 2) recognize use of electronic machines, 3) know educational programs of extension service and vocational agriculture programs, 4) set up a farm records system and center in the home, 5) use records as an aid in measuring your goal achievement, 6) figure power and machine costs per acre, and 7) determine the cash value of an insurance policy.

It was observed that the members of the association group were younger farmers, with higher educational attainment levels, operated larger acreages, tended to be owners of land, rented additional land to obtain volume, participated in more adult education programs, and had participated more extensively as youths in 4-H and vocational agriculture groups than had the random sample farmers. The effect of participation in vocational agriculture programs by both groups studied is revealed in Tables 2 and 3.
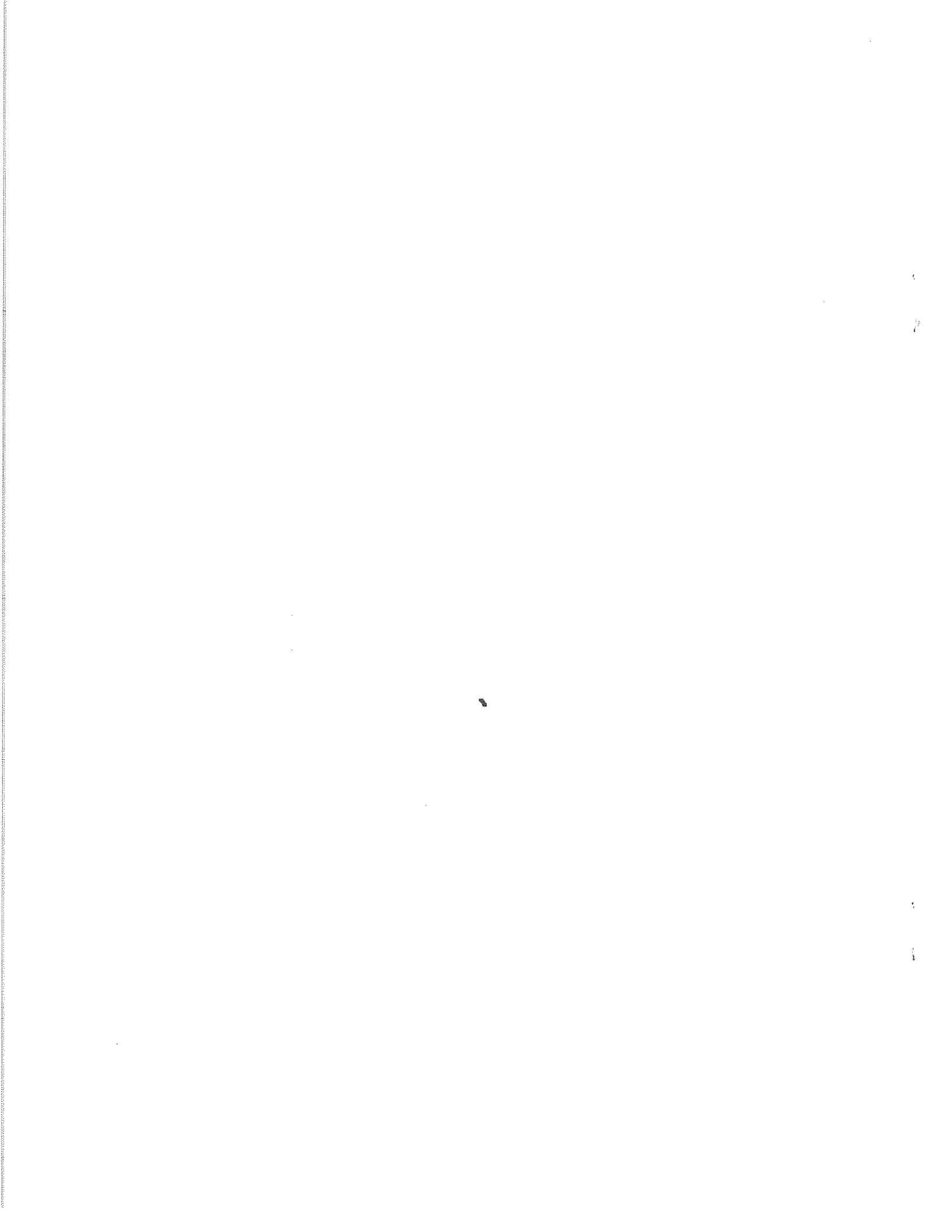
Table 2. Degree farm business analysis competencies were needed and possessed by association members by years of vocational agriculture

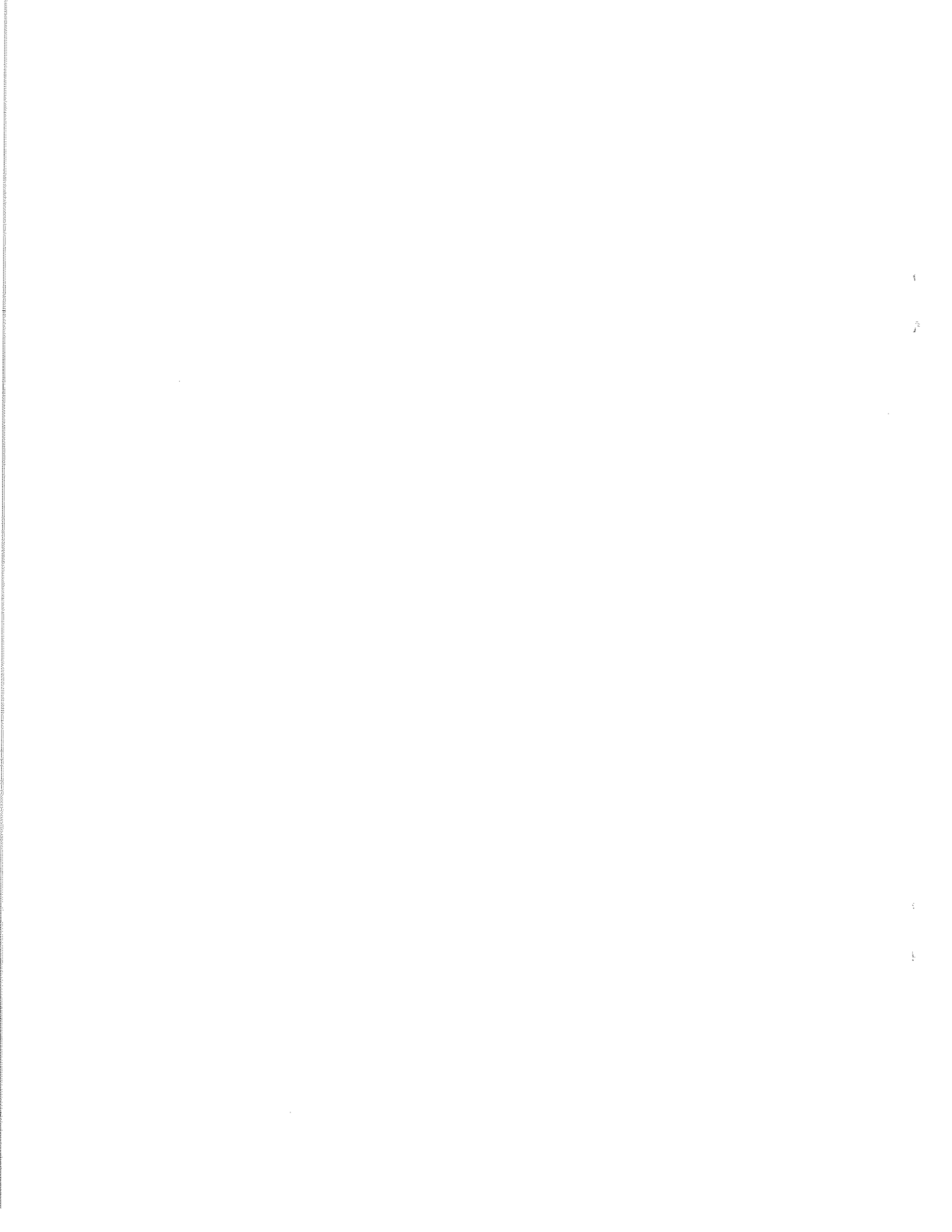| Competencies | Mean scores | | | | | |
| | None N = 34 | | 1-3 years N = 23 | | 4 years N = 35 | |
	Needed	Possessed	Needed	Possessed	Needed	Possessed
1	4.2	4.0	4.4	4.0	4.3	3.8
2	4.4	3.6	4.6	3.6	4.6	3.5
3	3.9	3.5	4.1	3.5	3.6	3.1
4	4.1	4.0	4.2	3.8	4.1	3.7
5	4.2	4.2	4.1	4.2	4.1	3.6
6	4.0	3.7	4.6	4.0	3.9	3.4
7	4.0	4.1	4.2	4.2	3.9	3.7
8	3.7	3.2	3.6	3.0	3.6	3.2
9	4.2	4.1	4.3	3.8	4.0	3.8
10	4.1	3.6	4.2	3.2	4.0	3.1
11	4.3	3.7	4.4	3.9	4.2	3.4
12	3.7	3.2	3.8	3.1	3.7	3.1
13	4.2	3.4	4.3	3.3	4.1	3.3
14	4.3	3.8	4.4	3.9	4.2	3.5
15	4.3	3.5	4.4	3.3	4.3	3.2
16	3.9	3.1	3.8	3.0	3.8	3.0
17	4.3	3.6	4.4	3.5	4.0	3.2
18	4.5	3.8	4.8	3.8	4.1	3.6
19	4.3	3.9	4.6	3.7	4.1	3.6
20	4.2	3.8	4.4	3.6	3.9	3.5
21	4.3	3.6	4.3	3.6	3.9	3.4
22	4.2	3.6	4.3	3.5	3.9	3.5
23	4.2	4.0	4.0	3.6	4.0	3.9
24	4.0	3.3	4.0	3.0	3.9	3.1
25	4.1	3.7	4.1	3.7	4.0	3.4
26	4.2	3.8	4.3	3.5	4.1	3.6
27	4.2	3.7	4.5	3.7	4.0	3.3
28	4.4	3.8	4.6	3.9	4.3	3.8
29	3.6	3.2	3.8	3.1	3.4	3.1
30	4.4	3.9	4.4	4.0	4.1	3.7
31	4.3	3.7	4.5	3.9	4.1	3.6
32	4.4	3.9	4.4	3.9	4.2	3.7
33	4.2	3.8	4.1	3.6	4.0	3.5
34	4.2	4.1	4.4	4.1	4.0	3.8
35	4.3	3.9	4.2	3.8	4.2	3.8
36	4.2	3.9	4.3	4.0	4.1	3.9
37	4.4	4.1	4.5	4.0	4.0	3.7
38	4.5	4.4	4.8	4.4	4.7	4.4
39	3.9	3.7	4.0	3.4	3.5	3.0
40	4.5	3.7	4.8	3.9	4.5	3.6
Total overall mean score	4.2	3.7	4.3	3.7	4.0	3.5

Table 3. Degree farm business analysis competencies were needed and possessed by random sample farmers by years of vocational agriculture

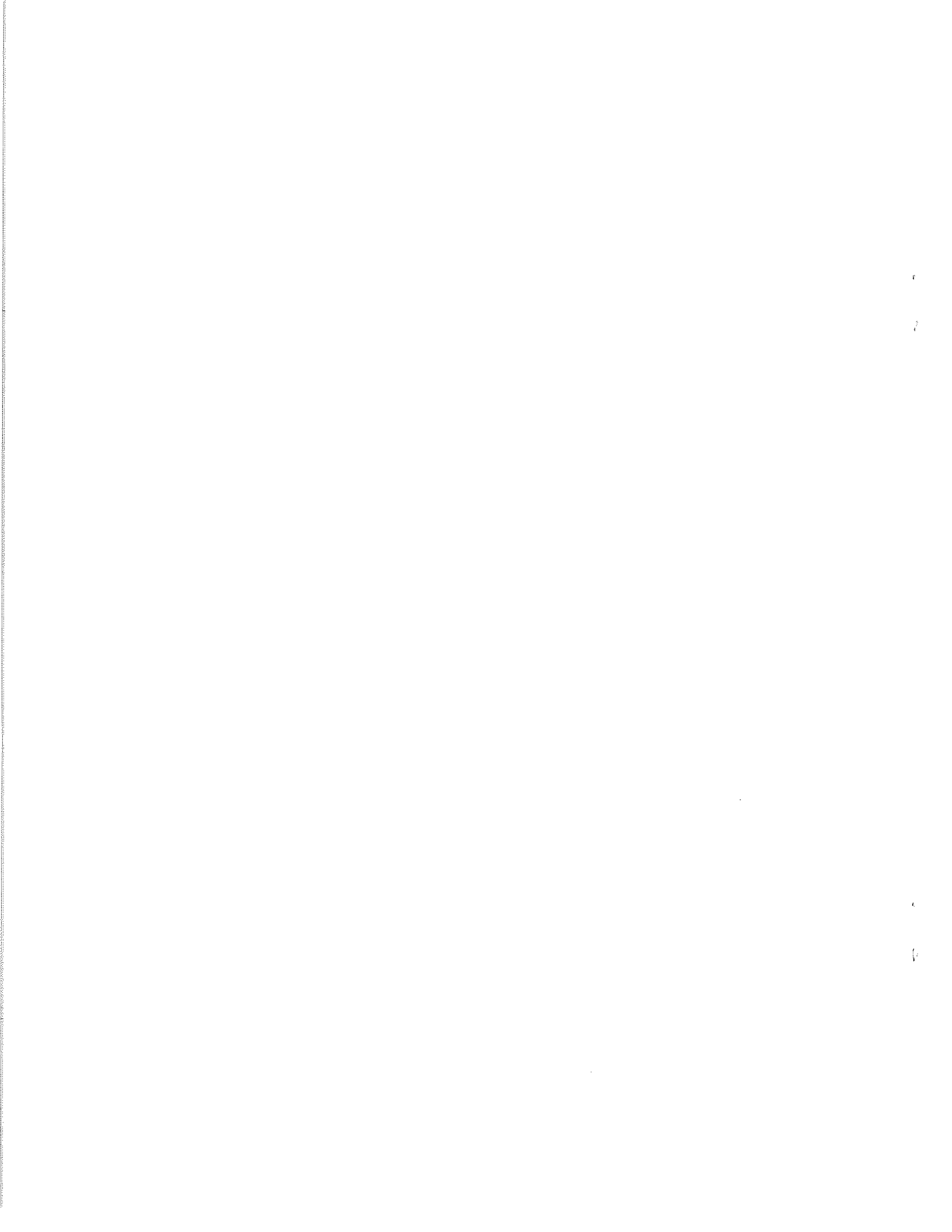| Competencies | Mean scores | | | | | |
	None N = 78		1-3 years N = 15		4 years N = 17	
	Needed	Possessed	Needed	Possessed	Needed	Possessed
1	4.0	3.4	3.8	3.3	4.3	3.8
2	4.2	3.3	4.1	3.3	4.5	3.8
3	3.8	3.2	3.9	3.0	4.0	3.5
4	3.8	3.6	3.7	3.9	4.4	4.1
5	3.6	3.2	3.8	3.9	4.4	3.9
6	4.0	3.6	4.1	3.3	4.1	2.3
7	3.2	2.8	3.1	2.1	3.4	3.8
8	3.6	2.8	3.6	2.8	3.3	3.1
9	4.3	4.1	4.1	3.8	4.4	4.1
10	3.9	3.0	3.8	3.1	3.9	3.2
11	4.0	3.4	4.1	3.3	4.4	3.7
12	3.6	3.0	4.1	3.7	3.7	3.1
13	3.9	3.2	4.2	3.9	4.3	3.5
14	3.8	2.9	3.9	3.3	4.3	3.4
15	3.8	2.9	4.0	3.0	4.2	3.4
16	3.7	2.9	3.9	3.1	3.6	2.9
17	3.8	3.3	3.7	3.1	4.2	3.5
18	4.1	3.8	4.0	3.6	4.5	3.6
19	4.2	3.6	4.2	3.5	4.5	3.8
20	4.0	3.4	4.1	3.2	4.4	3.5
21	3.9	3.4	4.1	3.3	4.2	3.7
22	4.0	3.2	4.1	3.2	4.4	3.7
23	4.1	3.9	4.1	3.5	4.4	4.0
24	3.7	3.1	3.9	3.3	3.9	3.2
25	3.6	2.9	3.6	3.3	4.2	3.5
26	3.8	3.5	3.8	3.1	4.2	3.8
27	3.9	3.4	4.0	3.2	4.4	3.8
28	4.1	3.4	4.0	3.3	4.2	3.8
29	3.6	3.1	3.7	2.9	3.9	3.0
30	4.0	3.7	4.1	3.4	4.4	4.1
31	4.1	3.6	3.8	3.0	4.5	3.7
32	4.1	3.9	4.4	3.5	4.4	3.7
33	4.2	3.7	3.9	3.3	4.3	3.5
34	4.1	3.8	4.1	3.7	4.5	4.0
35	3.8	3.3	3.9	3.3	4.1	3.4
36	3.3	2.4	3.4	2.5	3.8	3.8
37	4.0	3.6	3.7	3.2	4.5	3.8
38	4.5	4.4	4.5	4.3	4.8	4.7
39	2.9	2.2	3.6	2.4	3.5	2.9
40	4.1	3.9	4.1	3.7	4.3	3.8
Total overall mean score	3.9	3.3	3.9	3.3	4.2	3.6
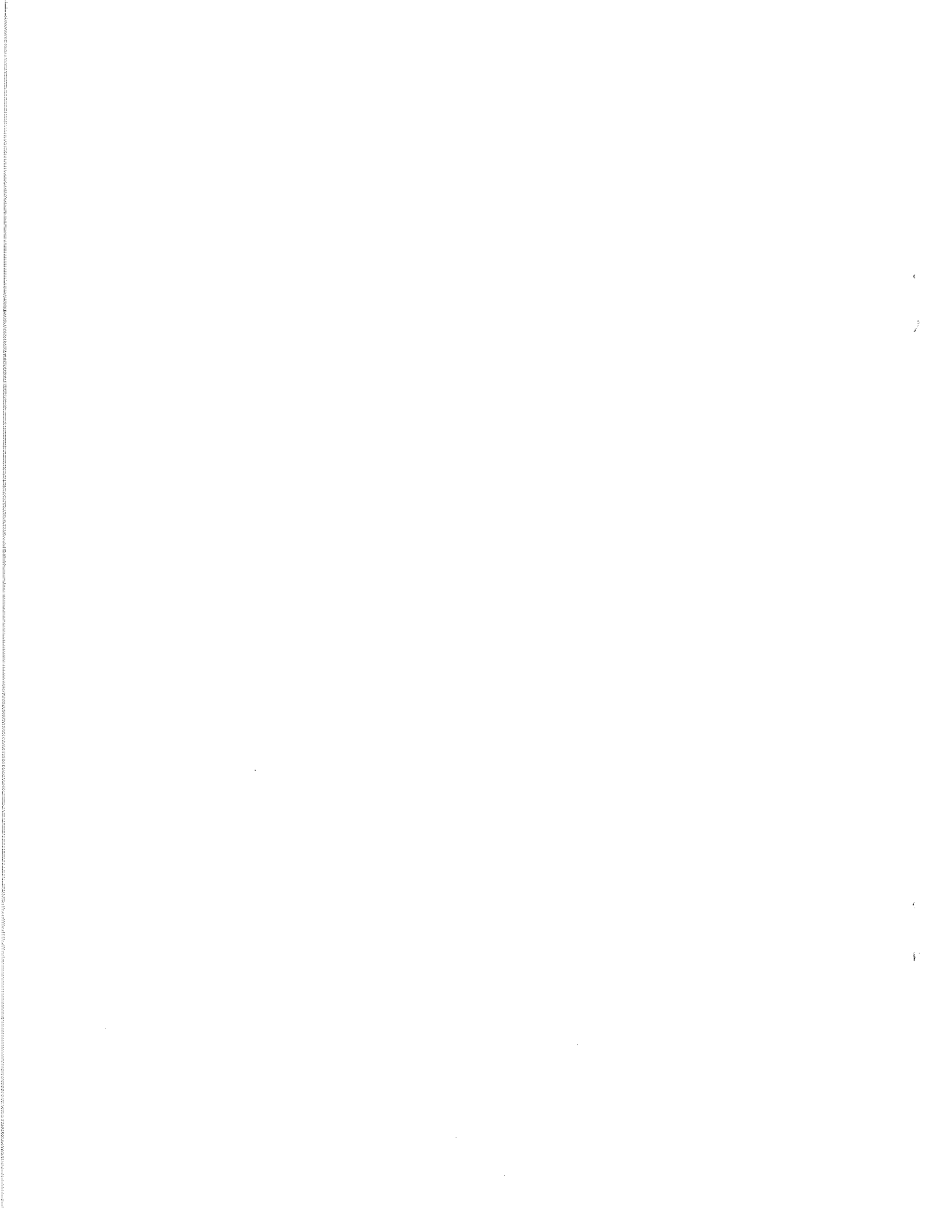
Eight competencies were selected for correlation analysis with the control factors. Those chosen were competencies having the widest differences between the degree of competence needed and possessed by both the association members and random sample farmers.
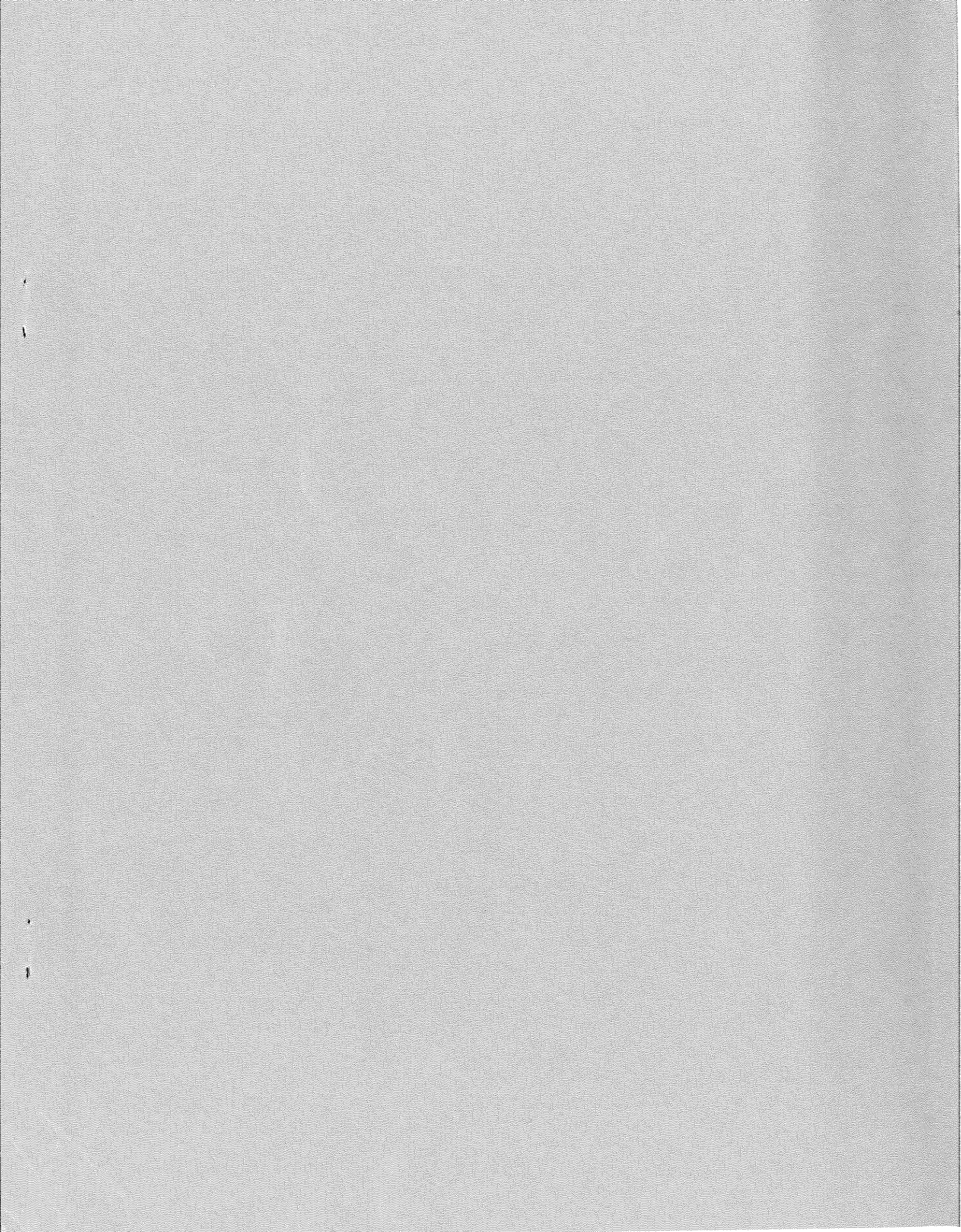
When the control factors were correlated with the degree of competence needed by the association members, two coefficients were found significant at the one percent level. They were age of operator and the ability needed to take time for bookkeeping and analyzing your business (-.37) and (-.31) when the same competency was related to years of farming experience. Two coefficients significant at the five percent level were the age of operator and the ability needed to gather and use agricultural outlook information (.18) and acres operated and the ability needed to recognize the probability of profit in various feeding and cropping programs (.17).

Correlations were computed for the same selected variables for the random sample farmers. When control factors were correlated with the degree of competence needed, four coefficients were significant at the five percent level. They were: 1) the ability needed to take time for bookkeeping and analyzing your business with years of farming experience (-.19), 2) the ability needed to figure feed fed to each livestock enterprise with age of operator (-.24), 3) years of farming experience with the ability needed to figure feed fed to each livestock enterprise (-.22) and 4) the ability needed to figure rate of return per dollar invested per enterprise with years of farming experience (.21).

The 40 competencies in farm business analysis identified in this study have importance in planning educational programs. They should form the basis for instruction and in-service training in vocational agriculture classes for youth, young and adult farmers, in the extension service program, in area vocational schools, and in the College of Agriculture resident instructional program.

Recommendations for future programs were listed as follows: 1) educational agencies must give instruction in record keeping and analysis high priority. Teachers and extension personnel must become adequately prepared in order to assume their responsibility in providing instruction in the area of farm business, record keeping and analysis, 2) educators must work closely with the computer services and establish a role as an educator. There will be a big need to interpret to the farmer what has been analyzed on the computer, and 3) develop programs for 4-H and vocational agriculture groups based on their needs. The future for educators appears to be exciting in the field of farm business analysis.