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**RISK MANAGEMENT AND INFORMATION SOURCES OF COMMERCIAL FARMERS,
AGRICULTURAL LENDERS AND PROFESSIONAL FARM MANAGERS**

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Risk Management and Information Sources of Commercial Farmers, Agricultural Lenders and Professional Farm Managers

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Abstract

The results summarize large-scale farmers, professional farm managers, and agricultural bankers sources of information, sources of and response to risk in agriculture, and their willingness to take risks. All three groups rated numerous information sources as important in making production decisions. Fewer sources of information were rated as important in making financial and marketing decisions. "Internal" sources of information such as farm records, farm employees, tenants, or borrowers were most highly rated. Professional farm managers and agricultural bankers, unlike surveyed large-scale farmers, rated peers and professional colleagues as important sources of information. Responses of the three groups in their willingness to take risks were generally similar, as were their choices from among proposed gambles, or uncertain outcomes.

The Participating Triad

Participants in the 1991 Top Farmer Crop Workshop were questioned about their sources of information and their attitudes toward risk and variability in agriculture. The Top Farmer Crop Workshop is a three-day program, held annually since 1968 at Purdue University, which provides an update on crop economics and production technology. A total of 82 farmers of the 102 participants responded to the survey and these data are summarized in Ortmann, et al. (1992). Eight states were represented, with over 85 percent from Indiana, Illinois, and Ohio. The average respondent was 39.7 years of age, had 14.9 years of schooling, and operated a farm of 1,820 acres (range of 270 to 9,605 acres). An average of 37 percent of the land was owned, 31 percent was share-leased, 29 percent was cash rented, and 2 percent was custom-operated. Corn and soybean sales represented nearly 75 percent of gross farm income. All had gross farm sales of more than \$100,000, about 42 percent had gross farm sales of \$250,000 to \$499,999, and over 35 percent had sales over \$500,000 in 1990. About 4 percent were debt free and almost 42 percent had debt-to-asset rates exceeding 40 percent.

Questionnaires were sent to 131 members and friends of the Indiana Chapter of the Society of Farm Managers and Rural Appraisers in late 1992 with a follow-up postcard reminder in January 1993. A total of 68 responses were received, two from individuals who had retired or performed only appraisals. The 66 useable responses, a 50.4 percent response rate, had an average of 22 years experience as farm managers (a range of 2 to 47) and had completed 16.4 years of formal education. About 30 percent of the respondents were also personally engaged in farming.

The average farm manager had 42 tenants (a range of 2 to 500), 55 land-owning clients (2 to 1100), and managed 47 farms (2 to 600). The average farm manager was responsible for 15,057 acres with a range from 110 to 155,000 acres. An average of 86 percent of the acreage managed was in crops, 7 percent in pasture, and 7 percent in other uses. Crop share leases were used on about 60 percent of acreage, 31 percent was cash rented, 3 percent was custom farmed, and 6 percent had some other type of lease.

Questionnaires were also sent to 265 agricultural bankers on the Indiana Bankers School mailing list at the same time and using the same procedures as the farm managers. A total of 116 useable responses (43.8 percent response rate) were obtained. The average respondent had 13.3 years of experience as a banker (range of 4 to 30) and had 15.9 years of formal education. Nearly 45 percent indicated that they were personally engaged in farming.

The average banker responding was involved in a bank with four other agricultural lender, ranging from none to 125. The average institution represented (multiple responses from a single bank could occur) had agricultural loans of \$16.4 millions, ranging from \$1.5 to \$55 million. About 44 percent of the loans were for real estate, although responses ranged from 0 to 80 percent of loans. Non-real estate loans ranged from 20 to 100 percent of loan volume with an average of 56 percent. The average bank had 203 agricultural borrowers and was involved with 101 real estate loans and 156 non-real estate loans with these borrowers.

What Information Sources are Most Relied Upon?

Respondents in each survey were asked to rate a series of sources of information (on a Likert-type scale of one for low to five for high) for their value in making production, marketing, and financial decisions. The sources of information included both general (e.g. agricultural magazines) and highly specific sources (e.g. fertility consultants). For the agricultural bankers, the question was posed as the value of the information sources for evaluating their borrowers' decisions.

The average rankings of the top three sources of information for production, marketing, and financial decisions are summarized in Table 1. All three groups rated nine (of seventeen) or more of the production information sources at 3.00 or higher. Both farmers and agricultural bankers rated records highest as a source of production informa-

tion, while professional farm managers rated tenants first, followed by records. Soil fertility consultants were rated significantly higher by farmers and farm managers than by agricultural bankers, while agricultural banker gave significantly greater importance to the accountant/tax preparer in providing production decisions than did the farmers and farm managers. Fewer information sources are highly rated in assisting the respondents in marketing decisions. Records, computerized information services, and marketing services are farmer's most highly ranked sources of marketing information, while professional farm managers and bankers rely upon their peers and/or colleagues as sources of marketing information.

All three groups rated records and the accountant/tax preparer highly as sources of financial information with farmer relying also upon their lender(s) and professional farm managers and bankers again rating their peers and/or professional colleagues as valuable sources of financial information.

Table 1 Average Rating of the Top Three Sources of Information for Production, Marketing and Financial Decisions by Large-Scale Farmers, Farm Managers and Agricultural Bankers (1=low value, 5=high value)

Sources of Information	Farmers	Farm Managers	Ag. Bankers
<u>Production</u>			
Records	4.52	3.76	4.67
Soil Fertility	3.79	3.67	*
Labor Force/Tenants/borrowers	3.60	3.76	3.55
Accountants/Tax preparers	*	*	3.33
<u>Marketing</u>			
Records	3.83	3.36	3.97
Computerized Information Services	3.63	3.31	*
Marketing Service	3.44	*	3.38
Other Farmers/Farm Managers/Bankers	*	3.70	3.38
<u>Financial</u>			
Records	4.56	3.97	4.64
Accountants/Tax preparers	3.80	3.39	3.90
Other Farmers/Farm Managers/Bankers	*	3.52	3.67
Lender	3.16	*	*

* not ranked among top three sources of information

What are the Most Recognized Sources of Risk and Variability in Agriculture?

The three groups were also asked to indicate the relative importance (on a Likert-type scale of one for low to five for high) of various sources of risk in their decision-making. For farmers and farm managers this was in terms of their farm decision-making, while lenders were asked in relation to their farm lending and decision-making. The average ratings and relative rankings of the top three sources of risk are summarized in Table 2. Farmers and farm managers both ranked crop price variability as the most important source of risk in their decision-making. However, while these primarily grain farmers ranked crop yield variability second, farm managers and bankers only ranked it fifth. Changes in environmental regulations, tenants' financial positions, and government commodity programs were of greater concern to farm managers. Concerns about the health and safety of themselves and family ranked third for farmers, although the rating was not significantly different from other groups. Neither the large-scale farmers nor the farm managers gave much importance to livestock price or livestock production variability, reflecting the limited importance of livestock in their agricultural activities.

Table 2 Relative Importance of Top Three Sources of Risk in Decision-Making of Large-Scale Farmers, Farm Manager, and Agricultural Bankers (1=low value, 5=high value)

Source of Risk	Farmers
Crop Price Variability	4.31
Crop Yield Variability	4.21
Injury, Illness, Death of Operator	3.86
	Farm Manager
Crop Price Variability	4.21
Changes in environmental regulations	4.15
Tenants financial condition	4.09
	Agricultural Bankers
Borrower's financial condition	4.66
Change in borrower's family (business) relationship	4.33
Crop price variability	4.16

Agricultural lenders were most concerned about changes in their borrowers' financial situations and family relationships, and gave significantly higher ratings to these sources than other groups. Crop prices were ranked third. Agricultural bankers gave significantly greater importance to livestock price and yield variability as sources of variability than the other groups, probably reflecting their lending involvement with both crops and livestock.

It is interesting to note that large-scale farmers rated only two sources of risk over 4.0 on the five-point scale of importance in their decision-making. In contrast, farm managers rated three and agricultural bankers rated six sources at 4.0 or above. The average importance across all sources of risk is 3.57 for farmers, significantly lower than the average of 3.75 for farm managers and 3.94 for agricultural bankers. Perhaps, because the farm managers and agricultural bankers are less involved in the actual farming operations and have less control, they give greater importance to risk in their decision-making.

Responses to risk by farmer, farm manager, and agricultural bankers are generally quite similar, with low-cost production and enterprise diversification the most important production responses. Government farm program participation and forward contracting (prices) are the most popular marketing responses by each of the three crops. Liability insurance and (prudent) leverage and credit reserve management are rated by all three groups as the most important responses to financial risk.

Choice Dilemmas Confronting Farmers, Farm Managers, and Agricultural Bankers

Psychologists have developed and tested scales of the willingness of an individual to assume risks based on hypothetical choice dilemmas, problems reflecting real life decisions (Kogan and Wallach). Twelve real life situations, which range from chess matches to investment, career, and health decisions are described for participants. Each situation concerns an individual faced with a choice between two courses of action. One of the courses of action poses greater risk but is also more rewarding if successful. For example, in one situation an individual has developed a serious heart problem. If nothing is done, the individual will have to significantly change their life style. Alternatively, a risky surgical procedure could be performed. If successful, the surgical procedure would result in a full recover, but success is not assured and the operation could be fatal. The respondent is to advise the person in deciding what probability of success (e.g., from a 1 in 10 to a 9 in 10 chance) in the situation would be sufficient to justify choosing the risky alternative. An overall score is obtained by summing the probability of success responses to the individual questions. The higher the score, the greater conservativeness with respect to taking risks.

It is often hypothesized that individuals are more willing to assume risks in situations with which they are familiar. To test this hypothesis, 12 agricultural choice dilemmas dealing with production, marketing and finance decisions faced by farmers were developed (Patrick, Musser and Ortmann). One-half of the individuals in each group received the original choice dilemmas. It was expected that farmers would have lower scores, indicating more willingness to accept risk, than farm managers and agricultural lenders. Furthermore, it was expected that all three groups would have lower scores on the agricultural choice dilemmas, situations with which they were familiar, than the original choice dilemma problems.

The average scores and standard deviations for the three groups are presented in Table 3. The overall scores of 76-80 indicate an average probability of success response of about 65 percent across the 12 situations. Neither of the hypotheses are supported by these results. Although farmers do have lower scores than farm managers and agricultural bankers, indicating more willingness to take risk, the differences are not statistically significant. Furthermore, there is no difference between the traditional and agricultural choice dilemmas for any of the groups. These results suggest that familiarity with a situation does not lead to less risk averse behavior, a greater willingness to take risks. Perhaps individuals in familiar situations only appear to outsiders to be taking risky actions. Because of their familiarity with the situation, these individuals have greater knowledge and may more correctly assess the alternative outcomes and their probabilities. These individuals may also feel more comfortable in their abilities and skills to avoid and/or overcome possible adversities in these familiar situations.

Table 3 Average Scores and Standard Deviations (in parentheses) on Traditional and Agricultural Choice Dilemmas by Large-Scale Farmers, Farm Managers, and Agricultural Bankers

Group	Choice Dilemmas	
	Traditional	Agricultural
Farmers [31,35]*	76.50 (12.53)	76.71 (13.06)
Farm managers [25,39]	80.52 (14.43)	79.61 (14.16)
Agricultural bankers [55,59]	79.09 (11.20)	79.11 (11.09)

* Numbers in brackets indicate number of individuals in each group.

Will Professional Farm Managers and Agricultural Bankers Choose as Expected when confronted with Simple Gambles?

The surveyed Farm manager and agricultural bankers were also asked to choose their preferred option in nine simple uncertain versus certain returns questions. The gambles and number of respondents choosing each option are summarized in Table 4. As can be seen, in questions 1, 4, and 7, a lesser expected monetary value is preferred by the large majority of bankers to avoid the uncertainty of the undesirable gamble. Similarly, the farm managers also prefer the certainty of a lesser expected _____ in question 4 and 7 also, but fail to express as strong of conviction toward gamble B in question 1 [although check question 7's response is highly desirable!] In general, neither the farm manager or agricultural bankers prefer sure losses, as in questions 4 and 7, but choose to elevate risk in

a rather Friedman-Savage type way in negative (low) return situations. In addition, "big upside potential" is usually favored by both the farm manager and agricultural bankers (e.g. Q2.b, Q3.b, Q6.A) when non-negligible or (more) difficult to analytically assess probabilities are present.

Table 4 Results of Nine Kahneman-Tversky Proposed Gambles, Professional Farm Managers and Agricultural Bankers

	Farm Manager's and Banker's Responses (#)	
1. A: \$4000 @ 80%, \$0 @ 20%	32	16
B: \$3000	34	100
2. A: \$3000 @ 25%, \$0 @ 75%	12	44
B: \$4000 @ 20%, \$0 @ 80%	54	72
3. A: \$1500 @ 90%, \$0 @ 10%	18	55
B: \$3000 @ 45%, \$0 @ 55%	48	61
4. A: \$-3000	16	26
B: \$-4000 @ 80%, \$0 @ 20%	50	90
5. A: \$3000 @ 90%, \$0 @ 10%	46	80
B: \$6000 @ 45%, \$0 @ 55%	20	36
6. A: \$6000 @ 0.1%, \$0 @ 99.9%	48	90
B: \$3000 @ 0.2%, \$0 @ 99.8%	18	26
7. A: \$4000 @ 80%, \$0 @ 20%	16	19
B: \$3000	50	97
8. A: \$500	40	64
B: \$1000 @ 50%, \$0 @ 50%	26	52
9. After having just received an unexpected \$2000 gift,		
A: \$-1000 @ 50%, \$0 @ 50%	50	86
B: \$-500	16	30

Conclusions

This study explores the importance of different sources of information for large-scale farmers, farm managers, and agricultural bankers in production, marketing, and financial decisions. All three groups rated more sources of information above 3.0, the

midpoint of the 5-point Likert scale, for production decisions than for marketing and financial decisions. All rated nine or more sources above 3.0 for production decisions but none rated more than three sources of above 3.0 for financial decisions. These groups all stressed "internal" sources of information such as records and employees, tenants or borrowers for most decisions. Both farm managers and agricultural bankers rated their professional colleagues as important sources of information. The large-scale farmers', in contrast to the other groups and studies of farmers in general, often stressed technical consultants rather than other farmers as meaningful or important sources of information. Factors influencing farmers use of consultants are analyzed in Ortmann, et al. None of the groups gave high ratings to sales and supplier personnel or to county Extension personnel.

There was also considerable agreement among the groups about the important managerial responses to risk, especially in the production area. As may be expected, both farmers and farm managers gave the highest average rating to production responses while bankers gave the highest average ratings to financial responses. Marketing responses fell in the middle for all three groups. However, the differences in the rating of these risk responses among groups were not statistically significant.

Although there were differences among groups in the individual's self-assessed willingness to take risks, the differences on standard scales developed by psychologists were not statistically significant. Furthermore, there was no significant difference between general situations and agricultural situations within or across groups. These results indicate there is no significant difference in the willingness to take risk, on average, between the "conservative agricultural banker" and the "entrepreneurial large-scale farmer" in the same hypothetical situations. Similar results, and the lack of significant difference in risk aversion between farm managers and agricultural bankers, are reflected in responses to proposed gambles.

In a broader context, the results of this study indicate that there are some differences among groups with respect to the importance of various sources of information and management responses to risk. However, many of these differences are not statistically significant. Furthermore, within each group there is considerable individual variability. Generally, geographic and firm specific information sources are most important in production and financial decisions while market reporting services (e.g. marketing services and computerized information services) join firm level records as paramount in marketing decision making. Using a variety of information outlets and strategies will best serve agribusiness in communicating with three groups intimately involved in agricultural production; farmers, professional farm managers, and agricultural bankers.

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