

Agricultural Economics Research and Extension Marketing Programs: How Well Are They Integrated?

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Extension marketing economists were surveyed to determine whether they are using available research results and whether research is being conducted on topics relevant to extension marketing economists. In some cases, the beliefs of extension marketing economists differ from recent research results. The research topics recommended by extension economists and the topics of papers presented at the 1994-97 annual NCR-134 Conference on Applied Commodity Price Analysis, Forecasting, and Market Risk Management are well matched. While relevant research is being done, many extension economists desire marketing strategies that both reduce risk and increase income. Research, however, has not produced such strategies.

Key Words: efficient markets, extension, farmer marketing, outlook, research, risk

At the time of their establishment, land grant universities were given three missions (University of Wisconsin-Madison, College of Agricultural and Life Sciences):

- Provide a practical, affordable, college-level education in agriculture and other subjects missed by private universities;
- Conduct research on topics related to agriculture; and
- Disseminate research findings to the public in a form that nonscientists could understand and put to use.

The three missions were organized administratively as teaching, research, and extension. Several authors have recently expressed concern about a lack of coordination between the research and extension missions (e.g., Robison and Colyer; Brorsen and Irwin; Anderson and Mapp). Yet, there is little empirical evidence to indicate the degree of the problem.

This study seeks to determine what extension marketing economists teach, and to draw inferences about the use of research results in extension marketing programs.

We examine both (a) whether researchers are conducting the research that extension marketing economists desire, and (b) whether extension marketing economists are utilizing the available research. By pointing out any gaps between extension and research, this article may encourage greater coordination between these two discipline areas.

Extension marketing economists were surveyed and asked about the content of their programs, their use of research results, and their beliefs about agricultural markets. Some questions relate to relatively new research findings that may not have been adopted by agricultural economists. Extension economists were asked what they consider to be the most important unanswered research question. Their responses are compared to topics of papers presented at the annual NCR-134 Conference on Applied Price Analysis, Forecasting, and Market Risk Management and to papers published in the *American Journal of Agricultural Economics (AJAE)* during the period 1994 through 1997.

Procedures

It was attempted to survey the entire population of extension marketing economists in the United States. On February 14, 1996, the survey instrument was sent by the U.S. Department of Agriculture/Cooperative State Research, Extension, and Education Service (USDA/CSREES) to the 103 agricultural extension economists on the USDA/CSREES electronic mailing list (Bahn). Each recipient was asked to complete the survey and return it by FAX or by mail. Thirty-five of the 103 surveys were returned.

The authors sent a follow-up survey to nonrespondents by electronic mail. The second survey asked the recipients, in the event the survey was not applicable to them, to either notify the authors and/or to give the survey to someone working in extension marketing who had not previously received a copy. Two more surveys were sent to extension economists not on the original list. Of the original list of 103 economists, 34 were determined not to be conducting extension marketing programs. Fifty of the remaining 69 returned the survey. As a result of the follow-up procedure described above, an additional 15 marketing economists completed and returned copies of the survey instrument, giving a total of 65 surveys returned. However, five of the economists returned incomplete surveys, responding only to those sections considered applicable to their programs. This resulted in a final total of 60 usable surveys.

Such a snowball sampling approach is typically used when it is desired to survey an entire population and all members of the population are not known. Some extension economists are not members of professional associations such as the American Agricultural Economics Association. The mailing list we began with was the most comprehensive record available. When surveying a population, the usual concerns about nonrandom sampling are not applicable. The fact that the same survey was used to define the population and obtain responses should not bias the results.

Table 1. Characteristics of Extension Marketing Survey Respondents

Item	Extension Marketing Economists		
	All	Mostly Futures	Mostly Non-futures
Number of Respondents	60	34	26
Years in Extension	16.1	16.1	16.0
Percent Appointment (%):			
Extension Marketing	61.1	70.7	47.6
Other Extension	19.6	16.1	24.6
Research	10.5	7.9	14.2
Teaching	8.7	5.3	13.6
Commodity Responsibility (%):			
Corn	10.0	16.5	0.8
Soybeans	6.0	9.7	0.7
Wheat	8.2	13.4	0.9
Other Grains	3.4	4.8	1.5
Cotton	4.1	6.9	0.1
Fruits and Vegetables	18.1	2.9	39.7
Slaughter Cattle	8.2	13.8	1.0
Feeder Cattle	8.9	15.1	0.2
Finished Hogs	6.6	8.9	3.3
Dairy	7.3	1.0	4.3
Poultry	1.9	0.3	4.3
Other	17.3	7.3	31.4

As McCloskey and Ziliak argue, since we have a population, it is inappropriate to conduct statistical significance tests. The means reported are the population means (except for any error created by nonresponse).

Characteristics of Survey Respondents

Outlook and risk management can be very different depending on whether or not a futures market exists (or extension marketing programs vary depending on whether or not a futures market exists). Therefore, results are presented separately for extension economists whose primary ($\geq 50\%$) responsibility is for commodities with futures (34 futures economists) and for those whose primary responsibility is for commodities without futures (26 non-futures economists). Characteristics of the extension marketing survey respondents are identified in table 1. Dairy and poultry were classified as not having futures, even though a broilers futures market existed for a short time and futures markets of dairy products were just starting at the time of the survey. The largest non-futures commodity responsibility (39.7%) is fruits and vegetables. Futures economists, on average, estimated that 70.7% of their appointment was extension marketing.

Time Allocations of Extension Economists and Their Beliefs About Agricultural Markets

Time allocations are graphically illustrated in figures 1 and 2 for futures economists and non-futures economists, respectively. Of the time devoted to extension marketing, most was spent on outlook and market analysis, or price risk management. Both groups allocated about 32% of their efforts to price outlook and market analysis. Of course, some extension economists may be using outlook as a way to attract an audience even though their primary goal is economic education.

Non-futures extension economists spent less time on price risk management than their futures colleagues. Futures economists allocated 42% of their time to price risk management compared to 24% for the non-futures group. Non-futures economists' clientele must manage price risk with forward contracts and timing of sales. Clientele served by futures economists have the same price risk management tools plus all the marketing alternatives provided by futures and options contracts.

Non-futures economists indicated that they spend more time on marketing plans (55.4%) than futures economists (22.9%). One reason for this difference is that most futures economists include potential pricing opportunities in outlook and situation presentations. Thus, part of what may be defined as outlook and market analysis could also be considered teaching marketing plans.

Based on the data provided in table 2, the economists surveyed clearly believe that producers attend outlook meetings in the hope of increasing profit. Thirty-seven of the 55 completed responses to this question ranked "obtain forecast/increase profit" as the most important reason producers attend outlook meetings. "Obtain information" received the next highest ranking from economists as the reason for producers to attend the meetings. This is consistent with the economists' belief that producers expect them to provide outlook information and ways to increase profits.

As seen in table 3, extension economists (both futures and non-futures) make little use of the objective forecasting methods favored by researchers. The dominant price forecasting methods reported by the 60 survey respondents are: comparing similar years (20.7%), the balance sheet approach (15.1%), others' opinions (14.7%), and subjective feel (14.6%). Research has shown that composite forecasts outperform single forecasts, and thus extension economists placing weight on others' opinions matches research results. Extension economists likely have limited time, and they may be selecting forecasts that are easy to develop and revise rather than selecting methods that may be more accurate. Kastens, Schroeder, and Plain found that forecasters who relied on formal econometric models were slightly more accurate than those who did not. Alternatively, econometric models often provide only quarterly forecasts. Thus, models favored by researchers may not meet the needs of extension economists who must update forecasts daily.

A variety of questions were asked to determine extension economists' views on the ability of producers to obtain higher prices by using some type of marketing strategy (table 4). Extension economists indicated that they believe producers can increase price by using marketing strategies. This response may imply that the

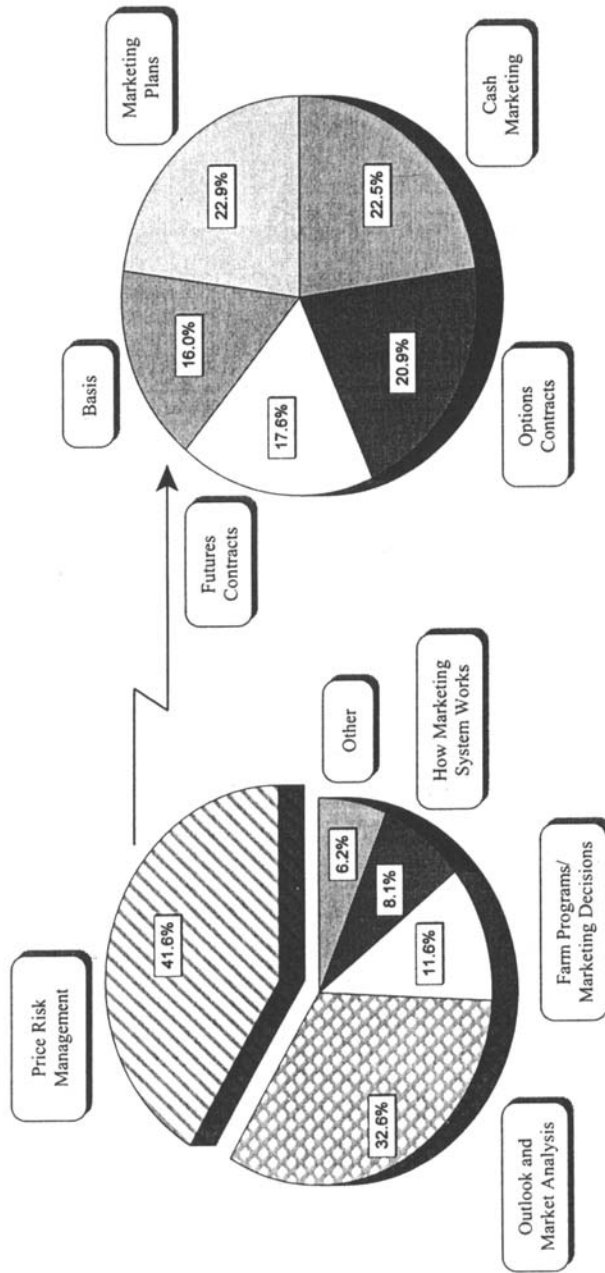


Figure 1. Time allocations of extension marketing economists with mostly futures commodities responsibilities (34 respondents)

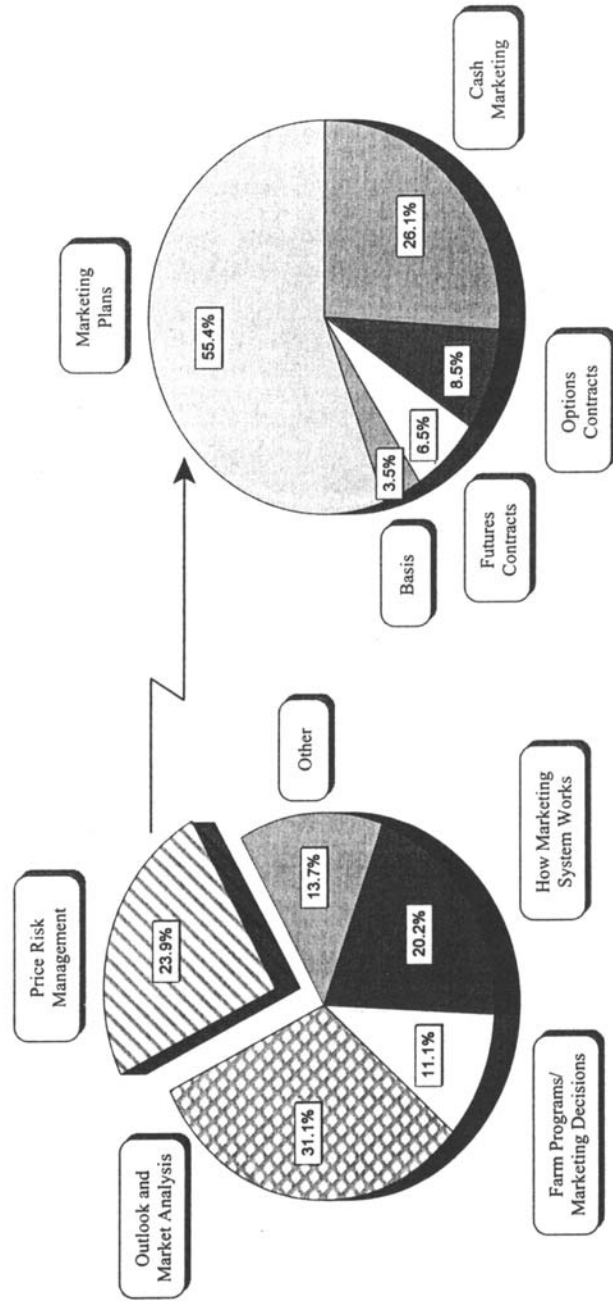


Figure 2. Time allocations of extension marketing economists with mostly non-futures commodities responsibilities (26 respondents)

Table 2. Why Most Producers Attend Outlook Meetings, as Perceived by Extension Marketing Economists

Reason for Meeting Attendance	Ranked Importance (1 = highest)					No Response
	1	2	3	4	5	
	----- (Number of Respondents) -----					
Obtain forecast/increase profit	37	9	3	4	2	5
Obtain information	8	21	10	8	5	8
Enjoyment/curiosity/visit	2	11	18	12	5	12
Other economic education	4	9	17	11	7	12
Other	5	1	0	3	4	47

Table 3. Average Weights Given to Price Forecasting Methods by Extension Marketing Economists

Price Forecasting Method	Extension Marketing Economists		
	All (N = 60)	Mostly Futures (N = 34)	Mostly Non-futures (N = 26)
	----- (Percent) -----		
Single-equation econometrics models	5.3	6.0	4.3
Multiple-equation econometrics models	5.7	6.0	4.5
Time-series	8.9	5.9	13.8
Comparing similar years	20.7	19.7	22.1
Technical analysis	8.5	10.5	5.2
Balance sheet	15.1	19.9	7.4
Subjective feel	14.6	13.6	16.2
Others' opinions	14.7	12.7	18.1
Other	6.4	5.2	8.3

majority believe the markets contain enough inefficiency to allow producers to enhance prices with available marketing tools. Research as summarized by Brorsen and Irwin does not agree with this view. While research has found some deviations from efficient markets,¹ the deviations are generally not large enough for farmers to profitably exploit. Nivens and Kastens also found that price received could not explain differences in profits over a 10-year period.

The extension economists largely disagreed with the statement that “farmers who forward contract production will receive a lower average price than farmers who do not” (table 4). While the statement might not be true for non-futures commodities,

¹ For readers unfamiliar with the efficient markets arguments, we suggest reading Zulauf and Irwin. The efficient markets arguments suggest that current prices reflect all available information.

Table 4. Responses of Extension Marketing Economists on the Ability of Producers to Obtain Higher Prices by Using Some Type of Marketing Strategy

Question	Group	Responses				
		SA	A	N	D	SD
Farmers who forward contract production will receive a lower average price than farmers who do not.	F	1	3	2	19	0
	NF	0	0	10	10	4
Farmers should not hedge unless they are willing to accept lower expected return in order to reduce risk.	F	1	6	3	16	6
	NF	1	7	5	9	2
Preharvest hedging strategies are available which allow a producer, on average, to receive a higher price than always selling at harvest.	F	5	17	6	3	0
	NF	2	14	5	0	1
Market timing strategies which allow a producer to increase the price received are available.	F	3	23	6	0	0
	NF	1	14	8	0	0
When prices are above the five-year average, producers should "bunch sells" by selling more than one year's or one production period's production.	F	0	4	14	8	2
	NF	0	3	12	7	0
Farmers who do not use futures/options are not good marketers.	F	1	5	3	16	7
	NF	0	5	4	10	5
Farmers who use futures/options are good marketers.	F	0	16	10	5	1
	NF	0	10	11	1	1
Marketing strategy recommendations should be based on statistically significant findings.	F	2	6	7	14	4
	NF	1	10	4	9	0
Research results presented in journal articles have proven useful to me.	F	2	9	7	9	6
	NF	2	6	6	7	3
Research results from experiment station research support my extension programs.	F	1	14	3	5	1
	NF	4	18	3	6	2
Farmers demand that I provide price forecasts.	F	5	14	6	5	3
	NF	1	5	4	9	5
My price forecasts could be used to make money trading futures.	F	0	10	9	8	4
	NF	1	3	7	6	7
The primary goal of a marketing strategy should be to reduce risk.	F	3	8	4	15	1
	NF	0	7	2	11	4
I consider cash flow constraints and margin calls in my marketing advice.	F	9	19	3	1	0
	NF	2	11	8	3	1
The goal of a marketing strategy should be to decrease long-term risk over marketing years rather than to focus on an individual year.	F	3	14	8	7	1
	NF	2	10	11	0	0

Notes: F = futures economists and NF = non-futures economists. Response categories are defined as follows: SA = strongly agree, A = agree, N = neutral, D = disagree, and SD = strongly disagree.

research has consistently shown that forward contracting is costly (Brorsen, Coombs, and Anderson; Elam; Elam and Woodworth).

Only 14 of the 60 extension economists believe that their forecasts could be used to make money in the futures market (table 4). The most frequent response was that they did not know (i.e., neutral). Many forecasts are either not recorded or are presented in such an ambiguous way that evaluation is difficult. Extension economists may need to do a better job of objectively evaluating their own forecasts.

A minority of extension economists think that marketing strategy recommendations should be based on statistically significant findings. This result contrasts strongly with Brorsen and Irwin's arguments that statistical significance should be a requirement. Some extension economists may essentially be recommending marketing strategies based on random noise.

In response to the statement "when prices are above the five-year average, producers should 'bunch sells' by selling more than one year's or one production period's production," the most frequent response was neutral (table 4). Such a response is consistent with research results on rollover hedging. Most past research (e.g., Kenyon and Beckman) has not had sufficient degrees of freedom to produce conclusive empirical results. Efficient market theory suggests that it should not be possible to hedge future years' crops with rollover hedging because the spreads between contract months should reflect people's expectations. Given the disaster caused by the hedge-to-arrive contracts (Kilman), it is surprising that so few respondents disagreed with this statement.

The futures extension economists said they spent more time on risk management than on outlook, yet the majority disagree with the statement that "the primary goal of a marketing strategy should be to reduce risks" (table 4). An explanation for this response result is that there are marketing strategies that can substantially reduce income, such as storing across crop years and forward contracting grain many months before harvest.

A majority of the respondents reported that research results from experiment station research support their extension programs, but only a minority found research results published in journal articles to be useful (table 4). While extension economists are not well served by journal articles, they may nevertheless be obtaining information about research results through conferences, word of mouth, and other types of publications. Many journal articles are general in that they do not provide information about a specific commodity. Few journal article results may be easily converted for use in extension programs. Thus, researchers may need to be encouraged to provide information in a form that extension economists can use.

Relevance of Research Topics

The extension economists were asked "what is the most important unanswered research question in agricultural marketing?" Thirty-five of the 60 economists

Table 5. Classification of Topics Suggested by Extension Marketing Economists, and Topics of Papers Presented at the NCR-134 Conferences and Published in the *American Journal of Agricultural Economics*, 1994–97

Suggested Topic	No. of Extension Economists	No. of NCR-134 Papers	No. of <i>AJAE</i> Articles
Marketing strategies (normative)	13	33	11
Quality/vertical coordination/contracts	5	12	9
Market power	2	3	34
Marketing strategies (positivistic)	2	4	0
Policy analyses	2	3	76
Price discovery	1	9	3
Supply/demand	1	4	115
Market integration	1	8	5
Basis	1	5	0
Futures/options	0	21	3
Theory/technique	0	5	333

responded with a usable suggestion. (The responses are listed in Brorsen and Anderson's 1997 paper.) Most responses are broad research objectives that would be appropriate for a regional committee like NCR-134 rather than for a single paper.

The responses of the extension marketing economists are categorized in table 5, along with topics covered in the 1994–97 NCR-134 Conferences and the *AJAE*. The NCR-134 Conference is selected for comparison because one of its stated purposes is to provide a forum for applied research that can be used in extension marketing programs. By far, the most frequent response of the extension economists was to develop marketing strategies that increased income and/or reduced risk. The second most important category included studies to improve vertical coordination primarily in terms of meeting specific quality specifications. These are also two of the three most frequent categories of papers presented at the NCR-134 Conferences, implying that the research presented at NCR-134 is at least addressing the topics that extension marketing economists desire. The NCR-134 Conference includes research conducted by economists with an extension appointment. For example, 11 of the 28 papers at the 1997 conference were authored or coauthored by extension economists. Thus, the NCR-134 Conference is a forum for research that is integrated with extension program needs.

There are several categories of NCR-134 papers which do not appear to be of much interest to extension economists. The price discovery, supply/demand, and market integration studies are of interest to federal agencies; the basis and futures/options studies are addressed to futures exchanges and traders; and the theory/technique papers are pertinent to other research economists.

While not all of NCR-134 papers address topics of interest to extension marketing economists, the bulk of the papers do generally address topics of interest to them. But, as indicated by their responses, marketing economists have not embraced the efficient markets viewpoint. Furthermore, as found by Parcell et al., many research economists also have not adopted a belief in efficient markets.

The distribution of articles published in the *American Journal of Agricultural Economics (AJAE)* is, of course, quite different than the distribution of papers observed in a specialized research group like NCR-134 (table 5). The *AJAE* has published a few articles related to farmer marketing, but most of these have presented theoretical models with highly restrictive assumptions. A 1995 article by Benirschka and Binkley is the only *AJAE* publication during 1994–97 that we would specifically encourage extension marketing economists to read. Thus, if the *AJAE* were used as a measure of the research being conducted, there would be little of relevance to extension marketing economists.

Conclusions and Discussion

Extension economists spend about 32% of their extension programming time on outlook and market analysis. They tend to use subjective price forecasting methods. Most extension economists believe that their price projections may not be used to “make money trading futures.” Yet, they also believe that they can help producers increase profits. These responses may seem inconsistent. Kenyon, however, showed that producers attending an outlook meeting have widely varying price expectations and tend to overestimate their own ability to forecast prices. Simply by explaining why current prices are correct, extension economists could help producers develop more rational expectations, which could indeed help them make money.

Extension economists are generally optimistic about the ability of marketing strategies to increase the price received. Zulauf and Irwin, however, argue that increasing profits with preharvest hedging strategies is not possible. Extension economists indicated that they use experiment station research, but rarely use research directly from academic journals.

The research topics recommended by extension marketing economists closely matched the topics of papers presented at the meetings of NCR-134, but not articles published in the *AJAE*. The research presented at the NCR-134 conferences is connected with extension economics, and is attempting to address the issues of concern to extension economists. One possible conflict is that many extension economists want market timing strategies that increase income, while the bulk of research suggests that markets are very close to being efficient—and so there may be little potential to increase income with a market timing strategy.

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