# 1997 Pricing Performance of Market Advisory Services for Corn and Soybeans

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## DISCLAIMER

The advisory service marketing recommendations used in this research represent the best efforts of the AgMAS Project staff to accurately and fairly interpret the information made available by each advisory program. In cases where a recommendation is vague or unclear, some judgment is exercised as to whether or not to include that particular recommendation or how to implement the recommendation. Given that some recommendations are subject to interpretation, the possibility is acknowledged that the AgMAS track record of recommendations for a given program may differ from that stated by the advisory service, or from that recorded by another subscriber. In addition, the net advisory prices presented in this report may differ substantially from those computed by an advisory service or another subscriber due to differences in simulation assumptions, particularly with respect to the geographic location of production, cash and forward contract prices, expected and actual yields, carrying charges and government programs.

## Abstract

The purpose of this research report is to present an evaluation of advisory service pricing performance for the 1997 corn and soybean crops. Specifically, the average price received by a subscriber to an advisory service is calculated for corn and soybean crops harvested in 1997. It is important to recognize that the performance results in this report address only the pricing, or return, element of risk management.

The total number of "advisory programs" evaluated is 23 for corn, and 21 for soybeans. The term "advisory program" is used because several advisory services have more than one distinct marketing program. A directory of the advisory services included in the study can be found at the **Ag**ricultural **M**arket **A**dvisory **S**ervice (AgMAS) Project website (http://www.aces.uiuc.edu/~agmas/).

In order to evaluate the returns to the marketing advice produced by the services, the AgMAS Project purchases a subscription to each of the services included in the study. The information is received electronically via DTN. Staff members of the AgMAS Project read the information provided by each advisory service on a daily basis.

Certain explicit assumptions are made to produce a consistent and comparable set of results across the different advisory programs. These assumptions are intended to accurately depict "real-world" marketing conditions. Several key assumptions are: 1) with a few exceptions, the marketing window for the 1997 crops is September 1, 1996 - August 31, 1998, 2) cash prices and yields refer to a Central Illinois producer, and 3) all storage is assumed to occur off-farm at commercial sites.

The average net advisory price across all 23 corn programs is $2.32 per bushel. The range of net advisory prices for corn is substantial, with a minimum of $2.00 per bushel and a maximum of $2.74 per bushel. The average net advisory price across all 21 soybean programs is $6.40 per bushel. As with corn, the range of net advisory prices for soybeans is substantial, with a minimum of $6.08 per bushel and a maximum of $6.99 per bushel.

Of the 23 marketing programs for corn, 12 achieve a net price that is within (plus or minus) 10 cents of the market benchmark price of $2.33 per bushel. Four of the advisory programs achieve a net price more than 10 cents higher than the market benchmark price, while seven programs achieve a net price that is more than 10 cents per bushel below the market benchmark price. For soybeans, seven of the advisory programs are within (plus or minus) 10 cents per bushel of the market benchmark price of $6.30 per bushel. Eight of the 21 programs achieve a net price that is more than 10 cents per bushel above the harvest price, with six services more than 10 cents per bushel below the harvest price.

## Introduction to the AgMAS Project

US agriculture has entered a period of increased economic uncertainty. The 1996 *Federal Agricultural Improvement and Reform Act* (FAIR) represents an especially profound change in the operating environment of agriculture. For the first time in over sixty years, the majority of producers have complete flexibility in their crop production and marketing activities. Additional changes will be caused by the full implementation of NAFTA and GATT and the fluctuating world demand for agricultural products.

In this rapidly changing environment, risk management plays a more important role in the overall management of farm businesses. The use of private-sector advisory services to secure marketing and price risk management advice is expected to increase as producers respond to the rising demand for risk management strategies. Market advisory services already are quite popular with many producers. Surveys indicate that producers rank market advisory services highly in terms of usefulness (e.g. Patrick and Ullerich).[1]

Despite their expected importance in the future and current popularity, surprisingly little is known about the risk management strategies recommended by these services and their associated performance. There is a clear need to develop an ongoing "track record' of the performance of these services. Information on the performance of advisory services will assist producers in identifying successful alternatives for marketing and price risk management.

The **Ag**ricultural **M**arket **A**dvisory **S**ervice (AgMAS) Project, initiated in the Fall of 1994, addresses the need for information on advisory services. The project is jointly directed by Dr. Darrel L. Good and Dr. Scott H. Irwin of the University of Illinois at Urbana-Champaign. Correspondence with the AgMAS Project should be directed to: Tom Jackson, AgMAS Project Manager, 434A Mumford Hall, 1301 West Gregory Drive, University of Illinois at Urbana-Champaign, Urbana, IL 61801; voice: (217)333-2792; fax: (217)333-5538; email: tejackso@uiuc.edu. The AgMAS project also has a website that can be found at the following address: http://www.aces.uiuc.edu/~agmas/.

Funding for the AgMAS project is provided by the following organizations: American Farm Bureau Foundation for Agriculture; Council for Food and Agricultural Research (C-FAR); Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture; Economic Research Service, U.S. Department of Agriculture; Ohio Soybean Council; and the Risk Management Agency, U.S. Department of Agriculture.

[1] Patrick, G.F. and S. Ullerich. "Information Sources and Risk Attitudes of Large Scale Farmers, Farm Managers, and Agricultural Bankers." *Agribusiness.* 12(1996):461-471.

**Purpose of Report**

The primary purpose of this research report is to present an evaluation of advisory service pricing performance for the 1997 corn and soybean crops. Specifically, the average price received by a subscriber to an advisory service is calculated for corn and soybean crops harvested in 1997. With a few exceptions, the marketing window for the 1997 crops is September 1, 1996 - August 31, 1998. Another purpose of this report is to compare the pricing performance results for the 1997 corn and soybean crops with previously released results for the 1995 and 1996 crop years.

It is important to recognize that the performance results in this report address the pricing, or return, element of risk management. While certainly useful, these results do not address the issue of risk. Two advisory services with the same net price received may expose producers to quite different risks through the marketing period. Research is currently underway at the AgMAS project to quantify the risk profiles of the different services. A comparison of return and risk will allow a more complete picture of the risk management performance of agricultural market advisory services.

Another important point to consider is that the pricing results are available for only three marketing periods. *It is inappropriate to draw too many conclusions from three crop years' results.* A useful analogy is university yield trials for crop seed. In evaluating the results of crop yield trials, while the results of the most recent year may be of particular interest, firm conclusions about the relative merits of one type of seed versus another can only be drawn after several years of results are available. The same is true for market advisory services.

This report has been reviewed by the AgMAS Review Panel, which provides independent, peer-review of AgMAS Project research. The members of this panel are: Henry Bahn, National Program Leader with the Cooperative State Research, Education, and Extension Service, US Department of Agriculture; Frank Buerskens, independent agribusiness consultant in Bloomington, Illinois; Renny Ehler, farmer in Champaign County, Illinois; Chris Hurt, Professor in the Department of Agricultural Economics at Purdue University; Terry Kastens, Assistant Professor in the Department of Agricultural Economics at Kansas State University and farmer in Rawlins County, Kansas; and Robert Wisner, University Professor in the Department of Economics at Iowa State University.

The next section of the report describes the procedures used to collect the data on market advisory service recommendations. The following section describes the methods and assumptions used to calculate the returns to marketing advice. The third section of the report presents 1997 pricing results for corn and soybeans. The final section presents a summary of the combined results for the 1995, 1996, and 1997 crop years.

## Data Collection

Most of the market advisory services currently included in the study are those available from Data Transmission Network (DTN), via their Ag Daily, DTNstant, and/or DTN FarmDayta services. Two of the services are no longer available on DTN, although they still deliver daily recommendations electronically.[2] Not all of the available "premium" services offered by DTN are included in the study. Only those services judged to contain specific marketing advice for agricultural producers are included. A directory of the advisory services included in the study can be found at the AgMAS website (http://www.aces.uiuc.edu/~agmas/).

In order to evaluate the returns to the marketing advice provided by the services, the first step is to collect the daily recommendations of the services. The AgMAS Project purchases a subscription to each of the services included in this study, and the information is received via DTN. Staff members of the AgMAS Project read the information provided by each advisory service on a daily basis. For the services that provide two daily updates, typically in the morning and at noon, information is read in the morning and afternoon. In this way, the actions of a producer-subscriber are simulated in "real-time."

The recommendations of each advisory service are recorded separately. Some advisory services offer two or more distinct marketing programs. This typically takes the form of one set of advice for marketers who are willing to use futures and options (although futures and options are not always used), and a separate set of advice for producers who only wish to make cash sales.[3] In this situation, both strategies are recorded and treated as distinct strategies to be evaluated.[4]

When a recommendation is made regarding the marketing of corn or soybeans, the recommendation is recorded. In recording recommendations, specific attention is paid to which year's crop is being sold, (e.g., 1997 crop), the amount of the commodity to be sold, which futures or options contract is to be used (where applicable), and any price targets that are mentioned (e.g., sell cash corn when March 1998 futures reach $2.50). When price targets are given and not immediately filled, such as a stop order in the futures market, the recommendation is noted until either the order is filled or is canceled.

Several procedures are used to check the recorded recommendations for accuracy and completeness. Whenever possible, recorded recommendations are cross-checked

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[2] Utterback Marketing Service is carried on a World Wide Web site, and Ag Review is available via e-mail. Both still are subscription services.

[3] Some of the programs that are depicted as "cash-only" did in fact have some futures-related activity, due to the use of hedge-to-arrive contracts, basis contracts, and some use of options.

[4] There are a few instances where a service clearly differentiates strategies based on the availability of on-farm versus off-farm (commercial) storage. In these instances, recorded recommendations reflect the off-farm storage strategy. Otherwise, services do not differentiate strategies according to the availability of on-farm storage.

against later status reports provided by the relevant advisory service. Also, at the completion of the marketing period, it is confirmed whether cash sales total exactly 100%, all futures positions are offset, and all options positions are offset or expire worthless.

The final set of recommendations attributed to each advisory program represents the best efforts of the AgMAS Project staff to accurately and fairly interpret the information made available by each advisory service. In cases where a recommendation is considered vague or unclear, some judgment is exercised as to whether or not to include that particular recommendation. This occurs most often when a service suggests “a producer might consider” a position, or when minimal guidance is given as to the quantity to be bought or sold. Given that some recommendations are subject to interpretation, the possibility is acknowledged that the AgMAS track record of recommendations for a given program may differ slightly from that stated by the advisory service, or from that recorded by another subscriber.

### *Selection Criteria for Market Advisory Programs*

The market advisory services included in this evaluation do not comprise an exhaustive list of all market advisory services available to producers. The initial services included in the study were selected from the list of DTN Premium Services. The first criterion used to identify services to be evaluated was that the service had to provide marketing advice to producers, instead of advice to speculative traders in agricultural commodities. Some of the services that are included in this study do provide speculative trading advice, but that advice must be clearly differentiated from marketing advice to producers of a given commodity for the service to be included in this study. The terms "speculative" trading of futures and options versus the use of futures and options for "hedging" purposes are used for identification purposes only. Any discussion of exactly what types of futures and options trading activities constitute hedging, as opposed to speculating, is beyond the scope of this project.

Another criterion that is essential for a market advisory service to be included in this study is that specific advice must be given for making cash sales of the commodity in addition to any futures or options hedging activities. In fact, some marketing programs which are evaluated in this study do not make futures and options recommendations at all. However, marketing programs that make futures and options hedging recommendations, but fail to clearly state when cash sales should be made, or the amount to be sold, are not included.

A third, and fairly obvious, criterion, is that the advice must be transmitted to subscribers before the action was to have been taken. This is largely the reason why electronically-delivered services are evaluated. Recommendations that take the form of "Today would have been a good day to sell" that are received by a subscriber after the market has closed are clearly of little value from a marketing standpoint.

The total number of advisory programs evaluated for the 1997/98 crop marketing year (crop harvested in 1997) is 23 for corn and 21 for soybeans. In 1995, the first year for which results were calculated, 25 market advisory programs for both corn and soybeans were evaluated, while in 1996 the results of 26 corn programs and 24 soybean programs were evaluated. The term "advisory program" is used because several advisory services have more than one distinct marketing program. Agri-Edge, Brock Associates, Pro Farmer, and Stewart-Peterson Advisory Services each have two distinct marketing programs, and Agri-Visor has four distinct marketing programs. Allendale and Ag Line by Doane both provide two distinct programs for corn but only one for soybeans.

Progressive Ag is included in the study for the 1996 and 1997 marketing years, but was not included in 1995 because it had not yet come to the project's attention. Utterback Marketing Services is included in 1997, but was not included in 1995 or 1996 because its marketing programs were not deemed to be clear enough to be followed by the AgMAS project. Ag Alert for Ontario was included in 1996, but their advice is geared to Canadian producers and was not deemed to be generalizable to U.S. producers. Grain Field Report, Harris Weather/Elliott Advisory, North American Ag, and Prosperous Farmer were in the study in previous years, but are not included for 1997 because they no longer provide specific recommendations regarding cash sales. Agri-Edge was included in previous reports, but the service was discontinued during the 1997 crop year. Allendale futures & options and Ag Line by Doane hedge are programs that were introduced during the 1996 marketing year for corn only.

## Calculating the Returns to Marketing Advice

At the end of the marketing period, all of the (filled) recommendations are aligned in chronological order. The advice for a given marketing year is considered to be complete for each advisory program when cumulative cash sales of the commodity reach 100%, all open futures positions covering the crop are offset, all open option positions covering the crop are either offset or expired, and the advisory program discontinues giving advice for that crop year, such as re-ownership via futures or call options. The returns to each recommendation are then calculated in order to arrive at a weighted average net price that would be received by a producer who precisely follows the marketing advice (as recorded by the AgMAS Project).

In order to produce a consistent and comparable set of results across the different advisory services, certain explicit assumptions are made. These assumptions are intended to accurately depict "real-world" marketing conditions.

### *Marketing Window*

A two-year marketing window, spanning September 1, 1996 through August 31, 1998, is used in the analysis. The beginning date is selected because advisory services in the sample first began to make marketing recommendations for the 1997 crop during

September 1996. The ending date is selected to be consistent with the ending date for corn and soybean marketing years as defined by the US Department of Agriculture (USDA). There are a few exceptions to the marketing window definition. Three advisory programs had relatively small amounts (10% or less) of cash corn or soybeans unsold as of August 31, 1998. One marketing program also began pre-harvest hedges prior to September 1, 1996. In these cases, the actual sales recommendations on the indicated dates are recorded.

***Prices***

The cash price assigned to each cash sale recommendation is the Central Illinois closing, or overnight, bid. The Central Illinois price is the mid-point of the range of bids by elevators in a 25-county area in central and east central Illinois. The bids are collected and reported by the Illinois Department of Agriculture.

The Central Illinois market also is used for forward contract transactions. Cash forward bids reported by the Illinois Department of Agriculture are recorded only for each Thursday. For the purposes of this study, we assume that the cash-forward basis with respect to the Chicago Board of Trade (CBOT) December 1997 futures settlement price for corn, and the CBOT November 1997 futures settlement price for soybeans remains the same until the next Thursday. Therefore, the price assigned to forward contract recommendations for a particular day prior to harvest is the CBOT December corn settlement price or November soybean settlement price for that day minus the reported basis for that day or the previous Thursday. It is assumed that all forward-contracted grain is delivered at harvest. Although the marketing window for the 1997 corn and soybean crops begins in September 1996, the Illinois Department of Agriculture did not begin to report actual cash forward bids until February 13, 1997. In order to generate cash forward bids for the first months of the marketing window, the cash forward basis on February 13, 1997 was assumed to be the basis from September 1996 through February 12, 1997. The cash forward bid was then calculated using the daily futures prices as described above.

It should be noted that the relative results of the analysis are likely to be similar if another location is used. The calculated returns to all the trading programs (as well as the benchmark prices) would most likely "shift" due to basis differentials. However, the exact results may differ somewhat for areas outside of Central Illinois.

The fill prices for futures and options transactions generally are the prices reported by the services. In cases where a service did not report a specific fill price, the settlement price for the day is used. This methodology does not account for liquidity costs in executing futures and options transactions.[5]

[5] Liquidity costs reflect the fact that non-floor traders must buy at the ask price and sell at the bid price. The difference between the bid and ask prices, termed the bid-ask spread, is the return earned by floor traders for "making the market."

### *Quantity Sold*

Since most of the advisory program recommendations are given in terms of the proportion of total production (e.g., "sell 5% of 1997 crop today"), some assumption must be made about the amount of production to be marketed. For the purposes of this study, if the per-acre yield is assumed to be 100 bushels, then a recommendation to sell 5% of the corn crop translates into selling 5 bushels. When all of the advice for the marketing year has been carried out, the final per-bushel selling price is the average price for each transaction weighted by the amount marketed in each transaction.

The above procedure implicitly assumes that the "lumpiness" of futures and/or options contracts is not an issue. Lumpiness is caused by the fact that futures contracts are for specific amounts, such as 5,000 bushels per CBOT corn futures contract. For large-scale producers, it is unlikely that this assumption adversely affects the accuracy of the results. This may not be the case for small- to intermediate-scale producers who are less able to sell in 5,000 bushel increments.

### *Expected Yield*

When making hedging or forward contracting decisions prior to harvest, the actual yield is unknown. Hence, an assumption regarding the amount of expected production per acre is necessary to accurately reflect the returns to marketing advice. Prior to harvest, the best estimate of the current year's expected yield is a function of yield in previous years. In this study, the assumed yield prior to harvest is the calculated trend yield, while the actual reported yield is used from the harvest period forward.

In Central Illinois, the expected 1997 yield for corn is calculated to be 141.5 bushels per acre (bpa). Therefore, recommendations regarding the marketing quantity made prior to October 1, 1997, are based on yields of 141.5 bpa. For example, a recommendation to forward contract 20% of expected 1997 production translates into a recommendation to contract 28.3 bpa (20% of 141.5). The actual reported corn yield in Central Illinois in 1997 is 140 bpa. The same approach is used for soybean evaluations. Since the calculated trend yield for Central Illinois in 1996 is 46.5 bpa, and the actual yield in 1997 also is 46.5 bpa, no post-harvest yield adjustment is necessary.

The expected yield is based upon a linear regression trend model of actual yields from 1972 through 1996 for Central Illinois. Previous research suggests a regression trend model produces relatively accurate yield forecasts.[6]

It is assumed that, after harvest begins, producers have a reasonable idea of what their actual realized yield will be. Since harvest occurs at different dates each year,

[6] Fackler, P.L., D.L. Young, and G.A. Carlson. "Estimates of Trend and Variability Patterns in U.S. Crop Yields," in *Quantifying Long Run Agricultural Risks and Evaluating Farmers' Responses to Risk*. Proceedings of a seminar sponsored by the Southern Regional Project S-252, Jekyll Island, Georgia, March 1993.

estimates of harvest progress as reported by USDA in Central Illinois are used. Harvest progress estimates typically are not made available soon enough to identify precisely the beginning of harvest, so an estimate is made based upon available data. Specifically, the date on which 50% of the crop is harvested is defined as the "mid-point" of harvest. The entire harvest period then is defined as a five-week window, beginning two and one-half weeks before the harvest mid-point, and ending two and one-half weeks after the harvest mid-point. In most years, a five-week window will include about 80 percent of the harvest.

For 1997, the harvest period for corn is defined as September 29, 1997, through October 31, 1997. For soybeans, the harvest period is September 17, 1997, through October 21, 1997. Therefore, for recommendations made after September 29, corn marketing recommendations are applied on the basis of the actual yield of 140 bpa. The expected soybean yield would have been changed on September 17 if the actual yield had been different from the calculated trend yield.

The issue of changing yield expectations typically is not dealt with in the recommendations of the advisory programs. For the purpose of this study, the actual harvested yield must exactly equal total cash sales of the crop at the end of the marketing time frame. Hence, an adjustment in yield assumptions from expected to actual levels must be applied to cash transactions at some point in time. In this analysis, an adjustment is made in the amount of the first cash sale made after the beginning of the harvest period. For example, if a service advises forward contracting 50% of the corn crop prior to October 1, this translates into sales of 70.75 bpa (50% of 141.5). However, when the actual yield is applied to the analysis, sales-to-date of 70.75 bpa imply that 50.5% of the crop has already been contracted. In order to compensate for this, the amount of the next cash sale is adjusted to align the amount sold. In this example, if the next cash sale recommendation is for a 10% increment of the 1997 crop, making the total recommended sales 60% of the crop, the recommendation is adjusted to 9.5% of the actual yield (13.25 bushels), so that the total crop sold to date is 60% of 140 bushels per acre (70.75+13.25=84=0.6*140). After this initial adjustment, subsequent recommendations are taken as percentages of the 140 bpa actual yield, so that sales of 100% of the crop equal sales of 140 bpa.

While the amount of cash sales is adjusted to reflect the change in yield information, a similar adjustment is not made for futures or options positions that are already in place. For example, assume that a short futures hedge is placed in the December 1997 contract for 25% of the 1997 crop prior to harvest. Since the amount hedged is based on the trend yield assumption of 141.5 bpa, the futures position is 35.375 bpa (25% of 114.5). After the yield assumption is changed, this amount represents a short hedge of 25.27% (35.375/140). The amount of the futures position is not adjusted to move the position to 25% of the new yield figure. However, any futures positions recommended after the beginning of harvest are implemented as a percentage of the actual yield.

### *Brokerage Costs*

Brokerage costs are incurred when producers open or lift positions in futures and options markets. For the purposes of this study, it is assumed that brokerage costs are $50 per contract for a round-turn for futures transactions, and $30 per contract to enter or exit an options position. Further, it is assumed that CBOT corn and soybean futures are used, and the contract size for each commodity is 5,000 bushels. Therefore, per-bushel brokerage costs are 1 cent per bushel for a round-turn futures transaction and 0.6 cents per bushel for each options transaction.

### *Carrying Charges*

An important element in assessing returns to an advisory program is the economic cost associated with storing grain instead of selling grain immediately at harvest. The cost of storing grain after harvest (carrying costs) consists of two components: physical storage charges and the opportunity cost incurred by foregoing sales when the crop is harvested. Physical storage charges can apply to off-farm (commercial) storage, on-farm storage, or some combination of the two. Opportunity cost is the same regardless of the type of physical storage.

For the purposes of this study, it is assumed that all storage occurs off-farm at commercial sites. This is assumed for several reasons. First, commercial storage costs reflect the full economic costs of physical storage, whereas on-farm storage cost estimates may not, due to differing accounting methods and/or time horizons. Second, commercial storage costs are relatively consistent across producers in a given area, whereas on-farm storage costs likely vary substantially among producers. Third, commercial storage cost data are readily available, whereas this is not the case for on-farm storage.

Carrying charges are assigned beginning October 31 for corn and October 21 for soybeans, which were the estimated ending points of the harvest windows. Physical storage charges are assumed to be a flat 13 cents per bushel from the end of harvest through December 31. After January 1, physical storage charges are assumed to be 2 cents per month (per bushel), with this charge pro-rated to the day when the cash sale is made. The storage costs represent the typical storage charges quoted in a telephone survey of Central Illinois elevators.

The interest rate is assumed to be 9.2% per year, and is applied to the average harvest-time price for each crop. This interest rate is the average rate for all commercial agricultural loans for the fourth quarter of 1997 and the first three quarters of 1998 as reported in the *Agricultural Finance Databook* published by the Board of Governors of the Federal Reserve Board. The interest charge for storing grain is the interest rate compounded daily from the harvest mid-point to the date of sale.

In addition to the storage and interest costs, another charge is assigned to corn (but not soybeans) that goes into commercial storage. This charge, referred to as a

"shrink charge", is commonly deducted by commercial elevators on "dry" corn that is delivered to the elevator to be stored, and reflects a charge for drying and volume reduction (shrinkage) which occurs in drying the corn from (typically) 15% to 14% moisture. The charge for drying is a flat 2 cents per bushel, while the charge for volume reduction is 1.3% per bushel. Given that the harvest-time cash price in Central Illinois for 1997 is $2.65 per bushel, the charge for volume reduction is 3.4 cents per bushel ($2.65 * .013). Therefore, the flat shrink charge assigned to all stored corn is 5.4 cents per bushel.

It should be noted that the cost of drying corn down to 15% moisture and the cost of drying soybeans to storable moisture are not included in the calculations. This cost is incurred whether or not the grain is stored or sold at harvest, or whether the grain is stored on-farm or off-farm.

### *Benchmark Prices*

In addition to comparing the net price received across advisory programs, it is useful to compare the results to simple market benchmark prices. These prices are intended to provide information about the actual prices that were available for a particular crop, and provide an indication of how producers might have fared using some basic marketing strategies that do not require professional marketing advice.

In the 1995 and 1996 AgMAS pricing performance reports, two market benchmark prices were reported: the average harvest-period price in Central Illinois and the average price received by Illinois farmers (as reported by USDA). However, recent research conducted by the AgMAS project[7] indicates that these benchmarks have some weaknesses that make them less than ideal indicators of the price that was offered by the market for a given crop.

Conceptually, a useful benchmark should: 1) be *simple* to understand and to calculate; 2) represent the returns to a marketing strategy that could be *implemented* by producers; 3) be directly *comparable* to the net advisory price received from following the recommendations of a market advisory service; 4) not be a function of the actual recommendations of the advisory services or of the actual marketing behavior of farmers, but rather should be *external* to their marketing activities; and 5) be *stable*, so that it represents the range of prices made available by the market throughout the marketing period instead of representing the price during a small segment of the marketing period.

The harvest cash price only includes prices during a small portion of the entire period over which the crop could be marketed. In certain years this price may not fairly represent the true range of prices available. The calculation of the harvest cash price also can be sensitive to the specific time period selected as the harvest period. The average

[7] A full discussion of the selection of the appropriate market benchmark price can be found in AgMAS Research Report 1998-02, "Development of a Market Benchmark Price for AgMAS Performance Evaluations", which can be obtained on the AgMAS web site (http://www.aces.uiuc.edu/~agmas/).

price received by Illinois farmers is not directly comparable to the net advisory price as calculated in this study because the average price received includes price discounts that were incurred because some grain marketed was of substandard quality, while the AgMAS project assumes that all grain marketed meets the requirements of No. 2 yellow corn or No. 1 soybeans.

The "market benchmark price" that was selected as the most appropriate for this evaluation is the average cash price for corn and soybeans over the entire marketing period. The marketing period used in the AgMAS project for a given crop spans two calendar years, beginning on the first of September in the year prior to harvest, and extends through the end of August in the year after harvest. As its name suggests, it is calculated as the average of the daily Central Illinois cash grain bids available for the 1997 crop. For the 1997 crop, the marketing period began on September 3, 1996, and ended on August 31, 1998. Pre-harvest cash prices represent cash-forward bids for Central Illinois for the 1997 crop, while daily spot prices for Central Illinois are used for the post-harvest period.

The average cash price meets all of the selection criteria, except it would not be easily implementable by farmers since it involves marketing a small portion of each crop every day of the two-year marketing window. It can be shown, though, that the price realized via a more manageable strategy of “spreading” sales during the marketing window very closely approximates the average cash price. Therefore, it is determined that the average cash price meets all five selection criteria, and is the most appropriate market benchmark to be used in evaluating the pricing performance of market advisory services.

Two adjustments are made to the daily cash prices to make the average cash price benchmark consistent with the calculated net advisory prices for each marketing program. First, instead of taking the simple average of the daily prices, a weighted average price is calculated to account for changing yield expectations. This adjustment is consistent with the procedure described previously in the "Expected Yield" section. The daily weighting factors for pre-harvest prices are based on the calculated trend yield, while the weighting of the post-harvest prices is based on the actual reported yield for Central Illinois. The second adjustment to the daily cash prices is to adjust the post-harvest cash prices to a harvest equivalent by subtracting carrying charges. The daily carrying charges are calculated in the same manner as those for the net advisory price.

While the market benchmark price described here is not the only benchmark which could be used, careful analysis suggests that it is the most appropriate for any discussion of how the advisory programs fared compared with "the market". An example of an alternative market benchmark that has been used in some circumstances to evaluate previous AgMAS pricing results is the average price received by U.S. farmers as reported by USDA. While the average price received is useful in many circumstances, it produces a biased comparison in this case because of differences in the level of prices between Central Illinois and the U.S. as a whole. Also, since the average price received is not adjusted to a harvest equivalent (i.e., carrying charges are not deducted from post-harvest prices) it has

a significant upward bias when compared with the net advisory prices as reported in this publication.

## 1997 Pricing Performance Results for the Advisory Services

Evaluation results for the advisory programs for the 1997 corn and soybean crops are presented in Tables 1 through 3 and Figures 1 through 4. For a specific example of how the marketing recommendations are translated into a final net advisory price which incorporates the aforementioned parameters, please refer to the 1996 AgMAS Pricing Report.[8]

The program-by-program results of the evaluation of corn marketing programs are contained in Table 1. This table shows the breakout of the components of the net advisory price as well as the net advisory price itself. The average net advisory price for all 23 programs is $2.32 per bushel, one cent below the market benchmark price. The range of net advisory prices for corn is fairly large, with a minimum of $2.00 per bushel and a maximum of $2.74 per bushel

Table 2 lists the program-by-program results of the soybean evaluations. The average net advisory price for all 21 programs is $6.40 per bushel, 10 cents per bushel above the market benchmark price. As with corn, the range of net advisory prices for soybeans is substantial, with a minimum of $6.08 per bushel and a maximum of $6.99 per bushel.

A point to consider when examining Tables 1 and 2 is the impact of the assumption that all storage occurs off-farm. It is possible to argue that, in the short run, the marginal cost of on-farm storage of grain is zero if the facilities already exist and variable costs associated with handling grain and maintaining grain quality are not included. Applying this logic, the results change somewhat. Excluding the costs of commercial storage entirely (but continuing to subtract interest costs), the average net advisory price for corn increases to $2.48 per bushel and the net advisory price for soybeans increases to $6.50 per bushel. The calculation of the market benchmark price also would be impacted by the change in the storage cost assumption. If only interest costs are subtracted from the daily cash prices, the market benchmark price for corn (soybeans) becomes $2.44 ($6.42) per bushel. Therefore, if physical storage charges are assumed to be zero, the net advisory price for corn is four cents above the market benchmark price, and for soybeans the net advisory price is eight cents above the market benchmark price.

Since many Corn Belt producers grow both corn and soybeans, it also is useful to examine a combination of the results for the corn and soybean marketing programs. In order to do this, gross revenue is calculated for a Central Illinois producer who follows

[8] AgMAS Project Research Report 1998-01, "1996 Pricing Performance of Market Advisory Services for Corn and Soybeans", pp. 10-13. This report is available on the AgMAS web site (http://www.aces.uiuc.edu/~agmas/).

both the corn and soybean marketing advice of a given service. It is assumed that the producer has 1,000 acres total, planted half to corn and half to soybeans, and achieved corn and soybean yields equal to the actual yield for the area in 1997. These revenues are compared with the revenue a Central Illinois producer could have received by achieving the market benchmark price for both corn and soybeans. Total advisory revenue is calculated only for those programs that offer both corn and soybean marketing advice.

Table 3 lists the program-by-program results of the total revenue analysis. The average revenue achieved by following both the corn and soybean advisory programs for the hypothetical 1,000 acre farm is $311,500, which is $1,925 above the revenue that would have been received if the producer received the market benchmark price in Central Illinois for the 1997 marketing period. The spread in total revenue for a 1,000 acre farm also is noteworthy, with the difference between the bottom- and top-performing advisory programs exceeding $70,000.

For comparison purposes, the annual subscription cost of each advisory program also is listed in Table 3. Subscription costs, which average $291 per program, are small relative to total revenue, on average less than one-tenth of one percent of total revenue for a 1,000 acre farm. Note that subscription costs are not subtracted from any of the revenue figures presented in Table 3.

The distribution of the net advisory prices is illustrated in Figure 1. Of the 23 marketing programs for corn, 12 programs achieved a net price that is within (plus or minus) 10 cents of the market benchmark price of $2.33 per bushel. Three of the advisory programs achieve a net price between $2.44 and $2.64 per bushel (11 to 31 cents higher than the market benchmark price), and one service achieves a net price of more than 32 cents above the market benchmark. Five programs are grouped in a range between 11 and 31 cents below the market benchmark price, with one program more than 32 cents below the market benchmark.

For soybeans, seven of the advisory programs are within (plus or minus) 10 cents per bushel of the market benchmark price of $6.40 per bushel, while six services fall below this range. On the other hand, three of the 21 programs achieve a net price that is between 11 and 31 cents per bushel above the market benchmark price, with three additional services in the range between 32 and 52 cents per bushel above the market benchmark. Two programs achieve a net price of more than 53 cents above the market benchmark price.

In terms of revenue, 10 of the 21 programs achieve total revenues within (plus or minus) $10,000 of the market benchmark revenue. Three programs achieve a total revenue that is between $10,000 and 30,000 above the market benchmark revenue, while two programs achieve a total revenue of more than $30,000 above the market benchmark revenue. Six programs achieve a total revenue that is between $10,000 and 30,000 below the market benchmark revenue.

Another view of the pricing performance of the advisory programs is shown in Figures 2 through 4. Here, net advisory prices or revenues are ranked from highest to lowest and plotted versus the market benchmark price. As shown in Figure 2, 12 of the 23 corn marketing programs achieve a net price for corn that is equal to or higher than the market benchmark price. There is a high frequency of observations right around the benchmark price. As reported in Figure 3, 13 of the 21 soybean programs achieve a net advisory price equal to or higher than the market benchmark price. As with corn, a large number of observations are close to the market benchmark. Figure 4 shows the comparison between the total advisory revenue and the total revenue implied by the market benchmark price. Total advisory revenue was greater than the market benchmark revenue for 12 of the marketing programs.

Figure 6 shows the pattern of prices available for the 1997/98 corn and soybean crops. Forward bids for the 1997 corn crop were relatively high during the early harvest period of the 1996 crop, which is a remnant of the record-high corn prices seen in the spring and summer of 1996. Cash-forward bids also were in the $2.60 to 2.75 per bushel range prior to the 1997 planting season. Corn prices then declined from planting until August 1997, when concerns about dryness caused a rally into harvest, and then prices rallied sharply during the early-harvest period, to a level between $2.60 and 2.80, that lasted from harvest through most of December 1997. After that, prices started a nearly constant decline through the rest of the marketing period. This decline was caused mostly by a decline in world demand resulting from economic problems in many countries. Corn production outside the U.S. was also rather large, which reduced the import needs of some countries and increased exportable supplies in competing countries. Large U.S. acreage planted to corn accelerated the downtrend, until the corn market fell to below $2.00 by the end of the marketing period.

Soybean prices for the 1997 crop followed a similar path to that of corn, and were influenced by similar factors. Tight 1996 crop supplies helped to support soybean prices of $6.50 to $7.20 from the pre-planting period through early summer. Prices then dropped to below $6.00 at times during July and August due to large soybean planted acreage and expectations of a large 1997 crop. Concern about crop losses, plus very strong demand for soybean exports, helped fuel a contra-seasonal rally during harvest which resulted in prices near or above $7.00 per bushel through mid-December 1997. Prices then gradually declined until the end of March 1998, when it became clear that soybean acreage would be quite large again in 1998. Record soybean production in Brazil and Argentina also pressured prices due to increased competition in export markets. Soybean prices staged a final rapid decline during July and August 1998 when it became clear that the 1998 crop would be at least adequate.

Figure 6 offers a slightly different perspective on prices for the 1997/98 corn and soybean crops. Storage, interest, and (in the case of corn) shrink charges are subtracted from the post-harvest cash prices to show the pattern of harvest-equivalent prices available through the marketing year. While figure 6 illustrates that the corn and soybean markets basically offered no returns to storage, this picture becomes much more clear

when the costs of storage are subtracted from corn and soybean cash prices. By late August 1998 the harvest-equivalent corn price was down to nearly $1.00 per bushel, while the harvest-equivalent soybean price was below $4.50 per bushel.

The fact that cash corn bids for the 1997 crop were the highest in the pre-harvest period and into harvest, and declined rapidly after harvest, meant that a marketing program which sold some or all of a producer's corn and soybeans prior to harvest or at harvest achieved a relatively high price for the crop when compared with programs which held the crop in storage. Also, programs that utilized the traditional strategy of short futures hedges prior to harvest tended to show gains in futures trading, although the pre-harvest rally erased those gains in some cases. Marketing programs that recommended producers assume more downward price risk through storing cash grain not only obtained a lower cash price but also incurred storage and interest costs.

Again, it is important to recognize that the performance results are based on pricing, or return, performance only. While certainly useful, these results do not address the issue of risk. Two programs with the same net advisory price may expose producers to quite different risks through the marketing period. Research is currently underway at the AgMAS project to quantify the risk profiles of the different programs. A comparison of return and risk will allow a more complete picture of the performance of agricultural market advisory services.

### Three-year Average Pricing Performance Results

A summary of the results of the pricing performance evaluations for the 1995, 1996, and 1997 corn and soybean marketing years is contained in Tables 4 through 6 and Figures 7 through 10. Some of the marketing programs included in the table were not evaluated for all three years. The three-year averages are calculated only for the 19 marketing programs that were evaluated for all three years. The results for the 1995 and 1996 crop years are those contained in the 1996 AgMAS Pricing Report[9]. The only change in assumptions used to calculate the 1997 results is that the exact dates of the harvest period are slightly different, which should have very little impact on the results.

As shown in Table 4, the average net advisory corn price over the three years for the 19 programs is $2.65 per bushel, which is two cents above the three-year market benchmark price of 2.63. The results range from a low of $2.36 to a high of $3.03.

The three-year results for soybeans are listed in Table 5. The three-year average net advisory soybean price is $6.73 per bushel, which is 17 cents above the three-year

[9]AgMAS Project Research Report 1998-01, "1996 Pricing Performance of Market Advisory Services for Corn and Soybeans". This report is available on the AgMAS web site (http://www.aces.uiuc.edu/~agmas/).

market benchmark price of $6.56. The results range from a low of $6.37 to a high of $7.27.

The three-year results for the total advisory revenue are presented in Table 6. The average total advisory revenue for the three years is $331,716. This is $4,812 higher than the three-year market benchmark revenue. The results range from a low of $312,468 to a high of $359,908.

The distributions of the three-year average prices and revenues are illustrated in Figure 7. Only the 19 programs that were evaluated in all three years are included in the graphs. For corn, 12 of the 19 programs achieve a three-year average net advisory price within 10 cents of the three-year market benchmark price of $2.63. Two of the 19 programs achieve a three-year average corn price between 11 and 31 cents greater than the market benchmark price, with one program more than 32 cents above the market benchmark. Four of the programs have a three-year average between 11 cents and 32 cents below the market benchmark price.

For soybeans, the picture is somewhat different. Six of the 19 programs are within 10 cents of the three-year market benchmark price of $6.56. However, 12 of the programs achieve a three-year average soybean price that is 11 cents or more above the market benchmark price. Eight of the programs are between 11 and 31 cents above the market benchmark price, with three programs between 32 and 52 cents above, and one program more than 53 cents above the market benchmark price. Only one service is more than 11 cents below the three-year market benchmark price.

In terms of total advisory revenue, 11 of the 19 marketing programs are within $10,000 of the three-year market benchmark revenue of (approximately) $327,000. Four of the programs achieve a total between $10,000 and $30,000 above the benchmark, with one more program more than $30,000 above the three-year benchmark. Three of the programs are more than $10,000 below the benchmark.

As shown in Figure 8, 11 of the 19 corn marketing programs achieved a three-year average net advisory price that was above the three-year average market benchmark price of $2.63. For soybeans (Figure 9), 17 of the 19 programs achieved a three-year average price that was above the three-year average market benchmark price of $6.56.

Figure 10 shows the comparison of the three-year average net advisory revenues versus the three-year average revenue implied by the market benchmark price. Twelve of the 19 advisory programs achieved a three-year average revenue that was above the three-year average market benchmark revenue of $326,904.

**Table 1. Pricing Performance Results for 23 Market Advisory Service Programs, Corn, 1997 Marketing Period**

| Advisory Service Program | (1) Unadjusted Cash Sales Price | (2) Carrying Charges: Interest Costs | (3) Carrying Charges: Storage Costs | (4) Carrying Charges: Shrink Costs | (5) Net Cash Sales Price | (6) Futures Gain | (7) Brokerage Costs | (8) Net Advisory Price |
|---|---|---|---|---|---|---|---|---|
| | | | | ----------$/bushel---------- | | | | |
| Ag Line by Doane (cash-only) | 2.50 | 0.05 | 0.09 | 0.03 | 2.33 | 0.00 | 0.00 | **2.33** |
| Ag Line by Doane (hedge) | 2.59 | 0.06 | 0.12 | 0.04 | 2.37 | -0.08 | 0.00 | **2.29** |
| Ag Profit by Hjort Associates | 2.39 | 0.13 | 0.21 | 0.05 | 2.00 | 0.00 | 0.00 | **2.00** |
| Ag Resource | 2.24 | 0.18 | 0.25 | 0.05 | 1.76 | 0.34 | 0.03 | **2.07** |
| Ag Review | 2.54 | 0.03 | 0.06 | 0.02 | 2.43 | 0.16 | 0.01 | **2.57** |
| Agri-Mark | 2.47 | 0.14 | 0.21 | 0.05 | 2.07 | 0.08 | 0.01 | **2.13** |
| Agri-Visor Aggressive Cash | 2.61 | 0.04 | 0.09 | 0.03 | 2.45 | -0.02 | 0.01 | **2.43** |
| Agri-Visor Aggressive Hedge | 2.61 | 0.04 | 0.09 | 0.03 | 2.45 | -0.03 | 0.01 | **2.41** |
| Agri-Visor Basic Cash | 2.55 | 0.06 | 0.11 | 0.03 | 2.35 | -0.01 | 0.00 | **2.34** |
| Agri-Visor Basic Hedge | 2.55 | 0.06 | 0.11 | 0.03 | 2.35 | -0.01 | 0.01 | **2.33** |
| Allendale (futures & options) | 2.42 | 0.13 | 0.20 | 0.05 | 2.04 | 0.40 | 0.05 | **2.38** |
| Allendale (futures only) | 2.44 | 0.13 | 0.20 | 0.05 | 2.06 | 0.54 | 0.04 | **2.55** |
| Brock (cash-only) | 2.52 | 0.05 | 0.10 | 0.03 | 2.34 | 0.00 | 0.00 | **2.34** |
| Brock (hedge) | 2.58 | 0.02 | 0.08 | 0.03 | 2.45 | 0.24 | 0.05 | **2.64** |
| Freese-Notis | 2.36 | 0.05 | 0.07 | 0.02 | 2.22 | 0.00 | 0.00 | **2.22** |
| Pro Farmer (cash-only) | 2.41 | 0.07 | 0.12 | 0.03 | 2.19 | 0.00 | 0.00 | **2.19** |
| Pro Farmer (hedge) | 2.51 | 0.06 | 0.10 | 0.03 | 2.32 | -0.04 | 0.01 | **2.28** |
| Progressive Ag. | 2.64 | 0.05 | 0.11 | 0.04 | 2.44 | -0.16 | 0.01 | **2.26** |
| Stewart-Peterson Advisory Reports | 2.48 | 0.05 | 0.08 | 0.02 | 2.33 | -0.21 | 0.03 | **2.09** |
| Stewart-Peterson Strictly Cash | 2.49 | 0.06 | 0.09 | 0.02 | 2.32 | 0.00 | 0.00 | **2.32** |
| Top Farmer Intelligence | 2.41 | 0.09 | 0.13 | 0.03 | 2.16 | 0.04 | 0.04 | **2.15** |
| Utterback Marketing Services | 2.51 | 0.12 | 0.18 | 0.04 | 2.17 | 0.65 | 0.08 | **2.74** |
| Zwicker Cycle Letter | 2.60 | 0.04 | 0.09 | 0.03 | 2.44 | -0.03 | 0.01 | **2.40** |
| ***Descriptive Statistics:*** | | | | | | | | |
| ***Average*** | 2.50 | 0.07 | 0.13 | 0.03 | 2.26 | 0.08 | 0.02 | **2.32** |
| ***Median*** | 2.51 | 0.06 | 0.11 | 0.03 | 2.33 | 0.00 | 0.01 | **2.33** |
| ***Minimum*** | 2.24 | 0.02 | 0.06 | 0.02 | 1.76 | -0.21 | 0.00 | **2.00** |
| ***Maximum*** | 2.64 | 0.18 | 0.25 | 0.05 | 2.45 | 0.65 | 0.08 | **2.74** |
| ***Range*** | 0.40 | 0.16 | 0.19 | 0.03 | 0.69 | 0.86 | 0.08 | **0.74** |
| ***Standard Deviation*** | 0.10 | 0.04 | 0.05 | 0.01 | 0.18 | 0.21 | 0.02 | **0.18** |
| ***Market Benchmark Price*** | | | | | | | | **2.33** |

Notes: Net cash sales price is calculated as (1) - (2) - (3) - (4). Net advisory price is calculated as (5) + (6) - (7), and therefore, is stated on a harvest equivalent basis. The market benchmark price is stated on a harvest equivalent basis. The market benchmark price is the average daily cash price for the two-year marketing window from September 1996 through August 1998.

**Table 2. Pricing Performance Results for 21 Market Advisory Service Programs, Soybeans, 1997 Marketing Period**

| Advisory Service Program | (1) Unadjusted Cash Sales Price | (2) Carrying Charges: Interest Costs | (3) Carrying Charges: Storage Costs | (4) Net Cash Sales Price | (5) Futures Gain | (6) Brokerage Costs | (7) Net Advisory Price |
|---|---|---|---|---|---|---|---|
| | | | | ----------$/bushel---------- | | | |
| Ag Line by Doane (cash-only) | 6.65 | 0.15 | 0.11 | 6.39 | -0.06 | 0.00 | **6.32** |
| Ag Profit by Hjort Associates | 6.50 | 0.20 | 0.14 | 6.16 | 0.00 | 0.00 | **6.16** |
| Ag Resource | 6.40 | 0.37 | 0.20 | 5.83 | 0.66 | 0.02 | **6.47** |
| Ag Review | 6.56 | 0.22 | 0.13 | 6.21 | -0.02 | 0.01 | **6.19** |
| Agri-Mark | 6.71 | 0.00 | 0.00 | 6.71 | -0.03 | 0.01 | **6.68** |
| Agri-Visor Aggressive Cash | 6.68 | 0.17 | 0.12 | 6.39 | -0.05 | 0.01 | **6.33** |
| Agri-Visor Aggressive Hedge | 6.71 | 0.17 | 0.13 | 6.41 | -0.25 | 0.02 | **6.14** |
| Agri-Visor Basic Cash | 6.67 | 0.18 | 0.13 | 6.36 | 0.00 | 0.00 | **6.35** |
| Agri-Visor Basic Hedge | 6.71 | 0.17 | 0.13 | 6.41 | -0.25 | 0.02 | **6.14** |
| Allendale (futures only) | 7.19 | 0.07 | 0.13 | 6.99 | -0.32 | 0.00 | **6.67** |
| Brock (cash-only) | 6.50 | 0.11 | 0.08 | 6.31 | 0.00 | 0.00 | **6.31** |
| Brock (hedge) | 6.65 | 0.03 | 0.05 | 6.57 | 0.39 | 0.03 | **6.93** |
| Freese-Notis | 6.34 | 0.12 | 0.07 | 6.15 | 0.00 | 0.00 | **6.15** |
| Pro Farmer (cash-only) | 6.57 | 0.17 | 0.11 | 6.29 | 0.00 | 0.00 | **6.29** |
| Pro Farmer (hedge) | 6.54 | 0.15 | 0.10 | 6.29 | 0.18 | 0.01 | **6.47** |
| Progressive Ag. | 6.90 | 0.01 | 0.03 | 6.86 | -0.21 | 0.01 | **6.65** |
| Stewart-Peterson Advisory Reports | 6.58 | 0.09 | 0.07 | 6.42 | -0.16 | 0.04 | **6.22** |
| Stewart-Peterson Strictly Cash | 6.54 | 0.13 | 0.08 | 6.33 | 0.00 | 0.00 | **6.33** |
| Top Farmer Intelligence | 6.80 | 0.07 | 0.09 | 6.64 | -0.52 | 0.05 | **6.08** |
| Utterback Marketing Services | 7.27 | 0.00 | 0.00 | 7.27 | -0.18 | 0.09 | **6.99** |
| Zwicker Cycle Letter | 6.85 | 0.14 | 0.12 | 6.59 | -0.01 | 0.00 | **6.59** |
| ***Descriptive Statistics:*** | | | | | | | |
| ***Average*** | 6.68 | 0.13 | 0.10 | 6.46 | -0.04 | 0.02 | **6.40** |
| ***Median*** | 6.65 | 0.14 | 0.11 | 6.39 | -0.02 | 0.01 | **6.33** |
| ***Minimum*** | 6.34 | 0.00 | 0.00 | 5.83 | -0.52 | 0.00 | **6.08** |
| ***Maximum*** | 7.27 | 0.37 | 0.20 | 7.27 | 0.66 | 0.09 | **6.99** |
| ***Range*** | 0.93 | 0.37 | 0.20 | 1.44 | 1.18 | 0.09 | **0.91** |
| ***Standard Deviation*** | 0.23 | 0.09 | 0.05 | 0.32 | 0.24 | 0.02 | **0.26** |
| ***Market Benchmark Price*** | | | | | | | **6.30** |

Notes: Net cash sales price is calculated as (1) - (2) - (3). Net advisory price is calculated as (5) + (6) - (7), and therefore, is stated on a harvest equivalent basis. The market benchmark price is stated on a harvest equivalent basis. The market benchmark price is the average daily cash price for the two-year marketing window from September 1996 through August 1998.

**Table 3. Pricing Performance Results for 21 Market Advisory Service Programs, 1,000 Acre Corn and Soybean Farm, 50/50 Rotation, 1997 Marketing Period**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Advisory Revenue | | | |
| **Advisory Service Program** | **Corn** | **Soybeans** | **Total Advisory Revenue** | **Cost of Service** |
| | ----------$/acre---------- | | ---$/1,000 acres--- | --$/year-- |
| Ag Line by Doane (cash-only) | 326 | 294 | **310,040** | 300 |
| Ag Profit by Hjort Associates | 280 | 286 | **283,220** | 240 |
| Ag Resource | 290 | 301 | **295,328** | 550 |
| Ag Review | 360 | 288 | **323,818** | 450 |
| Agri-Mark | 298 | 311 | **304,410** | 300 |
| Agri-Visor Aggressive Cash | 340 | 294 | **317,273** | 324 |
| Agri-Visor Aggressive Hedge | 337 | 286 | **311,455** | 324 |
| Agri-Visor Basic Cash | 328 | 295 | **311,438** | 324 |
| Agri-Visor Basic Hedge | 326 | 286 | **305,855** | 324 |
| Allendale (futures only) | 357 | 310 | **333,578** | 240 |
| Brock (cash-only) | 328 | 293 | **310,508** | 240 |
| Brock (hedge) | 370 | 322 | **345,923** | 240 |
| Freese-Notis | 311 | 286 | **298,388** | 342 |
| Pro Farmer (cash-only) | 307 | 292 | **299,543** | 324 |
| Pro Farmer (hedge) | 319 | 301 | **310,028** | 324 |
| Progressive Ag. | 316 | 309 | **312,813** | 171 |
| Stewart-Peterson Advisory Reports | 293 | 289 | **290,915** | 180 |
| Stewart-Peterson Strictly Cash | 325 | 294 | **309,573** | 99 |
| Top Farmer Intelligence | 301 | 283 | **291,860** | 180 |
| Utterback Marketing Services | 384 | 325 | **354,318** | 150 |
| Zwicker Cycle Letter | 336 | 306 | **321,218** | 239 |
| ***Descriptive Statistics:*** | | | | |
| ***Average*** | 325 | 298 | **311,500** | 279 |
| ***Median*** | 326 | 294 | **310,040** | 300 |
| ***Minimum*** | 280 | 283 | **283,220** | 99 |
| ***Maximum*** | 384 | 325 | **354,318** | 550 |
| ***Range*** | 104 | 42 | **71,098** | 451 |
| ***Standard Deviation*** | 27 | 12 | **17,412** | 102 |
| ***Market Benchmark Revenue*** | 326 | 293 | **309,575** | |

Notes: Advisory revenue per acre for corn (soybeans) is calculated as net advisory price times 140 (46.5) bushels. Market benchmark revenue per acre for corn (soybeans) is calculated as market benchmark price times 140(46.5) bushels. Total advisory revenue is calculated as (1) x 500 + (2) x 500. Advisory revenue per acre and average revenue received are stated on a harvest equivalent basis. The annual cost of a service is not subtracted from advisory revenue per acre or total advisory revenue.

**Table 4. Pricing Performance Results for Market Advisory Service Programs, Corn, Three-Year Average**

| Advisory Service Program | 1995 Net Advisory Price | 1996 Net Advisory Price | 1997 Net Advisory Price | Three-year average |
|---|---|---|---|---|
| | | ----------$/bushel---------- | | |
| Ag Alert for Ontario | N/A | 2.47 | N/A | **N/A** |
| Ag Line by Doane (cash-only) | 3.15 | 2.65 | 2.33 | **2.71** |
| Ag Line by Doane (hedge) | N/A | 2.61 | 2.29 | **N/A** |
| Ag Profit by Hjort Associates | 3.08 | 2.49 | 2.00 | **2.52** |
| Ag Resource | 3.90 | 3.12 | 2.07 | **3.03** |
| Ag Review | 2.59 | 2.76 | 2.57 | **2.64** |
| Agri-Edge (cash-only) | 3.07 | 2.62 | N/A | **N/A** |
| Agri-Edge (hedge) | 3.15 | 3.10 | N/A | **N/A** |
| Agri-Mark | 3.63 | 2.73 | 2.13 | **2.83** |
| Agri-Visor Aggressive Cash | 3.30 | 2.83 | 2.43 | **2.85** |
| Agri-Visor Aggressive Hedge | 3.10 | 2.58 | 2.41 | **2.70** |
| Agri-Visor Basic Cash | 2.72 | 2.65 | 2.34 | **2.57** |
| Agri-Visor Basic Hedge | 2.90 | 2.63 | 2.33 | **2.62** |
| Allendale (futures & options) | N/A | 2.75 | 2.38 | **N/A** |
| Allendale (futures only) | 2.46 | 2.08 | 2.55 | **2.36** |
| Brock (cash-only) | 2.75 | 2.70 | 2.34 | **2.59** |
| Brock (hedge) | 2.29 | 2.39 | 2.64 | **2.44** |
| Freese-Notis | 2.95 | 2.87 | 2.22 | **2.68** |
| Grain Field Report | 3.19 | N/A | N/A | **N/A** |
| Harris Weather/Elliott Advisory | 3.16 | 2.28 | N/A | **N/A** |
| North American Ag. | 3.22 | N/A | N/A | **N/A** |
| Pro Farmer (cash-only) | 3.16 | 2.64 | 2.19 | **2.66** |
| Pro Farmer (hedge) | 3.06 | 2.67 | 2.28 | **2.67** |
| Progressive Ag. | N/A | 2.53 | 2.26 | **N/A** |
| Prosperous Farmer | 2.91 | N/A | N/A | **N/A** |
| Stewart-Peterson Advisory Reports | 2.90 | 2.46 | 2.09 | **2.48** |
| Stewart-Peterson Strictly Cash | 2.92 | 2.68 | 2.32 | **2.64** |
| Top Farmer Intelligence | 3.17 | 2.44 | 2.15 | **2.59** |
| Utterback Marketing Services | N/A | N/A | 2.74 | **N/A** |
| Zwicker Cycle Letter | 3.15 | 2.56 | 2.40 | **2.71** |
| ***Descriptive Statistics:*** | | | | |
| ***Average*** | 3.03 | 2.63 | 2.32 | **2.65** |
| ***Median*** | 3.08 | 2.64 | 2.33 | **2.64** |
| ***Minimum*** | 2.29 | 2.08 | 2.00 | **2.36** |
| ***Maximum*** | 3.90 | 3.12 | 2.74 | **3.03** |
| ***Range*** | 1.61 | 1.04 | 0.74 | **0.67** |
| ***Standard Deviation*** | 0.33 | 0.22 | 0.18 | **0.15** |
| ***Market Benchmark Price*** | 2.90 | 2.65 | 2.33 | **2.63** |

Notes: N/A denotes "not applicable" -- program did not exist or was not evaluated for that marketing year. Net advisory price and market benchmark price are stated on a harvest equivalent basis. The market benchmark price is the average daily cash price for the two-year marketing window for each crop year.

**Table 5. Pricing Performance Results for Market Advisory Service Programs, Soybeans, Three-Year Average**

| Advisory Service Program | 1995 Net Advisory Price | 1996 Net Advisory Price | 1997 Net Advisory Price | Three-year average |
|---|---|---|---|---|
| | | ----------$/bushel---------- | | |
| Ag Alert for Ontario | N/A | 7.37 | N/A | **N/A** |
| Ag Line by Doane (cash-only) | 6.59 | 7.40 | 6.32 | **6.77** |
| Ag Profit by Hjort Associates | 6.78 | 7.13 | 6.16 | **6.69** |
| Ag Resource | 6.92 | 7.29 | 6.47 | **6.89** |
| Ag Review | 6.59 | 7.37 | 6.19 | **6.72** |
| Agri-Edge (cash-only) | 6.70 | 7.28 | N/A | **N/A** |
| Agri-Edge (hedge) | 6.62 | 7.18 | N/A | **N/A** |
| Agri-Mark | 7.94 | 7.18 | 6.68 | **7.27** |
| Agri-Visor Aggressive Cash | 6.38 | 7.28 | 6.33 | **6.67** |
| Agri-Visor Aggressive Hedge | 6.97 | 7.40 | 6.14 | **6.84** |
| Agri-Visor Basic Cash | 6.42 | 7.06 | 6.35 | **6.61** |
| Agri-Visor Basic Hedge | 6.78 | 7.46 | 6.14 | **6.79** |
| Allendale (futures only) | 6.21 | 7.30 | 6.67 | **6.73** |
| Brock (cash-only) | 6.27 | 7.20 | 6.31 | **6.59** |
| Brock (hedge) | 5.71 | 6.99 | 6.93 | **6.54** |
| Freese-Notis | 6.41 | 7.13 | 6.15 | **6.56** |
| Grain Field Report | 6.84 | N/A | N/A | **N/A** |
| Harris Weather/Elliott Advisory | 6.85 | 6.80 | N/A | **N/A** |
| North American Ag. | 6.44 | N/A | N/A | **N/A** |
| Pro Farmer (cash-only) | 6.69 | 7.31 | 6.29 | **6.77** |
| Pro Farmer (hedge) | 6.78 | 7.49 | 6.47 | **6.91** |
| Progressive Ag. | N/A | 7.80 | 6.65 | **N/A** |
| Prosperous Farmer | 6.52 | N/A | N/A | **N/A** |
| Stewart-Peterson Advisory Reports | 6.09 | 7.37 | 6.22 | **6.56** |
| Stewart-Peterson Strictly Cash | 6.28 | 7.13 | 6.33 | **6.58** |
| Top Farmer Intelligence | 6.20 | 6.84 | 6.08 | **6.37** |
| Utterback Marketing Services | N/A | N/A | 6.99 | **N/A** |
| Zwicker Cycle Letter | 6.89 | 7.67 | 6.59 | **7.05** |
| ***Descriptive Statistics:*** | | | | |
| ***Average*** | 6.59 | 7.27 | 6.40 | **6.73** |
| ***Median*** | 6.59 | 7.28 | 6.33 | **6.72** |
| ***Minimum*** | 5.71 | 6.80 | 6.08 | **6.37** |
| ***Maximum*** | 7.94 | 7.80 | 6.99 | **7.27** |
| ***Range*** | 2.23 | 1.00 | 0.91 | **0.89** |
| ***Standard Deviation*** | 0.41 | 0.23 | 0.26 | **0.20** |
| ***Market Benchmark Price*** | 6.26 | 7.11 | 6.30 | **6.56** |

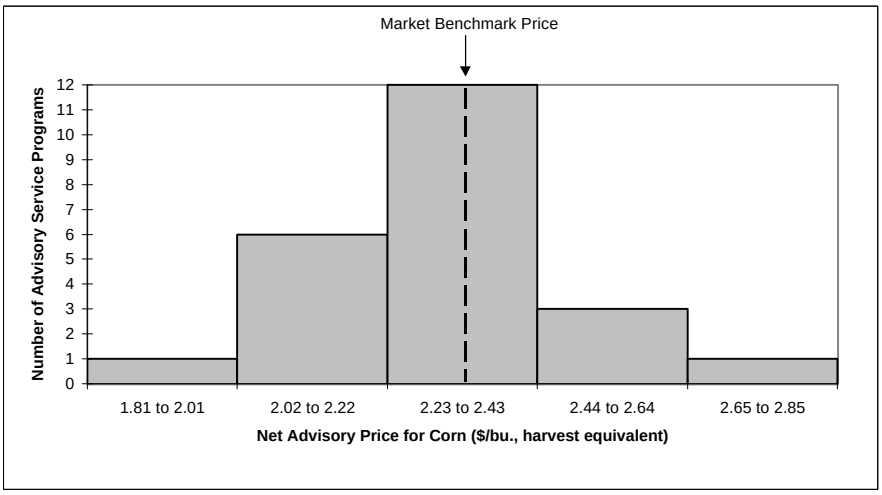
Notes: N/A denotes "not applicable" -- program did not exist or was not evaluated for that marketing year. Net advisory price and market benchmark price are stated on a harvest equivalent basis. The market benchmark price is the average daily cash price for the two-year marketing window for each crop year.

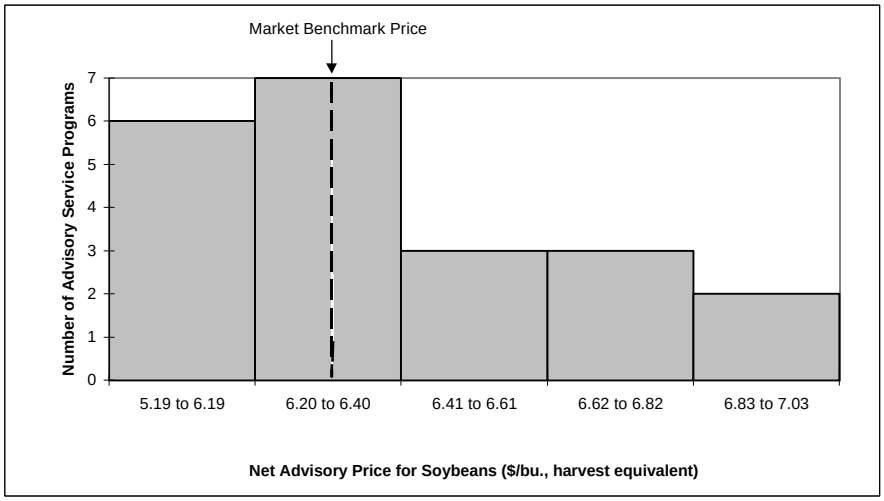
**Table 6. Pricing Performance Results for Market Advisory Service Programs, Three-Year Average Revenue for 1,000 Acre Farm**

| Advisory Service Program | 1995 Net Advisory Revenue | 1996 Net Advisory Revenue | 1997 Net Advisory Revenue | Three-year average |
|---|---|---|---|---|
| | | ---------$/1,000 acres--------- | | |
| Ag Alert for Ontario | N/A | 358,796 | N/A | **N/A** |
| Ag Line by Doane (cash-only) | 325,952 | 373,534 | 310,040 | **336,508** |
| Ag Profit by Hjort Associates | 325,654 | 355,429 | 283,220 | **321,434** |
| Ag Resource | 377,251 | 407,146 | 295,328 | **359,908** |
| Ag Review | 292,114 | 381,691 | 323,818 | **332,541** |
| Agri-Edge (cash-only) | 323,463 | 368,857 | N/A | **N/A** |
| Agri-Edge (hedge) | 326,687 | 403,363 | N/A | **N/A** |
| Agri-Mark | 382,449 | 374,843 | 304,410 | **353,900** |
| Agri-Visor Aggressive Cash | 330,432 | 385,269 | 317,273 | **344,324** |
| Agri-Visor Aggressive Hedge | 330,859 | 368,546 | 311,455 | **336,953** |
| Agri-Visor Basic Cash | 296,695 | 365,758 | 311,438 | **324,630** |
| Agri-Visor Basic Hedge | 314,650 | 373,918 | 305,855 | **331,474** |
| Allendale (futures only) | 276,717 | 327,111 | 333,578 | **312,468** |
| Brock (cash-only) | 294,956 | 373,041 | 310,508 | **326,168** |
| Brock (hedge) | 255,868 | 344,380 | 345,923 | **315,390** |
| Freese-Notis | 309,852 | 384,920 | 298,388 | **331,053** |
| Grain Field Report | 333,442 | N/A | N/A | **N/A** |
| Harris Weather/Elliott Advisory | 331,727 | 330,944 | N/A | **N/A** |
| North American Ag. | 326,746 | N/A | N/A | **N/A** |
| Pro Farmer (cash-only) | 328,594 | 370,994 | 299,543 | **333,043** |
| Pro Farmer (hedge) | 324,195 | 377,300 | 310,028 | **337,174** |
| Progressive Ag. | N/A | 373,589 | 312,813 | **N/A** |
| Prosperous Farmer | 310,139 | N/A | N/A | **N/A** |
| Stewart-Peterson Advisory Reports | 300,521 | 357,953 | 290,915 | **316,463** |
| Stewart-Peterson Strictly Cash | 305,697 | 369,976 | 309,573 | **328,415** |
| Top Farmer Intelligence | 319,018 | 344,788 | 291,860 | **318,555** |
| Utterback Marketing Services | N/A | N/A | 354,318 | **N/A** |
| Zwicker Cycle Letter | 332,238 | 373,134 | 321,218 | **342,196** |
| ***Descriptive Statistics:*** | | | | |
| ***Average*** | 319,036 | 368,553 | 311,500 | **331,716** |
| ***Median*** | 324,195 | 372,017 | 310,040 | **331,474** |
| ***Minimum*** | 255,868 | 327,111 | 283,220 | **312,468** |
| ***Maximum*** | 382,449 | 407,146 | 354,318 | **359,908** |
| ***Range*** | 126,581 | 80,036 | 71,098 | **47,440** |
| ***Standard Deviation*** | 26,503 | 19,035 | 17,412 | **12,648** |
| ***Market Benchmark Revenue*** | 304,010 | 367,128 | 309,575 | **326,904** |

Notes: N/A denotes "not applicable" -- program did not exist or was not evaluated for that marketing year.
Net advisory revenue and market benchmark revenue are stated on a harvest equivalent basis.

**Figure 1. Distribution of Market Advisory Service Pricing Performance, 1997 Marketing Period**



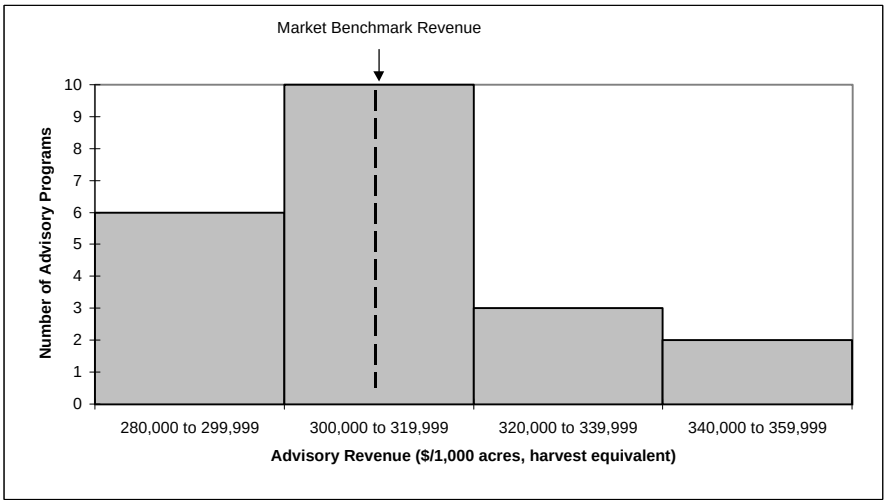



**Figure 2. Comparison of Advisory Service Pricing Performance to Market Benchmark Price, Corn, 1997 Marketing Period**

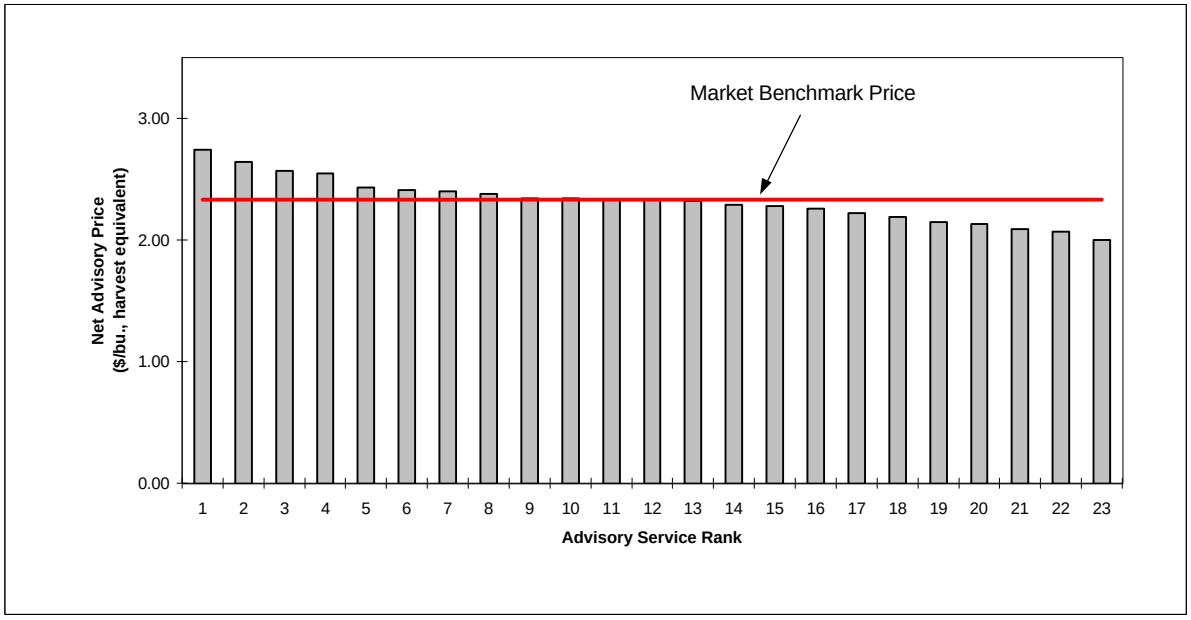



**Figure 3. Comparison of Advisory Service Pricing Performance to Market Benchmark Price, Soybeans, 1997 Marketing Period**

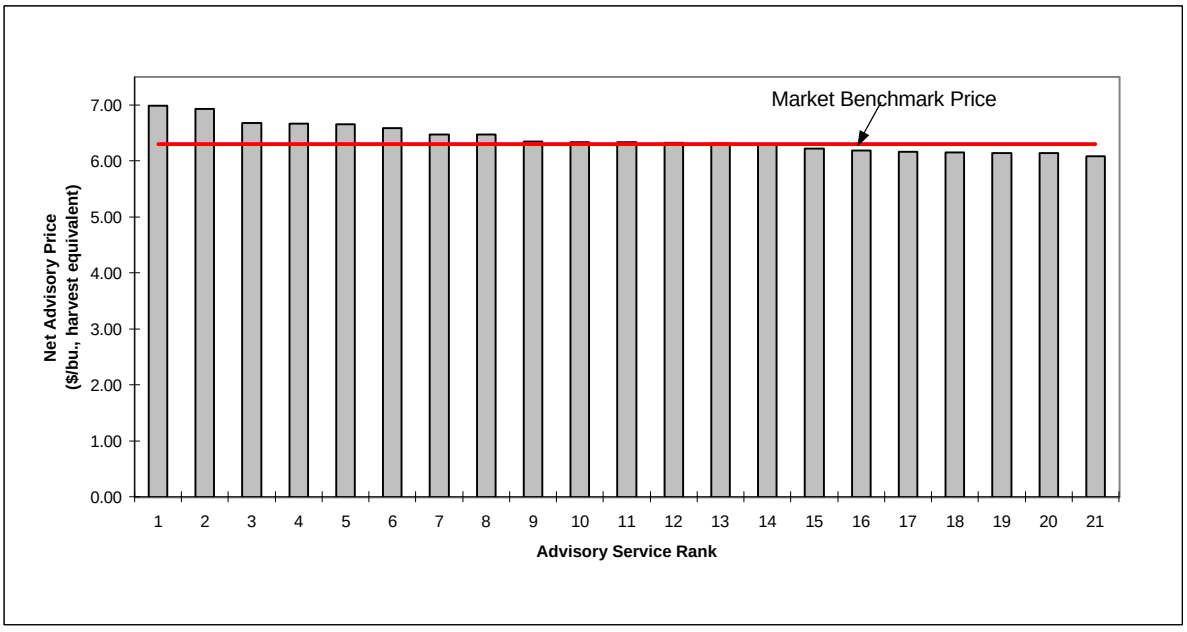


**Figure 4. Comparison of Advisory Service Performance to Market Benchmark Revenue, Corn and Soybeans, 1,000 acres, 50/50 Rotation, 1997 Marketing Period**

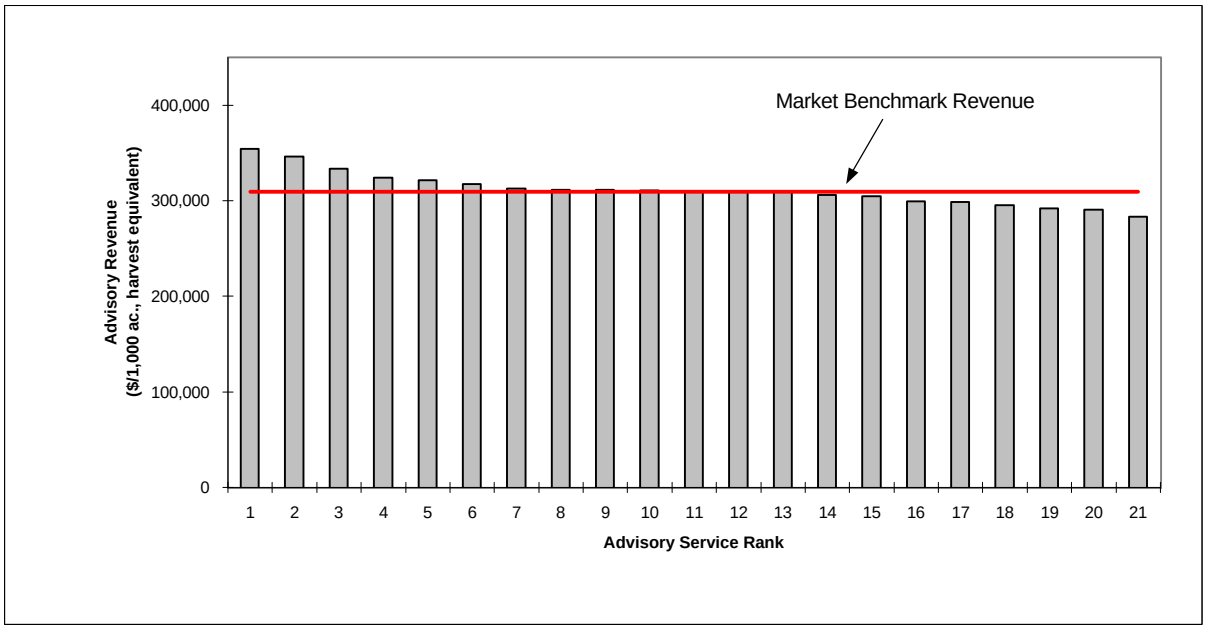
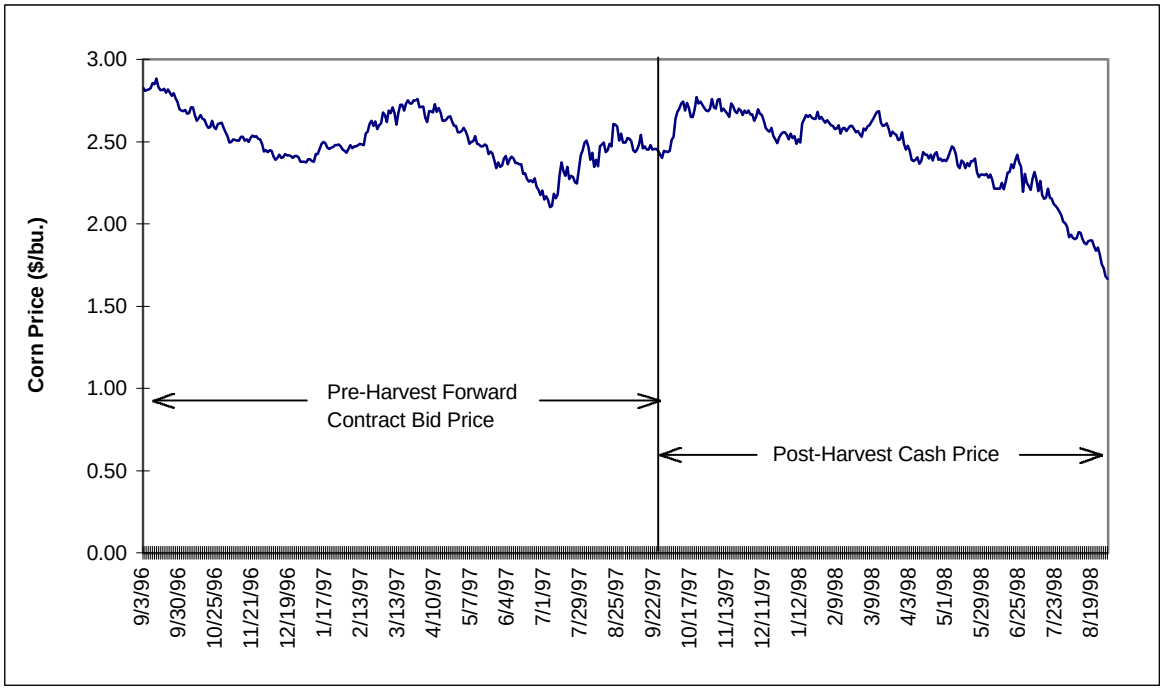


**Figure 5. Daily Corn and Soybean Prices, Central Illinois, 1997 Marketing Period**



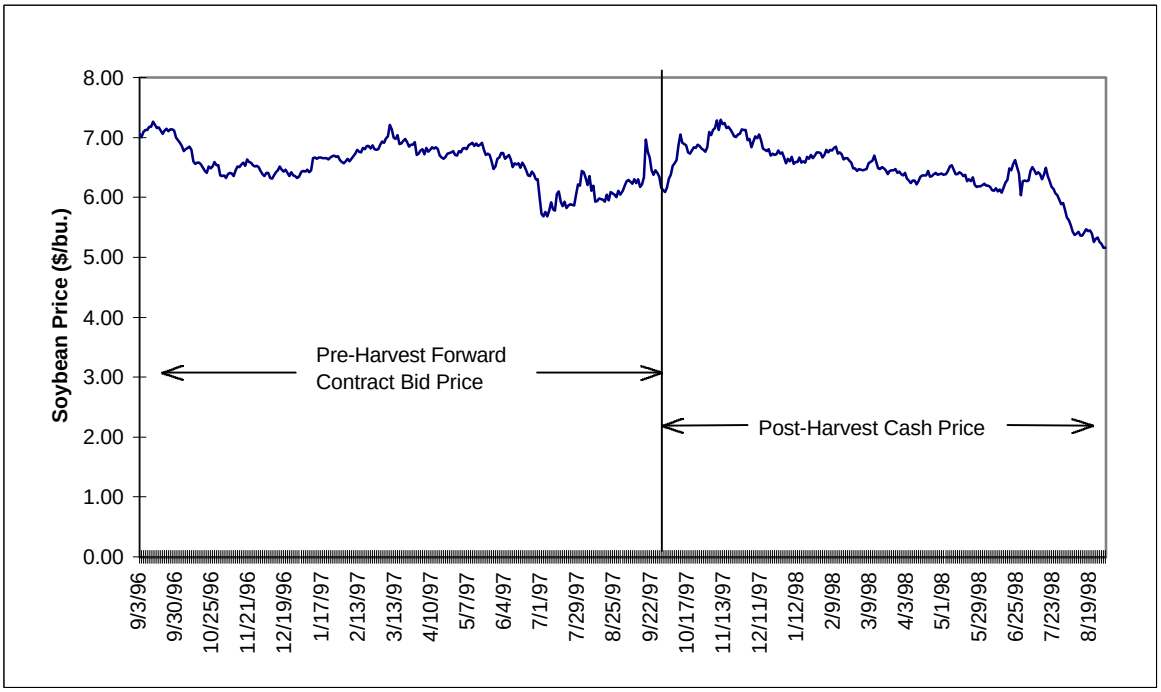
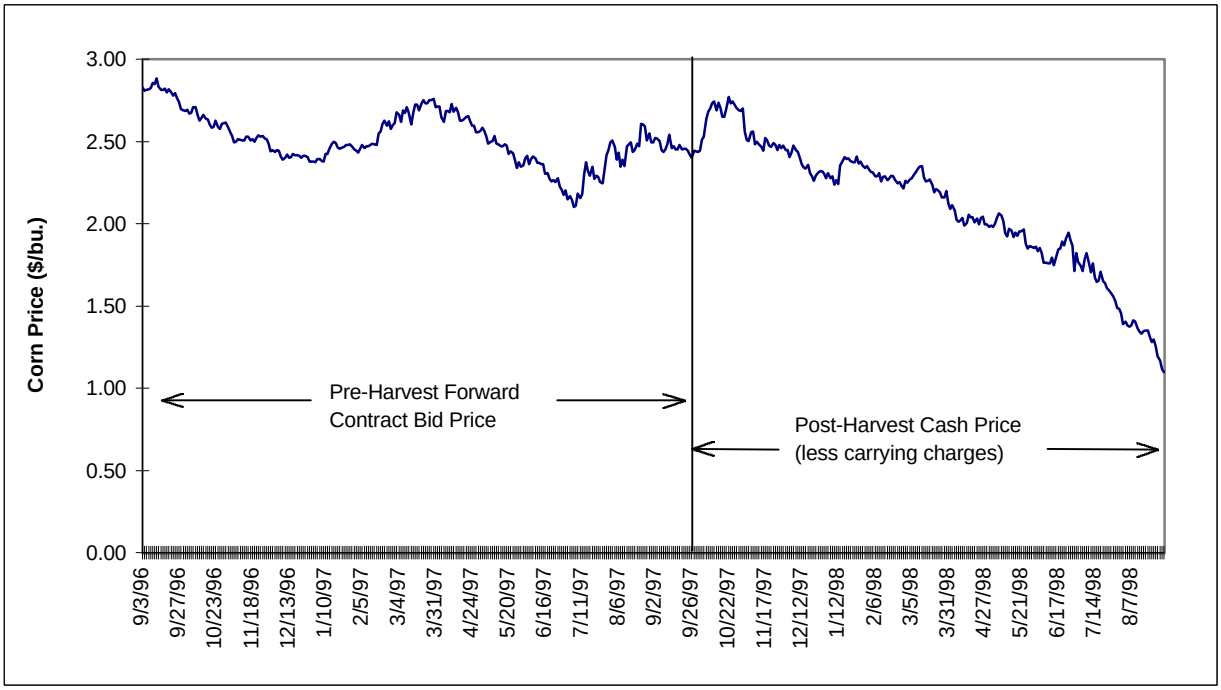



**Figure 6. Daily Corn and Soybean Prices, Central Illinois, 1997 Marketing Period (adjusted for full carrying charges)**



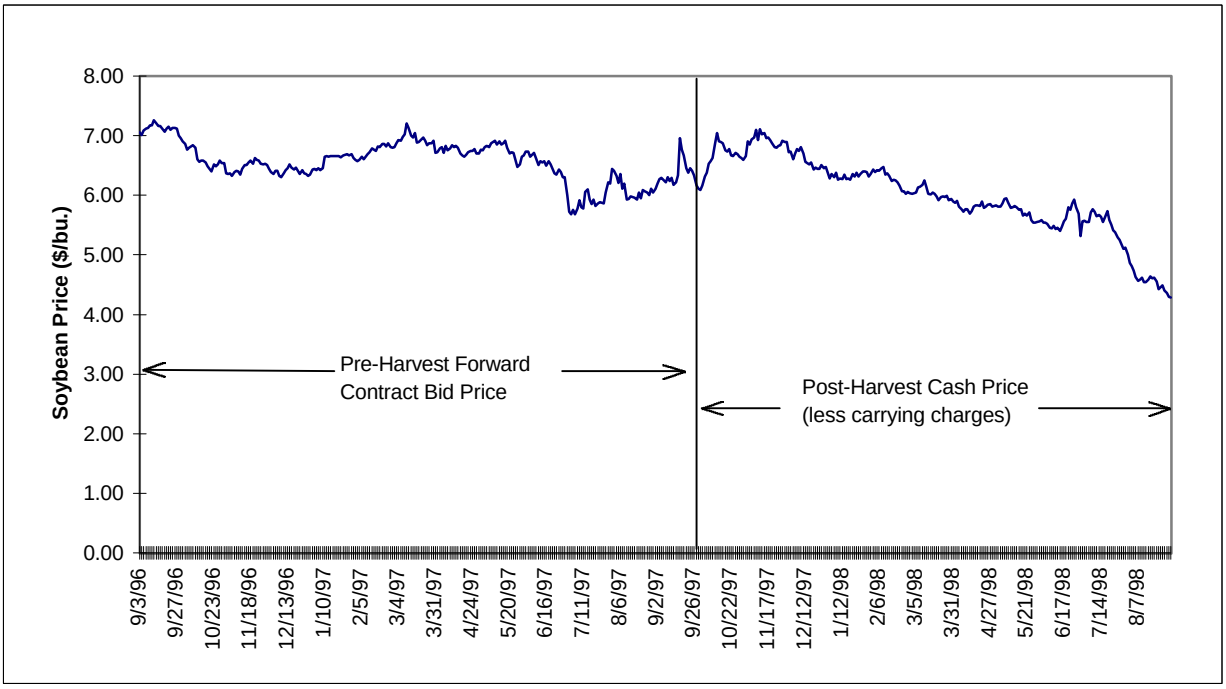
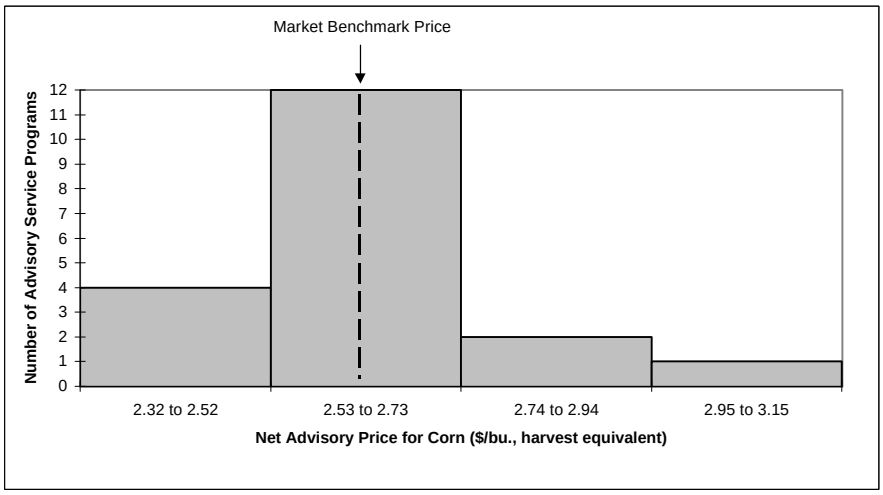
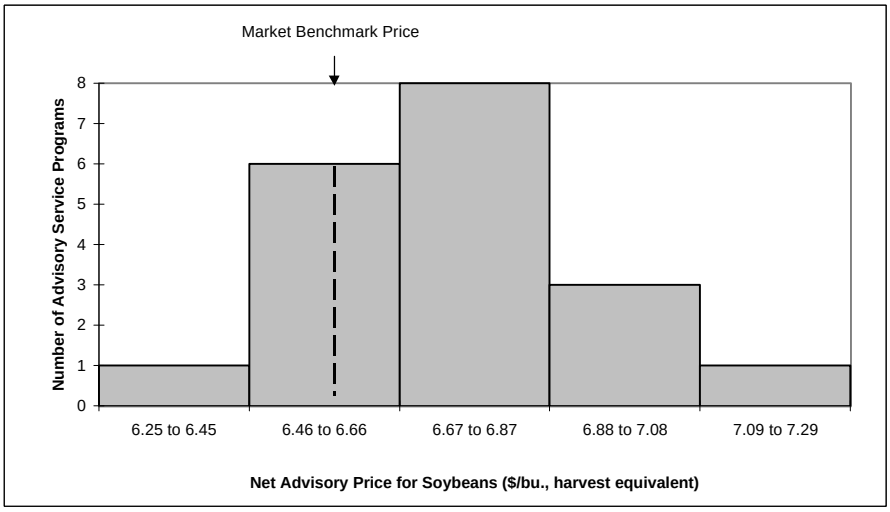



**Figure 7. Distribution of Market Advisory Service Pricing Performance, Three-year Average**



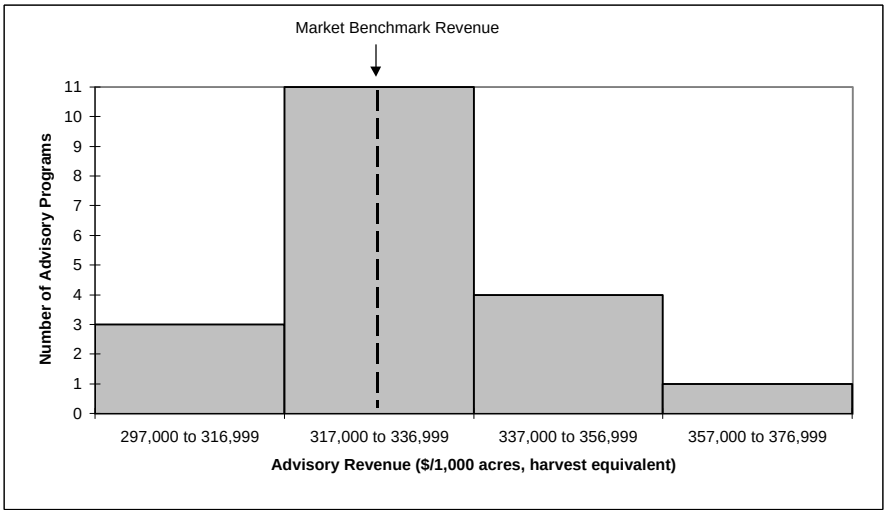



**Figure 8. Comparison of Advisory Service Pricing Performance to Market Benchmark Price, Corn, Three-year Average**

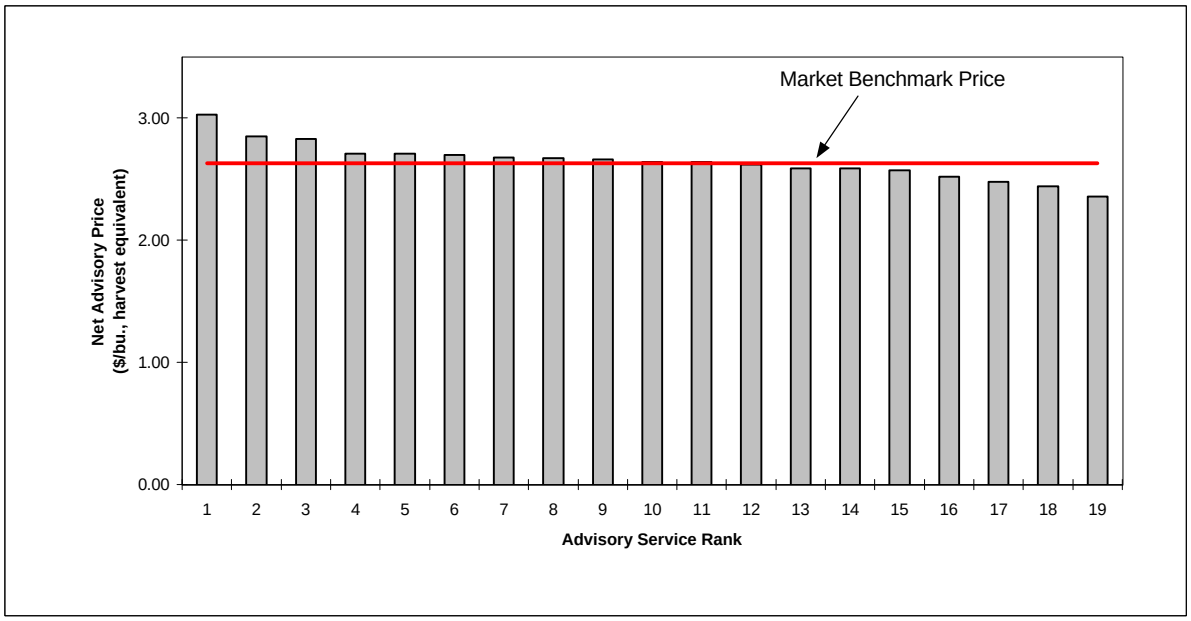



**Figure 9. Comparison of Advisory Service Pricing Performance to Market Benchmark Price, Soybeans, Three-year Average**

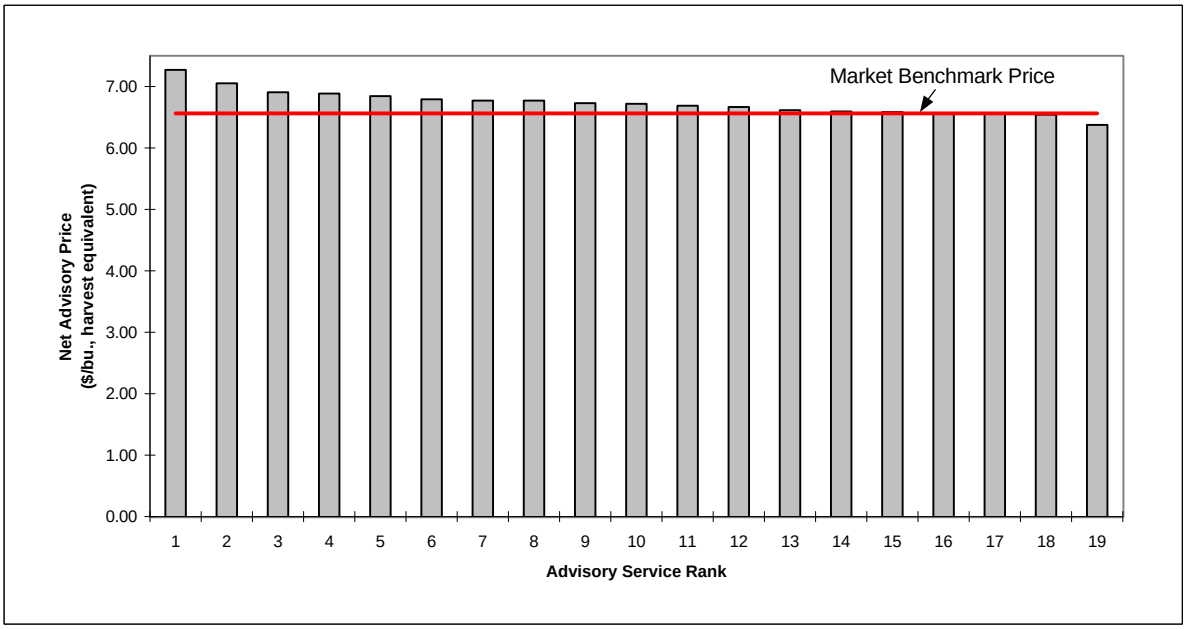


**Figure 10. Comparison of Advisory Service Performance to Market Benchmark Revenue, Corn and Soybeans, 1,000 acres, 50/50 Rotation, Three-year Average**