Large-Scale Producers' Perceptions of, and Managerial Responses to, Increased Volatility

By Corinne Alexander and George F. Patrick

Abstract

Surveys were conducted with participants in the 2008 and 2009 Top Farmer Crop Workshops at Purdue University. These large-scale commercial farmers were asked about changes in the availability of forward pricing contracts and its impact on their marketing program. These producers were also asked about their perceptions of input costs and their management responses to higher input costs, including flexible cash rents. Although these large-scale producers have used a more active management style in response to increased volatility, there is a need for additional education and assistance in both marketing and input acquisition.

Since 2007 producers have seen a large increase in the level and volatility of output prices and input costs (Auerlich, Hoffman, and Plato; Irwin and Good; Huang; and Thiesse). Relatively little is known about producers' perceptions of this increased volatility or their management responses. This article reports the results of surveys of large-scale Corn Belt producers participating in the 2008 and 2009 Top Farmer Crop Workshops (TFCW) held at Purdue University. Participants in the TFCW are not a statistically representative sample of producers. Workshop participants are larger, all gross over $100,000 in farm income, have more years of schooling, and are younger than farmers in general. However, the views of these large-scale producers and information about their responses to increased volatility are useful to agribusinesses, educators, and others working with commercial producers.

Participants in the TFCW were furnished lunch and asked to complete a questionnaire for each farm operation that covered a variety of areas. Fifty completed questionnaires were returned in 2008 and forty-four were returned in 2009, response rates for operations participating in the workshop of more than 85 percent. Selected socio-economic characteristics of the respondents and their farm operations are presented in Table 1.

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Producers' Responses to Reduced Forward Pricing Contracts

Output price volatility reached record levels in spring of 2008. One consequence of this extreme price volatility is that many grain elevators reduced the forward pricing contracts they offer producers because they simply did not have the line of credit to meet margin calls associated with hedging in the futures/options market (Thiesse). Based on the experience of TFCWs respondents, who came from eight states in the Corn Belt, the number of elevators who reduced their offerings was widespread; 85 percent said that their local elevator reduced their offering of price contracts in the summer of 2008. For the producers whose elevators reduced their price offerings, the majority (52%) indicated they made do with the reduced offerings of price contracts, although some producers implemented multiple responses (Table 2). Forty-five percent of the producers modified their marketing plans. Almost a third (31%) turned to the futures market to forward price by hedging with futures and options through a broker. A substantial number found buyers other than their local elevator: 26 percent marketed with a different elevator and 14 percent contracted directly with a buyer other than their local elevator.

Producers' Input and Cost Concerns

Producers were asked to indicate how concerned they were about cost increases between 2007 and 2008 and anticipated increases between 2008 and 2009 on Likert-type scales of 1 (no concern) to 5 (major concern) for 14 cost categories. Fertilizers, fuel for machinery, seed, and machinery were among the six highest rated concerns in both years (Table 3), although the rankings differed. For all of the 14 categories of costs, concern about cost increases was higher for 2009 than 2008. This is not unexpected in that most of the 2008 costs had been incurred by the time of the July 2008 survey. The level of cash rents attracted considerable attention in farm-related publications, but rated only 3.70 and 3.98 in the survey for 2008 and 2009, respectively. Herbicides, pesticides, fungicides and labor were other inputs for which the changes in costs were of less concern to producers.

Management responses to input cost increases

In 2008, producers also saw unprecedented increases in input costs and input cost variability. Depending on the timing of when a producer priced or purchased inputs, the actual cost increases varied greatly among producers in the workshop.

Diesel fuel

For diesel fuel, the TFCW producers reported an average cost increase of 45 percent and one producer reported no cost increase at all. Twenty-five percent reported a cost increase of 10-25 percent. Forty percent reported a cost increase of 26-50 percent. Sixteen percent reported a cost increase of 51-75 percent and 14 percent reported a cost increase of 76-100 percent.

Producers responded to the higher diesel fuel prices with several management strategies. The most common response (54%) was to organize their traveling to do less (Table 4). Over a third (38%) used more no-till or reduced tillage. Almost a third (30%) said that they look more at fuel efficiency when purchasing new machinery, although this is a strategy that only works for producers who are in a position to replace equipment. Very a few producers (2%) said that they responded by not travelling as far to farm. These results suggest that producers, in the short-run, had neither stopped renting farmland nor rented out owned land that is far from their base of operations.

Fertilizer

For fertilizer, the average cost increases and variation in those increases varied by the type of fertilizer (Huang). Overall, respondents indicated the average cost increase was about 60 percent for nitrogen, phosphorus, and potash (Table 5). Again, this average masks a lot of variability in the actual cost increases. In the case of nitrogen, while about half (48%) of the producers had cost increases between 20 and 50 percent, almost a quarter (23%) had cost increases of 100 percent or higher. In the case of phosphorus, while the majority (61%) had cost increases of 50 percent or less, about a fifth (22%) had cost increases of 100 percent or higher. In the case of potash, while two-thirds (67%) had cost increases of 50 percent or less, a quarter (25%) had cost increases of 100 percent or higher.

The most common strategies to deal with the higher fertilizer prices were to use lower rates (43%), do more soil testing (40%), and to use variable application rates (38%) (Table 6). Almost a quarter of the producers (23%) also reported that they planted more soybeans than they would have otherwise. Since soybeans use substantially less applied nitrogen and a bit less phosphorus than corn, producers can reduce the total amount of fertilizer they use by switching to soybeans. All of the producers with an average fertilizer price increase of over 50 percent used at least one of these management responses, and 44 percent of them used two or more management responses.

Fertilizer costs, 2009 data

The 2009 TFCW participants were asked if and how they have made changes in their fertilizer purchase behavior in the last year on Likert-

type scales of 1 (substantially earlier/smaller) to 3 (no change) to 5 (substantially later/larger). As a result of the higher fertilizer prices and the volatility of fertilizer prices, producers are spending more time and effort on their fertilizer purchases. Fifty-eight percent of producers responding reported that they are initiating their search for fertilizer earlier than in the past (Table 7), while thirty-five percent made no changes and seven percent initiated their search substantially later. Forty-two percent of producers reported that they are contacting more vendors than in the past, while forty-seven percent contact the same number, and eleven percent contacted fewer vendors. Thirty-one percent of producers have increased the amount of fertilizer they stored on-farm, compared with sixty-four percent who have made no change and five percent who have reduced on-farm storage of fertilizer. Overall there seem to be few changes in the number of producers who prepay fertilizer; 50 percent made no changes. Equal numbers of producers increased and decreased the amount they prepay. There were also very few changes in the number of written contracts for fertilizer as 75 percent made no change.

Almost a third (30%) of the producers switched fertilizer vendors in 2009 which is an indicator of the level of turmoil in the fertilizer market. For those who switched vendors, the primary reason was price; 92 percent reported price as the reason they switched vendors. There were other factors in addition to price: one producer mentioned product availability; one mentioned services; and one switched because his vendor went out of business.

Use of contracts with fertilizer suppliers declined slightly from 32 percent of producers in 2008 to 27 percent in 2009. Five of the twelve producers with contracts in 2009 attempted to renegotiate a previously established price, but only one producer was successful in obtaining a price reduction of 10 percent or more.

Farmland rents, 2008 data

With record farm incomes in 2007 and 2008, many producers and landlords renegotiated their leases. For TFCW respondents, the average increase in their cash rent was 24 percent, ranging from no increase to a high of an 80 percent increase. The land rental market has a lot of inertia because many of the leases are multi-year and are only renegotiated periodically. The TFCW participants were asked how they had responded to the increases in cash rents. The majority (58%) did not make any changes to their leases (Table 8). For the producers who made changes, the most popular response (29%) was to use a flexible rent, followed by a share rent (13%). Fewer producers either decided to farm less ground (8%) or decided to terminate the lease because the asking rent was too high (8%). All of the respondents with cash rent increases over 50 percent said that they were employing more flexible rents.

Flexible cash rents, 2009 data

In 2009, TFCW participants were asked to provide more detail on flexible leasing arrangements. Thirty-two percent of the 2009 TFCW respondents used flexible leasing arrangements on a portion of their rented ground. For producers who used flexible rents, on average 25 percent of their rented ground was under a flexible leasing arrangement, ranging from a low of 3 percent to a high of 75 percent.

Nearly half (43%) of the flexible cash rents agreements have a minimum cash rent that is close to what producers considered the current market level (Table 9), while about a fifth (21%) have a minimum rent that is below the current market level. A small portion of the producers (14%) have multiple minimum rent contracts and reported these rents are both close to and below the current market level. Almost a third (29%) of the producers has a maximum rent amount specified. Almost a third (29%) of the producers share gross revenue above a specified amount. About a fifth (21%) have an arrangement that accounts for changes in production costs. Almost half of these arrangements (43%) are renegotiated each year and over a third (36%) have provisions allowing for longer term leases. Almost half (43%) of the producers who use flexible cash rents report that this leasing arrangement has increased their landlord's interest in what is happening on the farm and over a third (36%) increased their landlord's willingness to make capital improvements in such things as improved drainage.

For the flexible cash rents, in the majority of cases (50%) the cash rent is adjusted based on the farm's gross revenue (Table 10). In about a fifth (21%) of the arrangements the cash rent is adjusted based on price only. In another fifth (21%) of the arrangements the cash rent is adjusted based on the yield on the rented farm. The least common arrangement adjusts the cash rent based on a yield, such as the county or state average yield, that is not specific to the rented farm. For the flexible cash rents in which gross revenue is shared, the landlord's share of the revenue was 33 percent in three-quarters of the arrangements and 25 percent in a quarter of the arrangements.

Conclusions and Implications

Producers have seen large increases in the level and volatility of both

output prices and input costs since 2007. Producers have responded to this increased volatility with more active management strategies. With higher commodity prices and limited availability of some pricing instruments, 40 percent of the large-scale producers modified their marketing plan, while 31 percent priced through a broker and 26 percent marketed with a different elevator. With respect to purchasing of inputs, producers traditionally followed a routine strategy or habit. In response to the recent increase in input costs, producers have also been active in trying to control the level of input costs and to ensure the availability of needed inputs. Furthermore, some producers have even taken steps to reduce their exposure to volatile input costs by investing in more fuel efficient equipment or being more flexible with crop rotations.

This new era of output price and input cost volatility challenges farm managers, farm advisors, and Extension to conduct research on new risk management tools and provide education for producers on existing and new risk management tools. Results of the 2008 and 2009 TFCW surveys provide some guidance for research and education priorities. For instance, a growing number of producers are utilizing flexible leasing arrangements, suggesting both more research and education efforts are needed. Producers are clearly becoming more active marketers and would benefit from more education on new and existing price risk management tools. Another area where little research has been done is the area of managing input costs.

References

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Table 1. Selected socio-economic characteristics of TFCW respondents

Characteristic	2008	2009
Age of the operator	46.0	46.4
Years of education	15.4	15.0
Total acres farmed	2870.9	3113.6
Percent of land owned	38.8	40.7

Table 2. Management responses to reduced price contracts at local elevator in summer 2008

Management Response	Percent[a]
Made do with the reduced offerings of price contracts	52%
Modified your marketing plan	45%
Hedge with futures and options through a broker	31%
Market with different elevator	26%
Contract directly with a buyer such as a livestock producer or ethanol plant	14%

[a]The percentages add to more than 100% because respondents could check more than one response.

Table 3. Producers' highest rated input and cost concerns for 2008 and 2009[a]

Input or Cost	2007 to 2008	Input or Cost	2008 to 2009
Nitrogen	4.28	Nitrogen	4.72
Fuel for machinery	4.04	Phosphate	4.40
Potash	3.98	Potash	4.39
Phosphate	3.94	Seed	4.29
Machinery	3.82	Fuel for machinery	4.28
Seed	3.74	Machinery	4.00

[a]Ratings were on Likert-type scales ranging from 1 (no concern) to 5 (major concern).

Table 4. Management responses to higher diesel prices in 2008

Management Response	Percent[a]
Organize my traveling to do less	54%
Use more no-till and/or reduced tillage	38%
Look more at fuel efficiency when purchasing new machinery	30%
Do not go as far to farm	2%

[a]The percentages add to more than 100% because respondents could check more than one response.

Table 5. Fertilizer cost increases in 2008

Fertilizer	Average Increase	Minimum	Maximum
Nitrogen	63%	20%	150%
Phosphorus	60%	10%	200%
Potash	56%	10%	125%

Table 6. Management responses to higher fertilizer prices in 2008

Management Response	Percent[a]
Use lower rates	43%
Use variable rates	38%
Did more soil testing	40%
Planted more soybeans than I would have otherwise	23%

[a]The percentages add to more than 100% because respondents could check more than one response.

Table 7. Changes in producer fertilizer purchasing behavior

	Substantially Earlier		No Change		Substantially Later		St.
Purchase Behavior	1	2	3	4	5	Mean	Dev.
Date when search for fertilizer is initiated	20%	38%	35%	0%	7%	2.35	1.03
	Substantially Smaller		**No Change**		**Substantially Larger**		**St.**
	1	2	3	4	5	Mean	Dev.
Number of potential vendors contacted	2%	9%	47%	35%	7%	3.35	0.83
Amount of fertilizer purchased	4%	22%	56%	16%	2%	2.89	0.80
Amount of on-farm fertilizer storage	5%	0%	64%	14%	17%	3.38	0.94
Amount prepaid (before delivery) for fertilizer	9%	16%	50%	16%	9%	3.00	1.03
Number of written contracts	8%	2%	75%	13%	2%	3.00	0.75

Table 8. Management responses to higher cash rents in 2008

Management Response	Percent[a]
Do more flexible rents	29%
Do more share rents	13%
Farmed less ground	8%
Had to let some ground go—could not farm it at that rent	8%
No response	58%

[a]The percentages add to more than 100% because respondents could check more than one response.

Table 9. Terms of flexible cash rent arrangements

Terms	Percent[a]
Have a minimum rent that is less than current market level	21%
Have a minimum rent that is close to the current market level	43%
Both a minimum rent that is less and a minimum rent that is close to the current market level	14%
Have a maximum specified rent	29%
Share revenue above a specified amount	29%
Account for changes in production costs	21%
Are renegotiated every year	43%
Allow for a longer term lease	36%
Have increased landlord's interest in what is happening on the farm	43%
Have increased the landlord's willingness to make capital improvements in such things as improved drainage	36%

[a]The percentages add to more than 100% because respondents could check more than one response.

Table 10. Basis for adjustments in cash rent

Basis for adjustment	Percent
Price only	21%
Only yield on the rented farm	21%
Only yield but not specific to rented farm (e.g., county or state average yields)	7%
Gross revenue	50%