Soybean Marketing Methods and Characteristics of Arkansas Grain Handlers

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INTRODUCTION

Marketing practices and price risk management have received much more attention in the agricultural community since the passage of the 1996 Federal Agriculture Improvement and Reform (FAIR) Act. The FAIR Act, also known as the 1996 Farm Bill, eliminated the traditional commodity price support programs (deficiency payments) and replaced them with seven years of flexibility contract payments that are decoupled from production. Two major effects of the 1996 Farm Bill are a transition to a more market-orientated U.S. agricultural economy and a greater share of risk management responsibility shifted to the producer. These changes increase the importance of marketing decisions made by Arkansas soybean producers. In order to more profitability market their output and reduce price risk, producers must become more acquainted and confident with alternative marketing sales methods. An assessment of soybean marketing strategies, information, and services will assist Arkansas producers in this effort. One component of the assessment is to survey soybean handlers to determine the types of marketing contracts offered to producers and the relative frequency of use of the various types of contracts.

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Arkansas grain handlers and soybean producers were surveyed as part of a study to determine the marketing contracting opportunities for Arkansas producers. This bulletin focuses on the results of the grain handler survey. Few studies have addressed the grain handler's perspective on the alternative marketing methods utilized by producers. Results from the soybean producer survey will be published separately from this document.

This bulletin specifically examines (1) the type and usage of various contract marketing tools offered by grain handlers in Arkansas and (2) the current structure of the grain marketing industry within Arkansas in terms of firm type, storage capacity and turnover rate, total grain merchandised, competitors, and market area. This is the first known survey of its type conducted in Arkansas. The study provides a timely update on current attitudes toward marketing contracts in light of the FAIR Act. Survey information on a new population sample in terms of geographical location is gathered by the study. In addition to the information regarding the marketing services offered by Arkansas grain handlers and usage by producers, the study provides an updated database on grain handler demographics.

REVIEW OF LITERATURE

It is noteworthy to mention the sparseness of literature focusing on producer surveys related to marketing and the virtual nonexistence of information pertaining to grain handlers and marketing. However, the following research, which relates to the marketing practices of producers and grain handlers, is briefly summarized.

Grain handlers in Arkansas, other Mid-South states (Alabama, Kentucky, Louisiana, Mississippi, and Tennessee), and the Corn Belt states of Illinois and Ohio were surveyed in 1982-83 to compare the structure of the grain marketing industry of these two regions in the United States (Hearne and Reed, 1989). The handlers included country elevators, river and terminal elevators, feed mills and manufacturers, and other processors that purchase unprocessed grain (corn, soybeans, and wheat) from producers. The survey among other topics also determined grain pricing methods and protection against price changes. Cash at delivery was the most commonly used method in the Mid-South, followed by forward cash sales.

An assessment was made over a 30-year period of the changes in the structure of the grain marketing industry in Georgia (Jordan, 1992). Surveys were conducted in 1962, 1985, and 1990. That study focused on the changes in the structure of the grain industry and not on changes in marketing strategies. Curtis et al (1997) surveyed grain (soybeans, wheat, and corn) handlers in South Carolina in 1996 to assess forward contracting

opportunities in 1995 and the extent of use by producers. Forward contracting opportunities were listed as fixed price, basis, delayed price, delayed payment, minimum price, and hedge-to-arrive contracts. They found that approximately 25% of producers forward contracted and 60% spot-delivered, according to elevator responses. The results were consistent with previous findings summarized by Heifner and Wright (1993).

Goodwin and Schroeder (1994) conducted a survey in 1992 of Kansas farmers to assess their use of forward and futures marketing alternatives. They learned that for the commodities mentioned, including soybeans, that cash sales were used by more than 90% of producers, 43% forward contracted one or more crops (more than 30% forward-contracted soybeans), and only 10% hedged. In a more pertinent survey of hedging use in Arkansas, Terry (1993) examined the extent to which a sample of Arkansas farmers use forward contracts, futures contracts, options contracts, and government programs to hedge their price risk. The sample was biased toward larger farmers, who are more likely to use hedging techniques. Terry's results were similar to previous research that showed producers do not frequently hedge despite the risk reduction advantages. Forward contracting was most commonly used, followed by futures and then options contracts.

In summary, previous studies have shown that grain handlers provide a number of alternative marketing methods. However, producers predominately use cash sales. A limited amount of literature is available that addresses the specific producer barriers to adopting alternative marketing methods. In a review of commodity futures markets literature, Carter (1999) emphasized that very little information is available on the usefulness of futures markets to producers and that few producers use this marketing alternative. The present study will provide a timely update of current attitudes toward marketing alternatives in Arkansas. The focus is on the grain handler perspective, which has received little attention from researchers.

THE ARKANSAS SOYBEAN MARKETING SYSTEM

Arkansas is a prominent soybean-producing state normally ranking eighth nationally in production and cash receipts. Soybean production in Arkansas has averaged 100 million bushels in the past five years, and soybean cash receipts in 1997 were $755,424,000. Arkansas farmers typically plant 3.5 million acres of soybeans, of which 1.5 million acres are irrigated. According to the 1997 Census of Agriculture (National Agricultural Statistics Service, 1999a), 3,571,342 acres of soybeans were harvested in 1997, accounting for 46% of the total harvested cropland of 7,665,490 acres. The

1997 Census records more than 6800 soybean farms in Arkansas. the National Agricultural Statistics Service (1999b) indicates that in recent years, 25% of the soybean acreage is double-cropped behind wheat.

The Arkansas soybean marketing system provides producers many alternatives. Soybeans are moved into marketing channels directly from the field or from on-farm storage to one of three types of facilities: country elevators, river/terminal elevators, or processors. Country (or local) elevators eventually move the soybeans to a river elevator or processor, where the soybeans eventually end up in the domestic or export market. Figure 1 shows commercial storage by county according to federal and state licenses and responses to the survey. Storage is located mainly in the eastern part of Arkansas, where the major production takes place. Heavy concentration of storage is located along major river waterways and near soybean processing plants.

Arkansas is fortunate to be located on the Mississippi, Arkansas, and White river waterways, which facilitates the movement of soybeans and other grains by barge for export at the Gulf Port of New Orleans. Approximately two-thirds of annual production is shipped to port areas for the export market. The total value of Arkansas soybean product exports in 1997 was $435 million, and soybeans were the leading export crop for that marketing year in Arkansas. Major export markets include China, the European Union, Japan, Mexico, Taiwan, and the Republic of Korea.

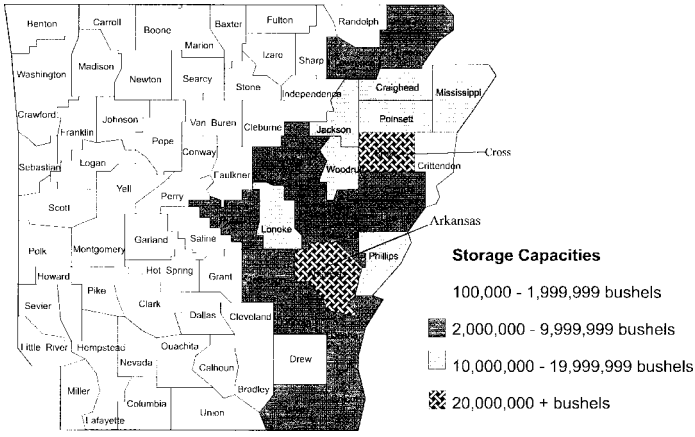

Figure 1. Commercial storage capacities by county.

Soybeans are further processed into meal, oil, and various value-added products. Approximately one-third of Arkansas' annual soybean production is processed in-state. Soybean meal is either exported or consumed domestically by the state's livestock industry, including cattle, poultry, swine, and aquaculture. Soybean oil is used in products such as margarine, salad dressing, and cooking oil. Some of the many other products coming from the processed soybean include soy flour and grits, high-fiber breads, cereal, snacks, ink, bio-diesel, building materials, and cosmetics (Coats and Ashlock, 2000).

The soybean marketing year begins September 1 and ends August 31. When demand from the export market is combined with the needs of nearby processors, grain terminals, and elevators, many Arkansas soybean producers can generally expect to receive close to maturing November soybean futures prices at harvest time. Elevators and processors offer a number of sales methods or contracts to sell new crop or old crop production. These sales methods include the following:

Forward Contract: A forward contract is a private contract with an elevator or processor that specifies the quantity, quality, location, and time of delivery. The price that is received is a flat or fixed price.

Deferred Price Contract: This contract is sometimes referred to as a delayed price or price-later agreement. It transfers title of the soybeans to the buyer at delivery, but allows the seller to set the price later at the prevailing market level. A producer can speculate on a price rise, especially if there is a shortage of storage space.

Delayed Payment Contract: A delayed payment contract allows for current pricing and delivery of soybeans, but a producer can delay the receipt of payment for the crop. This method is often used for income tax management. The seller becomes an unsecured creditor of the elevator.

Minimum Price Contract: A minimum price contract allows the seller to set a price floor but still have the opportunity to take advantage of higher prices if they occur. The price floor is set like a forward or cash contract minus a fee. The fee is for the purchase of a call option (long call hedge) that provides the opportunity for a higher price. The minimum price is thus the contract price minus a fee for the purchase of a near-the-money soybean futures call option. The buyer receives the minimum price upon delivery, and if prices rise before the option expires, the call option is sold for a gain. If prices decrease, the producer receives just the minimum price.

Floor Price-to-Arrive Contract: This contract is also called a long put hedge, which sets a price floor for the crop. It involves purchasing a soybean futures put option and the price floor will be below the current

forward contract price by approximately the cost of the put. If prices decrease, the price that is received is equal to the price floor. If prices increase, the producer is still able to sell at a higher price, minus the put premium. This contract is similar to a producer purchasing a near-the-money put option from a commodity broker.

Hedge-to-Arrive Contract: Hedge-to-arrive contracts are similar to a short futures hedge and are sometimes referred to as futures-only contracts. A hedge-to-arrive contract allows a producer to fix the futures price level for a specified quantity of soybeans and then accept the basis at a later date, usually at delivery. The futures price is tied to a particular futures contract.

Basis Contract: This contract fixes the basis at the time the contract is made, sometime prior to harvest, and it is tied to a specific futures contract month. The elevator takes delivery of the product at harvest. Basis contracts usually provide for a cash advance of about 75% of the value of the product at harvest. Sometime after harvest and prior to the futures contract maturing the producer must close out the contract and take the current futures price, minus the agreed-upon basis, as the established price for the product.

Mini-Max: This contract sets both a minimum and a maximum price that will be received for the new crop production. The minimum price is higher than what would be received from a minimum price contract.

Seasonal Pool: A seasonal pool markets as a whole several members' production throughout the marketing season. Pools are organized to gain savings from bargaining power gained by controlling a large quantity of production. Generally, a marketing cooperative acts as a marketing agency in which the producer delivers the production and receives an advance. The cooperative passes along savings throughout the year according to patronage. The advantages gained in bargaining should result in an average pool price that is greater than the average harvest or season price.

SURVEY DESIGN AND IMPLEMENTATION

A survey was developed for this study to assess business characteristics and determine the types of marketing methods offered by soybean grain handlers (see Appendix). The first section of the survey asked Arkansas soybean handlers to describe their primary business, list the storage capacity, and name the commodities handled in 1996. The second part of the survey assessed the types of contracts offered to producers; the quantity of bushels handled by the facility in 1996; the percentage of soybeans priced prior to harvest, at harvest, and after harvest; the producer frequency

of marketing method use; and the seasonal use of marketing methods by producers.

The population of Arkansas grain handlers was compiled from facilities licensed in the state through the State Plant Board and/or licensed federally through the Grain Inspection and Marketing Service of the USDA Farm Service Agency. An older elevator list supplied by the Farm Bureau was also used in compiling a mailing list. Surveys were distributed in January of 1998 to all Arkansas grain handlers; of the 257 sent, 92 were returned. A second mailing was then conducted; 165 surveys were distributed to those facilities that did not respond to the first mailing, and 53 surveys were returned. Of the 145 surveys returned, 86 were useable. Remaining surveys were not useable for the following reasons: duplicate survey, soybeans not handled, no longer in business, or not a grain handler. Grain handlers for this survey included country elevators, terminal/river elevators, and processors. Surveys were also separated into independent and cooperative categories so that comparisons of responses could be evaluated. The response rate for the survey was 56.4%.

Survey results were coded, tabulated, and statistically analyzed using SAS version 6.12. Data were categorized and classified into percentage terms when appropriate. The chi-squared test statistic was used when appropriate to test several hypotheses relating to the independence of categorical variables, the null hypothesis being that row and column classification criteria are independent.

RESULTS AND DISCUSSION

The survey results that follow are categorized according to the type of information collected in the survey. The first section entitled "Arkansas Soybean Handler Characteristics" provides a breakdown of the business characteristics and structure of the Arkansas grain merchandising industry. The ensuing section and subsections describe the marketing methods offered by grain handlers and their associated usage by producers.

Arkansas Soybean Handler Characteristics

Business Types: A total 202 public grain handling facilities located within the Arkansas borders were identified by the survey procedure explained above. The majority of responses were from country elevators, as shown in Table 1. The remaining responses were from terminal/river elevators or processors.

Grain handlers were also identified as independents or cooperatives

for comparison purposes. More than half of the responses were received from independents. Independent grain handlers, as shown in Table 2, were more diversified in terms of business classifications than cooperatives.

A large amount of Arkansas soybeans and rice is marketed to cooperatives. This is illustrated by the fact that 38% of all usable responses came from cooperatives. Table 2 shows that roughly half of all country elevator respondents could be classified as cooperatives. The independent grain handlers included country elevators, processors, terminal/river elevators, and facilities classified as other businesses, while the cooperatives consisted of only country elevators and terminal/river elevators.

Storage Capacities: Grain handlers were grouped according to their storage capacities, as shown in Table 3. Based on the distribution of responses, facilities were classified as small, medium, or large. Facilities with less than a 600,000-bushel capacity were grouped in the small category. Facilities with capacity between 600,000 and 2 million bushels were considered medium-sized. The large facilities had greater than 2 million-bushel capacity. Thirty facilities fell into the small category, with an average capacity of nearly 250,000 bushels and a range from 10,000 to 486,000 bush-

Table 1. Arkansas soybean handler survey respondent classification.

Business	Number of responses	Percentage of responses
Country elevator	65	76
Processor	11	13
Terminal/river elevator	7	8
Other	3	3
Total	86	100

Table 2. Distribution of Arkansas independent and cooperative soybean handlers.

Business	Number of Independent responses	Number of cooperative responses
Country elevator	34	31
Terminal/river elevator	5	2
Processor	11	0
Other	3	0
Total	53	33

els. The 28 respondents that fit into the medium category averaged 1 million bushels in capacity and ranged between 600,000 and 1.8 million bushels. Twenty-two respondents were classified as large facilities and averaged 5 million bushels of capacity with a median of 3.4 million bushels and a range of 2.000 to 3.319 million bushels.

In a comparison of independents andd cooperatives (Table 4), the majority of grain handlers with capacities of less than 600,000 bushels or between 600,000 and 2 million bushels were independents. Conversely, the majority of grain handlers with capacities greater than 2 million were cooperatives. This again emphasizes the importance of cooperatives in the Arkansas grain handling industry.

Commodities Handled: Grain handlers were asked what commodities were handled at their facility. Table 5 lists their overall response and responses based on storage capacity. All facilities handled soybeans; otherwise they were excluded from the analysis. On a percentage basis, wheat was the most common commodity handled besides soybeans. Rice was handled at more than half the facilities, corn and grain sorghum exceeded one-third, and oats were handled at only a few facilities. Results for commodities handled between size categories were as one would expect—the

Table 3. Arkansas soybean handler distribution based on storage capacity.

Storage size (bu)	Number of responses	Mean (bu)	Median (bu)	Range (bu)
<600,000	30	246,722	242,500	10,000-486,000
600,000 – <2 million	28	1,089,214	991,500	600,000-1,800,000
≥2 million	22	5,144,136	3,410,000	2,000,000-33,190,000
Total	80	6,480,072	4,644,000	10,000-33,190,000

Table 4. Distribution of Arkansas independent and cooperative soybean handlers by storage size.

Storage size category (bu)	Independent (%)	Cooperative (%)
<600,000	87	13
600,000 – <2 million	61	39
≥2 million	27	73

larger the storage capacity the greater the number of commodities handled by the facilities.

A χ^2-test was used to determine whether storage capacity influenced the types of commodities handled by grain elevators. The null hypothesis stated that there is no difference in the distribution of responses across storage capacity categories. The χ^2-test statistic and probability of rejecting the null hypothesis are included in the fifth column of Table 5. At a 95% confidence level, rice was the only grain showing a significant response. This indicated that rice is handled mostly at facilities with storage capacities greater than or equal to 2 million bushels.

In addition to size, responses were broken down according to business structure to determine whether structure influenced the types of commodities handled. The results presented in Table 6 show a significant dif-

Table 5. Commodities handled by Arkansas soybean handlers.

Commodity	Small grain handler (%)	Medium grain handler (%)	Large grain handler (%)	χ^2 Statistic (probability)	Total
Soybean	100	100	100	n/a	100
Corn	47	46	23	3.8 (0.15)	40
Grain sorghum	40	43	18	3.8 (0.15)	35
Oats	7	14	0	3.7 (0.16)	8
Rice	43	61	91	12 (0.002)	62
Wheat	90	93	91	0.15 (0.93)	91

n/a = not applicable because all facilities handled soybeans.

Table 6. Commodities handled by Arkansas independent and cooperative soybean handlers.

Commodity	Independent (%)	Cooperative (%)	χ^2 Statistic (probability)
Soybeans	100	100	n/a
Corn	60	12	19.5 (0.001)
Grain sorghum	51	12	13.2 (0.001)
Oats	15	0	*5.5 (0.019)
Rice	45	88	15.6 (0.001)
Wheat	93	91	0.07 (0.799)

* χ^2 test may not be valid because of low frequency count.

ference exists between the commodities handled by independent and cooperative grain handlers. Cooperatives handled mainly soybeans, rice, and wheat. In contrast, independents were more likely to handle all six grain types listed. However, far fewer independents handled rice than did cooperatives. This reflects the dominance of several large Arkansas cooperatives that predominantly handle rice. The majority of the corn, grain sorghum, and all the oats were handled by the independents. The χ^2 statistics showed a significant difference between categories for corn, grain sorghum, and rice.

Soybean Marketing Information

The second part of the survey focused on soybean marketing alternatives provided by Arkansas soybean handlers. Handlers responded to questions relating to alternative contracting methods offered and their use. Their responses are summarized and analyzed by size and business structure.

Marketing Methods Offered by Arkansas Grain Handlers: Grain handlers were asked which marketing methods they offered to soybean producers in 1996-97. Nine methods or contracts were listed (Table 7), along with an "Other" category. The contracts listed were forward cash, deferred price, delayed payment, minimum price, floor price-to-arrive, hedge-to-arrive, basis, mini-max, and seasonal pool contracts. The most frequently offered methods in order of highest response rate were forward cash, basis, deferred price, and delayed payment contracts. The least frequently of-

Table 7. Marketing methods offered by Arkansas soybean handlers.

Marketing method	Small grain handler (%)	Medium grain handler (%)	Large grain handler (%)	χ^2 Statistic (probability)	Total (%)
Forward cash	55	93	100	20.30 (0.001)	81
Basis	41	96	100	33.54 (0.001)	77
Deferred price	72	79	77	0.325 (0.850)	76
Delayed payment	48	71	68	3.73 (0.155)	62
Hedge-to-arrive	17	64	90	29.07 (0.001)	54
Minimum price	31	61	50	5.16 (0.076)	47
Seasonal pool	4	36	72	26.74 (0.001)	34
Floor price-to-arrive	7	11	5	*0.70 (0.705)	8
Mini-max	4	4	0	0.79 (0.673)	3
Other	4	0	0	1.75 (0.418)	1

* χ^2 test may not be valid because of low frequency count.

fered methods were floor price-to-arrive and mini-max contracts. In general, the more complex the contract, the less widely it was used.

The distribution of responses between storage capacities is presented in Table 7. The χ^2 test statistic, shown in the fifth column, indicated a significant difference at the 95% confidence level between storage size categories for forward cash, basis, hedge-to-arrive contracts, and seasonal pool marketing methods. Results indicated that these marketing methods are evidently used more often at facilities with storage capacities in excess of 600,000 bushels. In fact, nearly all facilities with storage capacities greater than 2 million bushels offer forward cash, basis, and hedge-to-arrive or futures-only contracts. Previous research that has targeted producer attitudes toward advanced marketing practices has highlighted the importance of farm size. In other words the number of acres produced has been found to be positively and significantly correlated to the frequency and use of forward contracts (Bonner, 1983; Goodwin and Schroeder, 1994). Thus our results are somewhat analogous to the producer-based survey results in terms of firm size. The larger the grain handling facility the more likely the offering of forward contracting methods.

Considering the responses according to size categories, medium and large handlers (storage capacity > 600,000 bushels) offered forward cash and basis contracts more often than the smaller grain handlers. Hedge-to-arrive contracts and seasonal pools were offered more often at large grain handling facilities. Deferred price, floor price-to-arrive, and mini-max contracts were offered equally across all size categories.

Table 8 provides percentage comparisons between independents and cooperatives in terms of various contracts offered. According to the survey responses, cooperatives offered more marketing methods and used them more often than independent soybean handling facilities. The best explanation for this is that Arkansas cooperatives tended to be larger than the independents in our sample. As noted above, handler size tends to be positively correlated to the number of contract offerings. Specifically, cooperatives most often offered seasonal pool marketing, forward cash, basis, deferred price, delayed payment, and hedge-to-arrive contracts. Seasonal pool pricing has been a traditional form of marketing offered by cooperatives. Hedge-to-arrive or futures-only contracts and seasonal pools were seldom used by independent soybean handling facilities. Both types of facilities rarely used the more complex floor price-to-arrive and mini-max methods. This is in line with producer-based survey results, which have found a reluctance on the part of producers to enter into more complex forms of forward contracting agreements (Bonner, 1983).

Table 8. Marketing methods offered by Arkansas independent and cooperative soybean handlers.

Marketing method	Independent (%)	Cooperative (%)	χ^2 Statistic (probability)
Forward cash	73	94	5.8 (0.016)
Basis	67	94	8.3(0.004)
Deferred price	62	91	8.8 (0.003)
Delayed payment	64	64	0
Hedge or futures	33	85	22.0 (0.001)
Minimum price	44	55	0.86 (0.35)
Seasonal pool	2	82	58.3 (0.001)
Floor price-to-arrive	10	6	*0.33 (0.56)
Mini-max	4	3	*0.04 (0.84)
Other	4	0	*1.3 (0.25)

* χ^2 test may not be valid because of low frequency count.

Marketing Methods Used by Producers at Grain Handling Facilities: The marketing methods most frequently used by producers, as indicated by grain handlers, were harvest cash sales and forward cash sales (Table 9). To a lesser extent, deferred price and delayed payment contracts were fairly frequent used. The least-used methods were floor price-to-arrive and mini-max contracts. These results are in line with previous research, which has consistently found harvest cash and forward cash sales to be the most popular forms of marketing for most producers. Delayed price, delayed payment, and basis contracts were used on a frequent level at nearly half the

Table 9. Frequency of use of marketing methods at soybean handling facilities in Arkansas.

Marketing method	Never (%)	Seldom (%)	Often (%)
Harvest cash	2	18	80
Forward cash	9	13	78
Deferred price	12	32	56
Delayed payment	18	29	53
Minimum price	47	49	4
Floor price-to-arrive	82	18	0
Hedge-to-arrive	52	35	13
Basis	24	42	34
Mini-max	91	9	0

facilities. Hedge-to-arrive and minimum price contracts were not used extensively by producers, but half the facilities reported use. Floor price-to-arrive and mini-max contracts were rarely used, corresponding with low offerings by grain handlers.

The distribution of responses among storage capacities is provided in Table 10. Review of this table would suggest that firm size played some role in determining the marketing method used. However, the frequency counts for all of the marketing method responses were too low to use χ^2 tests to statistically support this hypothesis. Grain handlers with storage capacities greater than 600,000 bushels reported a much higher usage rate of forward contracting methods, such as forward sales, deferred pricing, and delayed payment contracts. Customers of the smallest group of grain handlers in terms of storage capacity were more likely to forgo the opportunity to forward-contract and simply use harvest cash sales. Approximately 70% of facilities under 600,000 bushels of storage capacity also reported that their customers never use hedge-to-arrive contracts.

Independent soybean handlers, as shown in Table 11, reported harvest cash sales were used most often among the marketing method alternatives. Forward cash, deferred price, and delayed payment methods were also used frequently. Basis contracts were used a third of the time by producers, followed by hedge-to-arrive and minimum price contracts. Floor price-to-arrive and mini-max were not requested by producers. Cooperatives reported forward cash sales were used most frequently, followed by nearly equal usage of harvest cash, deferred price, and delayed payment sales. Basis and hedge-to-arrive contract use was similar to that of the

Table 10. Frequency of use of marketing methods by storage capacity category.

	Never			Seldom			Often		
Marketing method	Small (%)	Medium (%)	Large (%)	Small (%)	Medium (%)	Large (%)	Small (%)	Medium (%)	Large (%)
Harvest cash	0	4	0	9	15	32	91	82	68
Forward sales	27	4	0	14	11	14	59	85	86
Deferred price	21	4	14	29	42	23	50	54	64
Delayed payment	35	4	15	44	26	15	22	70	70
Minimum price	55	29	59	41	63	41	5	8	0
Floor price-to-arrive	86	78	80	14	22	20	0	0	0
Hedge-to-arrive	73	38	46	14	54	36	14	8	18
Basis	39	15	18	35	54	36	26	31	46
Mini-max	91	91	91	9	9	10	0	0	0

Table 11. Frequency of use of marketing methods by independent and cooperative soybean handlers.

Marketing method	Independent (%)	Cooperative (%)
Harvest cash	91	65
Forward cash	73	84
Deferred price	50	65
Delayed payment	48	63
Minimum price	7	0
Floor price-to-arrive	0	0
Hedge-to-arrive	14	10
Basis	34	36
Mini-max	0	0

independents. Floor price-to-arrive and mini-max contracts were not used by producers.

Seasonal Timing of Marketing Methods: The last question posed pertained to the timing of sales with respect to each contract. Preharvest marketing strategies are commonly used by grain producers to hedge anticipated production. If a portion or all of the cash crop is not sold by harvest, producers are exposed to postharvest price risk on their inventories. Some of the marketing methods are usually considered to be appropriate price risk tools for either the preharvest or postharvest period, while other types of contracts may be appropriate throughout the marketing cycle. For example, forward cash contracts are typically thought to be used prior to harvest. Harvest cash sales are by definition used at harvest. Deferred or delayed payment contracts are used postharvest.

Table 12 summarizes the results of when (preharvest, harvest, or postharvest) the customers of our sample of grain handlers chose to use the various marketing methods. As expected, virtually all forward sales contracts were used as preharvest strategies. Similarly, hedge-to-arrive or futures-only contracts were most frequently used in the preharvest period. Deferred price and delayed payment contracts were used mostly postharvest, though higher-than-expected use before harvest was indicated. Minimum price sales were spread out more during harvest, as well as basis contracts to a degree. Floor price-to-arrive and mini-max sales were about the same before and after harvest, but as reported above, they were rarely used if at all. The seasonal pool was primarily used as a preharvest sales method, but apparently some sales were at or postharvest. It should be noted that the wording of this particular question may have led to some ambiguity as to

whether we were referring to when the contract was initiated or actually used or offset. Results also indicated that no major differences existed between firm size or corporate structure (independent or cooperative) and contract market timing of producers.

In a comparison of sales timings across size categories, smaller soybean handlers usually contracted forward sales, minimum price, hedge-to-arrive, and seasonal pool contracts prior to harvest (Table 13). Deferred

Table 12. Seasonal timing of marketing methods at soybean handling facilities in Arkansas.

Marketing method	Before harvest (%)	After harvest (%)	About the same (%)
Harvest cash	15	35	50
Forward cash	93	0	7
Deferred price	24	59	17
Delayed payment	36	48	16
Minimum price	32	26	42
Floor price-to-arrive	17	0	83
Hedge-to-arrive	84	0	16
Basis	19	46	35
Mini-max	0	0	100
Seasonal pool	67	7	26

Table 13. Seasonal timing of marketing methods for three storage size capacities of soybean handling facilities.

Marketing method	Before harvest			After harvest			About the same		
	Small (%)	Medium (%)	Large (%)	Small (%)	Medium (%)	Large (%)	Small (%)	Medium (%)	Large (%)
Harvest cash	4.8	17.4	17.7	33.3	47.8	23.5	61.9	34.8	58.8
Forward sales	94.1	92.3	95.2	0	0	0	5.9	7.7	4.8
Deferred price	23.8	16.7	38.9	57.1	58.3	61.1	19.1	25.0	0
Delayed payment	20.0	38.1	47.0	73.3	38.1	41.2	6.7	23.8	11.8
Minimum price	50.0	18.8	66.7	16.7	37.5	0	33.3	43.8	33.3
Floor price-to-arrive	0	0	33.3	0	0	0	0	100	66.7
Hedge-to-arrive	75.0	85.7	81.8	0	0	0	25.0	14.3	18.2
Basis	27.3	17.4	17.7	54.6	34.8	58.8	18.2	47.8	23.5
Mini-max	0	0	0	0	0	0	0	100	0
Seasonal pool	100	44.4	81.2	0	11.1	0	0	44.4	18.8

price, delayed payment, and basis contracts were entered into after harvest, and harvest cash sales were conducted before and after harvest. Medium-sized handlers made forward sales and hedge-to-arrive agreements before harvest. Deferred price agreements were typically made after harvest. If floor price-to-arrive and mini-max agreements were made, they were made either before or after harvest. The large handlers contracted forward sales, minimum price agreements, hedge-to-arrive agreements, and seasonal pools before harvest. Deferred price and basis contracts were entered into after harvest. Harvest cash sales were made throughout the marketing season, as well as floor price-to-arrive contracts, most likely to a few select customers.

Table 14 summarizes the seasonal timing of the marketing methods according to business structure. Independent handlers contracted most forward and hedge-to-arrive sales prior to harvest, whereas cooperatives used minimum price, floor price-to-arrive, and seasonal pool contracts in addition to these preharvest contracts. A greater percentage of independent handlers used delayed payment, minimum price, and seasonal pool contracts after harvest. Independents used floor price-to-arrive , mini-max, and seasonal pool contracts before and after harvest, and cooperatives used harvest cash, deferred price, delayed payment, minimum price, hedge-to-arrive, and basis contracts before and after harvest.

Table 14. Seasonal timing of marketing methods by independent and cooperative soybean handlers.

Marketing method	Before harvest		After harvest		About the same	
	Independent (%)	Cooperative (%)	Independent (%)	Cooperative (%)	Independent (%)	Cooperative (%)
Harvest cash	15.0	15.4	37.5	30.8	47.5	53.9
Forward sales	92.1	93.3	0	0	7.9	6.7
Deferred price	26.3	21.4	60.5	57.1	13.2	21.4
Delayed payment	31.4	43.5	62.9	26.1	5.7	30.4
Minimum price	28.6	40.0	38.1	0	33.3	60.0
Floor price-to-arrive	0	100	0	0	100	0
Hedge-to-arrive	93.3	75.0	0	0	6.7	25.0
Basis	23.3	12.5	46.7	45.8	30.0	41.7
Mini-max	0	0	0	0	100	0
Seasonal pool	0	72	50	4	50	24

SUMMARY AND CONCLUSIONS

Differences in both corporate structure and facility size of Arkansas soybean handlers were found to play a significant role in determining the type of marketing contract offered to producers. The larger the grain handler in terms of storage capacity, the larger the variety of contracts offered. Cooperatives were found to offer a greater variety of marketing contracts in comparison to independent grain handlers. This particular result is probably influenced by our sample population, which included a number of large cooperatives. We also found that producer-based customers of the larger facilities and the cooperatives were more likely to use forward contracting methods, as opposed to simply selling at the harvest cash price. This result is dependent on the fact that larger facilities were more likely to offer forward contracts. In other words, it is likely that producers' marketing decisions are highly influenced by what marketing products are actually made available to them by their local grain handlers. Surprisingly, this particular issue has received little attention in previous studies, which has used producer-based surveys to answer questions relating to the usage of forward contracts by producers.

With the U.S. agricultural sector moving toward a more market-oriented system, we would expect producers' marketing strategies to grow in sophistication. This in turn would likely place a greater demand on the grain handling industry to provide a more diverse range of marketing tools. However, our survey results indicate that current marketing practices differ substantially between large and small grain handlers, with many of the latter providing relatively few if any forward contracting arrangements. We would expect over the coming years to see increased pressure on smaller grain handlers to adopt a wider range of marketing alternatives for their customers in order to remain competitive in the industry.

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APPENDIX

Arkansas Soybean Marketing Questionnaire
Conducted by
The Arkansas Cooperative Extension Service, and
The Arkansas Agricultural Experiment Station

Elevator and Processor Edition
Information

1. Check the title that most accurately describes your primary business.

❑ Country Elevator ❑Terminal/River Elevator ❑ Processor ❑ Other

2. What is the storage capacity of your facility? _____ bushels

3. Check the commodities handled by your facility in 1996.

❑ Corn ❑ Grain Sorghum ❑ Oats ❑ Rice ❑ Soybeans ❑ Wheat

Soybean Marketing Information

4. Which types of contracts do you offer producers for purchase of their soybeans?

❑ Forward Cash Contract
❑ Deferred Price Contract or Price-Later Agreement
❑ Delayed Payment Contract
❑ Basis Contract
❑ Minimum Price Contract (Purchase a call option)
❑ Floor Price-to-Arrive Contract (Purchase a put option)
❑ Hedge-to-Arrive or Futures-only Contract
❑ Mini-Max Contract (Purchase a call and sell a higher stike call option)
❑ Seasonal Pool
❑ Other
❑ None

5. Approximately how many bushels of Arkansas soybeans were handled by your facility in 1996?

_____ bushels

6. Approximately what percentage of the total Arkansas soybeans you purchased were priced by producers:

prior to harvest	%
at harvest	%
after harvest	%

7. For 1996/97 production (harvested in 1996 and marketed in 1996-97), please rank the usage of the following sales methods from one to ten:

	Rank
Harvest Cash Sales	_____
Forward Contract Sales	_____
Deferred Price Contract or Price Later Agreement	_____
Delayed Payment Contract	_____
Minimum Price Contract (Purchase a call option)	_____
Floor Price-to-Arrive (Purchase a put option)	_____
Hedge-to-Arrive Contract	_____
Basis Contract	_____
Mini-Max Contract (Purchase a call, sell a call)	_____
Seasonal Pool	_____

8. How often do your producer clients request or use the following sales methods? Please check one.

	Often	Seldom	Never
Harvest Cash Sales	❑	❑	❑
Forward Contract Sales	❑	❑	❑
Deferred Price Contract or Price Later Agreement	❑	❑	❑
Delayed Payment Contrac	❑	❑	❑
Minimum Price Contract (Purchase a call option)	❑	❑	❑
Floor Price-to-Arrive (Purchase a put option)	❑	❑	❑
Hedge-to-Arrive Contract	❑	❑	❑
Basis Contract	❑	❑	❑
Mini-Max Contract (Purchase a call, sell a call)	❑	❑	❑

9. When do your producer clients most often use the following sales methods? Please check one.

	Prior to Harvest	After Harvest	About the Same	Never
Harvest Cash Sales	❑	❑	❑	❑
Forward Contract Sales	❑	❑	❑	❑
Deferred Price Contract or Price Later Agreement	❑	❑	❑	❑
Delayed Payment Contract	❑	❑	❑	❑
Minimum Price Contract (Purchase a call option)	❑	❑	❑	❑
Floor Price-to-Arrive (Purchase a put option)	❑	❑	❑	❑
Hedge-to-Arrive Contract	❑	❑	❑	❑
Basis Contract	❑	❑	❑	❑
Mini-Max Contract (Purchase a call, sell a call)	❑	❑	❑	❑
Seasonal Pool	❑	❑	❑	❑

Your Cooperation is Greatly Appreciated!