

Farmers' Reported Use of Risk Management Strategies

Several surveys of farmers' use of risk management strategies have been conducted over the past 10-15 years. The results vary. Results of the 1996 Agricultural Resource Management Study (ARMS), for example, conducted shortly after passage of the 1996 Farm Act, indicate that operators in the largest gross income categories (more than \$250,000 annually) are most likely to use virtually all risk management strategies. In contrast, operators with less than \$50,000 in sales were less likely to use forward contracting or hedging. Keeping cash on hand for emergencies and good buys was the number one strategy for every size farm, for every commodity specialty, and in every region.

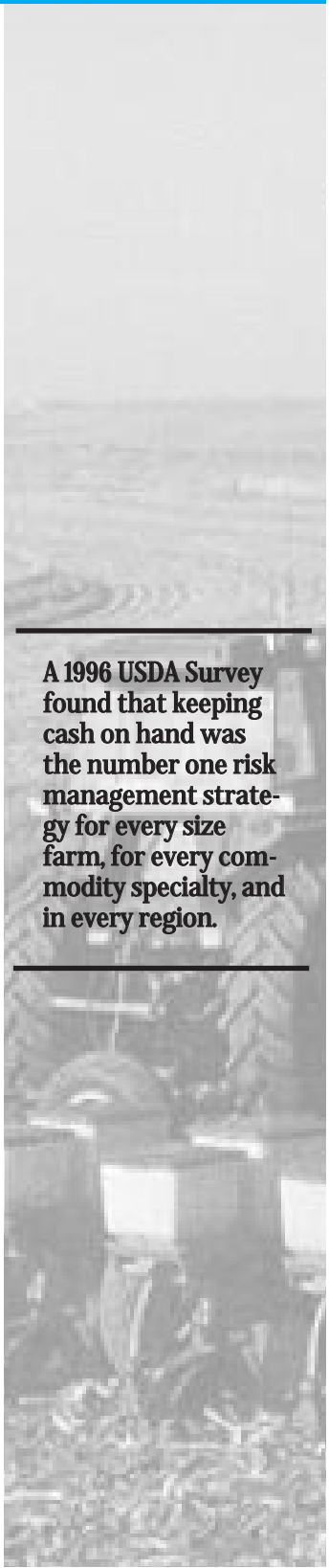
Previous sections in this report have focused on addressing the myriad strategies that producers can use to manage their farm-level risks and their effectiveness. This section, in contrast, addresses the questions: "How have producers used these tools and strategies on their farming operations?" "What factors are associated with farmers' use of different strategies?" Several surveys of farmers' use of various risk management strategies have been conducted over the past 10-15 years. These surveys typically focus on asking producers whether or not they use hedging, crop insurance, and forward contracts, as well as whether they manage risk through diversification, keeping cash on hand, and other strategies.

Two difficulties are present in assessing and interpreting the results of these surveys, which must be kept in mind while reading the results presented in the next paragraphs. First, many of the surveys are focused on specific States or areas. Because different questions are asked of different groups of farmers at different times, it is difficult to compare responses on a "one-for-one" basis across studies or across time.

Second, farmers are typically questioned as to their use of a strategy to manage risk. Some producers may indicate that they use a given strategy (such as diversification or hedging), even though profit maximization (and not risk reduction) may be their primary motivation.

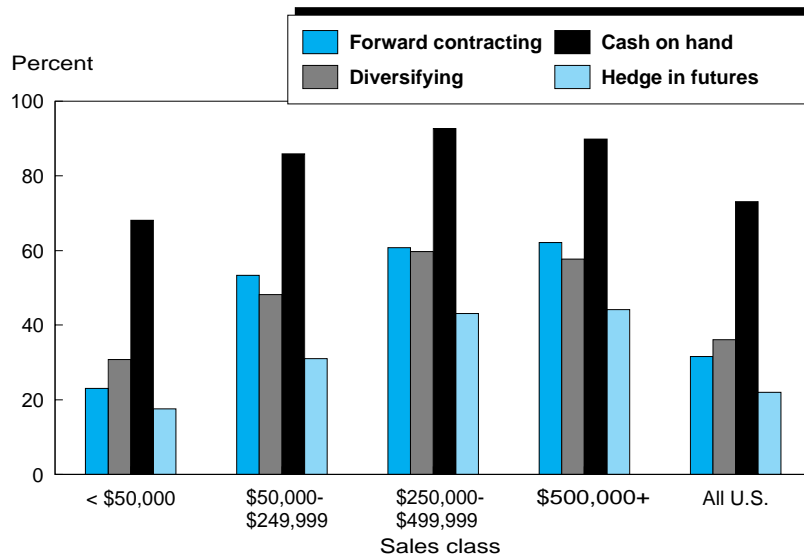
The most comprehensive survey of farmers' use of selected risk management strategies is USDA's Agricultural Resource Management Study (ARMS). Results of the 1996 ARMS survey, conducted shortly after passage of the 1996 Farm Act, indicate that operators in the largest gross income categories (more than \$250,000 annually) are most likely to use hedging, forward contracting, and virtually all other risk management strategies. In contrast, operators with less than \$50,000 in sales were less likely to use forward contracting or hedging, and significantly fewer reported diversification as a method for reducing risk (fig. 12). Keeping cash on hand for emergencies and good buys was the number one strategy for every size farm, for every commodity specialty, and in every region.

The 1996 ARMS survey also asked producers about the impact of the



A 1996 USDA Survey found that keeping cash on hand was the number one risk management strategy for every size farm, for every commodity specialty, and in every region.

Figure 12

Farmers' use of alternative risk management strategies by sales class and all United States, 1996

Note: For all sales classes, the principal occupation of the operator may or may not be farming.
Source: USDA, ERS, 1996 Agricultural Resource Management Study, special analysis.

Of producers receiving government payments, 5-8 percent indicated that they increased their use of at least one risk management tool or strategy in 1996 in response to the 1996 Farm Act.

1996 Farm Act in influencing whether or not they were considering the use of new strategies. At the U.S. level, about one-third of the producers responding to the survey reported receiving direct government commodity payments. Of those receiving government payments, between 5 and 8 percent indicated that they increased their use of at least one risk management strategy or tool (forward contracting, futures hedging, use of options, use of insurance, or other strategy) in 1996 in response to the 1996 Farm Act.²³ Responses were fairly consistent across all U.S. regions. With less government intervention in farming and greater trade liberalization, farmers appear to be increasingly relying on forward contracting and other risk management tools to reduce their farm-level risks.

A recent *Farm Futures* survey also questioned its readers nationally as to their use of various risk management strategies. The 690 respondents reflect a nonrandom pool of

²³This is approximately 1-3 percent of all U.S. farmers.

the magazine's readers. These readers are generally in the top 10 percent of all U.S. farmers, with about 75 percent located in the Corn Belt and almost all have sales exceeding \$100,000 annually. Commonly used strategies reported by a high proportion of these respondents included using government farm programs, diversifying into both crops and livestock, planting varieties with different maturity dates, contracting inputs to lock in a favorable price, buying crop insurance, and using crop-share rental arrangements (table 16).

Several surveys of producers' use of risk management strategies have been conducted by university extension specialists. In a survey conducted in the mid-1990's, Nebraska producers were questioned about their use of alternative marketing tools, including cash forward contracts, hedging with futures, hedging with options, hedge-to-arrive contracts, basis contracts, and minimum price contracts. They were also asked the percentage of their crops for which these tools, if any, were used, with use of a tool considered to be

important if it was used to market more than 50 percent of the producer's crop (Jose and Valluru). The results indicate that cash forward and basis contracts were the most commonly used marketing tools for any percentage of the Nebraska producers' crops. Of those using cash forward contracts, about 47 percent indicated the use of this tool to price 75-100 percent of their crop. Similarly, of those using basis contracts, 49 percent indicated use of this tool to price 75-100 percent of their crop.

Among the responding producers participating in Top Farmer Crop Workshops held at Purdue University in 1993, 1994, and 1995, about two-thirds indicated that they used cash forward contracts. Producers participating in the workshops indicated that these contracts were, on average, used to price 20-30 percent of their corn and soybean crops. Hedging was used by approximately 10-20 percent of the participants, depending on the specific crop and year (Patrick, Musser, and Eckman; Musser, Patrick, and Eckman).

Evidence also exists from the Great Plains. A 1992 survey of Kansas producers indicated that over 30 percent of the respondents used forward contracting to price a portion of their wheat, corn, and soybean crops during the 1990-92 period. Corn was hedged in futures most frequently (reported by 11 percent of the respondents), followed by cattle (8 percent of the respondents). Nearly 15 percent of the wheat producers and about 10 percent of the cattle and corn producers had used options compared with less than 5 percent of soybean, grain sorghum, and hog producers (Goodwin and Schroeder).

Several surveys provide information historically on the use of forward contracting and futures hedging, and suggest that the use of these strategies may have increased over time. In a 1986 Wisconsin study, for example, about 20 percent of the respondents had used cash forward contracts at least once in the most recent 5 years, and 8 percent had used futures within that period (Campbell and Shiha). The survey also indicated that large-scale producers were more frequent users of

Regional surveys often point to the common use of cash forward contracts by producers.

Table 16—Results of a *Farm Futures* magazine questionnaire on farmers' use of various risk management strategies, 1997

Tool or strategy	Percentage of respondents indicating use of tool or strategy
	<i>Percent</i>
Used government farm program	69
Diversified operation by raising crops and livestock	39
Planted seed varieties with different maturity dates	39
Contracted inputs to lock in a good price	35
Bought crop insurance	30
Used crop-share land rents	25
Kept a credit line open to take advantage of attractive input prices	20
Used multiyear leases	16
Irrigated	13
Shared expenses with landlord	10
Refinanced loans to take advantage of lower interest rates	8
Hired custom operator to reduce machinery expenses	6
Hired custom operator to improve timeliness of crop operations	6
Diversified by growing crops not normally grown in the area	3
Leased equipment rather than bought	3
Rented equipment rather than bought	2

Source: Excerpted by ERS from Knorr, Bryce A., editor of *Farm Futures* magazine, Testimony before the Subcommittee on Risk Management and Specialty Crops, U.S. House of Representatives, April 10, 1997.

Data from the 1996 ARMS survey indicate that more farmers in many areas may be using various risk management strategies than in the 1980's.

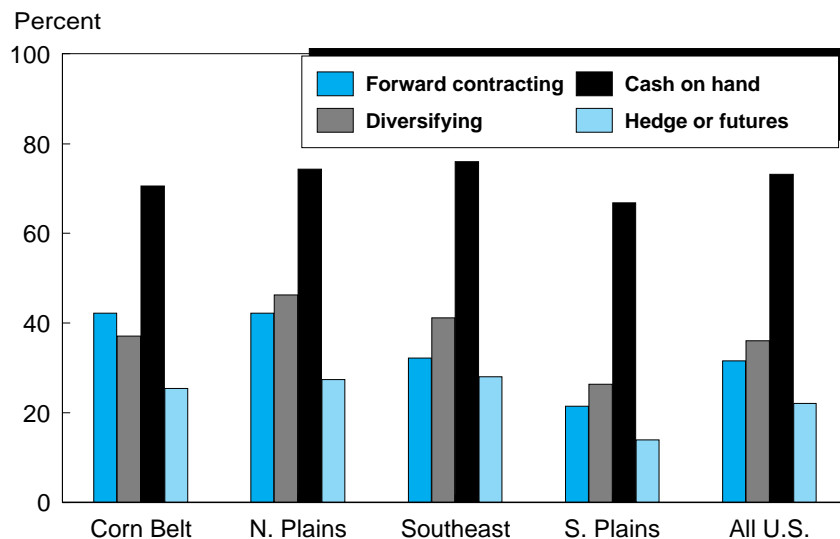
both forward contracting and futures than were small-scale producers.²⁴ In another study, only 7 percent of Kansas grain producers reported hedging in 1983, and 18 percent had forward contracted at any time in prior years (Tierney; Mintert). Based on a different sample, the Kansas Crop and Livestock Reporting Service reported that less than 5 percent of farmers hedged any of their grain in each of the years 1980-85.

²⁴ARMS survey results from 1983 provide information on the value of sales marketed by various methods regionally, and implicitly support the idea that large-scale producers are more likely to use forward contracts. The ARMS data indicate that between 50 and 60 percent of corn sales delivered at harvest in 1983 in Illinois, Iowa, Minnesota, and Ohio were priced by forward contract, while less than 30 percent of corn sales in Kansas, Michigan, and Missouri were priced using this method (Harwood, Hoffman, and Leath). Similarly, more than 50 percent of soybean sales delivered off-farm at harvest were forward contracted in Illinois and Minnesota in 1982 and 1983 compared with fewer than 25 percent of sales in Kansas and many Southeastern States (Leath). In contrast, less than 15 percent of wheat sales at harvest were forward contracted in 1983 in most major wheat-producing States, including Kansas and North Dakota (Hoffman, Harwood, and Leath).

Data from the 1996 ARMS survey indicate that more farmers in many areas may be using various risk managements strategies—such as forward contracting, diversifying, hedging, or keeping cash on hand—than reported in regional and State-level studies in the early- and mid-1980's (fig. 13). For example, about 40 percent of producers in the Corn Belt and Northern Plains regions used forward contracting and approximately 25 percent used futures in 1996. Producers in the Southern Plains were somewhat less likely to use many of the risk management strategies listed than those in the Corn Belt or Northern Plains, as were producers in the Northeast and Appalachia.

Empirical studies have at times extended survey data and examined the relationship between the use of various strategies and producer characteristics. A study of 41 selected farmers in Indiana in 1985, for example, found that the use of hedging was positively related to the farmer's perception of the income-stabilizing potential

Figure 13
Farmers' use of alternative risk management strategies by selected regions and United States, 1996



Note: For all regions, the principal occupation of the operator may or may not be farming.
Source: USDA, ERS, 1996 Agricultural Resource Management Study, special analysis.

Risk Management Education Can Use Many Avenues

Risk management education has been an important initiative, as witnessed by a fiscal year 1998 effort jointly sponsored by USDA's Risk Management Agency, USDA's Cooperative State Research, Education, and Extension Service, and the Commodity Futures Trading Commission. These efforts have focused on the use of a wide variety of workshops, education programs, information events, and research to better help educate producers and understand the needs of farmers in the learning process. These efforts complement longstanding work undertaken in the cooperative extension community (Anderson and Mapp; Schroeder, Parcell, Kastens, and Dhuyvetter).

In theory, a producer's decision to obtain the human capital necessary to adopt a new technology—whether involving a new conservation technique or a new forward pricing strategy—is based on factors related to the expected returns and costs associated with adoption and the producer's risk attitude. Producers evaluate the discounted value of their expected returns from education (net of investment costs) to evaluate whether or not they should participate. If discounted expected net returns are positive, a producer would tend to participate (Ben-Porath). Using an example, discounted expected returns to investment in education fall as the time horizon decreases. Thus, the expected returns to education are expected to decline with the age of the producer, meaning that older farmers are less likely to participate in educational programs than younger farmers.

This theoretical basis was used to evaluate Kansas producers' participation in risk management and marketing education programs in 1992 (Goodwin and Schroeder). This research found, as expected, that more experienced (older) farmers are less likely to participate in educational programs. The percentage of crop acres on the farm, total farm acres, the degree of farm leverage, the educational level of the operator, and a preference for risk were all positively related to participation. Similarly, preference for farm-related education, measured by hours per week spent reading farm publications, also had a significant positive effect on seminar attendance. Importantly, the authors found that participation in marketing and risk management education seminars and programs significantly increased farmers' adoption of forward pricing techniques.

Farmers use many educational sources other than seminar attendance. Ford and Babb, for example, found that farm magazines, other farmers, and family and friends were among the most important information sources for a sample of producers in Indiana, Illinois, Iowa, and Georgia in the 1980's. In another study conducted in the 1980's, researchers conducting a random survey of Ohio cash grain producers found that older farmers and operators of small farms often cited radio and television broadcasts as the most useful source of marketing information, while operators of larger farms and those with at least some college education tended to cite marketing professionals as most useful (Batte, Schnitkey, and Jones).

Further, a nonrandom sample of large, commercial farm operations in the Corn Belt in 1991 found that producers spent an average of \$2,578 per year on information sources, and that consultants accounted for 60 percent of total expenditures (Ortmann, Patrick, Musser, and Doster). Despite the importance of consultants, the use of "own farm records/budgets" were the highest-rated information source for production, marketing, and financial decisions for these producers. These results support recommendations by the extension service and others encouraging producers to keep and use farm records and to prepare farm budgets for planning purposes.

A series of questions included on USDA's 1996 Agricultural Resource Management Study provides information on priority educational needs. In this section of the survey, producers were questioned as to changes that they would make in their farming operation under adverse circumstances ("what would you do differently if faced with financial difficulty?"). The respondents were provided a listing of production, marketing, and financial activities from which to choose. Producers in the \$50,000 and higher sales classes indicated consistently that they would adjust their costs, improve their marketing skills, restructure their debt, and spend more time on management (see table). These responses indicate the wide-ranging—yet interrelated—risk management education needs of producers, and can be effectively provided by both private and public sector interests.

Changes that producers would make in their operations if faced with financial difficulty, 1996

Item	Sales Class				
	Less than \$50,000	\$50,000-\$249,999	\$250,000-\$499,999	\$500,000+	All
	<i>Percent</i>				
Restructure debt	24.3	47.7	45.8	48.7	30.3
Sell assets	31.1	27.8	31.2	28.5	30.4
Use more custom services	7.4	17.5	17.4	19.9	10.1
Scale back	25.6	23.1	20.0	23.7	24.8
Diversify	11.8	22.9	20.9	20.6	14.5
Spend more time on management	18.7	37.7	47.3	44.4	24.3
Use advisory services	18.8	22.1	28.0	26.3	20.1
Adjust costs	33.9	54.0	58.8	57.2	39.5
Improve marketing skills	29.5	47.2	53.1	53.4	34.6

Source: USDA, ERS, 1996 Agricultural Resource Management Study, special analysis.

Many different characteristics are associated with farmers' use of hedging, including farm size and prior use of forward contracts.

of hedging, debt position, and farm size (Shapiro and Brorsen). Contrary to expectations, education was found to be inversely related to hedging, a result that may be peculiar to the sample of producers analyzed in the study. In addition, risk attitudes were not significantly related to the use of forward pricing methods.

Other studies of this type have been based on larger participant samples. A survey of 677 Iowa grain, swine, and fed cattle producers in 1988, for example, indicated that use of hedging for grains was positively and significantly related to gross farm sales and the use of other forward pricing tools over the prior 2 years (Edelman, Schmiesing, and Olsen). These same variables also had the greatest significance in explaining use of futures to hedge swine and fed cattle.

In a study of 595 producers participating in USDA's Futures and Options Marketing Program between 1986 and 1988, model results indicate that prior use of forward contracts, possession of a bachelor's degree or above, membership in a marketing club, and gross sales had the greatest positive impact on the probability of

using futures and options (Makus, Lin, Carlson, and Krebill-Prather). A survey of 1,963 Kansas farms in 1992 found that the use of forward pricing techniques is positively and significantly related to years of formal education, cropland acreage, total farm acres, leverage, risk preference, input intensity, marketing seminar participation, and the use of crop insurance (Goodwin and Schroeder).

These studies, by providing information on producer characteristics and the use of forward pricing techniques, suggest strategies for producer education (see box). Operators of larger farms, those that are most highly leveraged, and those with prior experience using forward contracts would be most likely to be interested in using futures or options. In contrast, education on cash forward contracts would likely be more effective for the general farm population than education on futures and options. At least one study has found that the use of marketing clubs (which often emphasize a learning-by-doing approach) appears to be quite effective in introducing producers to futures and options (Makus, Lin, Carlson, and Krebill-Prather).