

## **Marketing Practices and Market Channel Utilization by Mississippi Soybean Producers**

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### *Abstract*

*This paper examines current marketing practices by Mississippi soybean producers as well as willingness to participate in a marketing cooperative and willingness to plant Identity Preserved soybeans. In general, most Mississippi soybean producers utilize cash sales at harvest or forward contracting as primary marketing tools. Use of futures and options is found to increase with farm size. Willingness to participate in a marketing cooperative (pool) is found to be effected by use of cash sales at harvest as a primary marketing tool, money spent on gathering marketing information, previous experience with marketing pools, and age of the respondent. Willingness to plant Identity Preserved soybeans is directly related to offered premiums.*

Keywords: soybeans, marketing, cooperative, identity preserved

## MARKETING PRACTICES AND MARKET CHANNEL UTILIZATION BY MISSISSIPPI SOYBEAN PRODUCERS

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The Federal Agricultural Improvement and Reform (FAIR) Act of 1996 fundamentally changed government support of agriculture. Prior to 1996, producers were, in essence, contracted with the government, which provided a high degree of price protection (Drabenstott). The FAIR Act has forced agricultural producers to take on a greater responsibility for their own marketing and risk management. The soybean industry is important to Mississippi, accounting for 21% of the total value of crop production in the state in 1999 according to the Mississippi Agricultural Statistics Service. As such, the economic viability of this industry is vital to the health of the agricultural complex in the state. To the extent that use of alternative marketing mechanisms alters farm profitability, it is important to understand how soybean producers market their crop. This information should aid researchers and extension personnel in assessing market impacts and educational needs.

Previous work by Coble et al. has addressed some of the elements of risk management and marketing practices used by agricultural producers within the current policy environment. In a three-state survey of soybean producers (other crop producers were surveyed as well), Coble et al. found that about 43.4% of Mississippi soybean producers used futures/options as a pre-harvest pricing strategy and about 78.8% used forward contracting. These authors found no use of marketing pools by Mississippi soybean producers.

While the Coble et al. study provides valuable basic information about current marketing practices used by Mississippi soybean producers, there are several more specific questions left unanswered. First, given the producers forward contract or hedge using futures/options, what proportion of their crop do they hedge using these techniques? Who is the primary marketer

of their crop? How do the soybeans enter the market channel? Are producers satisfied with their marketing opportunities? The objective of this analysis is to assess current marketing practices used by soybean producers in Mississippi. Second, this analysis attempts to ascertain producer satisfaction with the market channel and their willingness to utilize alternative marketing methods.

### Methods

A survey was administered by the National Agricultural Statistics Service in November 1999 to a stratified random sample of 620 Mississippi soybean producers. The sample was stratified by farm size (250-499, 500-999, and 1000 or more acres), and telephone follow-up was used to limit non-response bias. A total of 376 usable surveys were returned, representing a response rate of 61%.

The purpose of the survey was to assess current use of alternative marketing practices, hedging and contracting activity, marketing information, satisfaction with various parts of the market channel, willingness to participate in a marketing cooperative (a marketing cooperative is defined here as a marketing pool), and other salient characteristics such as computer use and off-farm employment. The responses were combined and descriptive statistics computed.

A logistic regression model was used to examine the willingness to participate in a soybean marketing cooperative. The general model form is:

$$COOP = f(Cash, Class, Money, SP, Staple, SizeS, SizeM, Age, Edu),$$

where:

COOP = 1 if the respondent was willing to participate in a marketing cooperative (COOP = 0 otherwise),

Cash = 1 if the respondent used cash selling at harvest as a marketing tool (Cash = 0 otherwise),

Class = 1 if the respondent had attended formal training on the use of futures markets (Class = 0 otherwise),

Money = the amount of money the respondent spent per month on market and price information,

SP = 1 if the respondent was satisfied with prices received for soybeans (SP = 0 otherwise),

Staple = 1 if the respondent had used the Staplcotn cotton marketing cooperative (Staple = 0 otherwise),

SizeS = 1 if the farm was 250-499 acres of soybeans,

SizeM = 1 if the farm was 500-999 acres of soybeans,

Age = age of respondent in years, and

Edu = 1 if the respondent had a high school diploma or less.

The Cash variable is used to represent those producers that predominantly sell their crop at harvest with no use of advanced marketing procedures. It is hypothesized that those producers would be more favorable to a marketing cooperative because these producers could take advantage of the indirect hedging benefits (presuming the cooperative hedged or contracted with processors) without having to actually execute the hedge themselves. By contrast, those producers already utilizing futures and options may not perceive any benefit from utilizing a cooperative because they are already comfortable (and using) alternative marketing techniques.

Class is used as proxy to represent familiarity and knowledge of advanced marketing techniques such as futures and options. As above, those with more formal training in advanced techniques may be less willing to

participate in a cooperative. Money spent on collecting marketing information is used as a proxy for current market awareness. As producers become more aware and knowledgeable about marketing alternatives, they may be less inclined to market through a cooperative.

Satisfaction with prices received is also expected to inversely impact willingness to participate in a marketing cooperative. If a producer is already satisfied with current prices, he/she may be less likely to turn over marketing responsibility to a marketing cooperative. Conversely, those producers not currently satisfied with prices may perceive the bargaining power of a marketing cooperative as an avenue to increase prices received.

The Staple variable is used to control for those soybean producers who grow cotton and market through the Staplcotn cotton marketing cooperative. This prior experience with a marketing cooperative may influence their willingness to participate in a soybean marketing cooperative. Whether the influence is positive or negative will likely depend on their level of satisfaction with the Staplcotn cotton cooperative.

## Results

The marketing alternatives used by Mississippi soybean producers by farm size are shown in Table 1. In general, use of cash sales at harvest declines with increases in farm size. The use of forward contracts, futures, and options increases substantially with farm size. This suggests that larger farms are more likely to employ advanced marketing strategies. Negotiating forward contracts or examining futures prices and dealing with brokers take time, which is an opportunity cost (called a transaction cost) to the farmer, and larger farms have more product over which to spread that cost. Thus, the transaction cost per unit may decline with farm size, making the use of advanced marketing techniques more cost effective and attractive.

A smaller percentage of the producers surveyed used futures contracts as a marketing alternative as compared to forward contracts of cash sales at harvest. A slightly larger percentage of large farms used options instead of or in conjunction with futures contracts. For those respondents that reported that they hedged using futures or

options, small farms hedged an average 43% of their crop, medium farms hedged an average 45% of their crop, and large farms hedged an average 52% of their crop. Thus, not only does the level of hedging activity appear to increase

with farm size, but the proportion of the crop hedged also increases with farm size. Conversely, the proportion of the crop that was

**Table 1. Marketing Practices Used by Mississippi Soybean Producers, 1999.**

	Proportion	Standard Deviation
<b>Cash at Harvest</b>		
Small	0.67	0.471
Medium	0.67	0.472
Large	0.58	0.496
<b>Forward Contracts</b>		
Small	0.58	0.495
Medium	0.63	0.485
Large	0.70	0.459
<b>Futures</b>		
Small	0.18	0.385
Medium	0.23	0.420
Large	0.28	0.453
<b>Options</b>		
Small	0.12	0.119
Medium	0.20	0.403
Large	0.32	0.467
<b>Self Storage</b>		
Small	0.28	0.450
Medium	0.32	0.469
Large	0.35	0.479

forward contracted was about 50% for all size groups, suggesting that the size of the farm has no real impact on the proportion of the crop that is forward contracted.

Self storage also appears to be a marketing alternative that is utilized by some farmers. Again, the proportion of farmers responding that they use self storage increases with farm size. In this case, larger farmers have more product,

allowing them to better capture the economies of scale in self storage.

While it is important to understand which marketing alternatives are employed by producers, it is also important to understand who handles the actual marketing activities. That is, is the producer acting on his/her own behalf or are elevators, brokers or cooperatives acting on behalf of the producers. These responses are shown in Table 2.

**Table 2. Proportions of Producers Who Use These Marketing Services, 1999.**

	Proportion	Standard Deviation
<b>Self-Marketing</b>		
Small	0.55	0.500
Medium	0.51	0.502
Large	0.52	0.501
<b>Elevator Marketing</b>		
Small	0.40	0.492
Medium	0.42	0.495
Large	0.38	0.486
<b>Broker Marketing</b>		
Small	0.00	0.000
Medium	0.01	0.090
Large	0.04	0.196

### Cooperative Marketing

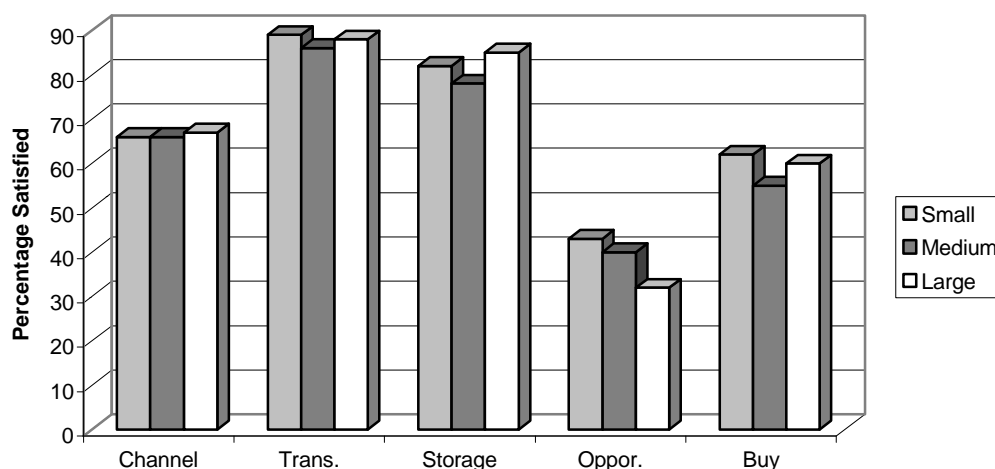
Small	0.04	0.196
Medium	0.06	0.247
Large	0.05	0.225

Over half of all producers responded that they market some or all of their soybeans themselves, but the percentage declined somewhat with the size of the farm. The largest farms were somewhat less likely to use elevators than smaller farms, and more likely to use brokers than small farms to handle their marketing needs. Only a small percentage of the farmers responded that they utilized a marketing cooperative. There are currently two marketing cooperatives operating in Mississippi. The apparent lack of use of that cooperative indicates that either: (1) most producers are unaware of this service or (2) many producers are not satisfied with this service. Given that about 70% of the producers surveyed responded they would be willing to participate in a marketing cooperative, it seems more likely that most producers are currently unaware of this service.

In terms of gathering market information, small farms spent an average 1.44 hours per month gathering and reading marketing information compared to 1.57 and 1.63 hours per month for

medium and large farms, respectively. Small farms spent an average \$39.50 per month on market information, while medium and large farms spent an average \$45.86 and \$65.50, respectively. Again, the amount of time and money increased with farm size. However, if this cost is converted to a per bushel basis ((monthly cost \* 12/(average acres \* average yield)), the small farmers are paying 4.6 cents per bushel for market information compared to 2.9 and 1.8 cents per bushel for medium and large farms, respectively. This would suggest that there are economies of size in information gathering/transaction costs.

The level of satisfaction that producers have with current market practices/alternatives is important. Satisfaction with different components of the market channel may influence how producers utilize marketing services and how they choose to market their crop. These results are presented in Figure 1.



**Figure 1. Producer Satisfaction With Different Components of the Marketing Channel, 1999.**

Over 60% of producers in each size group were generally satisfied with their overall market channel (Channel in Figure 1). Over 80% of each group were satisfied with both transportation facilities/opportunities and storage facilities/opportunities. However, less than 40% of producers were satisfied with alternative marketing opportunities (Oppor. in the figure).

The percentage of producers satisfied with marketing opportunities declined with farm size. A majority of respondents, over 50%, were satisfied with buyer availability. However, identification of new buyers would seem to be important given that about 40% of the respondents were dissatisfied with buyer availability.

### Soybean Marketing Cooperative

Given the dissatisfaction with marketing opportunities, alternative marketing arrangements may be beneficial to producers. Respondents were asked if they would be willing to market some or all of their soybeans through a soybean marketing cooperative. The results of the logistic regression are presented in Table 3.

These results suggest that those using cash sales at harvest were more likely to be willing to participate in a soybean marketing cooperative. Therefore, producers who utilize the simplest form of marketing may be more willing to, at least in part, hand over the responsibility for marketing their crop to a cooperative. It is possible that these producers perceive that the marketing cooperative could secure a higher average price than they could receive on their own.

**Table 3. Logistical Regression Results of Willingness to Participate in a Soybean Marketing Cooperative, 1999.**

	Estimate	Standard Error	Wald Chi-Square	Odds Ratio
Intercept	2.1194	0.7592	7.7932*	
Cash	0.4498	0.2701	2.7733*	1.568
Class	0.2351	0.2787	0.7117	1.265
Money	-0.0050	0.0023	4.7317*	0.995
SP	-0.6775	0.5576	1.4675	0.509
Staple	1.0968	0.3346	10.7436*	2.995
SizeS	-0.1920	0.3290	0.3404	0.825
SizeM	0.1351	0.3208	0.1774	1.145
Age	-0.0244	0.0121	4.0638*	0.975
Edu	0.3243	0.2991	1.1759	1.383
Likelihood Ratio	25.8689*			

\* Statistically significant at the 0.10 level.

Alternatively, these results may also suggest that these producers perceive the transaction costs of searching out market information and dealing with complexities of more advanced marketing methods as being too costly for their operation.

Producers that currently spend more money on gathering market information are less likely to participate in a marketing cooperative. This may suggest that those producers that are already actively searching out and using market information are more comfortable with their own marketing as compared to those that spend less money. It is difficult to discern causality here because those producers who may be more inclined to self-marketing are likely those producers who are spending the most money for market information. Thus, these producers may be less inclined to participate in a cooperative because of their disposition to self-marketing. In either case, these results suggest that the producers who spend more for market information are less likely to want to participate in a marketing cooperative.

An important factor in determining willingness to participate appears to be producer experience with the Staplcotn cotton marketing cooperative.

These results suggest that if a soybean producer had prior experience with the Staplcotn cotton cooperative, they were much more likely to be willing to participate in a soybean marketing cooperative (2.949 times more likely by the Odds Ratio in Table 3). Nearly 100% of those responding that they had prior experience with Staplcotn also responded that they were satisfied with that experience, further reinforcing their perception that a soybean marketing cooperative would be beneficial.

Age appeared to have a significant negative influence on the respondent's willingness to participate. This likely reflects the habit-forming nature of people in that as people age, they become less likely to try new things. Education, however, did not seem to influence the producer's willingness to participate.

### Identity Preserved Soybeans

The survey also assessed producer willingness to plant identity preserved (IP) soybeans. For this question, IP was defined as "high oil," "high protein," or other specific quality trait products. Producers were first asked about their knowledge of IP soybeans. About 1% of the respondents

reported that they had planted such soybeans and 43% said they had at least some knowledge of IP soybeans. About 69% reported that they would like to know more about IP products.

To examine the “willingness-to-plant” IP soybeans, each producer was asked a hypothetical question. The question stated that there was no evidence that IP soybeans had a higher cost of production for items such as chemicals, trips across fields, etc. However, there were added costs for handling and storage of IP soybeans. Then, each producer was asked if he/she would be willing to plant IP soybeans if a premium of 20, 40, 60, or 80 cents per bushel were available (These premium levels were derived from estimates by the United Soybean Board). Each producer was only offered one premium level, which was randomized across each farm size group. By asking the question in this manner, it forced the producer to consider his/her potential increase in cost of production as a result of the separate handling requirements versus the premium being offered.

About 48% of the respondents reported that they would plant the IP soybeans at the various premium levels. These responses are broken down by premium level in Table 4.

**Table 4. Proportions Saying “Yes” to Plant IP Soybeans by Premium Level, 1999.**

Premium Level	Proportion Saying “Yes”
20 cents/bu.	35%
40 cents/bu.	56%
60 cents/bu.	66%
80 cents/bu.	74%

These results suggest, as expected, that as the premium level increases, the willingness-to-plant also increases. Based on these data, the mean “willingness-to-plant” premium is 46 cents/bu. This suggests that a premium of 46 cents/bu. will induce the average producer to grow IP soybeans.

A value of 46 cents seems high. However, this figure includes the added cost of handling. In addition, there is likely some risk premium included in this amount. That is, there is risk associated with changing mode of operations and management for uncertain markets. Producers will demand some compensation for this risk before switching production and management practices. Finally, contract specification and other management considerations that were not

presented to the producer may ultimately change the premium required to induce the producer to plant IP soybeans.

## Conclusions

There are a couple of conclusions that can be drawn from this analysis. First, it appears that Mississippi soybean producers use a variety of marketing techniques, but the preponderance of producers utilize cash sales at harvest and forward contracts. Forward contracts can be thought of as an “indirect” hedging method because those writing the contracts are presumably hedging their positions. Thus, if one considers both forward contracting and direct hedging with futures/options, then most producers are hedging at least a portion of their crop. This is especially true for larger farms.

Second, the primary marketer for Mississippi soybean producers tends to be elevators or self, and this does not appear to vary substantially over farm size. However, larger farms tend to more frequently use brokers for at least some of their marketing although the percentage of producers using brokers is small.

Finally, it appears as if, in general, Mississippi soybean farmers are amenable to trying alternative marketing strategies and production practices. That is, most farmers responded as willing to participate in a soybean marketing cooperative. At the same time, many farmers also expressed a willingness to grow identity preserved soybeans. Both of these results suggest a relative flexibility on the part of soybean producers in both marketing and production.

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