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Long-Term Impact of the Farm Financial Analysis Training Curriculum on FSA Borrowers in Pennsylvania

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Abstract: The Farm Financial Analysis Training (FFAT) course covers fundamental skills and concepts in liquidity, profitability, solvency, and efficiency. The research reported here identifies and measures the impacts of FFAT on participants including: 1) perceived gains in knowledge, 2) changes in management behavior, 3) changes in specific farm assets and profitability, and 4) changes in attitudes regarding farm finance. FFAT is demonstrated to provide new and at-risk producers with effective educational materials that will significantly increase: their knowledge about financial statements, their use of financial management tools, and farm profit and net worth, and improve their attitudes when dealing with agricultural lenders.

Background and Previous Studies

Structured finance and production management borrower training was an explicit mandate in the 1990 Farm Bill (The Food, Agriculture, Conservation, and Trade Act of 1990) and has been part of every farm bill since then. The background for this mandate was the farm financial crisis of the 1980's, the most severe agricultural downturn since the "Dust Bowl" of the 1930's. Financial stress during 1983-87, the most difficult years, led to the failure of approximately 300 agricultural banks and more than 200,000 farmers nationwide (Hanson, Delavan, & Power, 1996). In the wake of this agricultural tragedy, Congress sought to motivate the

improvement of farmer finance skills by mandating that farmers with USDA loans complete finance and production training courses (FSA, 2001).

A Kentucky study by Ibendahl, Isaccs, and Trimble (2002) concluded that producers typically commence Farm Service Agency (FSA) borrower training with "substantial management training deficiencies" thus supporting the need for the mandated courses. This study also concluded that most farmers do not keep track of enough information, nor do they understand some of the records they do keep.

Past studies give us a brief glimpse of how FSA borrowers keep records and how they use or fail to use them to manage their farm. Hanson, Parson, Musser, and Power (1998) provided a financial description of a "typical" FSA borrower and measured immediate gains in knowledge of financial statements, planning, and profitability by applying learned skills on a broad scale. They concluded that the educational impact of the farm financial workshops was "large and significantly different dependent upon socioeconomic variables including farm profit and size."

Since 1993, Penn State University and various farm management educators in the Commonwealth of Pennsylvania have been meeting the finance training needs of farmers using the Farm Financial Analysis Training (FFAT) curriculum materials. The FFAT course provides farm producers with the following: grounding in core financial statements; the fundamental concepts of liquidity, profitability, solvency, and efficiency; and an in-depth understanding of financial analysis and problem solving. FFAT consists of five chapters that use curricula based primarily on short explanations, examples, exercises, quizzes, and own-farm homework.

The success of the Pennsylvania training program led to its use by the USDA national office in the training of all new Farm Service Agency (FSA) loan officers since 1997. Acting upon a request by FSA in 2003, the FFAT course was further adapted for use in a correspondence format. Currently, FFAT is used, at some level, in 45 states to satisfy the FSA borrower training requirement. To our knowledge, no post-training impacts survey has been performed or published.

Goals of the Study

The goal of the research reported here was to identify and measure the impacts of FFAT training on participants. Specifically the survey was designed to measure: 1) quantify perceived gains in knowledge, 2) measure changes in management behavior, 3) measure change in specific farm assets and profitability, and 4) assess changes in attitudes regarding farm finance and lending. The research project surveyed participants of FFAT 1 to 5 years after taking the finance training.

Methodology

A first draft of the survey was mailed, along with a list of research goals, to five financial management educators in Pennsylvania for their evaluation and input. In addition, several producers completed the survey and were asked for comments regarding its clarity and ease of understanding. All comments and suggestions were reviewed and, where possible, incorporated.

A modified Dillman survey approach (1978) was used. A list of farm participants who had attended the training between 2001 and 2006 in Pennsylvania was compiled. Two hundred and thirty-three (233) participants were sent a numerically coded survey in September of 2006, along with a cover letter explaining the project and asking participants to return the completed survey in a self-addressed stamped envelope. Those not returning surveys within the first 2 weeks after the initial mailing were sent a post card reminder.

Finally, a second survey and cover letter were mailed to non-respondents in November of 2006 offering a last chance to participate in the survey. Of the initial mailing, sixty-nine (30%) completed surveys were returned. The response rate is thought to be representative for the farm population sampled.

Findings and Discussion: About the Respondents

The distribution of ages of respondents is shown in Table 1. Note that over half of all respondents were less than 40 years of age. In fact, 68% of the responding dairy farmers were less than 40 years old. When one considers that, according to the National Agricultural Statistical Service in 2002, the average age of a farm operator in Pennsylvania was 53 years old, it is apparent that the respondents were a much younger group. This also correlates with the priority given to loans to beginner farmers by FSA.

Of all respondents, 57% reported a high school diploma as their highest level of education. Thirty-six percent of dairy farmers responding reported having only an 8th-grade education, which likely represents the large population of Anabaptist (Amish and Mennonite) dairy farmers in the region.

Experience is often cited as a factor in farm profitability. Respondents indicate that slightly less than half (49%) had 10 years or less experience in farming. Fifty-seven percent of the dairy farmers had 10 years or less experience (not shown). While farming experience is a requirement for FSA farm loans, many FSA borrowers are relatively new to operating their own farm. Absence of good commercial credit is regarded as a requirement for FSA loan eligibility, and inexperience is often a factor in withholding credit.

The gender of respondents was similar for all farms types, 77% male and 23% female, except for the livestock farms, in which 36% of the respondents were female (not shown). When asked who keeps the farm records, Table 1 shows that in only 29% of farms was recordkeeping done by both spouses, and that males are the record keepers in close to 40% of the farms. Females, alone or with the spouse, are involved in recordkeeping 50% of the time, which correlates to anecdotal evidence.

Table 1.
Demographic Data by Percent Respondents

Age of Respondents by Farm Type (%)			
Age	Dairy	Non Dairy	Total
30 Years or Younger	33%	13%	25%
31 - 40 Years	35%	21%	30%
41 - 50 Years	16%	29%	21%
51+ Years	16%	38%	24%
Education of Respondents (%)			
Education	Dairy	Non Dairy	Total
8 th Grade or less	36%	4%	25%
High School	45%	78%	57%
College or Post Grad	17%	17%	17%

Record Keepers by Type of Farm (%)			
Record keeper	Dairy	Non-dairy	Total
Male	38%	40%	39%
Female	26%	12%	21%
Both	26%	36%	29%
Accountant	11%	12%	11%
Value of Market Machinery (%)			
Value	Dairy	Non-dairy	Total
0 - 50,000	36%	42%	38%
50,001 - 100,000	31%	21%	27%
100,001 - 200,000	26%	21%	24%
200,001 - 250,000	5%	13%	8%
250 ,000 +	3%	4%	3%
Debt to Asset Ratio of Respondents (%)			
Value	Dairy	Non-dairy	Total
0 - 30%	25%	22%	24%
31 - 70%	67%	78%	70%
71% +	8%	0%	6%

When asked about their debt to asset level, 70 % of the respondents indicated that they were in the 31% - 70 % category (Table 1). Dairy producers also reported that 8% of respondents had debt levels that exceeded 70% of their assets. According to Peoples, Freshwater, Hanson, Prentice, and Thor (1992), a debt ratio of 71% would be classified as high debt. The enterprises operated by respondents and the average number of animals on livestock farms are shown in Table 2. Forty-two (42) producers averaged 76 cows on the farm. Producers indicated that 36 of the 68 respondents produced corn silage and/or hay. Only 15 % raised cash grains or soybeans.

Table 2.
Number of Responses by Farm Type

Type of Farm Animals	# Respondents	Ave # Animals
Dairy	42	76
Beef	10	32
Feed Beef Calves	7	95
Hogs	4	769

Corn Silage/Hay	36	
Raise Cash Grains/Soybeans	15	
Fruit and Vegetables	5	
Contract Producer, Poultry/Hogs	5	
Other	5	

Findings and Discussion: Perceived Gains in Financial Knowledge

Respondents were asked to rate their perceived level of knowledge about the five core financial analysis tools BEFORE and AFTER attending FFAT on a scale of 1 (poor) to 5 (excellent). T-tests were conducted with the hypothesis being there was not an improvement in knowledge level from taking the training and the alternative hypothesis that there was an improvement in knowledge level from taking the training. The alternative hypothesis was significant at the .001 level for all skill levels. This is evidence that the trainings did improve knowledge level in all five key financial analysis skills shown in Table 3.

Another useful measure of impact is quantifying how many "steps" individual participants increased their level of perceived knowledge. Table 3 shows the number of respondents by the number of jumps on the Likert Scale by financial tool. Note the rankings of each tool. "Using the Balance Sheet" rated the highest number of step-gains, followed by "Financial Ratios," then "Income Statements" and "Cash Flow Budgets." Restoring financial health to high-debt farmers is a complex and difficult task, so it is not surprising that "Fixing Broken Finances" ranked last in perceived gains in knowledge.

Table 3.

Number of Respondents by Number of Levels Increased on Likert Scale by Financial Tool

Financial Tool (ranked)	Number of Changes in Likert Scale						Total Changes
	0	1	2	3	4	5	
Balance Sheet	13	22	24	7	0	0	91
Income Statement	15	26	17	6	0	0	78
Cash Flow Budget	23	23	17	4	0	0	67
Financial Ratios	21	15	22	7	0	0	80
Fixing Broken Finances	27	22	12	3	0	0	52

The percentage of participant farmers who rated post-training knowledge higher than pre-training knowledge for the five core analysis tools is shown in Table 4.

Table 4.

Percent Respondents (%) Perceived Level of Knowledge by Tool

Financial Tool		Poor		Good to Excellent		
		1	2	3	4	5
Using a Balance Sheet	Before	25%	27%	34%	9%	4%
	After	3%	3%	20%	62%	12%
Using Income Statements	Before	24%	26%	32%	18%	0%
	After	5%	6%	20%	59%	9%
Fixing Broken Finances	Before	16%	34%	34%	13%	3%
	After	9%	8%	32%	43%	8%
Using Cash Flow Budgets	Before	22%	31%	29%	16%	1%
	After	4%	13%	25%	49%	9%
Using Finance Ratios	Before	48%	36%	12%	3%	0%
	After	15%	12%	41%	26%	5%

After FFAT, "Using a Balance Sheet" rated the highest in number of respondents indicating a "good to excellent" understanding, 94%, followed closely by "Using Income Statements" (88%) and "Fixing Broken Finances"(83%). "Using Financial Ratios" ranked last, with a rating of 74%. However, the number of participants rating their perceived knowledge of financial ratios as "poor" before FFAT is substantially higher (85%) than the other tools. This needs to be taken into account when measuring impacts.

Findings and Discussion: Changes in Management

Changes in farm management practices as a result of attending a training workshop are difficult to estimate. We identified practices (Table 5) as suitable management impact categories and asked participants to rate how likely they were to use each practice on a Likert Scale of 1 (no change) to 5 (very likely). For ranking purposes, responses of 1 and 2 ("not likely") were grouped together, and responses of 3, 4, and 5 were grouped as "likely to very likely." It is significant to note that of the 10 management practices emphasized during FFAT, eight were rated by at least 74% of all participants as "likely or very likely" to implement. Ninety percent (90%) of respondents reported that they were likely to keep more accurate financial records and (88%) not use a credit card to finance farming. Eighty-two percent (82%) or more of respondents reported that they were likely to: 1) complete a December 31st balance sheet, 2) know their total farm production costs, 3) manage interest costs better, and 4) monitor operating cost better.

Table 5.
Percent of Respondents Likely to Make Changes in Management Practices as a Result of FFAT

Management Practice (ranked)	Not Likely		Likely to Very Likely		
	1	2	3	4	5

Keep More Accurate Financial Records	4%	6%	19%	57%	13%
Use a Credit Card to Finance Farming	68%	21%	9%	3%	0%
Monitor OPERATING Cost Better	9%	4%	31%	45%	10%
Improve Your Farm LIQUIDITY	9%	6%	41%	35%	9%
Know Your Total Farm Production Costs	9%	7%	22%	44%	18%
Complete a Dec 31 st Balance Sheet	10%	6%	15%	44%	25%
Manage INTEREST Costs Better	12%	6%	32%	47%	3%
Budget Your Family Living Costs	9%	16%	39%	25%	10%
Monitor Your Debt to Asset Ratios	18%	25%	18%	36%	3%
Plan Monthly Cash Flows in January	18%	28%	35%	16%	3%
*An inverse response is considered "good" for "Use a Credit Card to Finance Farming".					

The two management practices having a significant percentage of respondents reporting they are not likely to do are: 1) plan monthly cash flow and 2) monitor your debt to asset ratios. This might indicate an area where a different training approach should be taken to stress the importance of both of these critical management practices.

It is also interesting to note that the preferred answer of "Use a Credit Card to Finance Farming" was the inverse of the typical answer. A respondent simply marking "very likely" or "likely" down on the sheet without reading the question would answer in the positive, which is not a good management practice. Only eight (12%) respondents answered they were likely to use a credit card to finance farming. This indicates that most participants did read the questions before answering.

Findings and Discussion: Changes in Attitudes

FFAT focuses on the preparation and use of financial statements and ratios, and provides a methodology for fixing broken finances. The tools are taught with the goal of assisting producers in not only managing their farm but working with their lenders as well. Respondents were asked the following questions about attitudes related to farm financial management and their agricultural lenders and to rate their response from "strongly disagree" to "strongly agree" using a Likert Scale (Table 6).

Over half (53%) of all respondents agreed that, post-training, they discuss their finances more capably with their lender (Table 6). A full fifty percent (50%) also felt more confident about their financial management skills. Forty to forty-six percent felt that they were: more confident when talking to their lender (46%), more positive about their future in agriculture (41%), and less discouraged when costs rise (40%). Surprisingly, only 29% agreed that they would have managed their finances better if they had taken FFAT prior to their actual enrollment.

Table 6.
Percent of Respondents with Perceived Changes in Attitudes Influenced by FFAT

Changes in Attitude (ranked)	Strongly Disagree		No Change	Strongly Agree	
	1	2	3	4	5
I Discuss My Finances More Capably When Talking to My Lender	3%	12%	31%	40%	13%
I Feel More Confident About My Financial Management Skills	3%	15%	32%	41%	9%
I'm More Confident When Talking to My Lender	1%	15%	37%	33%	13%
I'm More Positive About My Future in Agriculture	4%	21%	34%	29%	12%
When Costs Rise, I am Less Discouraged as I am More On-Top of My Finances	6%	24%	30%	33%	7%
Had I Taken the FFAT Earlier, I Would Have Managed My Past Finances Better	9%	22%	40%	22%	7%

Findings and Discussions: Changes in Farm Profitability and Growth

The survey included nine measures of farm profitability and growth in an effort to quantify these changes as a result of FFAT (Table 7). The most frequent change in assets for all participants was 51% reporting an increase in production units and/or capacity. As might be expected, another leading change to farm assets was "Up-grade Your Farm Equipment" with 41% reporting yes. Thirty percent (30%) of the respondents reported increasing animals to the farm and having farm loans approved faster. Fourteen percent (14%) added more acres to the farm. Farming fewer acres more profitably was one of the discussion topics in the training. Seven producers (12%) reported farming fewer acres more profitably. Only 10% added hired labor to increase profitability. It is clear that growth was due to modernization and increasing production capacity. Seventy percent (70%) made one or more of the changes measured, and 45% made two or more changes.

Table 7.
Respondents Reporting Changes in Profitability and Growth Measures

Change in Profitability and Growth Measures	No Change	Yes
A. Increase Production Units/Capacity	49%	51%
B. Up-grade Your Farm Equipment	59%	41%
C. Add Animals to the Farm	70%	30%
D. Have Farm Loans Approved Faster	70%	30%
E. Add Acres to the Farm	86%	14%

F. Farm Fewer Acres More Profitably	88%	12%
G. Add Hired Labor to Your Farm	90%	10%

FFAT asserts that a basic understanding of farm financial analysis and the application of good management practices will result in an increase in profitability. To support this assertion, the survey measured participants' perception of their annual farm profit increase as a result of FFAT. The results are shown in Table 8. While 36% reported no gain, 64% reported a gain of 2% or more in annual profit. It is not an easy task for producers to estimate the impact of an educational training program on profitability. However since 47% of respondents indicated a 2% to 4% gain in profit, a substantial improvement on most farms, we believe this impact did occur.

Table 8.
Number of Respondents Reporting Increases in Annual Farm Profit

Improved Annual Farm Profit	Number of Respondents	Respondents (%)
0%	20	36%
2%	11	20%
4%	15	27%
6%	5	9%
8%	1	2%
10%	4	7%

The survey also measured participants' perception of their annual family net worth increase as a result of the financial training (Table 9). No increase was reported by 38% of participants. However, 62% reported some gain in net worth, with the highest net worth gain category of 5%, selected by 19% of respondents. This represented an average increase in net worth of \$7,314 based on producer data gathered in the survey. In summary, for all respondents, there was an average 3% gain in profit and a 2% gain in net worth.

It is important to note that Hanson et al. (1998) reported that the average response to the same question "FFAT will likely increase your net worth by?" was \$7,490, or about 4% of gross farm and non-farm income. The consistence of responses between the studies supports the validity of producer's perceptions of the impact of FFAT on farm profitability and net worth.

Table 9.
Number of Respondents by Increase in Annual Net Worth

Increase in Annual Net Worth	Number of Respondents	Respondents
0%	20	38%
1%	5	9%

2%	8	15%
3%	4	8%
4%	6	11%
5%	10	19%

Conclusions and Recommendations

As commodity margins decrease, the need for intensive financial management to maintain profitability is made more critical. Producers need to identify and solve issues detrimental to profit quickly if they are going to survive. Farm financial training is demonstrated to provide new and at-risk producers with cost effective educational materials that will: significantly increase their knowledge about financial statements, increase their use of financial management tools, improve their comfort and even attitudes when dealing with agricultural lenders, and increase farm profit and net worth.

Farm Financial Training Is Needed

Ibendahl (2002) concluded that farm producers entered financial management training with substantial financial management training deficiencies. The impacts of FFAT demonstrate that producers need farm financial training. It is important to note that in the study reported here, two out of five participants (42%) rated their perceived level of knowledge before FFAT as "Good to Excellent." This perhaps helps to explain why it is difficult to get producers to take time to learn more about farm finances. Educators need to first convince producers of their lack of knowledge regarding financial statements and the potential benefits of learning more.

Of the 11 management practices encouraged during FFAT, over 75% reaffirmed their intent to implement each of them with the exception of "plan monthly cash flows" and "monitor your Debt/Asset ratio." This likely indicates a need for additional education to focus on the importance of these practices.

Farm Financial Training Can Have Significant Impacts

Hanson et al. (1996) asserted that "clear/simple instructional materials and generous use of workshop exercises and homework based on own-farm records" were keys to a successful workshop. FFAT uses such a curriculum and has been demonstrated in this research to significantly:

- Improve perceived knowledge about farm financial management,
- Improve good farm management practices,
- Improve producers' confidence and attitudes about their finances, and
- Increase farm assets, net worth and profitability.

The Impacts of Farm Financial Training Should Be Promoted to Producers

Extension educators can encourage and promote the specific impacts of financial management training to producers using the results of the study reported here. The array of demonstrated impacts from the training are surprisingly broad and varied, so we are convinced that they can be extended beyond FSA clientele to all producers. Financial institutions that lend to agricultural producers can be made aware of the trainings and their potential impact so that lenders are better able to promote such trainings to their customers.

A Renewed Emphasis on Financial Training in Cooperative Extension Is Warranted

The requirement for finance training for FSA borrowers was written into the 1990 Farm Bill, and it has not since been removed. In many states, Extension no longer provides borrower training for FSA due in part to declining numbers of farm management educators qualified to teach it, as well as changing priorities and funding streams. The substantial impacts shown in the research reported here provides justification for renewed emphasis on the importance of farm financial management for agricultural producers. Alternate means of providing this important training can be found to assist small farms to survive. It is important that Extension professionals who focus on production issues understand the finance concepts taught in courses like FFAT, so that they are better able to encourage clientele to attend trainings. In-services can provide such training to Extension educators.

Need for Further Study

The scope of the survey described here was limited to participants in the FFAT in Pennsylvania. Farm financial analysis training is provided in other states using various methodologies and curricula. It would be useful to measure and compare the various delivery types by state and their impacts on producers using a similar survey instrument. The results will provide valuable information concerning: 1) attitudes regarding the need for borrower training, 2) the effectiveness of training programs by state, and 3) impact of multi-state training programs such as FFAT and ways to improve their effectiveness.

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