

# Changing Emphasis in Agribusiness Curricula

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Required courses for agribusiness degrees at forty-three schools were divided into six categories. The ranges in the percentage of required credits by category were quite large. Industry leaders, alumni, and employers have suggested increasing the course work on communications and business skills to improve the curricula. However, a comparison of degree requirements over time for a sample of twelve programs did not reveal major increases in emphasis for these areas. Departments should consider customer needs and competing programs as they review their curricula and attempt to add more value to their educational products.

In business, product comparisons and consumer surveys are often used to identify potential opportunities to enhance product quality and value. Similarly, new insights on the needs of agribusiness degree customers (e.g., students and employers) and on how to meet their needs could produce major curricula innovations. Comparisons between agricultural economics programs started over 75 years ago. Some early reports from the American Farm Economic Association dealt with surveys on course offerings (Handschin, 1920), on course offerings and outlines (Grimes, 1921), and on degree requirements (Nicholls, 1923). Farm organization heads and farm paper editors, along with college deans, directors, and department heads were also asked about the importance of subjects in degree programs (Lloyd, 1927). Over the years, many articles attempted to clarify what courses and skills should be in undergraduate curricula. Mandercheid (1973) summarized many results from the 1960s and 1970s. Erven (1987) and Vandever and Guedry (1992) addressed some curricula issues from the 1980s and 1990s. This paper outlines the recommendations from industry leaders, alumni, and employers about undergraduate agribusiness management training, summarizes the current undergraduate degree requirements at forty-three schools, and examines changes in curricula emphasis during the last decade. If many of the customer recommendations were adopted, significant emphasis changes in agribusiness cur-

ricula should be observed. Some schools are making changes. Although few colleges prepare students for careers in food distribution and marketing (Capps, 1992), some are designing new curricula to better meet the needs of this clientele group (Senauer, 1992). Because food distribution is a key part of agribusiness and courses in this area are offered by agricultural economics departments, the training requests from alumni and employers and the variations in degree programs should interest both food marketing educators and practitioners.

## Recommendations from Industry Leaders, Alumni, and Employers

To improve a product, one approach is to ask buyers and other stakeholders for suggestions. Food marketers often use focus groups, surveys, and taste tests to identify possible enhancements. Undergraduate education producers have surveyed industry leaders, alumni, and employers for their opinions. This section outlines their recommendations.

At professional meetings, agribusiness representatives listed the skills they seek in graduates and recommended several program changes to enhance student performance on the job. For example, Coats (1966) suggested that students should be more familiar with computers, business accounting and finance principles, consumer marketing techniques, and communication skills. He also highlighted the need for graduates to be profit-orientated and knowledgeable with the decision-making processes and information needs of industry. Luby (1969) recommended training in

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management decision-making, especially in imperfectly-competitive environments, and listed many business questions that should be familiar to students. Hoffman (1969) thought that the typical undergraduate degree was too focused on narrow, vocational subjects and contained too many courses in the physical sciences. He suggested that it may be desirable to restructure programs so that more courses are taken outside the Colleges of Agriculture. Rainey (1991) emphasized the importance of human relations. He believed many careers were blocked by poor communication skills and an inability to get along with people. The industry leaders encouraged agribusiness management educators to increase the emphasis in business, communications, humanities, and social sciences.

Another approach for identifying potential improvements is to ask current and former customers. Four published alumni surveys that asked about curricula had very similar results. Blank (1987) surveyed graduates from 15 institutions in 1984 and received 429 responses. He included an open-ended question on what topics should receive more emphasis. The most common answers were accounting, finance, computer skills, management, and communication skills. Riesenber (1988) surveyed University of Idaho College of Agriculture alumni and received 801 responses. After analyzing the results, he concluded that: "the College should require more emphasis on the curriculum areas of decision-making capabilities, accounting, business & economics, agricultural marketing, written communications, and oral communications & public speaking." (p. 36) Virginia Polytechnic Institute and State University alumni were asked to rate the need for 37 competencies to improve career experiences. Preston and Broder (1990) analyzed the 239 responses. The top four were oral communication, written communication, using problem-solving techniques, and setting organizational goals and objectives. Nearly all 17 technical agriculture skills were ranked in the bottom half of the skills. Eggenberger and Cepica (1990) surveyed Texas Tech graduates. Of the 416 respondents in agricultural occupations, over 89 percent suggested increasing computer instruction, 67 percent recommended more business management, and 66 percent endorsed more accounting and bookkeep-

ing. Over 65 percent suggested greater emphasis on business finance, 65 percent recommended more marketing, 57 percent recommended more oral communications, 54 percent suggested more leadership, and 48 percent recommended more written communications. These four surveys confirmed the need for more business and communication skills in curricula.

Agribusiness employees have also provided suggestions on how to enhance curricula. Bruening and Scanlon (1995) conducted four focus groups with agribusiness professionals. They reported: "a need for courses on human labor relations, business organizational structure, managerial theory, problem solving and critical thinking with an agribusiness emphasis." (p. 31) Harris (1989) analyzed the rankings by 17 agricultural sales professionals of the skills needed by undergraduates who are interested in sales careers. Self-motivation, a positive work attitude, the ability to work with others, and self-confidence were the highest rated traits.

Another approach is to survey employers about what characteristics they want in students. Litzenberg, Gorman, and Schneider (1983) asked 324 Texas cooperatives to rank the importance of different skills. The 74 respondents rated personal qualities, communication skills, professional qualities, and business skills above the six other skill classes: work experience, quantitative skills, technical skills, economics, legal/tax/business law, and computer knowledge. In a survey of prospective employers and University of Georgia alumni by Broder and Houston (1986), the 131 respondents said communication skills and leadership experience were the most important traits for firms. They reported that students were most lacking in communications and business skills. Harbstreit, Stewart, and Birkenholz (1989) asked 65 managers and supervisors of urban agribusinesses what additional education and training were needed by their employees. Out of 43 categories, the top two requests were human relations and employee leadership.

In the AGRI\*MASS survey, Litzenberg and Schneider (1987) received usable responses from 543 agribusinesses and government agencies. Respondents rated the value of 74 student traits and skills using a ten-point scale. Interpersonal characteristics (e.g., self-motivation and positive work

attitude) as a group were judged to be most important with communication skills ranked second and business and economics skills in third place. The top technical agriculture skill, crop production systems, was ranked 37th, below most business and economics skills. This suggests that firms may value business course work higher than technical agriculture training. Howard (1989) sent a similar questionnaire (e.g., 76 characteristics) to Canadian agribusinesses and government agencies and received 287 responses. The findings from both surveys were similar. They had the same ordering of the major characteristics groups and had parallel ratings of individual traits. For example, professional selling skills were ranked in the top half in both surveys and were judged to be more important than intermediate economic theory, agricultural policy, international trade, and all technical agriculture skills. These surveys give educators some guidance on what to include in their programs.

Litzenberg, Gorman, and Schneider (1983) used feedback from industry leaders, alumni, and employers to develop an ideal undergraduate curriculum. They compared it with existing programs and suggested that the typical school might want to require an additional course in technical agriculture (raise semester credits or hours to 12), in accounting (raise to 9), in business management (raise to 6), in computers (raise to 6), and in finance (raise to 6). They also suggested new course requirements in sales and in ethics. This does not imply that there is a magic set of courses that students need to be successful agribusiness managers. Requests by employers and students should not be the sole determinants of curricula because they may only focus on short-term concerns. Departments should also consider their comparative advantages when building degree programs and adding value to their educational products. Geographic differences in student and employer needs and differences in faculty backgrounds are likely to create some variations in requirements.

### **Summary of Current Degree Requirements**

Competitor intelligence techniques are often employed by businesses to identify valuable product changes and stay competitive. Robert

Thompson (1992) argued that agribusiness programs are also in a highly competitive environment. Universities compete for new students, for placement of graduates, and for linkages with businesses. "Unless we are perceived as adding unique value relative to our competitors, our customers will go elsewhere and we in the agribusiness programs will be out of business." (p. 14) Students may choose other departments, business schools, or liberal arts programs if they do not believe agribusiness degrees will meet their needs. Since students appear to be sensitive to the high opportunity costs of agricultural and natural resource careers (Thompson, Capps, and Massey, 1994), curriculum improvements that boost the potential earnings of graduates may be needed to attract top students. Periodic market reviews can help educators identify innovative curricula and enhance their competitive position. As a first step in a competitor intelligence analysis, this section compares the agribusiness management degree requirements at 43 schools.

Several surveys of agribusiness degree requirements have been completed. Jones, Lard, and Manderscheid (1972) examined the quantitative requirements at 54 U.S. and Canadian programs. As part of a curriculum review at the University of Minnesota, Larson (1983) classified required courses into six groups and compared agricultural economics and agribusiness management degrees. Carman and Pick (1986) examined the agribusiness management degree requirements at 35 schools and Franklin (1986) looked at specific agricultural economics, economics, quantitative, and management course requirements at 37 schools with agribusiness management majors. Adrian (1990) compared agricultural economics departments in the South.

Degree requirements and course offerings were reviewed using college bulletins (Career Guidance Foundation, 1994; 1995). In most cases, the requirements applied to students entering degree programs during 1995 or 1996. Efforts were made to include the programs in previous surveys and to increase the sample's geographic and school-size diversity. Several outstanding programs were excluded because their college bulletins did not explain their requirements (i.e., bulletins varied in their user-friendliness). Some of the 43 degree programs in the analysis were con-

tacted and asked to provide more details about their programs.

Degree requirements were divided into six groups: Math, Statistics, and Computer; Written and Oral Communications; Humanities, Social Sciences, and International; Agricultural Economics, Economics, and Business; Technical Agriculture; and Science. Health and physical fitness courses were counted as free electives because many schools did not require them. In most programs, restricted electives allowed students to choose courses within these classes. In cases where students needed a course from one of several groups (e.g., 3 credits of either Technical Agriculture or Advanced Calculus), an assumption was made about the choice most students would make (Technical Agriculture). When more than one course could be taken in different groups (e.g., 20 credits in the College of Agriculture), no assumptions were made and the groups involved were not included in the averages. Programs were compared by examining the percentage of the required credits (total credits or hours for a degree minus free electives) allocated to each of the six groups.

There was considerable variation in program flexibility. Some schools defined the entire degree program while others had over 20 percent of the credits as free electives. Course requirements are quality controls that influence what minimum competencies employers can expect of graduates. Williams (1987) stated: "Employers must have confidence that graduates will perform as represented, and they will employ future graduates only if their expectations are met" (p. 51). To offer a fairly homogeneous product, departments

may reduce the number of free electives and limit student opportunities for exploring a variety of fields.

Agricultural Economics, Economics, and Business courses were grouped into a single category because of differences in the courses offerings by departments of agricultural economics. Some taught economic principles and theory, accounting, finance, marketing, law, management, ethics, operations, logistics, strategy, labor, quantitative analysis, computer, or calculus courses. All quantitative analysis, computer, and calculus courses were in the Math, Statistics, and Computer group. Other agricultural economics courses were counted in the professional skill category.

Table 1 shows how the average degree program's required credits are allocated. For example, about 12 percent of the required credits are in the Math, Statistics, and Computer category. Note the wide range in each group's percentage. One school has 24.2 percent of required credits in the Math, Statistics, and Computer category while another has only 4.1 percent. These ranges probably reflect differences in the educational needs of the customers, in the competitive advantages of the departments, and in the educational philosophies of the schools. Variations in the course offerings and degree requirements between colleges were noted as problems in the *Agribusiness Education in Transition: Setting Directions for Global Competitiveness* (1991) conference report. This group encouraged rapid curricula changes to better meet student and employer needs.

**Table 1. Percentage of Required Course Credits in Different Categories.**

Agribusiness Management Requirement Categories	Average Percentage	Range of Percentages	Standard Deviation	Number of Schools
Math, Statistics, and Computer	11.9	24.2 - 4.1	4.1	42
Written and Oral Communication	9.1	14.8 - 4.8	2.4	43
Humanities, Social Science, and International	14.9	27.5 - 4.8	4.9	42
Agricultural Economics, Economics, and Business	46.5	60.5 - 35.3	6.0	40
Technical Agriculture	9.0	26.9 - 0.0	6.1	39
Science	8.6	14.9 - 4.1	2.6	41

Note: Changes in the mix of schools by category limit comparisons across categories.

Changes in specific course offerings and requirements suggest that many departments are striving to better meet customer needs. Bekkum (1993) surveyed agribusinesses about the experience needs of graduates. Internships and coop programs were rated as the number one experiences that will strengthen a student's educational background. Snodgrass (1974) examined the availability of programs that give students credit for participating in work or study experiences off-campus. About two-thirds of the agricultural economics department reported that these programs were available. By 1995, over 85 percent of the departments had course numbers for internships and eight required internships or projects for graduation. Another characteristic that employers rated as important was professional selling skills. At least 13 departments offer a course that focuses on sales or sales management and two require the course. These examples illustrate that agribusiness management curricula are evolving to meet student and employer needs.

Departments interested in competitor intelligence could move beyond course descriptions and compare course outlines. For example, Novakovic and Hall (1980) collected and published 30 syllabi for graduate marketing courses to facilitate an exchange of ideas about course contents. A similar process could help enhance undergraduate courses and make the degree programs more competitive.

Educators looking for innovations also may want to broaden their market definition and look at international curricula, technical agriculture programs, and business schools. Agribusiness programs in Australia (e.g., Schroder, 1988; Robertson, 1989) and Canada (e.g., Howard, 1989) have taken different approaches with their curricula. Within technical agriculture, many departments are increasing their business focus (e.g., animal science: Brink, 1994; Buchanan, Hibberd, Kropp, and Damron, 1994; poultry science: Summers, 1992). These and other departments (e.g., Food Science) may become major competitors for agribusiness management students. Since numerous business schools have recently revised their courses and requirements, they may be excellent sources for ideas to enhance programs.

### Changes in Agribusiness Curricula

In a 1984 survey of department heads, 54 percent anticipated the greatest enrollment growth over the next decade in the agribusiness category (Blank, 1985). Given the input from industry leaders, employers, and alumni during the last 20 years and the belief that demand is increasing in this area, one might expect to find significant changes in agribusiness management programs. If emphasis is defined as the percentage of required credits by category, increases in the Oral and Written Communications and the Agricultural Economics, Economics, and Business groups might be anticipated. This section examines what emphasis changes have occurred in twelve agribusiness management undergraduate programs since the early 1980s.

Table 2 shows how the percentage of required credits by category has changed for the agribusiness management degree programs surveyed by Larson (1983). For example, in the ten programs that have requirements consistent with the Math, Statistics, and Computer category during each time period, 11.9 percent of the credits were in that group during 1995, the same as in 1983. One school raised their percentage by 3.7 points while another lowered it by 4.0 points. Note that the average percentages for this subsample were quite similar to those for all 43 programs.

Although the requirement percentages for communications, business, and humanities and social sciences increased, some industry leaders might be disappointed by the magnitude of the changes. Given the consistency of the needs expressed by alumni, it is surprising that, in each of the three categories, several schools reduced their emphasis. It is true that some new initiatives may not appear in the percentage measures. For example, a few schools have added writing requirements within existing required courses or have replaced one required course with another. Other changes, such as varying the credits granted by courses, the number of required credits at the university level, or the number of required "review" courses (e.g., dropping an algebra requirement while continuing to require calculus), could influence these percentages without neces-

**Table 2. Changes in the Percentage of Required Course Credits by Different Categories.**

Agribusiness Management Requirement Categories	Average Percentage in 1995	Average Change (1995 - 1983)	Range of the Percentage Changes	Number of Schools
Math, Statistics, and Computer	11.9	0.0	+3.7- -4.0	10
Written and Oral Communication	10.5	+0.3	+3.5- -2.7	12
Humanities, Social Science, and International	12.1	+0.8	+5.0- -4.9	11
Agricultural Economics, Economics, and Business	46.1	+1.4	+6.0- -6.5	10
Technical Agriculture	7.4	-2.1	+5.5- -5.8	10
Science	10.5	-1.0	+3.2- -5.5	10

Note: Changes in the mix of schools by category limit comparisons across categories.

sarily enhancing the educational product. However, if many schools boosted their emphasis on communications or business skills, it is likely that the percentages would have shown larger changes.

Some departments may want to re-examine their curricula. Leaders in the profession have advanced principles to guide agribusiness program development. Snyder (1969) suggested that specialized courses on trade practices should be avoided. Connor (1989) recommended having separate degree programs for disciplinary and professional education. White (1990) argued that agribusiness degrees should be distinct and fill different market niches than agricultural economics and business administration degrees. Padberg (1987) recommended that programs should prepare students for leadership positions. Thompson (1992) believed that agribusiness management graduates must have the same business skills as business school graduates and Connor (1993) recommended that agricultural economics departments should teach the business courses in the curricula.

Since programs evolve over time, many departments periodically review their degree requirements. Several cases studies describe the curricula review process and the lessons learned (e.g., Sjo, Orazem, and Biere, 1973; Litzenberg et. al., 1986; Beck 1990; Lindsey and Martin, 1993). One particularly useful step in the process is to define the program objectives or the competencies that graduates should possess (Mather et. al., 1977). Another step that is sometimes forgotten is to include in the review all program stakeholders including college administrators and stu-

dents. Differences in information sets or in priorities need to be discussed. A survey by Comer, Weldon, and Connor (1994) found that deans were significantly more likely than faculty to agree that "Agricultural economics undergraduate programs should have an agribusiness/applied business focus" and that "Agribusiness majors should have two options -- input supply and food distribution -- because they appeal to different students, needed different supporting courses, and relate to different job markets." Students may lack information about the program objectives and the opportunities for graduates. A recent survey of 283 students found that only 22 percent were very or somewhat interested in a supermarket industry career (Park and Perosio, 1995). A curriculum review can be an excellent device to encourage information sharing and to unify stakeholder beliefs about which needs have the highest priority.

Agribusiness management programs continue to have considerable diversity in their degree requirements. Suggestions by industry leaders, alumni, and employers that more business and communication training are needed have not generated significant, widespread increases in course requirements. Additional comparisons with competitors and discussions about customer needs may help produce major curricula innovations. The literature summaries and program reviews in this paper will hopefully encourage more analysis on what should be emphasized in agribusiness curricula to enhance the value of the educational product.

## References

- Agribusiness Education in Transition: Setting Directions for Global Competitiveness. Walter J. Armbruster and Teddee Grace, Editors. Oak Brook, IL: Farm Foundation. 1991.
- Adrian, John. "Undergraduate Education in Departments of Agricultural Economics in the South: Status, Challenges, and Opportunities," *Southern Journal of Agricultural Economics*. Vol. 22, No. 1 (July, 1990): 1-9.
- Beck, Robert L. "Agricultural Business Curricula," *NACTA Journal*. Vol. 34, No. 3 (September, 1990): 12.
- Bekkum, Victor A. "Experience Needs of College of Agriculture Graduates as Perceived by Business and Industry," *NACTA Journal*. Vol. 37, No. 2 (June, 1993): 48-50.
- Blank, Steven C. "A Decade of Change in Agricultural Economics Programs," *Western Journal of Agricultural Economics*. Vol. 10, No. 2 (December, 1985): 375-81.
- Blank, Steven C. "Comparing Faculty and Alumni Expectations of Future Agribusiness Curriculum Content," *NACTA Journal*. Vol. 31, No. 2 (June, 1987): 30-32.
- Brink, D. R. "A Case Description: A Process for Animal Science Curriculum Development," *NACTA Journal*. Vol. 38, No. 2 (June, 1994): 4-7.
- Broder, Josef M. and Jack E. Houston. "Employer Assessments of Graduates," *NACTA Journal*. Vol. 30, No. 2 (June, 1986): 18-22.
- Bruening, Thomas H., and Dennis C. Scanlon. "Communications and Business Curricular Needs of Agribusiness Employees," *NACTA Journal*. Vol. 39, No. 1 (March, 1995): 28-31.
- Buchanan, David S., Charles A. Hibberd, J. Robert Kropp, and W. Stephen Damron. "Revision of the Animal Science Curriculum: Responding to Students, Industry Changes and Evolving University Guidelines," *NACTA Journal*. Vol. 38, No. 2 (June, 1994): 9-14.
- Capps, Oral, Jr. "The Food Distribution Industry: Untapped Clientele for Agricultural Economists," *Southern Journal of Agricultural Economics*. Vol. 24, No. 1 (July, 1992): 1-10.
- Career Guidance Foundation. "1994/95 Final Shipment," *College Catalog Index*. Vol. 21, No. 3 (December, 1994).
- Career Guidance Foundation. "1995-96 Midyear Shipment," *College Catalog Index*. Vol. 22, No. 2 (September, 1995).
- Carman, Hoy F. and Daniel H. Pick. "Undergraduate Curriculum in Agricultural Economics and Agricultural Business Management," *Proceedings of the American Agricultural Economics Association Teaching Workshop*. Reno, NV. (1986): 139-147.
- Coats, Norman M. "Appraisal of the Current Training of Economists for Positions in Industries Serving Agriculture," *Journal of Farm Economics*. Vol. 48, No. 5 (December, 1966): 1600-3.
- Comer, Dorothy, Richard Weldon, and Larry Connor. "Future Directions for Agricultural Economics Curricula: Faculty and Administrative Perspectives," *NACTA Journal*. Vol. 38, No. 2 (June, 1994): 16-20.
- Connor, Larry J. "Land-Grant Ag Programs: They Need Revitalizing," *Choices*. Vol. 4, No. 1 (First Quarter, 1989): 12-15.
- Connor, Larry J. "Structural Change in Higher Education: Implications for Agricultural Economics Academic Programs," *Journal of Agricultural and Applied Economics*. Vol. 25, No. 1 (July, 1993): 122-30.
- Eggenberger, Lewis and Marvin Cepica. "Occupational Status and Educational Needs of Graduates from the College of Agricultural Sciences, Texas Tech University, 1971-1986," *Texas Journal of Agriculture and Natural Resources*. Vol. 4 (1990): 50-52.
- Erven, Bernard L. "Reforming Curricula: Challenge and Change for Agricultural Economists," *American Journal of Agricultural Economics*. Vol. 69, No. 5 (December, 1987): 1037-42.
- Franklin, Douglas R. "Four Curriculum Options within Agricultural Economics," *NACTA Journal*. Vol. 30, No. 2 (June, 1986): 15-17.
- Grimes, W. E. "Report of the Committee on Teaching for the Year 1920," *Journal of Farm Economics*. Vol. 3, No. 2 (April, 1921): 100-3.
- Handschin, W. F. "Report of the Committee on Teaching for the Year 1919," *Journal of Farm Economics*. Vol. 2, No. 3 (July, 1920): 172-73.
- Harbstreet, Steven R., Bob R. Stewart, and Robert J. Birkenholz. "Manager/Supervisor Perceptions of Educational Needs of Urban Agribusiness Employees," *Journal of Agricultural Education*. Vol. 30, No. 2 (Summer, 1989): 10-17.
- Harris, Kim. "Skills and Characteristics Needed by Undergraduates Choosing a Career in Agricultural Sales," *NACTA Journal*. Vol. 33, No. 2 (June, 1989): 39-43.
- Hoffman, A. C. "What Agribusiness Economists Need from Theoretical and Empirical Agricultural Economics," *American Journal of Agricultural Economics*. Vol. 51, No. 2 (May, 1969): 448-56.
- Howard, Wayne H. "What Our Students Should Know: Perspectives from Business and Academia," *Canadian Journal of Agricultural Economics*. Vol. 37, No. 2 (July, 1989): 303-17.
- Jones, Lonnie L., Curtis F. Lard, and Lester V. Manderscheid. "Present Status of Quantitative Techniques in Undergraduate Agricultural Economics Programs," *American Journal of Agricultural Economics*. Vol. 54, No. 1 (February, 1972): 102-7.
- Larson, Ron. "Survey of Major Requirements," *University of Minnesota Memo*. October, 1983.
- Lindsey, Patricia J. and Michael V. Martin. "The Agricultural Business Management Program: Lessons Learned at Oregon State University," *Journal of Agribusiness*. Vol. 11, No. 2 (Fall, 1993): 101-16.
- Litzenberg, Kerry K., Hoy F. Carman, Raymond J. Folwell, Patrick D. O'Rourke, and Thomas Scott. "Recent Experiences in Agricultural Economics Curriculum Reform: The Case of Four Universities," *Proceedings of the American Agricultural Economics Association Teaching Workshop*. Reno, NV. (1986): 56-61.
- Litzenberg, Kerry K., William D. Gorman, and Vernon E. Schneider. "Academic and Professional Programs in

- Agribusiness," *American Journal of Agricultural Economics*. Vol. 65, No. 5 (December, 1983): 1060-64.
- Litzenberg, Kerry K. and Vernon E. Schneider. "Competencies and Qualities of Agricultural Economics Graduates Sought by Agribusiness Employers," *American Journal of Agricultural Economics*. Vol. 69, No. 5 (December, 1987): 1031-36.
- Lloyd, O. G. "Agricultural Economics Curricula," *Journal of Farm Economics*. Vol. 9, No. 1 (January, 1927): 64-72.
- Luby, Patrick J. "What Agribusiness Economists can Contribute to the Content and Equipment of Agricultural Economics," *American Journal of Agricultural Economics*. Vol. 51, No. 2 (May, 1969): 457-63.
- Manderscheid, Lester V. "Guidelines for Curriculum Changes in Agricultural Economics," *American Journal of Agricultural Economics*. Vol. 55, No. 5 (November, 1973): 740-47.
- Mather, Loys L., Joe T. Davis, Russell H. Brannon, A. Frank Bordeaux, Jr., and Robert L. Beck. "Developing a Competency-Based Curriculum in Agricultural Economics," *American Journal of Agricultural Economics*. Vol. 59, No. 4 (November, 1977): 760-65.
- Nicholls, W. D. "Report of Teaching Committee of the American Farm Economic Association," *Journal of Farm Economics*. Vol. 5, No. 3 (July, 1923): 168-75.
- Novakovic, Andrew and Lana Hall. A Survey of Graduate Marketing Courses in Agricultural Economics. Cornell University Agricultural Experiment Station A.E. Res. 80-11. July, 1980.
- Padberg, Daniel I. "Agricultural Economics: Finding Our Future," *American Journal of Agricultural Economics*. Vol. 69, No. 5 (December, 1987): 883-89.
- Park, Kristen and Debra J. Perosio. Perceptions of Undergraduate College Students and Career Counselors. Washington, DC: Food Marketing Institute. 1995.
- Preston, Warren P. and Josef M. Broder. "Market Returns to Agribusiness Skills and Competencies," *Agribusiness*. Vol. 6, No. 1 (January, 1990): 1-13.
- Rainey, James L. "Challenges for Agribusiness Education: Managers for the Future," Proceedings of the Inaugural Symposium of the International Agribusiness Management Association. Boston, MA. (1991): 160-61.
- Riesenberg, Lou E. "Future Curriculum Emphasis for Colleges," *NACTA Journal*. Vol. 32, No. 2 (June, 1988): 34-37.
- Robertson, Don E. "Current Status of Agribusiness Education in Australia," *Agribusiness*. Vol. 5, No. 4 (July, 1989): 385-92.
- Schroder, W. R. "Experiences in Developing an Agricultural Business Curriculum," *Review of Marketing and Agricultural Economics*. Vol. 56, No. 2 (August, 1988): 217-22.
- Senauer, Benjamin. "Preparing Students for Careers in Food Distribution and Marketing: An Opportunity for Colleges of Agriculture," *Journal of Food Distribution Research*. Vol. 23, No. 1 (February, 1992): 1-7.
- Sjo, John, Frank Orazem, and Arlo Biere. "Undergraduate Program Revision at Kansas State University," *American Journal of Agricultural Economics*. Vol. 55, No. 4, Part I (November, 1973): 604-10.
- Snodgrass, Milton M. "Off-Campus Work and Study Experience Programs for Undergraduate Students in Agricultural Economics and Agricultural Business Management," *American Journal of Agricultural Economics*. Vol. 56, No. 5 (December, 1974): 1153-62.
- Snyder, James C. "Trials, Errors, and Successes in Agribusiness Education at Purdue," *American Journal of Agricultural Economics*. Vol. 51, No. 5 (December, 1969): 1218-21.
- Summers, John D. "Will Poultry Science Curricula Meet Projected Needs of Poultry and Associated Industries?" *Poultry Science*. Vol. 71, No. 8 (August, 1992): 1316-18.
- Thompson, Richard P., Oral Capps, Jr., and Joseph G. Massey. "Demand for an Undergraduate Education in the Agricultural Sciences," *American Journal of Agricultural Economics*. Vol. 76, No. 2 (May, 1994): 303-12.
- Thompson, Robert L. "The Changing Role of Agribusiness Education in North America," Evolution of the Food Chain in a Changing International Environment. Proceedings of the Second Symposium of the International Agribusiness Management Association in Oxford, England. (1992): 14-16.
- Vandevveer, Lonnie R. and Leo J. Guedry. "Educating the Undergraduate Agribusiness Major," *Southern Journal of Agricultural Economics*. Vol. 24, No. 1 (July, 1992): 17-26.
- White, Fred C. "Agribusiness Education," *Journal of Agribusiness*. Vol. 8, No. 2 (Fall, 1990): 11-17.
- Williams, F. W. "Agricultural Economics Undergraduate and Graduate Curricula: Are We Competitive?" *Southern Journal of Agricultural Economics*. Vol. 19, No. 1 (July, 1987): 49-57.