

Agribusiness Educational Methods and Cooperation With Agri-Educators

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The agribusiness industry has become the world's biggest and most important business. The entire scope of agricultural activities is increasingly dependent on agribusiness. In addition to providing essential food and clothing, the agribusiness industry "contributes about 20% to the gross national product and employs approximately 23% of the labor force" (Woolverton, Cramer, & Hammonds, 1985).

The agribusiness industry is playing an increasing role in the educational field. Recent studies have indicated that more agribusinesses are serving as sources of educational information for farmers and vocational agriculture teachers (Hillyard, 1979; Johnson, 1982). The recent decrease in resources available to public agricultural education has stimulated interest in alternative delivery methods and in cooperation between the public and private sectors. Community agribusinesses can be valuable resources for agri-educators.

There was a need to identify methods used by agribusinesses in disseminating agricultural information and to determine the extent of cooperation with agri-educators. More information was needed about how company officials in agribusinesses viewed the importance of supplying agriculture teachers with current information.

Exploration of different methods used by agribusinesses to reach their clients with educational information would not only benefit agri-educators in their decision-making processes on programs but would also aid them in preparing students for positions in agribusiness. Information was needed about the willingness of agribusinesses to provide educational materials, workshops, and cooperative ventures as an important supplement to the formal classroom setting (Harris, 1982).

Purpose and Objectives

The purpose of this study was to explore the educational strategies used by three selected types of Iowa agribusinesses: livestock feed, chemical/fertilizer, and seed. Objectives were to identify: (a) different educational methods employed by the three types of agribusinesses in the study, (b) extent of cooperation between agribusinesses and other agencies, and (c) views of agribusiness officials on the importance of supplying teachers with up-to-date information on selected agricultural topics.

Procedures

The population for this study consisted of 555 livestock feed, chemical/fertilizer and seed agribusinesses. The population was taken from the Directory of Iowa Manufacturers, 1985-86. To ensure access to low-incidence seed agribusinesses, approximately 15% of each population was randomly selected from the stratified sample. The resultant 84 samples included 33 livestock feed, 40 chemical/fertilizer and 11 seed (corn/soybean) agribusinesses.

Survey instruments were mailed to company officials who were asked to rate on a 99-point scale the extent of their company's educational activities. After a follow-up letter to the nonrespondents, the return rate was 59.5%. Five of the nonrespondents were contacted by telephone, bringing the sample number to 79 persons and the return rate to 63.3%. The means and standard deviations of responses to seven randomly selected items were checked for differences between non-respondents and respondents, and little or no difference existed.

Graduate students and faculty of the Department of Agricultural Education at Iowa State University assisted in development of the instrument which was based on the literature review and on information gathered from agribusiness officials. To check for content validity, the instrument was reviewed prior to use by agribusiness representatives from companies not included in the study. An analysis of reliability was not done because the type of question was not suited to a statistical reliability check. Reliability will need to be checked by replications of the study.

A 99-point scale was used to help respondents express (in a wide range) their level of understanding of the company's activities. The 99-point scale helped to eliminate the problem of a curvilinear relation between the item means and variances which occurs in a short scale (Menne, 1974). Ratings from the 99-point scale were transformed to a z scale. This was done in order to weight highly responsive differences in the ends of the scale and diminish responses at the center of the scale (Wolins & Dickensen, 1973).

Analysis of Data

Item responses were divided by 100 and transformed to a z scale of normal deviates. With the transformation, a 99 response was replaced with 2.33, a 50 with 0.00, and a 1 with -2.33. To eliminate negative integers, the normal deviates were multiplied by 100 and added to a constant, 500, resulting in a scale in which 500 signified a middle position.

Mean scores and standard deviations were computed for each item and for the three types of agribusinesses. Frequency counts and percentages were used to analyze descriptive data.

Analysis of variance for an unequal number within groups was employed to test differences among the three types of agribusinesses. The computer program, Statistical Analysis Systems, was used. A post-hoc analysis using the Scheffe multiple range test was carried out to determine differences among groups for F-values significant beyond the assigned level ($\alpha = .05$).

Results

The study used as independent variables three types of agribusinesses: (a) livestock feed, (b) chemical/fertilizer, and (c) seed as identified in the Directory of Iowa Manufacturers, 1985-86. The 50 Iowa agribusinesses in the study tended to be small and long established in their communities. Forty-two percent had 10 or fewer employees, and 94% had been in operation more than 10 years. The agribusinesses in the study tended to be diversified in their products. Results of analysis indicated that over 60% of the agribusinesses dealt with more than one of the three products: livestock feed, chemical/fertilizer and seed.

All types of agribusinesses reported substantial increases in their educational efforts since 1980. Responses of company officials as to the extent of increase of educational efforts were made on the scale of 1 to 99 and scores were transformed to a z scale. Means were 540.03 for livestock feed, 528.58 for chemical/fertilizer and 538.14 for seed agribusinesses.

An analysis of the educational methods used by the three types of agribusiness discloses significant differences in Farmers dropping in at business office and Use of television (Table 1). All other methods were used similarly by the three types of agribusinesses. The use of Meetings was rated highly (means of 530-560) by all types. There was a pattern of use of a wide variety of methods rather than selected use of a few.

The extent of cooperation between agribusinesses and other agencies in educational efforts was assessed. Means were low for the variables related to cooperation between agribusinesses and other groups (Table 2). Means fell below the mid-point of the scale except for cooperation between agribusinesses and private individuals. The grand means for extent of cooperation was 459.83. The standard deviations were high, which indicated a wide variation in responses. These results may indicate that agri-educators have not been aggressive in promoting cooperative efforts with agribusinesses.

The low level of cooperation in this study was contrary to the high level of cooperation reported by others (Bowen, 1986; Pascalar, 1986). The low levels of cooperation existing between agribusinesses in this study and vocational agriculture programs and other educational agencies may have been due to lack of opportunity for cooperation. Some of the agribusinesses may have been geographically located at a distance from high school, area or university agriculture programs. The greater accessibility of agribusinesses to private individuals and the Cooperative Extension Service may account for their higher levels of cooperation (Table 2).

Another objective of the study was to identify views of agribusiness officials on the importance of supplying teachers with up-to-date information on selected agricultural programs. The programs listed in Table 3 were ones that were identified by a committee of teachers as topics to be considered for inservice programs. The agribusinesses in the study thought it was important to supply teachers with up-to-date information on all of these programs except for Hay and pasture management and Wildlife management, which were rated as somewhat important.

The program topics Marketing and New skills for new careers were rated highly by all three types of agribusinesses. Diversification of agriculture was supported more strongly by chemical/fertilizer agribusinesses than by seed agribusinesses. These findings agreed with the call for teachers to emphasize agribusiness entrepreneurship and marketing of agricultural products as reported by McCormick (1986) and Bowen (1986).

The Scheffe test was used to find the significant difference ($\alpha = .05$) between chemical/fertilizer and seed agribusinesses on the variable Diversification in agriculture. The reason for the strong interest of chemical/fertilizer businesses in diversification might have been due to the pressures they were under from the farm crisis and from the water quality concern. They may have had more of a vested interest in diversification while the seed companies may have preferred that concentration on corn and soybeans be continued.

Table 1

Group Means, Standard Deviations, and Analyses of Variance Relating to
Extent of Use of Educational Methods by Types of Agribusiness

Method	Agribusiness Types			F Value	Proba- bility
	Livestock Feed	Chemical/ Fertilizer	Seed		
	<u>n</u>	<u>n</u>	<u>n</u>		
	Mean <u>SD</u>	Mean <u>SD</u>	Mean <u>SD</u>		
Telephone conversation	17 501.75 90.94	24 521.19 77.14	8 491.49 86.74	0.49	0.61
Personal letter	17 441.20 76.01	21 463.23 84.44	8 447.27 87.21	0.36	0.70
Form letter	16 452.34 104.70	22 475.88 74.25	7 504.58 76.50	0.93	0.40
Farm (home) visits	16 596.37 116.89	24 595.04 87.66	7 540.01 57.56	1.02	0.37
Farmers dropping in at office	18 507.12 76.20	23 574.01 103.54	8 475.95 98.86	4.38	0.01
Neighbors contacting neighbors	17 429.64 95.48	22 484.61 114.89	8 442.32 118.16	1.32	0.28
Contact through Interns	11 339.76 91.09	19 374.40 97.42	6 353.79 104.31	0.46	0.63
Radio	15 482.41 111.06	22 414.13 97.87	7 421.75 114.00	1.99	0.15
Television	14 368.12 83.21	18 302.43 73.25	7 403.45 109.00	4.56	0.01
Newspapers	17 493.68 70.53	22 470.90 116.41	8 462.64 94.70	0.38	0.68
Magazines/Periodicals	15 417.14 123.81	20 385.11 139.35	7 486.49 58.92	1.73	0.19

(table continues)

Method	Livestock	Chemical/	Seed	F	Proba-
	Feed	Fertilizer			
	n	n	n		
	Mean	Mean	Mean	Value	bility
	SD	SD	SD		
Posters	17 443.49 136.40	22 387.80 105.48	7 404.17 130.04	1.02	0.37
Bulletins	16 424.50 140.90	22 411.47 108.73	7 439.34 89.39	0.16	0.85
Brochures	17 527.41 136.89	24 485.86 126.61	7 525.85 54.23	0.54	0.59
Newsletters	17 502.84 127.58	23 559.49 107.91	8 517.59 74.89	1.36	0.27
Catalogs	11 367.05 147.01	18 322.85 101.40	8 444.91 131.05	2.76	0.08
Flyers	14 430.29 137.14	22 412.59 110.28	7 446.31 98.04	0.25	0.78
Farm Demonstrations/Plots	16 471.02 118.24	23 509.42 73.01	8 550.93 74.87	2.14	0.12
Sponsoring Community Program	16 453.55 91.92	21 442.33 102.98	7 404.38 98.84	0.62	0.54
Meetings	17 532.31 78.84	24 559.67 83.51	8 530.43 102.28	0.66	0.52
Exhibitions/Trade Fair	13 472.56 107.52	21 401.25 136.41	8 482.77 101.48	2.00	0.15
Other	4 357.56 180.39	4 331.86 128.98	2 409.90 201.58	0.15	0.86

Note. Interval value of the 99-point scale after transformation:

267	350	433	466	500	534	567	652	733
Not Important or None or Never	A Little Important or Little or Seldom	Somewhat Important or Some or Less Often	Important or Much or Often	Very Important or Very Much or Most Often				

Table 2

Means and Standard Deviations Relating to the Extent of Cooperation Among Agribusinesses and Other Agencies in Providing Educational Information

Education Agency	N	Mean	Standard Deviation
Vocational agriculture adult program	46	445.91	84.96
Vocational agriculture--FFA program	46	482.37	90.58
Private Individuals	48	511.79	106.52
Cooperative Extension Service	49	497.59	107.22
Other agribusinesses	48	459.20	89.38
University or area college agriculture depts.	47	478.71	99.69
Chamber of Commerce	43	435.18	97.72
Soil Conservation Service	44	432.03	101.19
Farmer's Home Administration	45	408.44	107.30
Agri'l Stabilization and Conservation Service	44	447.08	123.77
Grand Mean	46	459.83	100.83

Note. Interval value of the 99-point scale after transformation:

267	350	433	466	500	534	567	652	733
Not Important or None or Never	A Little Important or Little or Seldom	Somewhat Important or Some or Less Often	Important or Much or Often	Very Important or Very Much or Most Often				

Conclusions

Conclusions were based on the findings from the study of three types of Iowa agribusinesses: livestock feed, chemical/fertilizer and seed. The agribusinesses in the study tended to be small and well-established. Their interrelationships and interdependence were reflected in the uniformity of their choices of methods. Agribusinesses used a wide variety of educational methods rather than relying on a specific few to reach their clientele. Farm visits and Meetings were highly used by all.

Agribusinesses rated the extent of their cooperation with other educational groups in Iowa as seldom. This rating was in contrast with the high extent of agribusiness educational cooperation reported by others (Bowen, 1986; Pascalar, 1986). This finding might come from geographical factors, or it might indicate that agri-educators have been negligent in seeking out the assistance of community resources. Agriculture teachers need to address the nature and extent of the role of agribusinesses in education.

Table 3

Group Means, Standard Deviations, and Analyses of Variance Relating to the Perception of Agribusinesses on Importance of Supplying Up-To-Date Information to Agriculture Teachers

Agricultural Program	Agribusiness Types			F Value	Probability
	Livestock Feed	Chemical/Fertilizer	Seed		
	$\frac{n}{\text{Mean}} \frac{\text{SD}}$	$\frac{n}{\text{Mean}} \frac{\text{SD}}$	$\frac{n}{\text{Mean}} \frac{\text{SD}}$		
New skills for new ag careers	18 586.33 64.66	23 596.67 81.32	8 621.07 72.77	0.61	0.54
Soil conservation and tillage	17 589.66 89.72	23 549.09 86.34	8 577.01 80.60	1.12	0.33
Farm chemicals	17 596.92 84.33	23 599.99 99.78	8 551.83 59.47	0.93	0.40
Computer (remote data base)	18 556.50 80.84	22 583.12 71.89	8 549.96 46.89	0.96	0.39
Crop scouting and entomology	16 538.87 75.64	23 537.14 85.70	8 556.30 41.43	0.19	0.82
Diversification in agriculture	17 565.18 99.17	23 623.99 80.52	8 563.43 38.09	3.06	0.05
Hay and pasture management	17 503.40 81.27	23 476.74 93.84	8 491.57 72.53	0.47	0.63
Farm safety	17 571.71 75.69	22 552.27 102.11	8 535.81 78.67	0.48	0.62
Wildlife management	16 506.53 84.74	22 486.51 96.98	7 488.22 42.58	0.27	0.77
Agricultural marketing	18 611.20 72.05	23 623.55 76.53	8 680.37 74.06	2.47	0.09

Note. Interval value of the 99-point scale after transformation:

267	350	433	466	500	534	567	652	733
Not Important or None or Never	A Little Important or Little or Seldom	Somewhat Important or Some or Less Often	Important or Much or Often	Very Important or Very Much or Most Often				

Agribusinesses in this study uniformly supported the supplying of up-to-date information to agricultural teachers, a finding supported by Conrads (1985). The program topics Marketing and New skills for new careers were rated highly by all three types of agribusinesses. Diversification of agriculture was supported more strongly by chemical/fertilizer agribusinesses than by seed agribusinesses.

Recommendations

Agri-educators should look at the wide variety of educational methods used by agribusinesses, evaluate their effectiveness, and consider trying a wider variety of teaching methods. Agri-educators in Iowa need to cooperate more with agribusinesses. Involving agribusiness representatives in planning programs and school curricula would bring industry ideas and materials into agricultural instruction. Education/agribusiness cooperation would help in preparing students for career positions in the agribusiness industry.

Agri-educators should ask agribusinesses for materials on marketing of farm products, new agricultural careers and diversification of agriculture. Agribusinesses thought it was important for agri-educators to be supplied with current information in these areas. Further research is needed to determine: (a) how to incorporate agribusiness ideas into agricultural education, (b) specific subject areas that will help students secure jobs in the agribusiness arena, and (c) willingness of the agribusiness industry to support the advanced education of potential agri-educators.

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(Cheek, continued from page 31)

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