

Pricing Practices of Selected Western Kentucky Grain Farms

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Farmers have been encouraged and advised for many years to “improve” their marketing skills. Many individuals and institutions have increased the quantity and volume of this rhetoric since the passage of the 1996 farm bill. The argument has been advanced that the 1996 farm bill has created more risk for farmers due to the elimination of target prices, deficiency payments and land set-aside requirements, increased planting flexibility and the operation of the marketing loan program. Therefore, farmers are expected to be exposed to greater risk from both price and yield fluctuations. To deal with this increased risk exposure farmers are encouraged to learn how to use futures and options markets and various insurance products.

A survey was undertaken during the winter of 1997-98 to gather data from grain farms in Kentucky about their marketing practices. These data were obtained from 130 farmers in 11 counties via a written survey instrument administered by the county agricultural agent in each county. The respondents were selected/solicited by the agent. No uniform procedure was followed in every county. In some

counties, agents mailed the survey to farmers on their grain farmer mailing list; in other counties, the farmers were selected by the agent. It is, therefore, not possible to use the results from these surveys to generalize about the marketing habits of all grain farms within the State. However, the authors believe these farmers to be reasonably representative of a “typical” grain farm located in the western half of the State. This is only conjecture.

Farm Characteristics

The counties surveyed are located in crop reporting districts 1 and 2. These two districts, the farthest west in the state, typically account for 75 to 80 percent of total Kentucky corn, wheat and soybean production. According to the most recent census the average Kentucky farm contains only 158 acres. The survey farms are much larger than farms in other parts of the state. The average farm in the survey data cropped 624 acres of corn, 617 acres of soybeans and 211 acres of wheat each year for the 1995-1997 crop years (Table 1 and Figure 1). The largest corn farms were located in Union

Table 1: Crop Acres and Yields by County (1995-1997 averages)

County	Code	Acres of Corn per farm	Acres of Soybeans per farm	Acres of Wheat per farm	Avg Yield of Corn	Avg Yield of Soybeans	Avg Yield of Wheat
Average Acreage/farm	AA/F	624	617	211	123	38	38
Daviess	Dav	385	399	66	116	38	32
Webster	Web	413	405	45	123	40	22
Hancock	Han	253	345	125	115	35	45
Union	Uni	1217	1077	224	119	44	44
Henderson	Hen	653	695	103	110	37	46
Ohio	Ohi	463	627	67	129	34	29
Christian	Chr	800	762	651	139	35	58
Caldwell	Cal	700	800	0	118	40	0
Crittenden	Crit	125	50	0	105	35	20
McClellan	McC	229	270	80	110	33	26
Hopkins	Hop	236	260	65	129	42	35

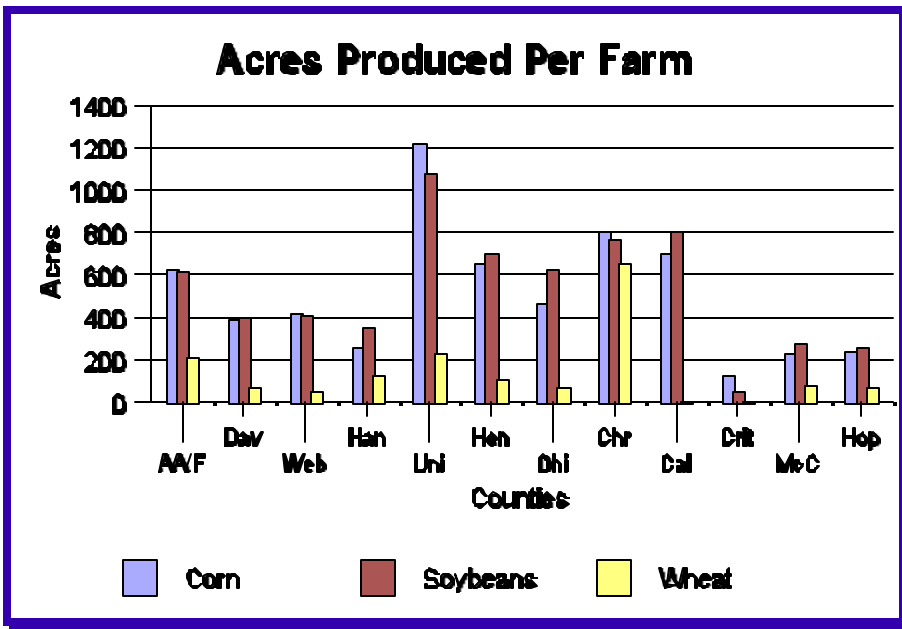


Figure 1

This survey was designed to gather information on farmers crop pricing practices. Grain storage capacity can be a major factor in determining the methods and timing used to make pricing decisions. The 130 farms covered by the survey average slightly more than 55,000 bushels of storage when own-farm storage is combined with storage available on rented land (Table 2). As expected, the largest farms (Union County) had the greatest amount of storage with an average of 136,000 bushels (Figure 2). Likewise, the county with the smallest

County, the number one corn producing county in Kentucky, and Christian County (typically number 1 or 2 in wheat acres) had the farms with the most wheat acres. Union County, which typically is number two in soybean production, following Daviess County, also averaged the most acres of soybeans in the survey data.

farms, Crittenden County, had the least amount of storage available per farm. However, it should be noted that there were only two respondents in Crittenden and Caldwell Counties. In total, farmers had access to an average of 5.3 bins. Additionally, expected production for the sample average farm of 1452 acres, based on 1995-97 crop yields, indicates that average total grain

Table 2: Grain Storage By County

County	Code	Total Number of Farms	Grain Storage own farm (in Bushels)	Avg. # of bins per own farm	Grain Storage rented farm (in Bushels)	Avg. # of bins per rented farm	Avg. Grain Storage per farm (in Bushels)
Daviess	Dav	11	204000	3.2	88000	1.4	26545
Webster	Web	28	794000	3.6	300500	1.3	39089
Hancock	Han	10	268800	3.7	50000	0.9	31880
Union	Uni	17	1803000	6.2	516500	2.4	136441
Henderson	Hen	9	239000	2.4	131500	1.2	41167
Ohio	Ohi	7	659200	5.0	32000	0.6	98743
Christian	Chr	22	1162400	7.1	505500	2.6	75814
Caldwell	Cal	2	94000	4.5	25000	1.0	59500
Crittenden	Crit	2	49000	3.0	0	0.0	24500
McClellan	McC	16	542000	3.9	168500	1.4	44406
Hopkins	Hop	6	186000	3.0	0	0.0	31000

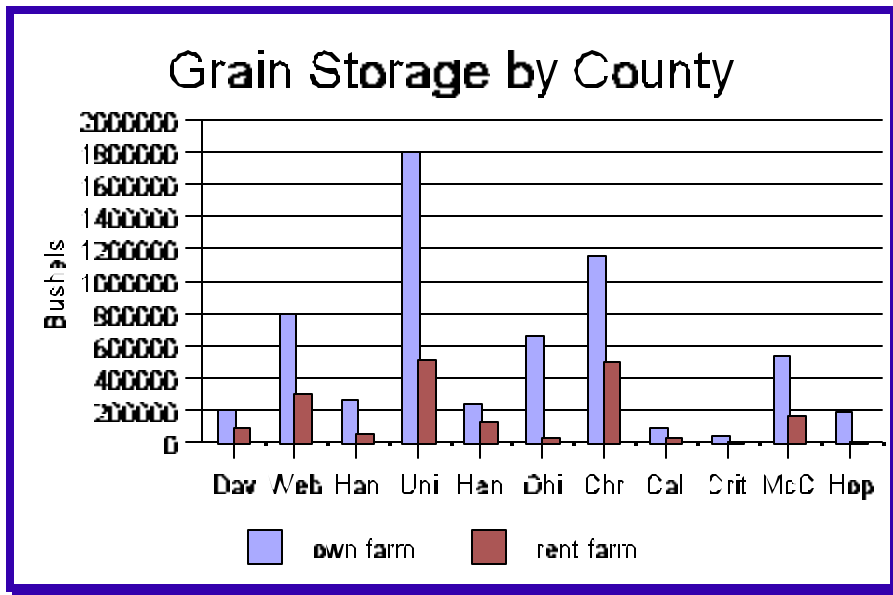


Figure 2

priced via 11 different techniques over the 1995-1997 crop marketing season's (Table 3). They were instructed to account for 100% of each crop each season. The 11 marketing methods and a short description, if necessary, follows:

- A) cash out of the field — no explanation necessary
- B) cash out of the bins — farmer owned bins or elevator storage program; grain still owned by farmer

production per farm would be about twice the available farmer controlled storage space.

Pricing Methods

Farmers were asked to indicate the percentage of each crop (corn, soybeans, wheat) they had

- C) elevator cash forward contract — traditional cash contract for future delivery
- D) 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,

Table 3: Farmers Marketing Methods: Corn

		Farmers Using this Technique	% of Farmers Reported Using this Technique	Average % of Crop Marketed by this Method
A) Cash out-of-field	COF	80	61.5	16.8
B) Cash out-of-bins	COB	84	64.6	28.2
C) Elevator cash forward contracts	EI.FC	77	59.2	26.3
D) Elevator basis contracts	EI.BC	24	18.5	4.1
E) Elevator delayed price (DP) contracts	EI.DPC	43	33.1	10.3
F) Elevator hedge-to-arrive contracts	EI.HtoA	19	14.6	3.4
G) Elevator min price contract	EI.MPC	2	1.5	0.1
H) Futures markets plus cash sales	FH+Cash	7	5.4	1.6
I) Futures markets plus elevator contracts	FH+EI.C	8	6.2	0.0
J) Futures options plus cash sales	FO+Cash	6	4.6	0.7
K) Futures options plus elevator	FO+EIC	7	5.4	1.4

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.

- E) 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 latter date.
- F) 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.
- G) 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 appropriate 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.
- H) 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.
- I) 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.

- J) options and cash sales— cash sales could be from the field, or bin. Could be buy a put first and sell cash grain latter; could be sell cash grain first and replace with the purchase of a call option.
- K) options and 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 market place. However, the authors believe the above list of methods account for essentially all pricing methods currently in use within the State. Additionally, it should be noted that methods H-K 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.

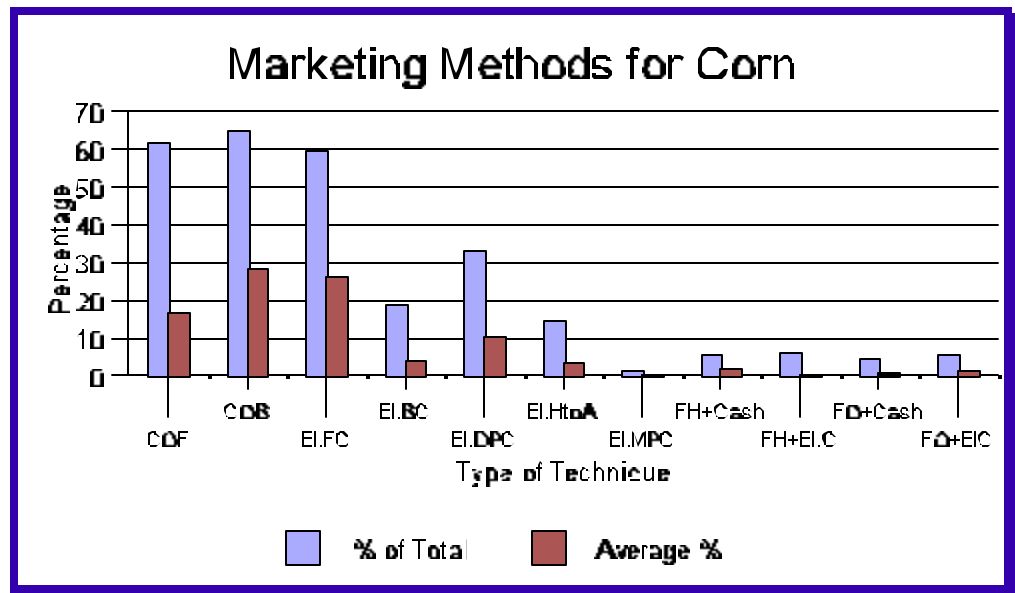


Figure 3

Table 4: Farmers Marketing Methods: Soybeans

			Farmers Using this Technique	% of Farmers Reported Using this Technique	Average % of Crop Marketed by this Method
A)	Cash out-of-field	COF	71	54.6	14.8
B)	Cash out-of-bins	COB	69	53.1	23.5
C)	Elevator cash forward contracts	EI.FC	75	57.7	23.7
D)	Elevator basis contracts	EI.BC	26	20.0	5.6
E)	Elevator delayed price (DP) contracts	EI.DPC	68	52.3	23.1
F)	Elevator hedge-to-arrive contracts	EI.HtoA	13	10.0	3.6
G)	Elevator min price contract	EI.MPC	1	0.8	0.1
H)	Futures markets plus cash sales	FH+Cash	7	5.4	0.8
I)	Futures markets plus elevator contracts	FH+EI.C	4	3.1	0.5
J)	Futures options plus cash sales	FO+Cash	5	3.8	0.7
K)	Futures options plus elevator contracts	FO+EIC	3	2.3	0.5

Nearly two-thirds of the respondents in the survey reported using cash out-of-the-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%, also used DP contracts while 14.6% 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% to only 6.2% (Figure 3).

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% of all sales during the three year

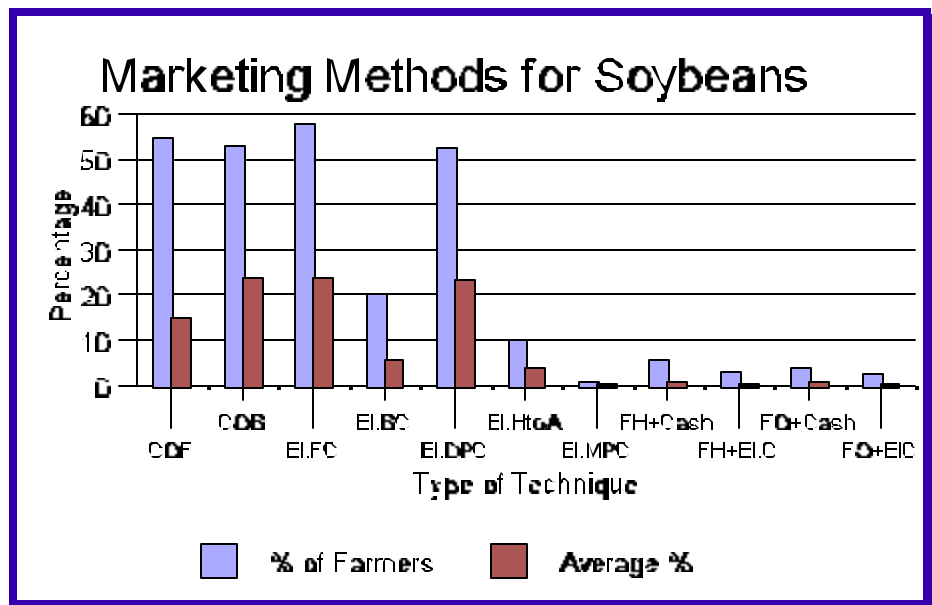


Figure 4

When asked to identify the percent of their corn crop marketed by each

Table 5: Farmers Marketing Methods: Wheat

		Farmers Using this Technique	% of Farmers Reported Using this Technique	Average % of Crop Marketed by this Method
A)	Cash out-of-field	COF	57	65.5
B)	Cash out-of-bins	COB	24	27.6
C)	Elevator cash forward contracts	EI.FC	45	51.7
D)	Elevator basis contracts	EI.BC	15	17.2
E)	Elevator delayed price (DP) contracts	EI.DPC	9	10.3
F)	Elevator hedge-to-arrive contracts	EI.HtoA	6	6.9
G)	Elevator min price contract	EI.MPC	0	0.0
H)	Futures markets plus cash sales	FH+Cash	3	3.4
I)	Futures markets plus elevator contracts	FH+EI.C	1	1.1
J)	Futures options plus cash sales	FO+Cash	1	1.1
K)	Futures options plus elevator contracts	FO+EIC	3	3.4

period examined by the survey instrument. Cash-out-of-field (16.8%) accounted for the third largest percentage of corn marketings among farmers in the survey. DP contracts, at slightly more than 10%, 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% 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% 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%.

Farmers' marketing methods were somewhat different for soybeans compared to corn. Cash forward contracts and cash-out-of-bin were still the top marketing techniques, however, there was a much greater percent of soybeans marketed via DP contracts, 23%, compared to corn sold via DP— 10% (Table 4). As in corn sales, very few farmers used futures or options and those who did sold only a small percent of their soybean crop with these methods (Figure 4).

The major distinction of farmers marketing methods for wheat as compared to either corn or

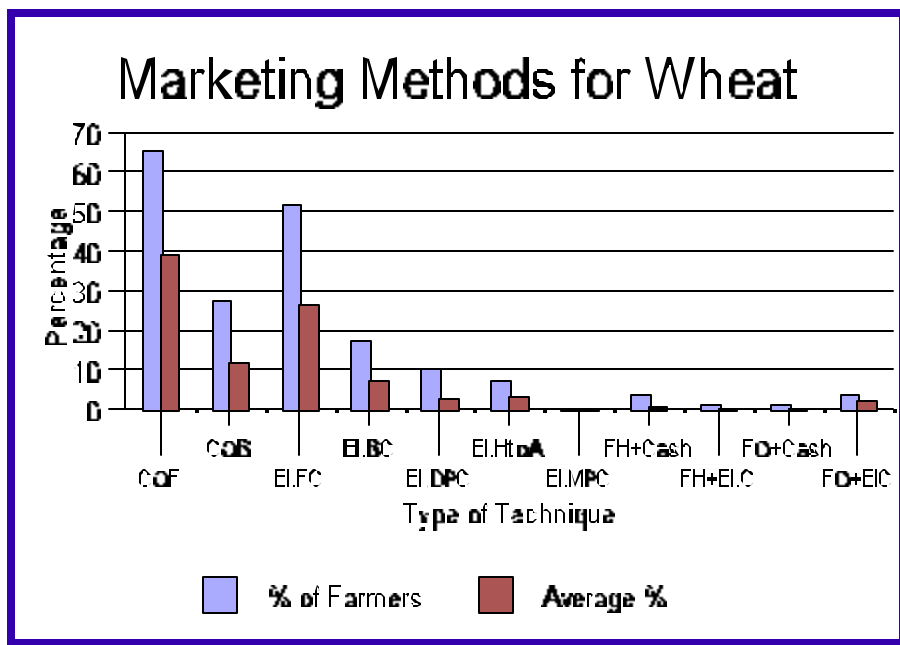


Figure 5

Table 6: Periods of Contract Delivery: Corn

	Average % of Crop Contracted for Delivery During Specified Period
A) June-July	2.0
B) Aug-Sept	6.5
C) "Fall"	25.2
D) Jan-Feb	38.1
E) Mar-May	12.5

soybeans was the much greater use of cash-out-of-field as the primary marketing method, 39.2% (Table 5). Cash forward contracts was the second most important marketing method at 26% which is about the same percentage this method represented for both corn and soybean sales. Farmers made modest use of farm stored wheat as cash-out-of-bin sales accounted for about 12% of all sales (Figure 5).

Contract Delivery Periods

Period of Contract Delivery / Corn

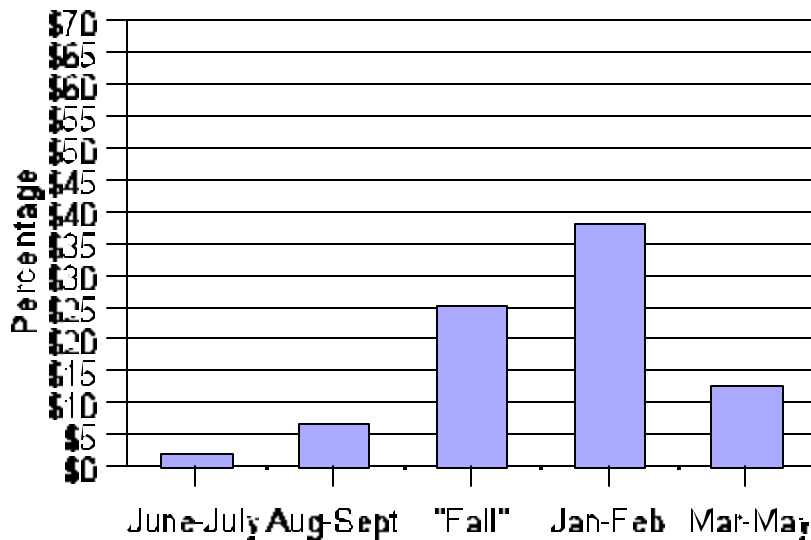


Figure 6

Farmers make extensive use of elevator contracts as a method of marketing corn, soybeans and wheat. The 130 farmers represented in this sample priced 26%, 24% and 26%, respectively, of their corn, soybeans and wheat with cash forward contracts. Additionally, other types of elevator contracts accounted for 18% of corn sales, 32% of soybean sales and 12% of wheat sales. The primary delivery period, for contracted corn, was Jan-Feb, followed by the "Fall" period while Mar-May was the 3rd most contracted delivery-time period (Table 6 and Figure 6). Farmers were supposed to account for 100% of all contracted grain, however, some failed to do so, leaving nearly 16% of all contract sales unaccounted for from a delivery time perspective.

Period of Contract Delivery / Beans

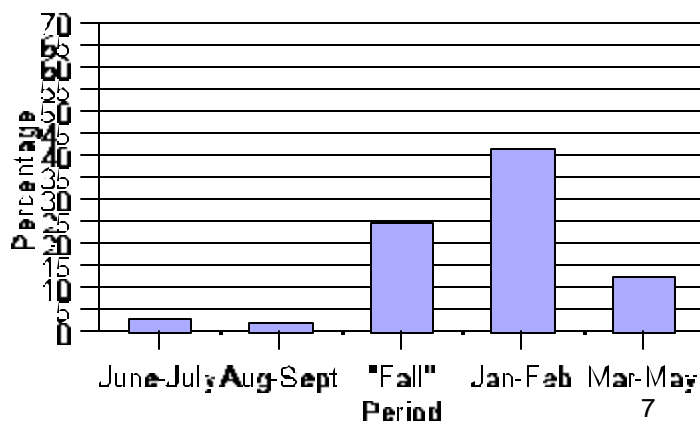


Figure 7

Table 7: Periods of Contract Delivery: Soybeans

	Average % of Crop Contracted for Delivery During Specified Period
A) June-July	2.7
B) Aug-Sept	2.2
C) "Fall"	24.6
D) Jan-Feb	41.5
E) Mar-May	12.2

Table 8: Periods of Contract Delivery: Wheat

Wheat		Average % of Crop Contracted for delivery During Specified Period
A)	June-July	58.4
B)	Aug-Sept	12.2
C)	"Fall"	0.6
D)	Jan-Feb	3.9
E)	Mar-May	0.1

The number one delivery period for contracted soybeans, 41%, was Jan-Feb while the "Fall" period was the second major period for delivery on elevator contracts (Table 7). Very few contracted soybeans are delivered during the period June through September (Figure 7).

The most frequent delivery period for elevator contracted wheat is the harvest period of June-July (Table 8 and Figure 8). Farmers indicate they deliver nearly 60 % of their contract wheat at this time. However, they fail to account for a time period for delivery on nearly 25% of their contracts. Wheat is a minor grain crop on many Kentucky farms. It appears that many farmers move wheat as rapidly as possible during or shortly after harvest and reserve most of their bin space for corn and/or soybeans. This is indicated by the above mentioned contract delivery period and the data in table 5 that places cash-out-of-field wheat sales at 39.2% of all wheat marketings.

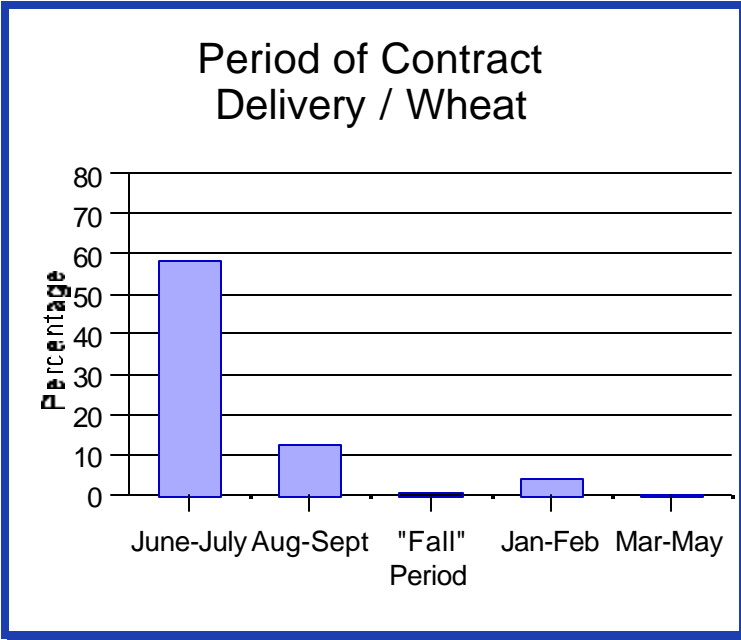


Figure 8

Timing of Grain Sales

Timing of grain sales is a question of interest in understanding farmers marketing habits. The survey form

Table 9: Timing of Pricing Decisions: Corn

	Total Responses Per Each	% of Farmers Reported Using this Technique	Average % Marketed at this Time	Code
A) More than a month before planting	68	52.3	13.9	BePlnt
B) during planting season	35	26.9	5.4	@Plnt
C) planting until mid-season	47	36.2	7.8	Plnt-Mid
D) mid-season until crop maturity	55	42.3	10.3	Mid-Mat
E) during harvest season	56	43.1	12.7	@Harv
F) during month after harvest	35	26.9	7.6	AftHar
G) more than a month after harvest	94	72.3	39.1	>1moAftHar

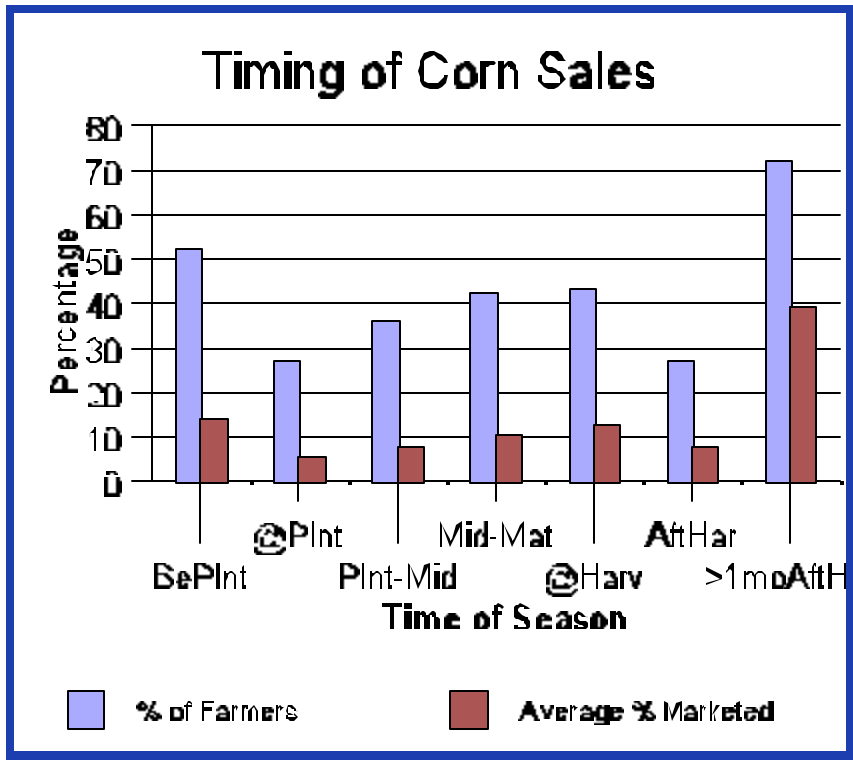


Figure 9

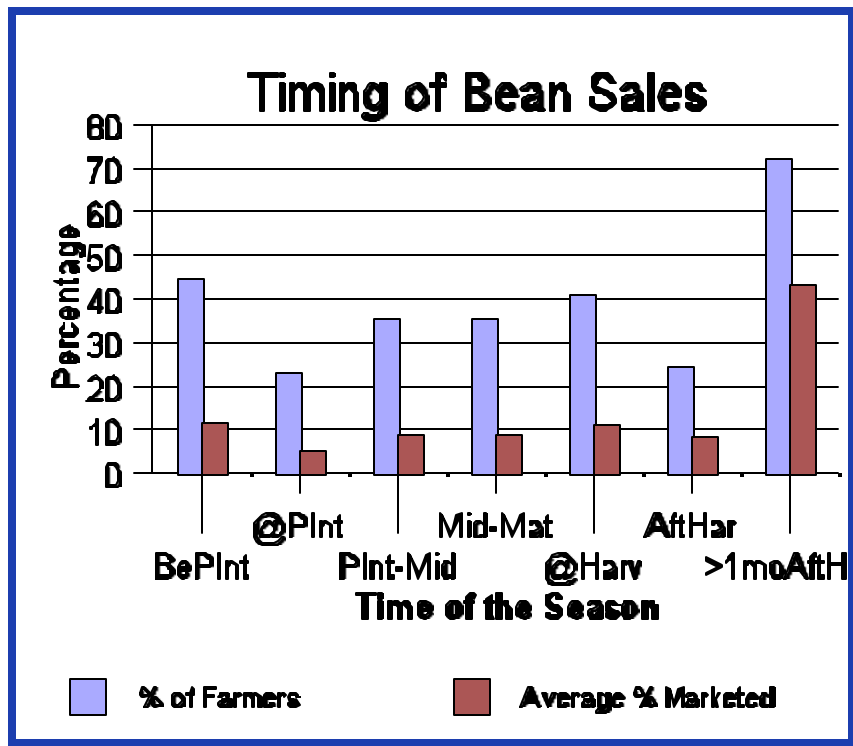


Figure 10

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 (Figure 9). The second major pricing period is the period labeled as more than a month before planting. Together these two time periods account for 53% 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 Jan-Feb and Mar-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.

The data for timing of soybean sales was nearly identical to the corn price timing data (compare Tables 9 and 10 and Figures 9 and 10).

The most interesting aspect of the timing of the pricing decision for wheat was confirmation of the earlier data indicating a high percentage of wheat is sold at harvest, either as cash-out-of-field or as elevator contract delivery (Figure 11). Other than the 30% priced at harvest, no other time period stands out as

broke the marketing year into seven time periods (Table 9) and asked farmers to indicate the

being very significant as a wheat pricing time period (Table 11). It is interesting that very little, 3.5%, of wheat is priced during the planting

Table 10: Timing of Pricing Decisions: Soybeans

	Total Responses Per Each	% of Farmers Reported Using this Technique	Average % Marketed at this Time	Code
A) More than a month before planting	58	44.6	11.5	BePlnt
B) during planting season	30	23.1	5.0	@Plnt
C) planting until mid-season	46	35.4	8.7	Plnt-Mid
D) mid-season until crop maturity	46	35.4	8.8	Mid-Mat
E) during harvest season	53	40.8	11.0	@Harv
F) during month after harvest	32	24.6	8.1	AftHar
G) more than a month after harvest	94	72.3	43.3	>1moAftHar

season. This, however, is not much lower than corn or soybean data that indicate only 5% of those crops are priced during the planting period.

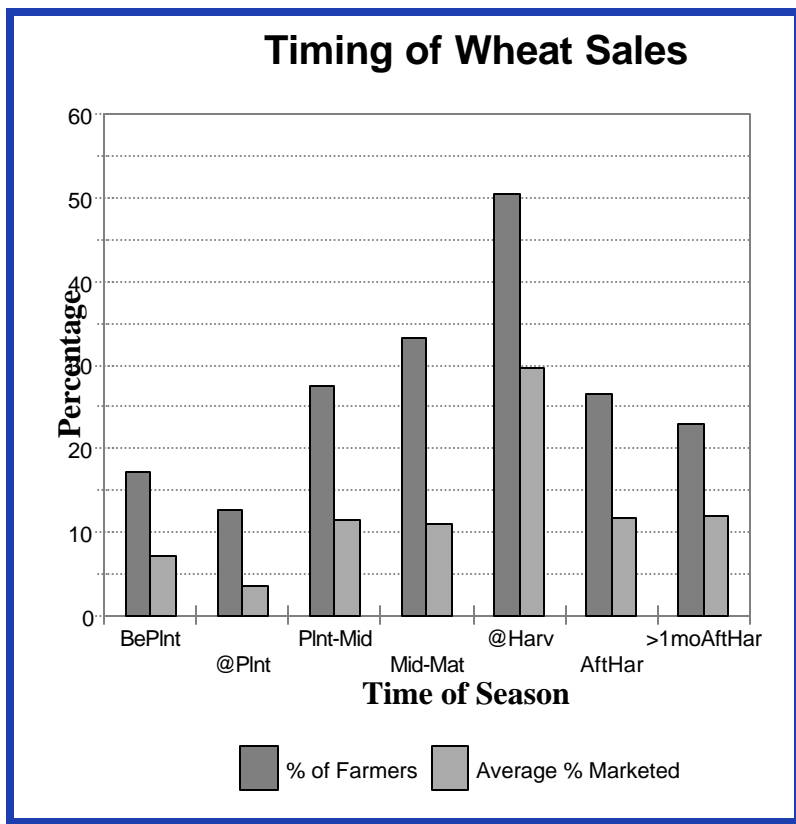


Figure 11

Table 11: Timing of Grain Sales: Wheat

	Total Responses Per Each	% of Farmers Reported Using this Technique	Average % Marketed at this Time	Code
A) More than a month before planting	15	17.24%	7.21%	BePlnt
B) during planting season	11	12.64%	3.45%	@Plnt
C) planting until mid-season	24	27.59%	11.38%	Plnt-Mid
D) mid-season until crop maturity	29	33.33%	11.01%	Mid-Mat
E) during harvest season	44	50.57%	29.77%	@Harv
F) during month after harvest	23	26.44%	11.67%	AftHar
G) more than a month after harvest	20	22.99%	11.95%	>1moAftHar

Table 12: Direct Use of Futures and Options Markets by Farmers

	Corn	Beans	Wheat
Short hedge: # of contracts	407	220	143
# of 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
# of farmers who sold options (all grains)	9		
Options sold:			
# puts sold	35	3	0
# calls sold	25	4	2

marketed only 3.7% of their corn by using futures contracts. The average number of corn acres multiplied by the 3 year average yield, multiplied by 3 years, multiplied by 130 farms, multiplied by 3.7% produces enough corn for only 222 hedged short futures contracts, slightly more than half the futures contracts farmers claimed they

held over the time period in question. Perhaps farmers are under reporting their use of futures markets or overestimating the number of short hedges placed?

Futures and Options Use

Survey respondents were asked to provide information on the number of actual futures contracts they had held as short hedges by commodity over the three year time period of 1995– 1997 (Table 12). The 130 farmers over the entire three crop marketing seasons instituted 407 short corn contracts, 220 short soybean contracts and 143 short wheat futures contracts. These farmers indicated they also held purely speculative futures positions 17 times in corn, 16 times in soybeans and 8 times in wheat. According to the data in Table 3, farmers

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 participate 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 12). As an example, corn farmers had

used options to set price floors 142 times and they claim 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.

(Table 13). 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 (Figure 12).

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 3 soybean puts sold and 4 soybean calls sold. For wheat, only 2 call contracts were sold as speculative positions while no puts were sold.

Table 13: Farmers Sources of Marketing Decision Information: All Grains

Rank over the survey population (10=most important source)

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

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

Conclusions

The farmers who participated in this non-random sample, farm much larger acreages than is 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% of their corn and less than 15% of their soybeans directly out of the

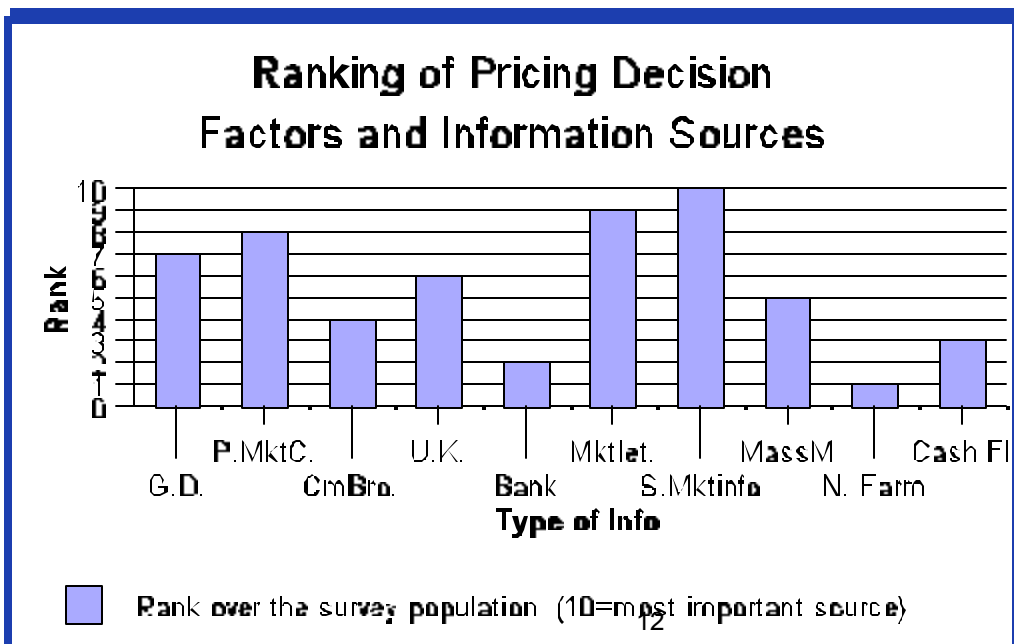


Figure 12

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 un-priced 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

try and 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.

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