Abstract

When selecting crop insurance coverage, farmers must consider multiple factors. The importance associated with factors that are considered when making crop insurance decisions varies among individual farmers. As available crop insurance options increase, selecting the appropriate coverage becomes a more complicated process. The prevalence of crop insurance participation and the existence of multiple selection criteria also makes understanding participant decisions more difficult. This paper provides findings of a mail survey conducted among farmers in northern Illinois. Mainly, this paper examines factors influencing farmers' crop insurance purchase decisions, types of coverage purchased, and farmers' risk attitudes.

Crop Insurance Purchase Decisions: A Study of Northern Illinois Farmers

By Matthew Ginder, Aslihan D. Spaulding, J. Randy Winter, and Kerry Tudor

Introduction

To be successful, farmers must manage several types of risk, including those inherent to production, marketing, financial management, and human resource decisions. A variety of risk management tools and practices have been conceived to help farmers mitigate the wide range of risks they face. One specific tool, crop insurance, provides means for managing both production and marketing risk.

Since its inception, crop insurance has gained wide acceptance among farmers. While participation in the program is not 100 percent, crop insurance is a commonly used risk management tool. Subsequent to implementation of the Federal Crop Insurance Reform Act of 1994, participation in the crop insurance program has increased steadily. For example, net acres insured totaled 217.662 million in 2005 compared to 99.640 million in 1994, and total crop insurance premiums have increased from $949.395 million in 1994 to $3.712 billion in 2005. In addition, crop insurance contracts represented liability of $13.068 billion in 1993 versus liability of $37.188 billion in 2005 (RMAa). The Risk Management Agency of the United States Department of Agriculture reported that 72 percent of soybean acres and 71 percent of corn acres in Illinois were covered by some form of crop insurance during the 2005 growing season (RMAb).

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When selecting crop insurance coverage, farmers must consider multiple factors, and the importance associated with each factor varies among individual farmers. When considering crop insurance coverage, farmers have a variety of alternatives, ranging from Catastrophic (CAT) coverage on a county-by-county basis to revenue or yield protection on individual farm units. In addition, multiple coverage elections exist within a majority of existing crop insurance plans. As available crop insurance options have increased, selecting the appropriate coverage has become a more complicated process. The prevalence of crop insurance participation and the existence of multiple selection criteria also make understanding participant decisions more difficult.

To date, much of the research conducted on the Federal Crop Insurance Program has examined participation rates and the factors responsible for changes in the level of participation (Knight and Coble 1997; Gardner and Kramer 1986; Calvin 1992; Coble, et al. 1997; Goodwin and Kastens 1993; Just and Calvin 1993). More recent studies have analyzed choices among crop insurance products and coverage levels (Makki and Somwaru 2001; Changnon 2002; Barry, et al. 2002; Serra, Goodwin and Featherstone 2003; Claassen, Lubowski and Roberts 2005; Babcock and Hart 2005; Shaik, Coble and Knight 2005). Determining which factors most influence farmers' crop insurance purchase decisions can be instrumental in helping the federal government, the crop insurance industry, and farm managers design more effective programs for clients who must make crop insurance purchase decisions. The purpose of this paper was to examine the crop insurance purchase decisions of farmers in northern Illinois.

Research Methodology

This study focused on the crop insurance decisions made by farmers in the forty-two county region of northern Illinois that is served by 1st Farm Credit Services of Illinois. 1st Farm Credit Services of Illinois is a member of the Farm Credit System, which holds a federal charter to provide financing and financial-related services to farmers. A map depicting the forty-two counties included in this study is provided (Figure 1). The target population included all farming operations in the forty-two county region that were clients or prospective clients of 1st Farm Credit Services.

A list of approximately 35,000 clients or prospective clients was provided by 1st Farm Credit Services. Systematic sampling was used to generate a list of 1,000 farm operations from the database.

According to procedures described by Salant and Dillman (1994, 55), 239 useable questionnaires were needed to make estimates about the designated population with a sampling error of ±5 percent at the 95 percent confidence level. That figure was based upon an 80/20 split between those who utilized crop insurance and those who did not, and a conservative 24 percent response rate. A random number was selected and used as the interval for selecting individual farming operations from the list until 1,000 operations had been identified.

A list of factors that could have influenced farmers' crop insurance purchase decisions was derived from a review of literature, the knowledge and experience of investigators associated with the project, and the experience of crop insurance industry professionals. That list was then incorporated into a questionnaire that contained four sections. In the first section, respondents were asked if they had purchased crop insurance for their corn acres, soybean acres, or other crop acres in 2005. In section 2, respondents who had purchased insurance were asked to identify the specific products and coverage levels that they had selected for their corn and soybean acres. The third section requested information about purchase decision factors. In that section, respondents were initially asked to identify who most influenced their crop insurance purchase decision from a list that included tenant, landlord, insurance agent, spouse, neighbor, no one, farm manager, and other. Secondly, respondents were asked to rank five purchase decision factors from most important to least important. The list of factors included: 1) price of the insurance; 2) compatibility of insurance coverage with grain marketing plans; 3) probability of receiving a claim payment; 4) agent recommendations; and 5) required by lender to carry crop insurance. Thirdly, respondents were requested to rate five additional purchase decision factors as very important, somewhat important, or not important. Those factors included: 1) government subsidization of insurance premiums; 2) unit structure flexibility provided by the insurance; 3) weather concerns; 4) crop yield in previous year; and 5) the company writing the policy. Finally, the fourth section of the questionnaire sought information about demographics and characteristics of respondents' farm operations.

Due to the geographic dispersion of the 1,000 potential contacts and the length of the questionnaire utilized in the survey, a mail survey was deemed to be the most efficient method of collecting information. On August 15, 2005, the questionnaire and a cover letter were mailed. The cover letter explained the purpose of the study, discussed confidentiality, and requested participation. Approximately one

month after the initial mailing, a reminder postcard was mailed to all non-respondents of record. A second copy of the questionnaire and a cover letter were mailed to all non-respondents of record on approximately October 15, 2005. To encourage participation, a donation to St. Jude Children's Research Hospital was made on behalf of each respondent.

All responses were coded by participant number to maintain confidentiality, and the resulting data were entered into a spreadsheet database. Data were analyzed using SAS version 9.1 (SAS Institute, Inc., Cary, NC) and a five percent significance level was utilized for all statistical tests.

Survey Responses

Incorrect or incomplete addresses resulted in 35 undeliverable questionnaires. Of the remaining 965 questionnaires, 408 were returned. Ninety-three of the 408 returned questionnaires were returned without responses or did not have a response to the question pertaining to purchase or non-purchase of crop insurance; therefore, 315 of the returned questionnaires were deemed useable. The computed response rate was 31.5 percent.

Non-response bias was tested by comparing values for gross farm income, age, acres-farmed, and net worth between respondents and non-respondents. All compared values were obtained from the 1st Farm Credit Services database. The null hypothesis of equal means between groups was not rejected; therefore it was concluded that there was no non-response bias in the survey results, and that the data represented the population of farmers provided by 1st Farm Credit Services. However, arithmetic means of respondent corn acres per farm (700.6) and respondent soybean acres per farm (482.2) were higher than mean corn acres (264.5) and mean soybean acres (252.7) for all Illinois farms as per the 2002 Census of Agriculture. Based upon that information, the sample of farm operations utilized in this study appeared to represent larger-scale farm operations; it did not appear to represent the population of all Illinois farms.

Demographics and Characteristics of Farm Operations

Of the 315 respondents who returned usable questionnaires, 93.7 percent were males and 5.1 percent were females (Table 1). Four respondents (1.3%) did not designate gender. Education up to and including a high school degree was attained by 30.8 percent of respondents, and 57.8 percent had earned some college credit or obtained a 2- or 4-year degree. Nearly 10 percent of respondents had

earned some graduate credit or a graduate degree, while 1.6 percent of respondents did not report information about education. The average age of respondents was 55.2 years.

One hundred forty-nine respondents, or 47.3 percent, reported 2004 gross farm income that was less than $250,000 (Table 2). Approximately 34 percent of respondents reported gross farm income between $250,000 and $750,000, and 12.1 percent, reported gross farm income greater than $750,000. The remaining 6.7 percent of respondents did not report gross farm income. More than one-half of respondents, specifically 51.7 percent, reported net worth greater than $750,000, while 27.9 percent reported net worth between $250,000 and $750,000, and 13.0 percent reported net worth less than $250,000. Net worth was not reported by 7.3 percent of respondents. One hundred seventy-six respondents, or 55.9 percent, reported that their farm operation's total debt outstanding was $250,000 or less. Ninety respondents, or 28.6 percent, reported debt outstanding between $250,000 and $750,000, and 8.9 percent of respondents reported debt outstanding greater than $750,000. Twenty-one individuals did not report total debt outstanding.

Approximately 15 percent of respondents reported that they were landlords in 2005, and 34.3 reported that they were tenants. An additional 46.7 percent of respondents reported that they were both landlord and tenant, and 3.8 percent did not respond to the tenancy question. Individuals who identified themselves as landlords were significantly older (67.0 years) than individuals who identified themselves as both landlord and tenant (55.6 years), and the latter group was significantly older than individuals who identified themselves as tenants only (49.4 years). Also, landlords were associated with smaller combined corn and soybean acres (419.4 acres) compared to tenants (1276.2 acres) and individuals who were both landlords and tenants (1285.5 acres). Total corn acres farmed in 2005, as reported by respondents, ranged from 18 to 10,000 acres with a mean of 700.6 acres. Total soybean acres farmed in 2005, as reported by respondents, ranged from 1 to 5,000 acres with a mean of 482.2 acres. Lastly, average time farming was 31.3 years.

Selection of Insurance Products

Respondents were asked if they had purchased crop insurance in 2005. Two hundred ninety-three respondents indicated that they had purchased crop insurance and 22 indicated that they had not. Of those who reported purchases of crop insurance coverage, 7.5 percent had purchased coverage for corn only, 4.8 percent had purchased

coverage for soybeans only, and 86.3 percent had purchased coverage for both corn and soybeans. Two respondents, or 0.7 percent, reported purchases of coverage for crops that did not include corn and soybeans, and an additional 0.7 percent purchased crop coverage but did not indicate which crops were covered.

Respondents were asked to identify the crop insurance plans and coverage levels that they had selected for their 2005 crops. For corn products other than crop hail, Crop Revenue Coverage (CRC) was selected most frequently, followed by Revenue Assurance (RA), Group Risk Income Plan (GRIP), Actual Production History (APH), Catastrophic (CAT), Group Risk Plan (GRP), and Income Protection (IP) (Table 3). Aside from limited selection of IP, respondents generally preferred crop insurance products that provided revenue protection (CRC, RA, and GRIP) to crop insurance products that provided protection against yield loss (APH, GRP, and CAT). One-hundred fifteen individuals had selected crop hail coverage for their 2005 corn acres.

With regard to soybean products other than crop hail, RA was the most frequently selected plan, followed by GRIP, CRC, APH, GRP, CAT, and IP. As with corn, respondents generally preferred crop insurance products that provided revenue protection (CRC, RA, and GRIP) to crop insurance products that provided protection against yield loss (APH, GRP, CAT). Seventy-eight respondents had selected crop hail coverage for their 2005 soybean acres.

Table 4 shows crop insurance coverage elections for corn, and Table 5 shows equivalent information for soybeans. For corn CRC, corn RA, and corn IP, the 75 percent coverage level was selected most frequently. For corn APH, the 75 percent yield election was selected most frequently and the 100 percent indemnity price was selected most frequently. For corn GRP, the most popular yield election was 90 percent, and for corn GRIP, the most popular coverage level was 90 percent. For both corn GRP and corn GRIP, respondents most often selected the 100 percent protection level. Results for corn were also applicable to soybeans.

Respondents were asked if they had purchased the Harvest Price/Revenue option with RA or GRIP insurance for either corn or soybeans. Ninety individuals reported that they had purchased RA or GRIP for their corn acres and also selected the Harvest Price/Revenue option. With regard to soybeans, 105 individuals reported that they had purchased RA or GRIP and also selected the Harvest Price/Revenue option.

Purchase Decision Factors

Respondents were asked to identify who most influenced their crop insurance purchase decision by selecting a single individual from a prepared list. Of the 302 individuals who responded to the question, 39.7 percent indicated that no one had influenced their purchase decision (Table 6). An additional 34.6 percent indicated that their insurance agent most influenced their purchase decision, and 6.3 percent reported that their tenant was most influential. Thirty-six individuals selected "Other," writing in banker, own records, and government programs most frequently. Less frequently selected as most influential were spouse at 1.3 percent, neighbor at 1.3 percent, landlord at 1.0 percent, and farm manager at 0.3 percent.

A list of five factors that could have influenced crop insurance purchase decisions was presented to respondents with a request to rank the factors from most important (1) to least important (5) (Table 7). The most important factor, as perceived by respondents, was price of the insurance (mean rank = 2.0) followed by compatibility of the insurance coverage with grain marketing plans (mean rank = 2.7) and probability of receiving a claim payment (mean rank = 2.8). Lower ranked factors were agent recommendations (mean rank = 3.0) and required by lender to carry crop insurance (mean rank = 4.3). Each of the last four items was ranked significantly lower than price of the insurance ($P < 0.0001$; SAS PROC PHREG). The odds that price of the insurance would be ranked as the most important factor were 1.82 times the odds that compatibility of the insurance coverage with grain marketing plans would be ranked as the most important factor. The odds ratios associated with probability of receiving a claim payment, agent recommendations, and required by lender to carry crop insurance were 2.35, 2.16, and 10.99, respectively. The ranking of required by lender to carry crop insurance was significantly lower than the rankings of each of the other four factors.

Respondents were presented with a list of five additional factors with a request to rate each as "very important," "somewhat important," or "not important" (Table 8). Government subsidization of insurance premiums was considered very important or somewhat important by 274 respondents and not important by 22 respondents; and unit structure flexibility provided by the insurance was considered very important or somewhat important by 254 respondents and not important by 36 respondents. Weather concerns were considered very important or somewhat important by 287 respondents and not important by eight respondents; and crop yield in previous year was considered very important or somewhat important by 209

respondents and not important by 82 respondents. The insurance company writing the policy was considered very important or somewhat important by 206 respondents and not important by 87 respondents. Write-in responses by 25 individuals included peace of mind, probability of disaster, agent, price, and markets.

Respondents were also asked to indicate if their 2005 crop insurance purchase decision had been affected by the availability of a Premium Discount Plan (PDP). Eighty-eight respondents reported that availability of a PDP had affected their crop insurance purchase decision, whereas 205 respondents reported that it had not.

Statistical Analysis of Insurance Product Selections

Chi-square tests of independence between the perceived importance of five factors that influenced insurance product purchase decisions and actual purchases revealed significant relationships for all factors except weather concerns (Table 9). Respondents who indicated that government subsidization of insurance premiums was important (very important or somewhat important) were more likely than expected to purchase corn CRC, soybean CRC, and soybean GRIP. Those who perceived that the insurance company writing the policy was important were more likely than expected to purchase corn CRC, soybean CRC, and soybean crop hail. Additionally, respondents who believed that unit structure flexibility provided by the insurance and crop yield in previous year were important were more likely than expected to purchase soybean CRC.

When asked to assess their general attitudes toward risk, which was undefined in the questionnaire, 12.4 percent of respondents identified themselves as risk averse. Alternatively, risk neutral was selected by 48.3 percent of respondents, and 36.8 percent of respondents identified themselves as risk takers. Eight individuals, or 2.5 percent of respondents, did not select a risk category. Those who perceived themselves to be risk averse were more likely than expected to purchase corn CRC, corn crop hail, and soybean CRC (Table 10). Additionally, those who perceived themselves to be risk averse were less likely than expected to purchase soybean GRIP, while those who perceived themselves to be risk takers were more likely than expected to purchase soybean GRIP.

There were significant relationships between demographic factors and crop insurance decisions as displayed in Table 11. Based upon chi-square tests of independence, respondents with college credit or a college degree were less likely than expected to purchase corn CRC

but more likely than expected to purchase corn GRP. Conversely, individuals with no college credit were more likely than expected to purchase corn CRC and less likely than expected to purchase corn GRP. Also, males were more likely than expected to purchase soybean GRIP, and females were less likely than expected to purchase soybean GRIP. Independent sample t-tests revealed that ages of respondents differed between purchasers and non-purchasers of some products. Data indicated that individuals who had purchased corn RA were 4.2 years older than those who had not purchased the product, and individuals who had purchased soybean RA were 4.9 years older than those who had not purchase the product. Alternatively, respondents who had purchased corn GRIP were 6.7 years younger than non-purchasers, and respondents who had purchased soybean GRIP were 5.5 years younger than non-purchasers. Finally, individuals who had purchased soybean IP were 11.0 years older than non-purchasers, and individuals who had purchased soybean GRP were 4.2 year younger than non-purchasers.

Chi-square tests of independence between characteristics of farm operations and purchase decisions revealed significant relationships for categories of tenancy, gross farm income, net worth, and debt outstanding (Table 12). Tenants were less likely than expected to purchase corn RA, corn IP, and soybean RA, whereas individuals who identified themselves as both landlord and tenant were more likely than expected to purchase corn RA and soybean RA. Landlords were more likely than expected to purchase corn RA and corn IP. Respondents with higher gross farm incomes were more likely than expected to purchase corn GRIP and soybean GRIP but less likely than expected to purchase soybean RA. Respondents with higher levels of net worth were more likely than expected to purchase soybean GRIP but less likely than expected to purchase corn APH. Finally, individuals with higher levels of outstanding debt were more likely than expected to purchase both corn and soybean GRIP.

With respect to total combined acres of corn and soybeans farmed, those individuals who purchased corn RA, soybean RA, and corn crop hail tended to be associated with smaller acreages, and those individuals who purchased corn GRIP and soybean GRIP tended to be associated with larger acreages. There was evidence that purchases of corn CRC were related to smaller owned-corn acreage and smaller total soybean acreage, and purchases of corn APH were related to smaller rented-corn acreage (Table 13). Purchasers of soybean CAT and soybean crop hail tended to have smaller rented-corn acreage.

In order to provide a more complete profile of respondents, risk attitude was cross-tabulated with multiple variables (Table 14). Results indicated that risk averse or risk neutral respondents were more likely to believe that the following factors were important: 1) unit structure flexibility provided by insurance, 2) weather concerns, and 3) crop yield in previous year. Individuals who identified themselves as risk takers tended to have higher gross farm income, higher net worth, and higher total debt outstanding. They also farmed more acres of corn and soybeans.

Discussion

The four most frequently selected insurance products for corn, beginning with the most popular, were crop hail, CRC, RA, and GRIP. The four most frequently selected insurance products for soybeans, beginning with the most popular, were crop hail, RA, GRIP, and CRC. Those results were notable because CRC, RA, and GRIP are revenue insurance plans, which indicated that those types of plans were more popular than the yield-based insurance products. The least frequently selected insurance product for both corn and soybeans was IP. For corn and soybean CRC and RA, the 75 percent coverage level was most often selected. For corn and soybean GRIP, the 90 percent yield level and the 100 percent protection level were the most popular choices of respondents.

For corn and soybean CRC, there were three common factors that distinguished between purchasers and non-purchasers. Those who purchased CRC for both crops believed that: 1) government subsidization of insurance premiums was important; and 2) the insurance company writing the policy was important. In addition, purchasers of corn and soybean CRC were more likely to identify themselves as risk averse. The latter observation is logical because potential claim payments would be based upon the actual production history of the farm unit or units in question as opposed to average county yields. With CRC, the probability of having zero indemnity against loss from a localized event is greatly reduced relative to a group coverage plan.

Respondents who purchased corn and soybean RA were older and farmed fewer acres than non-purchasers. Tenants were less likely than landlords to purchase RA coverage, and individuals who identified themselves as both landlord and tenant were more likely than tenants to purchase RA coverage. Logically, RA coverage would appeal to landlords with fewer acres because yields from smaller units would not tend to be highly correlated with average county yields, and there would be limited geographic diversification of holdings.

GRIP coverage for corn and soybeans was purchased by respondents who tended to be younger and reported higher levels of gross farm income and total debt outstanding. For individuals who purchased corn GRIP, more corn acres were farmed. Respondents who identified themselves as risk takers were more likely than others to purchase soybean GRIP. Those individuals also thought that government subsidization of insurance premiums was important, they farmed more acres of corn and soybeans, they reported higher levels of net worth, and they reported fewer years farming.

The tendency for younger respondents and respondents with higher gross farm incomes to purchase GRIP coverage is intuitively appealing and consistent with other information derived from survey results. Younger respondents were more likely to be tenants, and tenants tended to farm more acres of corn and soybeans than landlords (Table 2). As operations become larger, farm yields become more highly correlated with county yields, and group products become a more logical insurance choice. In addition, as operations become larger, there is a possibility that they become more geographically diversified within a county, which would also support a decision to select a group product. Landlords, on the other hand, were associated with smaller acreages of corn and soybeans; therefore they were less likely to benefit from a group product. Landlords were, in fact, less likely than tenants to believe that the unit structure flexibility provided by the insurance was very important, and they were more likely to select corn IP, which would have provided coverage for all of the respondent's corn acres as a single unit.

With regard to crop hail purchases, those who purchased coverage for corn tended to be risk averse and they farmed fewer corn and soybean acres than non-purchasers. Respondents who purchased hail protection for soybeans believed that the insurance company writing the policy was important, and they rented fewer corn acres.

Conclusions

In 2005, northern Illinois survey respondents ranked price of insurance as most important among five factors that could have influenced crop insurance purchase decisions. In addition, government subsidization of premiums was considered important by 22 percent of respondents and very important by 65 percent of respondents. The importance of cost to crop insurance purchase decisions suggests that the Federal Crop Insurance Corporation and Approved Insurance Providers should continue to assess the feasibility of programs or endorsements that could reduce farmer paid premiums. Marketing ancillary services that increase the perceived

value of crop insurance policies may also be of benefit to Approved Insurance Providers.

The results of this study also indicated that crop insurance agents, as well as farm managers, may benefit from understanding the risk profiles of their clients when assisting them in making crop insurance decisions and planning risk management strategies. Evidence suggested that selection of one popular crop insurance option, specifically Crop Revenue Coverage, was highly sensitive to the risk attitudes of clients. Employing differential marketing approaches that are based upon risk profiles may increase the effectiveness of crop insurance sales efforts for crop insurance agents.

Finally, this study provided evidence that client age and size of operation were factors in decisions pertaining to Revenue Assurance and Group Risk Income Protection. Clients who purchased Revenue Assurance tended to be older and associated with smaller farm operations, whereas clients who purchased Group Risk Income Protection tended to be younger and associated with larger farm operations. It is likely that those observations reflect differences in business circumstances and risk management practices between tenants and landlords, but final conclusions will require further research.

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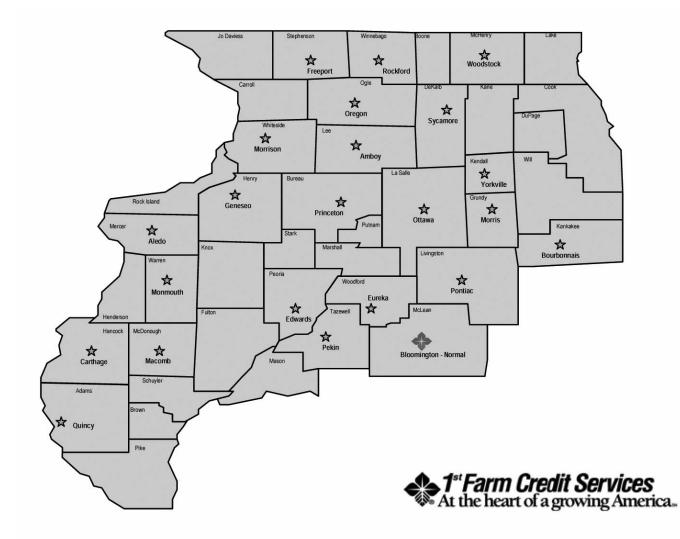
Figure 1. Map of counties surveyed

Table 1. Demographics of respondents

Gender	Frequency	Percent
Male	295	93.7
Female	16	5.1
No response	4	1.3

Education	Frequency	Percent
High school degree or less	97	30.8
Some college	60	19.0
Two-year college degree	41	13.0
Four-year college degree	81	25.7
Some graduate work	7	2.2
Graduate degree	24	7.6
No response	5	1.6

Age	
Minimum	22
Maximum	87
Mean	55.2
Standard deviation	12.6

Table 2. Characteristics of farm operation

Range of values ($)	Gross farm income		Net worth		Total debt outstanding	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
$50,000 or less	38	12.1	11	3.5	88	27.9
$50,001 - $250,000	111	35.2	30	9.5	88	27.9
$250,001 - $500,000	76	24.1	42	13.3	66	21.0
$500,001 - $750,000	31	9.8	46	14.6	24	7.6
More than $750,000	38	12.1	163	51.7	28	8.9
No response	21	6.7	23	7.3	21	6.7

Tenancy	Frequency	Percent	Age[1]	Corn + soybean acres[1]
Landlord	48	15.2	67.0[c]	419.4[a]
Tenant	108	34.3	49.4[a]	1276.2[b]
Landlord and tenant	147	46.7	55.6[b]	1285.5[b]
No response	12	3.8		

Reported acres farmed, 2005

	Minimum	Maximum	Mean	Standard deviation	n
Total corn acres	18	10,000	700.6	907.1	299
Corn owned	3	2,000	266.8	317.5	211
Corn rented	18	4,400	572.4	658.6	194
Total soybean acres	1	5,000	482.2	564.4	280
Soybean owned	15	1,200	185.4	200.7	166
Soybean rented	20	3,600	426.7	475.9	177

Years farming[2]	
Minimum	2
Maximum	70
Mean	31.3
Standard deviation	12.8

[1] Group means; values with different superscripts are significantly different ($P < 0.05$).
[2] N = 290. Twenty-one individuals did not report number of years farming, and 4 individuals reported zero years farming.

Table 3. Crop insurance plans selected for corn and soybean acres in 2005

	Corn		Soybean	
Crop insurance plan	Frequency	Percent[1]	Frequency	Percent[1]
Crop Revenue Coverage (CRC)	97	33.1	49	16.7
Revenue Assurance (RA)	78	26.6	69	23.5
Income Protection (IP)	6	2.0	6	2.0
Actual Production History (APH)	32	10.9	24	8.2
Group Risk Plan (GRP)	8	2.7	24	8.2
Group Risk Income Plan (GRIP)	42	14.3	58	19.8
Catastrophic (CAT)	24	8.2	21	7.2
Crop Hail	115	39.2	78	26.6

[1] Percent of respondents who had purchased one or more crop insurance plans.

Table 4. Crop insurance coverage elections for corn acres

		Number of respondents at alternative election levels					
Plan		50&55	60&65	70&75	80&85	90&95	100
Crop Revenue Coverage		0	6	44	45	NA[1]	NA
Revenue Assurance		1	17	42	14	NA	NA
Income Protection		0	1	5	0	NA	NA
Actual Production History	Yield	0	7	15	9	NA	NA
	Indemnity	NA	1	4	3	0	12
Group Risk Plan	Yield[2]	NA	NA	1	2	4	NA
	Protection	NA	0	2	0	2	4
Group Risk Income Plan	Yield[2]	NA	NA	2	8	31	NA
	Protection	NA	1	5	5	7	17

[1] NA = not available.
[2] 95% election was not available.

Table 5. Crop insurance coverage elections for soybean acres

		Number of respondents at alternative election levels					
Plan		50&55	60&65	70&75	80&85	90&95	100
Crop Revenue Coverage		3	1	24	21	NA[1]	NA
Revenue Assurance		1	16	32	17	NA	NA
Income Protection		0	0	4	1	NA	NA
Actual Production History	Yield	1	5	11	7	NA	NA
	Indemnity	NA	2	1	4	0	7
Group Risk Plan	Yield[2]	NA	NA	3	1	14	NA
	Protection	NA	1	3	1	7	9
Group Risk Income Plan	Coverage[2]	NA	NA	3	7	45	NA
	Protection	NA	2	3	5	10	29

[1] NA = not available.
[2] 95% election was not available.

Table 6. Individuals who most influenced crop insurance purchase decisions as identified by respondents

Influencer	Frequency	Percent of respondents
No one	125	39.7
Insurance agent	109	34.6
Other	36	11.4
Tenant	20	6.3
Spouse	4	1.3
Neighbor	4	1.3
Landlord	3	1.0
Farm manager	1	0.3
No response	13	4.1
Total	315	100.0

Table 7. Average ranking of five factors that influenced crop insurance purchase decisions

Factor	Average rank[1]	n
Price of the insurance	2.0	288
Compatibility of coverage with grain marketing plans	2.7	288
Probability of receiving claim payment	2.8	284
Agent recommendations	3.0	285
Required by lender to carry crop insurance	4.3	286

[1] 1 = most important; 5 = least important.

Table 8. Importance of five factors that influenced crop insurance purchase decisions

Factor	Number of responses		
	Very important	Somewhat important	Not important
Government subsidization of premiums	205	69	22
Unit structure flexibility provided by insurance	100	154	36
Weather concerns	198	89	8
Crop yield in previous year	69	140	82
Insurance company writing policy	58	148	87
Other	20	4	1

Table 9. Tests of independence: Selection of insurance plans vs. imiportance of factors that influenced selection[1]

Variables	Product purchase decision[2]		Sig.[3]
	Purchase	No purchase	
Corn CRC.			
vs. government subsidization of premiums			
Important	31.1%	61.5%	
Not important	1.0%	6.4%	0.039
vs. insurance company writing policy			
Important	24.9%	45.4%	
Not important	7.2%	22.5%	0.038
Soybean CRC			
vs. government subsidization of premiums			
Important	16.2%	76.4%	
Not important	0.0%	7.4%	0.017
vs. unit structure flexibility provided by insurance			
Important	15.9%	71.7%	
Not important	0.3%	12.1%	0.010
vs. crop yield in previous year			
Important	13.7%	58.1%	
Not important	2.7%	25.4%	0.035
vs. insurance company writing policy			
Important	14.0%	56.3%	
Not important	2.4%	27.3%	0.007
Soybean GRIP			
vs. government subsidization of premiums			
Important	18.9%	73.6%	
Not important	0.3%	7.1%	0.050
Soybean crop hail			
vs. insurance company writing policy			
Important	21.2%	49.1%	
Not important	4.4%	25.3%	0.004

[1] Only tests where $P \leq 0.05$ are included.
[2] Values in columns represent percent of respondents.
[3] Significance associated with Fisher's Exact Test.

Table 10. Tests of independence: Selection of insurance plans vs. self-selected risk attitude[1]

Variables	Product purchase decision[2]		Sig.[3]
	Purchase	No purchase	
Corn CRC			
Risk averse	6.5%	6.2%	
Risk neutral	15.0%	34.5%	
Risk taker	10.1%	27.7%	0.015
Corn crop hail			
Risk averse	6.8%	5.9%	
Risk neutral	18.2%	31.3%	
Risk taker	11.7%	26.1%	0.038
Soybean CRC			
Risk averse	3.9%	8.8%	
Risk neutral	8.5%	41.0%	
Risk taker	3.6%	34.2%	0.006
Soybean GRIP			
Risk averse	1.0%	11.7%	
Risk neutral	7.8%	41.7%	
Risk taker	10.1%	27.7%	0.012

[1] Only tests where $P \leq 0.05$ are included.
[2] Values in columns represent percent of respondents.
[3] Significance associated with Pearson chi-square statistic.

Table 11. Selection of insurance plans vs. demographic variables[1]

Variables	Product purchase decision		Sig.
	Purchase	No purchase	
Corn CRC vs. education[2]			
High school degree or less	12.3%	19.0%	
Some college or college degree	18.7%	50.0%	0.025^4
Corn RA vs. age[3]	58.3	54.1	0.013^5
Corn GRP vs. education[2]			
High school degree or less	0.0%	31.4%	
Some college or degree	2.6%	66.0%	0.047^4
Corn GRIP vs. age[3]	49.4	56.1	0.001^5
Soybean RA vs. age[3]	59.0	54.1	0.005^5
Soybean IP vs. age[3]	66.0	55.0	0.034^5
Soybean GRP vs. age[3]	51.4	55.6	0.019^5
Soybean GRIP vs. gender[2]			
Female	0.0%	76.2%	
Male	18.6%	5.1%	0.034^4
Soybean GRIP vs. age[3]	50.7	56.2	0.002^5

[1] Only tests where $P \leq 0.05$ are included.
[2] Numeric values represent percent of respondents.
[3] Numeric values represent sample means.
[4] Significance associated with Fisher's Exact Test.
[5] Significance associated with independent samples t-test.

Table 12. Test of independence: Selection of insurance plans vs. characteristics of farm operations[1]

Variables	Product purchase decision[2]		Sig.
	Purchase	No purchase	
Corn RA vs. tenancy			
Landlord	5.3%	10.6%	
Tenant	5.6%	29.8%	
Both landlord and tenant	13.9%	34.8%	0.023[3]
Corn IP vs. tenancy			
Landlord	1.0%	14.9%	
Tenant	0.0%	35.6%	
Both landlord and tenant	1.0%	47.5%	0.035[3]
Corn APH vs. net worth			
Less than $750,000	6.2%	38.0%	
Greater than $750,000	4.1%	51.7%	0.050[4]
Corn GRIP vs. gross farm income			
Less than $250,000	3.4%	47.3%	
Greater than $250,000	9.9%	39.5%	0.001[4]
Corn GRIP vs. debt outstanding			
Less than $250,000	4.1%	55.8%	
Greater than $250,000	9.5%	30.6%	0.000[4]
Soybean RA vs. tenancy			
Landlord	3.6%	12.4%	
Tenant	4.6%	31.0%	
Both landlord and tenant	13.5%	35.0%	0.017[3]
Soybean RA vs. gross farm income			
Less than $250,000	13.6%	37.1%	
Greater than $250,000	8.8%	40.5%	0.045[4]
Soybean GRIP vs. gross farm income			
Less than $250,000	3.4%	47.3%	
Greater than $250,000	15.6%	33.7%	0.000[4]
Soybean GRIP vs. net worth			
Less than $750,000	6.2%	38.0%	
Greater than $750,000	13.0%	42.8%	0.030[4]
Soybean GRIP vs. debt outstanding			
Less than $250,000	6.5%	53.4%	
Greater than $250,000	12.6%	27.6%	0.000[4]

[1]

Table 13. Independent samples t-tests: Selection of insurance plans vs. characteristics of farm operations[1]

Variables	Product purchase decision[2]		Sig.[3]
	Purchase	No purchase	
Corn CRC			
Corn acres owned	138.1	275.9	0.000
Soybean acres farmed	87.1	154.5	0.002
Corn RA			
Corn acres farmed	544.2	754.0	0.025
Corn acres rented	315.1	505.8	0.018
Soybean acres farmed	386.3	504.0	0.048
Soybean acres rented	218.0	376.0	0.002
Corn APH			
Corn acres rented	281.2	478.9	0.013
Corn GRIP			
Corn acres farmed	1151.1	631.0	0.007
Corn acres rented	834.4	395.6	0.008
Corn Hail			
Corn acres farmed	577.6	774.3	0.046
Corn acres rented	348.6	523.0	0.027
Soybean acres farmed	359.5	540.3	0.002
Soybean acres rented	249.3	381.7	0.014
Soybean RA			
Corn acres farmed	469.0	767.5	0.000
Corn acres rented	325.3	496.4	0.039
Soybean acres farmed	360.4	509.2	0.006
Soybean acres rented	243.7	361.2	0.025
Soybean GRIP			
Corn acres farmed	1112.1	603.7	0.000
Corn acres rented	762.0	383.8	0.004
Soybean acres farmed	663.9	428.2	0.005
Soybean acres rented	516.6	288.5	0.003
Years farming	27.7	31.6	0.045
Soybean CAT			
Corn acres rented	315.6	468.3	0.031
Soybean crop hail			
Corn acres rented	337.3	495.3	0.035

[1] Only tests where $P \leq 0.05$ are included.
[2] Values in columns represent sample means.
[3] Significance associated with independent samples t-test.

Table 14. Miscellaneous variables compared across risk attitude categories

| Variable | Risk attitude | | Sig. |
	Risk neutral/ risk averse	Risk taker	
Unit structure flexibility provided by insurance[1]			
Important	57.5%	30.4%	
Not important	5.6%	6.3%	0.030[3]
Weather concerns[1]			
Important	62.5%	35.1%	
Not important	0.3%	2.1%	0.012[3]
Crop yield in previous year[1]			
Important	48.4%	23.7%	
Not important	14.3%	13.6%	0.010[3]
Gross farm income[1]			
Less than $250,000	35.1%	15.8%	
Greater than $250,000	26.1%	23.0%	0.004[3]
Net worth[1]			
Less than $750,000	30.6%	13.5%	
Greater than $750,000	30.9%	25.0%	0.010[3]
Total debt outstanding[1]			
Less than $250,000	41.7%	17.9%	
Greater than $250,000	20.0%	20.3%	0.000[3]
Acres corn + acres soybeans[2]	1,001.5	1,447.1	0.024[4]

[1] Numeric values represent percent of respondents.
[2] Numeric values represent sample means.
[3] Significance associated with Fisher's Exact Test.
[4] Significance associated with independent samples t-test.