

Marketing

Steve Riggins

Acreage devoted to corn production in Kentucky has been quite stable ever since farmers have had time to adjust to the new lower loan rates for corn that came out of the 1985 Farm Bill. The government programs of the 1970s and the 1980 law led to increases in corn acres both nationally and in Kentucky (Figure 1). These programs had built-in adjustments for higher loan rates if costs of corn production increased. Very sharp increases in energy cost and increases in interest rates produced higher loan rates and guaranteed minimum prices for farmers participating in the feed-grain government program. In contrast, the soybean loan rate was frozen.

As stockpiles of corn grew and corn exports remained relatively flat in the United States, prices to farmers fell sharply, except during a few drought years when supply was reduced. The 1985 farm law changed the way loan rates were determined, and the 1990 and 1996 laws continued that approach. The average corn loan rate in the United States has been stable at \$1.89 per bushel since 1994.

Yield-enhancing technology, however, has continued to propel production ever higher, with national average corn yields improving about 1.7 bushels per acre per year. Annual yield improvement in Kentucky has just about matched the national rate of increase at 1.6 bushels per acre per year. It is also apparent that Kentucky corn yields closely track national corn yields in most years. However, the years 1997, 1998, and 1999 were evidence that sometimes Kentucky corn yields don't mirror what happens in the corn belt (Figure 2).

As acreage devoted to corn production has remained relatively flat and while yield has steadily improved, the number of farms that grow corn in Kentucky has dropped significantly over the past several years (Table 1).

It is also apparent from Table 1 that farms with small corn acreages are dropping out while the number of the largest corn farms are increasing their share of total state corn production.

As the concentration of corn (and soybean and wheat production) increases, so does the concentration within the agribusiness sector serving grain farms. According to the *Directory of the Kentucky Feed & Grain Association of 1994*, there were 194 licensed grain dealers and warehouses, while the most recent listing indicates there are only 181 such entities. Additionally, the *Kentucky Fertilizer & Agricultural Chemical Association Directory of 1994* listed 143 different firms as members, while the 2001 directory contains a listing for 120 different firms.

Data from the most recent issue of *Kentucky Agricultural Statistics (1999-2000)* also support the idea of a mature corn industry in Kentucky that is increasingly becoming more concentrated at both the farm and associated agribusiness level. The number of commercially operated off-farm grain storage facilities has dropped from 224 in 1985 to 217 in 1999, while total storage capacity has essentially remained stable. In addition, on-farm rated grain storage capacity has remained relatively unchanged at approximately 180 million bushels (Table 2). It will be interesting to observe what happens to grain storage capacity with time under the more "market oriented" 1996 Farm Bill. The excellent weather and resulting large crops have created a very strong

Figure 1. Kentucky harvested corn acreage.

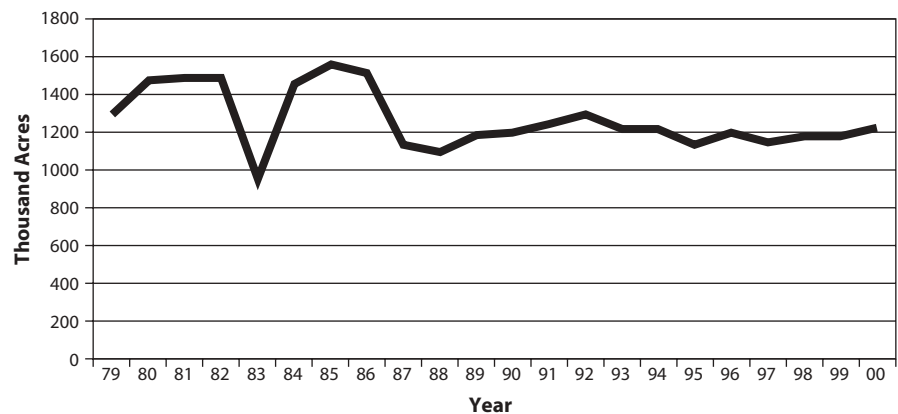


Figure 2. U.S. and Kentucky corn yields.

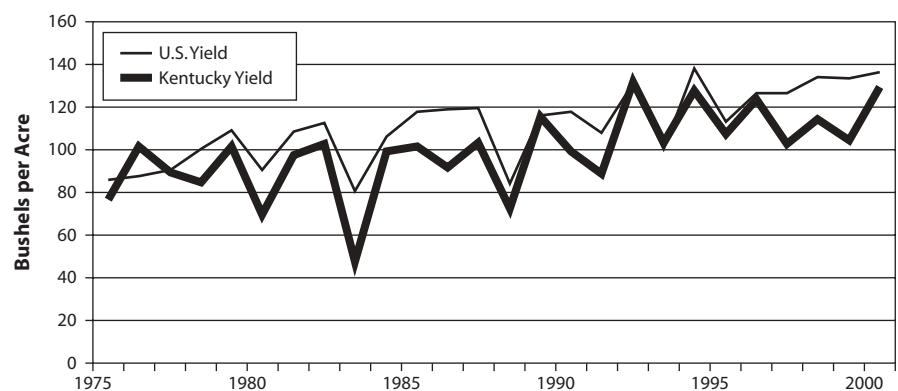


Table 1. Number of corn farms in Kentucky by size 1987-1997.

	1987	1992	1997
Corn for grain (all farms)	25,067	16,945	11,021
1-14 acres	13,147	7,293	4,060
15-24 acres	3,657	2,315	1,440
25-49 acres	3,642	2,692	1,615
50-99 acres	2,209	1,897	1,408
100-249 acres	1,555	1,599	1,390
250-499 acres	598	716	607
1,000 acres or more	48	109	157
Total number of all farms	92,453	90,281	82,273

Source: Census of Agriculture. Various issues.

Table 2. Kentucky off-farm and on-farm grain storage capacity: December 1, 1985-1999.

	Off-farm storage		On-farm storage
	Number of facilities	Rated storage capacity (1,000 bu)	Rated storage capacity (1,000 bu)
1985	224	56,350	NA
1990	262	61,350	190,000
1994	238	57,500	180,000
1995	236	55,510	170,000
1996	233	57,820	190,000
1997	229	59,250	180,000
1998	218	58,870	180,000
1999	217	59,200	180,000

Source: Kentucky Ag Statistics 1999-2000.

“carry” in the market for grain storage. Casual observation indicates that farmers have responded in the past 18 to 24 months by adding significantly to on-farm storage capacity. This should begin to show up in the Kentucky Agricultural Statistics reports starting with the 2000-2001 issue.

The mature corn and soybean/wheat industry and the increasing concentration of grain production implies that competition for available land base for grain production will be very intense and result in very thin average operating margins over time for grain farmers. In years of above-average yields, farmers should earn ample profits, while in poor yielding years, it will be nearly impossible for non-owned land to cash flow.

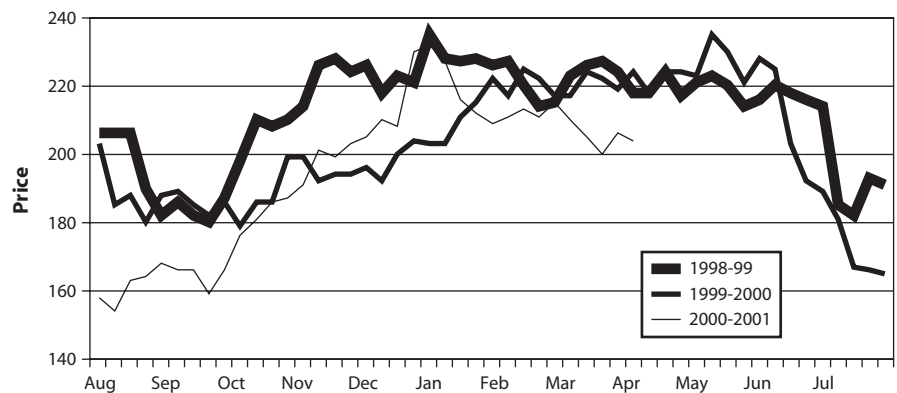
The skill or luck involved in the timing of the pricing decision is one area that could make a difference in farm survivability. Recent weekly corn price data from the Green River area of Kentucky serve to illustrate both the within-season and season-to-season price variability faced by Kentucky grain farmers. At first glance, the price pattern for the past three crop seasons looks remarkably similar. However, the September/early October 2000 price was some 15 to 20 cents per bushel less than the price from the same time period for the 1998 and 1999 crops. At the 2000 Kentucky corn average yield of 130 bushels per acre, that difference represents \$20 to

\$25 per acre, a substantial sum for a typical Kentucky large grain farm. The within-season price range for the 2000-crop corn marketing year in this area ranged from just under \$1.60 per bushel at harvest to more than \$2.30 per bushel in late December, and back down to \$2.00 in late March 2001 (Figure 3). With perfect hindsight, it is clear that cash receipts per acre could have varied as much as \$90 (70 cents/bu x 130 bu yield). This is on a farm with average state yields for that crop year. Clearly farmers stand to benefit from improving both their production skills as well as their marketing skills.

In an attempt to better understand current pricing and marketing practices of large Kentucky grain farms, survey data were collected from a non-random sample of Western Kentucky grain producers. The full details of this research are contained in

“Pricing Practices of Selected Western Kentucky Grain Farms,” Agricultural Economics Extension No. 2000-12, published by the University of Kentucky Cooperative Extension Service in May 2000. The following sections of this paper draw heavily on that report.

Usable data were obtained from 130 farms in 11 counties in Western Kentucky. The average farm in the survey cropped 624 acres of corn, 617 acres of soybean, and 211 acres of wheat. In addition, these farms averaged slightly more than 55,000 bushels of grain storage capacity, frequently an important component of a grain marketing plan. Based on average state yields for corn, soybean, and wheat, the average sample farm of 1,452 acres controlled sufficient grain storage capacity to cover about half of their expected total grain and soybean production.

Figure 3. Cash corn prices—Green River area.

Pricing Methods

The specific aim of this research project was to discover the method(s) and time frame most often employed by grain producers to price and market their crop production. Farmers were asked to indicate the percentage of each crop (corn, soybean, wheat) they had priced via 11 different techniques over the 1995 through 1997 crop marketing seasons (Table 3). They were instructed to account for 100 percent of each crop each season. The 11 marketing methods and a short description, if necessary, follows:

1. Cash out-of-field—no explanation necessary.
2. Cash out-of-bins—farmer owns bins or elevator storage program; grain still owned by farmer.
3. Elevator cash-forward contract—traditional cash contract for future delivery.
4. Elevator basis contract—quantity/delivery date specified in advance of delivery; basis negotiated on initial contract date; title transfers to elevator at delivery; farmer may or may not receive any cash at delivery; final pricing could be before or after delivery, typically at or after delivery; final pricing must occur by definite date, or farmer must negotiate new ending date and pay additional fees.
5. Elevator delayed price (DP) contract—farmer delivers grain; may or may not receive any cash at delivery; title transfers to the elevator; farmer must set final cash price by set date or pay fees to “roll” the contract to a later date.
6. Elevator hedge-to-arrive (HTA) contract—specific futures contract month and price and a specific quantity negotiated prior to delivery; basis typically negotiated at or prior to delivery.
7. Elevator minimum price contract—minimum price; quantity and delivery date set on initial contract date; elevator typically shorts the appropriate futures contract month and buys an appro-

Table 3. Farmers' marketing methods: Corn.

		Farmers using this technique	% of farmers reported using this technique	Average % of crop marketed by this method	
1.	Cash out-of-field	COF	80	61.5	16.8
2.	Cash out-of-bins	COB	84	64.6	28.2
3.	Elevator cash-forward contracts	El.FC	77	59.2	26.3
4.	Elevator basis contracts	El.BC	24	18.5	4.1
5.	Elevator delayed price (DP) contracts	El.DPC	43	33.1	10.3
6.	Elevator hedge-to-arrive contracts	El.HTA	19	14.6	3.4
7.	Elevator min price contract	El.MPC	2	1.5	0.1
8.	Futures markets plus cash sales	FH+Cash	7	5.4	1.6
9.	Futures markets plus elevator contracts	FH+El.C	8	6.2	0.0
10.	Futures options plus cash sales	FO+Cash	6	4.6	0.7
11.	Futures options plus elevator contracts	FO+El.C	7	5.4	1.4

priate call option strike price and delivery month; they charge the farmer all costs plus an additional service fee; final total net farm price is established on delivery date.

8. Futures market plus cash sale—cash sales could be from field or bin; futures transaction could be a short hedge coupled with a later cash sale, or it could be the purchase of a long futures position as a replacement for a cash sale.
9. Futures market plus cash forward contract sale—offset short hedge and replace with cash contract or add a long futures position to an existing cash forward contract.
10. Futures options plus cash sales—cash sales could be from the field or bin; could buy a put first and sell cash grain later; could sell cash grain first and replace with the purchase of a call option.
11. Futures options plus elevator contracts—could be the purchase of a call option combined with an elevator cash forward contract; could also be offsetting a put option and converting to a cash forward contract.

Clearly, the 11 pricing methods do not cover all possible convolutions of marketing methods that could be devised or offered by the marketplace. However, the authors believe the

above list of methods account for essentially all pricing methods currently in use in Kentucky. Additionally, it should be noted that methods eight through 11 could involve some slight variations beyond those listed in the above explanation. The goal of the survey instrument was to measure the degree of use of futures and futures options market in a general sense, not as an exact measurement of each possible variation of use of these methods.

Nearly two-thirds of the respondents in the survey reported using cash out-of-bins as a marketing method for corn (Table 3). This was closely followed by cash-out-of-field and elevator cash forward contracts as the methods used by most farmers in the sample data. A sizeable percentage of farmers, 18.5 percent, also used DP contracts, while 14.6 percent of farmers in the sample also used HTA contracts. The number of farmers in the sample who reported using futures or options as marketing methods during the 1995-1997 crop marketing years was very modest, ranging from 4.6 percent to only 6.2 percent.

When asked to identify the percent of their corn crop marketed by each method, farmers showed the strongest preferences for cash-out-of-bins and cash-forward contracts as the two dominant marketing methods. These two methods accounted for nearly 55 percent of all sales during the three-

year period examined by the survey instrument. Cash-out-of-field (16.8 percent) accounted for the third largest percentage of corn marketings among farmers in the survey. DP contracts, at slightly more than 10 percent, was the only other method with double digit use by farmers marketing corn. The top four marketing methods (two cash strategies and two elevator contracts) represented more than 81 percent of all corn sales by survey respondents. In contrast, the four methods involving the use of futures and options markets accounted for less than 6 percent of total marketings. Even though farmers were instructed to account for all sales, some did not do so; therefore, total sales from all methods only adds to 95 percent.

Contract Delivery Periods

Farmers make extensive use of elevator contracts as a method of marketing corn, soybean, and wheat. The 130 farmers represented in this sample priced 26 percent, 24 percent, and 26 percent, respectively, of their corn, soybean, and wheat with cash-forward contracts. Additionally, other types of elevator contracts accounted for 18 percent of corn sales, 32 percent of soybean sales, and 12 percent of wheat sales. The primary delivery period for contracted corn was January-February, followed by the "Fall" period while March-May was the third most contracted delivery time period (Table 4). Farmers were supposed to account for 100 percent of all contracted grain; however, some failed to do so, leaving nearly 16 percent of all contract sales unaccounted for from a delivery time perspective.

Table 4. Periods of contract delivery: Corn.

	Average % of crop contracted for delivery during specified period
June-July	2.0
Aug-Sept	6.5
"Fall"	25.2
Jan-Feb	38.1
Mar-May	12.5

Timing of Grain Sales

Timing of grain sales is a question of interest in understanding farmers' marketing habits. The survey form broke the marketing year into seven time periods (Table 5) and asked farmers to indicate the percentage of each crop priced during each period. Clearly, the period identified as more than a month after harvest is the most used time period for pricing corn. The second major pricing period is the period labeled as more than a month before planting. Together these two time periods account for 53 percent of annual corn pricing decisions. It is also clear there could be some overlap between these two ill-defined time periods. These results are consistent with the earlier data for corn that indicate a heavy reliance on cash-out-of-bins, cash-forward contracts, and DP contracts as significant pricing methods and the corn data on contract delivery periods that indicate the January-February and March-May time periods as the two major periods of contract delivery. The data are also consistent with the harvest season being the third most important pricing period and cash-out-of-field being the third most used pricing method.

Information obtained from the survey results concerning farmers' use of futures options was somewhat consistent. Farmers were asked how many total times over the past three marketing years they had used options to set price floors prior to any active pricing on the cash side and how many times they had used options to par-

ticipate in a futures market rally after they had priced the cash grain. They were also asked to list the total number of puts and calls (by crop) they had purchased over the same time period (Table 6). As an example, corn farmers had used options to set price floors 142 times, and they claimed to have purchased 134 puts, "reasonably close." They also claimed to have used options 97 times to participate in a futures market rally after they had priced cash corn and they purchased 109 calls.

Only nine of the 130 farmers claimed to have speculated in the options market over the time period surveyed. Essentially all of this activity was focused on corn, with 35 puts sold and 25 calls sold. There were three soybean puts sold and four soybean calls sold. For wheat, only two call contracts were sold as speculative positions, while no puts were sold.

Factors Influencing Pricing Decisions

Survey respondents were asked to rank, from 1 to 10 (with 10 being the most important), their sources of information and contingent factors that influenced the pricing decisions for their crops. Satellite market information systems were the top choice among the 10 provided on the survey form (Table 7). Marketing newsletters and private consultants also ranked high in the farmer survey. Neighbors, bankers, and cash flow needs/requirements were less well regarded as aids in making crop pricing decisions.

Table 5. Timing of pricing decisions: Corn.

	Total responses per each	% of farmers reported using this technique	Average % marketed at this time	Code
More than a month before planting	68	52.3	13.9	BePlnt
During planting season	35	26.9	5.4	@Plnt
Planting until mid-season	47	36.2	7.8	Plnt-Mid
Mid-season until crop maturity	55	42.3	10.3	Mid-Mat
During harvest season	56	43.1	12.7	@Harv
During month after harvest	35	26.9	7.6	AftHar
More than a month after harvest	94	72.3	39.1	>1moAftHar

Table 6. Direct use of futures and options markets by farmers.

		Corn	Soybean	Wheat
Short hedge:	Contracts	407	220	143
	Farmers who speculated	17	16	8
Option use:	Before pricing	142	67	37
	After pricing	97	94	67
Options bought:	Puts bought	134	51	42
	Calls bought	109	72	89
	Farmers who sold options (all grains)	9		
Options sold:	Puts sold	35	3	0
	Calls sold	25	4	2

Table 7. Farmers' sources of marketing decision information: All grains.

	Rank¹	
Grain dealer	7	G.D.
Private market consultant	8	P.MktC.
Commodities broker	4	CmBro.
University resource	6	U.K.
Banker/Lender	2	Bank
Marketing newsletter	9	Mktlet.
Satellite market info. system	10	S.Mktinfo
Mass media	5	MassM
Neighbor	1	N. Farm
Cash flow	3	Cash FI

¹Rank over the survey population (10 = most important source or factor).

Conclusions

The farmers who participated in this non-random sample farm much larger acreages than are common for non-grain farms in Kentucky. These farmers also own or control sufficient on-farm storage to handle about half of their expected annual grain production. This group of farmers relies heavily on the latest communication technology and paid professionals for marketing advice and assistance. While the group as a whole does not

make heavy use of futures or options markets to price grain directly, they also sell less than 17 percent of their corn and less than 15 percent of their soybean directly out of the field at harvest. These farmers make significant use of on-farm storage to contract for mid-to-late winter delivery, they contract in late winter and early spring for harvest and fall delivery, and they also store sizeable quantities unpriced to sell after harvest.

This survey did not address the question of whether farmers are doing a good job of marketing. That is a very complicated question to answer. Clearly, these farmers are actively seeking marketing advice, and they are trying to spread sales throughout the marketing year. They are also employing a wide array of marketing methods. These are all signs of strong marketing skills. It is possible that increased use of futures and options markets by farmers could be beneficial, but that is a testable hypothesis, not a fact.