

12-1-2002

Measuring the Perceived Effectiveness of Training for the Dairy Option Pilot Program

Gregory Ibendahl

University of Kentucky, gibendahl@uky.edu

Leigh Maynard

University of Kentucky, lmaynard@uky.edu

Andrea Branstetter

University of Kentucky



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Recommended Citation

Ibendahl, G., Maynard, L., & Branstetter, A. (2002). Measuring the Perceived Effectiveness of Training for the Dairy Option Pilot Program. *The Journal of Extension*, 40(6), Article 12.

<https://tigerprints.clemson.edu/joe/vol40/iss6/12>

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December 2002 // Volume 40 // Number 6 // Research in Brief // 6RIB4



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Abstract

This article presents the results of a survey designed to measure the perceived effectiveness of Dairy Option Pilot Program (DOPP) training. A pre- and post-training survey was used to see if the training increases a dairy farmer's perceived knowledge and understanding of put options. Because the Risk Management Agency is expanding dairy risk management, evaluations are needed to measure the potential success of these programs. Survey results show the training significantly increased the farmers' reported comfort level and understanding. The majority of farmers reported intentions to buy options to control risk. Undetermined, however, is whether dairy farmers will consider options after the DOPP program ends.

Gregory Ibendahl

Assistant Extension Professor

Internet Address: gibendah@uky.edu

Leigh Maynard

Assistant Professor

Internet Address: lmaynard@uky.edu

Andrea Branstetter

Graduate Assistant

Agricultural Economics

University of Kentucky

Lexington, Kentucky

Background

The Risk Management Agency (RMA) of the United States Department of Agriculture (USDA) was established as part of the provisions of the Federal Agriculture Improvement and Reform Act of 1996. One of the RMA's main responsibilities is to help administer the crop insurance program. However, the RMA is also charged with providing risk management training to farmers. Some of this training and education is conducted jointly with the Cooperative Extension Service.

One of the new programs being developed by the RMA is the Dairy Option Pilot Program (DOPP). Most new programs such as DOPP are tested for 2 or 3 years before they are made broadly available. The current DOPP program requires a significant time commitment from Cooperative Extension Service personnel. However, no studies have been conducted to determine if DOPP will help farmers' perception of risk reduction or if DOPP training will improve farmers' knowledge and understanding of some of the available risk reduction tools.

This article presents the results of a survey designed to assess the perceived effectiveness of DOPP training. Specifically, the survey addresses the issue of whether farmers feel DOPP training increases a dairy farmer's knowledge and understanding of put options.

The results can be used by policy makers and educators to help address the issues of risk training for farmers. Often farmers may be reluctant to participate in a program because they feel overwhelmed by the materials and concepts. The success of DOPP has implications beyond the dairy industry, as DOPP was initially conceived as the forerunner in a potential series of option pilot programs. DOPP fits into the broader context of efforts to encourage use of private risk management tools, as an alternative to reliance on government loss assistance.

Background of Options and DOPP

Until the 1980's, dairy farmers did not face much price risk because government price supports were so high (Plourd, 1997). Starting in the 1980's, the government reduced its price supports. This has resulted in much greater variation in milk prices. The last few years have seen the largest month to month price drops in history. These price changes mean dairy farmers are now operating in a much riskier environment.

Put options are one of the main tools dairy farmers can use to manage price risk. These options give dairy farmers the right, but not the obligation, to sell their milk at a predetermined price. Farmers are basically buying price insurance when they purchase a put option. Like other types of insurance, buyers must pay a premium for the protection and can choose among several levels of protection. A study by Wolf and Berwald (1999) found that the dairy futures market is an efficient hedging tool.

There are several factors that discourage farmer use of dairy put options. One of the main obstacles with purchasing put options is their cost. Costs vary but can often be 5% of the milk price (Chicago Mercantile Exchange, 2002). Another potential problem is the lack of farmer knowledge about futures and options. Terms like "basis," "strike price," and "premium" are probably unfamiliar to the typical dairy farmer. In addition, the farmers usually must deal with a broker whom they likely have never met.

The DOPP program is designed to help farmers determine if options contracts can provide useful risk reduction on their farms. DOPP provides a financial incentive toward purchasing put options as well as providing education about futures and options. Under the DOPP rules, eligible farmers only have to pay 20% of the cost of a put option (RMA, 2001). The USDA pays for the other 80% as well \$30 of the broker fee per option. Additional restrictions control who is eligible and when the options can be purchased and sold. However, the biggest requirement is that dairy farmers attend a 4-hour training session.

Methods

This article presents the results of a survey designed to gauge the perceived effectiveness of DOPP training in Kentucky. During June 2001, 41 farmers from 12 counties participated in one of four training sessions. This represents 4.5% of the 917 eligible farmers. DOPP training began in 2000 in Kentucky in two counties and was expanded in 2001 to include 12 counties. Because counties included in 2000 were also part of the current training, there were a few participants who had already been through the training.

All of the participating farmers were given a two-part survey. Pre-training questions were asked to gauge the farmers' perceived knowledge of put options and risk management. Post-training questions asked many of the same questions, along with some others about the overall usefulness of the training. Differences between pre- and post-training responses were used to determine if the DOPP training increased farmers' knowledge of put options. Pre-training surveys were given at the start of the day's training, and post-training questions were asked at the end of the day's training. The training usually lasted 4 hours. The authors developed the questions used in the survey instrument.

Table 1 presents descriptive statistics of dairy farmers participating in the DOPP training. The average farmer was 42 years old with some college education. These farmers were milking over 100 cows, and the typical cow produced over 18,000 pounds of milk per year. Only three farmers had ever tried using put options before, and at least two of the three had done so because of DOPP training the previous year.

Table 1.
Descriptive Statistics of Farmers in DOPP Training

Description	Mean	Coefficient of Variation ^a
1. Age of producer	42.0	24%
2. Level of Education ^b	3.7	23%
3. Number of cows in milk	109.2	105%
4. Number of dry cows	32.5	146%

5. Milk/Cow/Year (lbs.)	18,328	17%
6. Number of times options used in the past	0.22	3.8%
^a coefficient of variation = standard deviation/mean ^b 3=high school, 4=some college, 5=4-year college degree. Note: education is a discrete measurement.		

According to Kentucky Agricultural Statistics (1999-2000), the average Kentucky dairy farm is smaller and has lower milk production per cow than farms participating in DOPP training. In 1999, the average milk production per cow for Kentucky was 12,368 pounds, while the average farm had fewer than 42 cows. In total, Kentucky has 133,000 milk cows on 3,200 dairy farms.

Findings

Perceived Learning Outcomes from Training

Table 2 presents results of the survey instrument about perceived learning outcomes from training. The first column lists the question that was asked in both the pre- and post-training parts. The second column shows the mean pre-training score, and the third column shows the mean post-training score. The fourth column tests whether there was a significant change from pre- to post-training response by using a paired t-test. If the t-value in column four is greater than two, then the change in the responses was deemed statistically significant at approximately the 0.05 level.

Table 2.
Perceived Learning Outcomes from Training

Question	Pre-training Response (1 to 5)	Post-training Response (1 to 5)	t-Value ^a
1. I know enough about milk options to feel comfortable using them in my business ^b .	4.10	2.50	7.14*
2. I could explain a strike price to another farmer ^b .	4.38	2.59	8.89*
3. I could explain an option premium to another farmer ^b .	4.33	2.49	7.62*
4. People who use futures and option contracts are gambling with their money ^b .	3.03	3.71	2.69*
5. Brokers can be trusted to give you good financial advice ^b .	3.00	2.89	0.68
	Pre-training % Correct	Post-training % Correct	t-Value ^a
6. Put options are most like a) insurance b) gambling	73%	94%	2.38*

7. Put options are a way to a) make money b) reduce risk c) both a) and b)	95%	97%	0
8. How do brokers make money on put options a) when purchased b) when sold c) when milk price go up d) when milk prices go down	39%	65%	2.28*
9. A put option increases in value when milk prices a) go up b) go down c) stay the same	73%	93%	1.98
<p>^a t-values > 2 imply a statistically significant difference (at approximately the 0.05 level) between pre- and post-training responses.</p> <p>^b 1=strongly agree, 2=agree, 3=indifferent, 4=disagree, 5=strongly disagree.</p> <p>Note: These results are significant at the 0.05 level.</p>			

The first five questions of Table 2 use a five-point scale to qualify responses. If farmers strongly agree with a statement, then it is scored as a one, while strongly disagreeing is scored a five. Agree, indifferent, and disagree are scored a two, three, and four, respectively.

The last four questions of Table 2 are not designed to qualify responses. These questions have a correct and an incorrect response. A farmer's response is scored a one for choosing the correct answer and is scored a zero for picking the incorrect answer.

Question one is probably the best indication that the training encouraged farmers to participate in the program. Before the training began, most were not comfortable with options and how they worked. Training increased their comfort level so that many farmers would agree that they would be comfortable using options in their operations. Assuming increased confidence in a tool increases the usage of the tool, then the training achieved its objective.

Questions two and three indicate that the training may have helped farmers understand the terms involved with purchasing an option. What is somewhat surprising is that farmers feel slightly more comfortable using options than they do explaining the option terms. This difference appears both in the pre- and post-training responses. However, the differences are very small, especially for the post-training responses.

The training was less successful in convincing farmers that using put options is not gambling. Question four indicates that farmers started the training indifferent about whether options are gambling. By the end of the training, they only slightly disagreed with the gambling statement. A preferred result would have more farmers disagreeing that options are gambling. When options are compared to either gambling or insurance, as in question 6, farmers did a better job of correctly describing options as insurance. By the end of the training, 94% of the participants thought the insurance analogy better described hedging with options.

Part of the explanation of why farmers may have compared options to gambling may be a factor of the training methods used. Farmers played a simulated game involving whether and when to purchase options. In the game, timing was critical to payoffs, and some farmers even made more money not purchasing options. The fact that options helped reduce income variation may have been overlooked by farmers.

Questions seven, eight, and nine indicate the training helped farmers understand the mechanics behind options. The correct response was picked by more participants at the end of the training than at the beginning. For questions seven and nine, farmers started with correct responses in pre-training above 70% and finished with correct responses above 90%.

Another weak area of the training appears to be about the function of brokers. Question five indicates some wariness among farmers about whether to trust brokers. Training did not significantly change this perception. Question eight indicates farmers do not fully understand how brokers make money, although the training did improve the correct response rate. Outcomes on questions 5 and 8 may be related to broker participation. During the Kentucky training, only one broker attended and for only two of the four sessions.

Perceived Usefulness of Training

Table 3 shows the results of questions only asked during the post-training. They concern perceived usefulness of training.

Table 3.
Perceived Usefulness of Training

Description	Mean	Coefficient of Variation ^a
1. I plan to purchase a put option ^b .	2.2	45%
2. This training increased my knowledge of put options ^b .	1.9	64%
3. I would recommend this training to other dairy farmers ^b .	1.9	54%
4. I need to learn more before trying to buy put options ^b .	2.6	43%
5. I thought the information presented was sufficient ^c .	0.1	481%
^a coefficient of variation = standard deviation/mean. ^b 1=strongly agree, 2=agree, 3=indifferent, 4=disagree, 5=strongly disagree. ^c -1=too basic, 0=just right, 1=too difficult.		

Question one of Table 3 corresponds closely to question one of Table 2. Most farmers agree they will purchase a put option. A similar response from Table 2 indicates most farmers feel comfortable using put options. Thus, comfort level can be used as an indication of whether the training was successful at encouraging farmers to buy put options. However, an unanswered question is whether farmers will buy put options outside the DOPP program.

The rest of the questions provide a guide about sufficiency of the training. Question two and three show that farmers agree the training was helpful and useful to dairy farmers. Farmers stated that the information covered was just right (question five). However, there was slight agreement that farmers need to learn more (question four).

Kentucky modified the original DOPP material to help emphasize the insurance aspects. This was done because of the lack of experience with futures and options of most farmers. These changes probably helped with the response to question five but may have lowered the responses to question four. However, using the original material probably would have increased the "too difficult" response for question five without increasing the understanding of most farmers.

Conclusions

The survey reported here indicates that DOPP training is useful in helping dairy farmers understand and use options. Most farmers in the training had little prior knowledge about put options and probably would not have considered this tool without the training. The training significantly improved the farmers' comfort level, and most agreed they would consider buying put options. Yet to be determined, however, is whether farmers will buy put options without the DOPP program subsidy.

A final point of concern is about the desire of dairy farmers to undertake risk management. The DOPP program provides significant financial incentives to help farmers learn about risk management. Despite the substantial financial incentives to attend the training, fewer than 5% of the eligible farmers elected to attend the training.

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