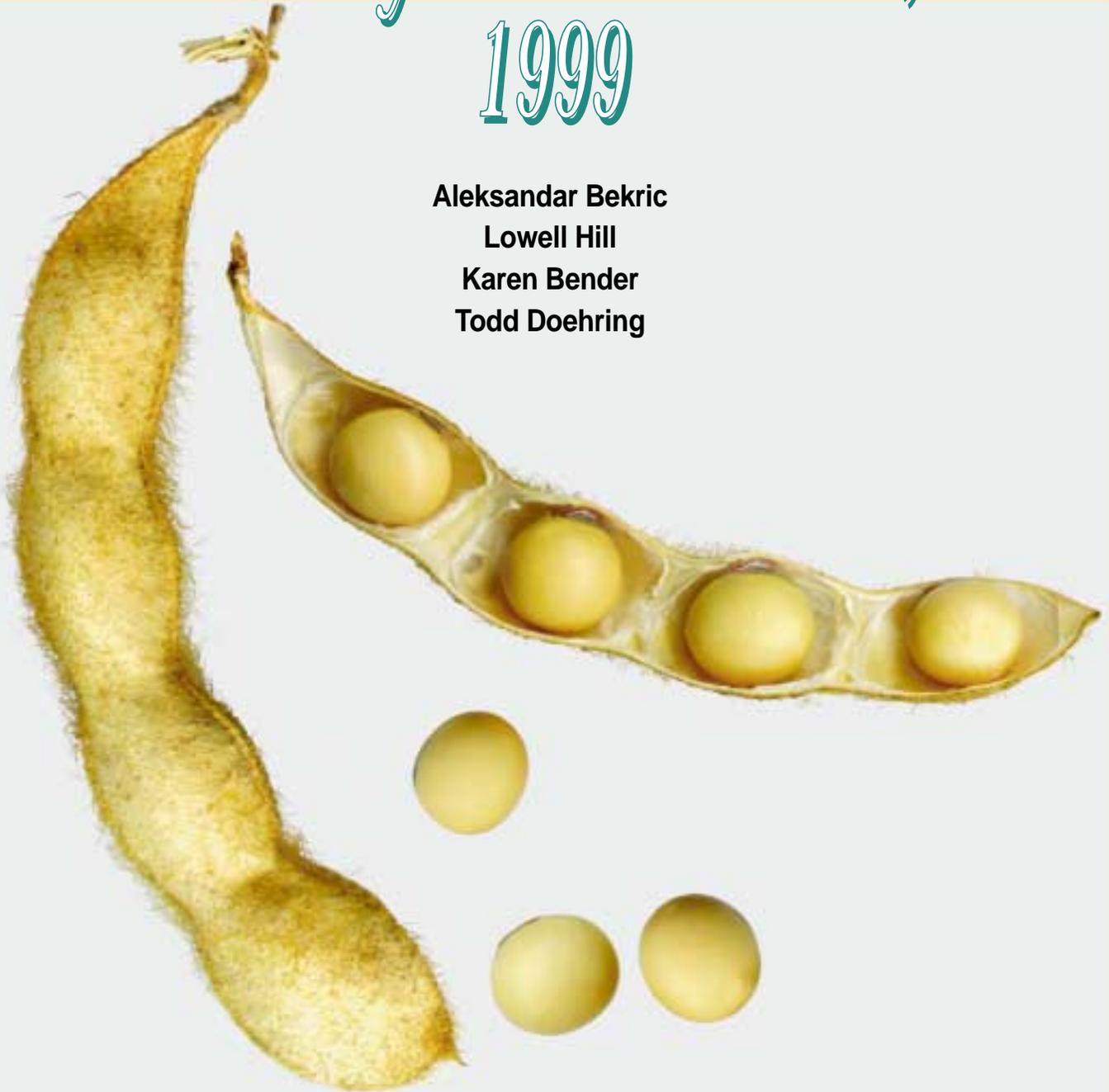


Illinois Farmers' Selection Criteria for Soybean Varieties, 1999

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The Importance of Information

Information about the characteristics of soybean varieties is an important ingredient in farmers' choice of varieties for planting. The increased use of quality specifications in processors' contracts increases the importance of end-use information when farmers select varieties for planting. Although yield is the primary criterion in farmers' choice of variety (see AE 4724) the importance of oil and protein contents and other end-use properties should increase as processors and foreign buyers increase their use of contracts that specify quality attributes. The amount of information available to farmers has increased in recent years, and those firms and agencies providing information to farmers have access to a wider range of information technology. It is important to know how the information is being used and which information will influence farmers' decisions.

Producer Surveys

In order to meet the dual objectives of 1) describing farmers' strategies with respect to soybean variety selection, and 2) identifying changes in strategies over time, surveys were sent to three groups of farmers in 1998. The survey was repeated in 1999 and will be repeated once more in the year 2000 (See Appendix A for a copy of the survey). The three groups surveyed were: (1) a panel of soybean producers maintained by the Farm Research Institute (FRI), Savoy, Illinois, (2) a random selection of soybean growers in Christian County, Illinois (CCSP), and (3) members of a group of producers involved in the Initiative for Quality in Soybeans (IQS), who are participating in variety experiments involving the Illinois Soybean Program Operating Board and a multi-national processor, working to develop an efficient vertical relationship between producers and end-users. IQS was identified as the Illinois Soybean Program Operating Board (ISPOB) in the previous survey report, but the more inclusive term (IQS) will be used throughout this report.

The FRI panel has been structured to provide a cross section of Illinois farmers. Surveys were mailed to 447 panelists identified as soybean producers — 389 usable surveys were returned.

The soybean producers in the CCSP data base are a random selection of customers of an elevator located in Christian County, Illinois. Surveys were mailed to the same 100 farmers both years. One of the respondents retired in 1998 and returned the 1999 survey with no data. Therefore, of the 42 surveys returned, 41 were used in the analysis.

In the IQS group, a total of 26 surveys were obtained by distributing forms during one of the 1999 information meetings. This was followed by a mail survey to the other participants in IQS, who were not at the meeting. Nineteen of the 26 responses were from farmers enrolled in the program — the other seven had attended only the one meeting. The two groups from the Bloomington, Illinois area were analyzed separately in order to maintain a data base of identical farmers across the three years. The 19 respondents who have been active in the full program are identified as IQS respondents and the seven others as BL respondents.

Each of the four groups surveyed in 1999 were exposed to different types of information about soybean composition during 1997 and 1998. By comparing the results of the surveys in the two time-periods, it will be possible to evaluate whether the perceptions and decision criteria of the three groups of farmers have been altered by access to different information. The information strategy during 1998 for the three groups is described briefly below:

FRI Panelists

No information was distributed to the FRI panelists, although there are many sources of information and research results available to the general public. These sources include results of yield trials, test plots and the Illinois Crop Improvement Association (ICIA) publication that provides information on composition for selected varieties. The same panel members are retained with minimal replacement providing a benchmark for comparison over time. The information to which they were exposed should be similar to that of all farmers in the state.

CCSP Group

The CCSP group received information about oil and protein contents as they delivered soybeans to their local elevator. Only a few loads were tested during 1998, but additional information will be provided

during 1999. The elevator managers will be provided assistance in conducting promotional programs and developing marketing strategies to emphasize the importance of increasing the value of soybeans by selecting different varieties.

IQS Group

The IQS group has been, and will continue to be, involved in an educational program and an experiment where selected varieties are converted to value-enhanced soybean oil or meal in the local processing plant. Information about processing value will be made available to producers. A subset of seven producers, who attended the February informational meeting in Bloomington (BL), attended at least one educational meeting and may be more aware of quality issues than the average farmer, but will not have had the same intensive educational program as the 19 IQS respondents.

Results From the Survey

The questions on the survey were designed to obtain three kinds of information:

1. Sources of information about varieties.
2. Availability of information about oil and protein contents from seed company dealers.
3. Factors influencing producers' selection of variety.

Sources of Information for Variety Selection in 1999

Respondents in all four groups were asked to identify the sources of information that they used when selecting varieties for planting in 1999.

Seed company dealers were identified as a source by the largest percentage of respondents in all groups. *Seed*

Table 1.

Sources of Information Used in Selecting Soybean Seed, 1999, Illinois.

Source of Information	FRI Respondents	CCSP Respondents	IQS Respondents	BL Respondents
	----- percent of those responding -----			
Seed company dealers	87	93	100	100
Seed company field day test plots	63	78	58	86
Other soybean growers	55	61	79	71
U of I performance trials	30	32	53	43
Co-op Extension agent*	14	5	0	29
ICIA composition tests	14	15	16	14
Web site	4	5	11	0
Other*	6	15	11	14

* percents responding among groups are significantly different at the 90% level

Note: In addition to these results, a one-way ANOVA analysis was performed on 1999 data that excluded Bloomington respondents. Results of that analysis confirmed that percentages of respondents that selected "extension agents" and "other factors" as a source of information were significantly different among groups, even with the BL response deleted.

company field day test plots were next in importance in all groups except IQS — respondents in that group ranked *other soybean growers* higher than test plots. The *other* category reported by 15 percent of CCSP respondents contained several different sources not easily categorized, such as bankers, end-users and family members.

The four groups differed significantly on only two of the eight sources of information in 1999 (Table 1).

One of the important differences among the groups was the lack of reliance on *Co-op Extension agent* for information — none of the IQS respondents in contrast to 29 percent of the BL group and 14 percent of the FRI respondents. A much higher percent of the IQS group reported using a *web site* for information, in contrast to none of the Bloomington group and only 4 percent in the FRI group. The IQS program provides participants the opportunity for working with computers and exposure to web sites. Based on the 1998 survey, it was concluded that all three groups were very similar in their sources of information. The 1999 survey shows slightly larger differences but only the *Co-op Extension agent* and *other sources* were statistically significant across the four groups.

Changes in Sources of Information for Variety Selection, 1998–1999

Although only one year has elapsed since the last survey, it is important to determine if there has been any change in the sources of information among the three groups since the 1998 survey. The comparison of 1998 with 1999 results indicates similar percentages for most sources for all groups (Table 2). Most of the exceptions are in the IQS responses, where the category of *seed company field day test plots* increased significantly as a source of information in selecting soybean varieties — *Co-op Extension agent* as a source decreased from 50 percent of respondents to 0 percent. In addition, there were increases in reliance on *seed company dealers*, *other soybean growers*, and *U of I performance trials*. This could indicate that the educational programs for IQS participants have had an effect, even in one year of activity. The small number of respondents in 1998 requires that this conclusion be interpreted with caution.

Table 2.

Sources of Information Used in Selecting Soybean Seed, 1998 and 1999, Illinois.

Source of Information	FRI Respondents		CCSP Respondents		IQS Respondents	
	1998	1999	1998	1999	1998	1999
	----- percent of those responding -----					
Seed company dealers	88	87	89	93	88	100
Seed company field day test plots	57	63	80	78	13	58**
Other soybean growers	55	55	74	61	63	79
U of I performance trials	29	30	35	32	38	53
Co-op Extension agent	11	14	4	5	50	0***
ICIA composition tests	11	14	11	15	38	16
Web site	–	4	–	5	–	11
Other	5	6	2	15**	13	11

*** percents responding among groups are significantly different at the 99% level

** percents responding among groups are significantly different at the 95% level

Access to Information About Chemical Composition

In response to the question, “Do any of your *seed company dealers* provide information about differences in oil and protein contents among varieties?”, less than one-half of the respondents in all groups said, “yes”. The FRI respondents reported receiving information from their *seed company dealers* concerning composition

more often than the CCSP, IQS and BL groups (Table 3). A comparison across the two years shows a decline in the percentage of respondents indicating that their *seed company dealers* provided information on oil and protein contents as reported by the CCSP and IQS groups (Table 4). There was little change in the state average represented by FRI data. The question did not ascertain the level of information available — only if some information was provided by the dealer.

Table 3.

Information on Chemical Composition Provided by Seed Dealers in 1999.

Source of Information	FRI Respondents	CCSP Respondents	IQS Respondents	Bloomington Respondents
----- percent of those responding -----				
Seed company dealers provided information**	48	29	26	14
Seed company dealers did not provide information	52	71	74	86
Total	100	100	100	100

Number responding	381	41	19	7

** percents responding among groups are significantly different at the 95% level

Table 4.

Information on Chemical Composition Provided by Seed Dealers in 1998 and 1999.

Source of Information	FRI Respondents		CCSP Respondents		IQS Respondents	
	1998	1999	1998	1999	1998	1999
----- percent of those responding -----						
Seed company dealers provided information	43	48	43	29	38	26
Seed company dealers did not provide information	57	52	57	71	52	74

Factors Considered When Selecting Variety

Farmers consider a wide range of factors when selecting the varieties which they will plant each year. Given the present pricing system, there is little incentive to consider chemical composition. However, research has shown that improved composition can be achieved with no reduction in yield. As farmers receive more information about these alternatives, it is anticipated that the importance of oil and protein contents will increase when selecting a variety. Respondents

were asked to rate the importance of 11 factors in their choice of soybean varieties on a rating scale of one to five (with five being most important). The FRI respondents rated *yield* as 4.8 in the 1999 survey. The lowest ratings were given to *oil and protein contents* (2.75) and *contract specifies variety* (2.18) (Table 5). *Yield* was rated as “5” (most important) by 77 percent of the FRI respondents and *oil and protein contents* by 4 percent.

CCSP and IQS generated high and low ratings similar to the FRI state average (Tables 6 and 7). The percent of respondents rating *oil and protein contents* as “5” among the IQS respondents (5 percent) and CCSP re-

Table 5.

FRI — Respondents' Rating of Criteria in Soybean Seed Selection, Illinois, 1999.

Criteria	Number of Respondents	Average Rating	Percent Selecting Each Score				
			5	4	3	2	1
Maturity	383	4.16	36	45	18	1	0
Disease resistance	383	4.47	53	40	6	0	0
Oil/protein contents	377	2.75	4	17	41	24	12
Company reputation	381	3.83	24	39	30	4	1
Resistance to lodging	386	4.23	37	49	12	1	0
Resistance to shatter	385	4.29	42	44	11	1	0
Herbicide compatibility	382	3.75	31	30	23	9	5
Previous experience	381	4.00	28	50	15	5	1
Contract specifies variety	354	2.18	7	10	16	18	40
Yield	369	4.80	77	17	1	0	0
Seed price	366	3.88	24	40	26	3	1

Table 6.

CCSP— Respondents' Rating of Criteria in Soybean Seed Selection, Illinois, 1999.

Criteria	Number of Respondents	Average Rating	Percent Selecting Each Score				
			5	4	3	2	1
Maturity	40	4.38	49	39	7	2	0
Disease resistance	41	4.54	61	32	7	0	0
Oil/protein contents	39	2.54	10	12	15	42	17
Company reputation	41	4.00	34	34	29	2	0
Resistance to lodging	41	4.29	39	51	10	0	0
Resistance to shatter	41	4.27	42	46	10	2	0
Herbicide compatibility	41	4.24	51	29	15	2	2
Previous experience	36	3.81	27	32	20	5	5
Contract specifies variety	35	3.14	32	5	15	12	22
Yield	40	4.95	93	5	0	0	0
Seed price	39	4.03	37	37	15	2	5

spondents (10 percent) was higher than in the state as a whole (4 percent). The average rating given to *oil and protein contents* by the BL group was lowest of all groups (1.86 percent), but was based on a very small sample size. None of the BL respondents rated *oil and protein contents* as “5” (Table 8).

Changes in Factors Influencing Variety Selection, 1998–1999

When comparing responses across the two time-periods, there were very few significant differences in the FRI group (Table 9). There was an increase in average rating by FRI in *contract specifies variety*, from 1.9 to 2.2

and an increase in rating of *seed price* from 3.7 to 3.9. Among the CCSP responses only *previous experience* had a statistically significant change. There was an interesting change among the IQS respondents, although the conclusion must be tempered by the low response rate in 1998. The rating given to *oil and protein contents* as a factor in choice of variety increased from 1.8 in 1998 to 2.5 in 1999 (Table 9). The BL group was not in the 1998 survey but their 1.9 value in 1999 is almost the same as the 1998 rating for IQS respondents from the same county. Although there were insufficient responses from IQS in 1998 for a statistical analysis, it would appear that the educational efforts with the IQS group might have had an impact.

Table 7.

IQS— Respondents’ Rating of Criteria in Soybean Seed Selection, Illinois, 1999.

Criteria	Number of Respondents	Average Rating	Percent Selecting Each Score				
			5	4	3	2	1
Maturity	19	4.00	37	26	37	0	0
Disease resistance	19	4.68	68	32	0	0	0
Oil/protein contents	19	2.53	5	5	47	21	21
Company reputation	19	3.42	21	26	32	16	5
Resistance to lodging	19	3.89	5	79	16	0	0
Resistance to shatter	19	4.05	26	58	11	5	0
Herbicide compatibility	19	4.05	47	32	5	11	5
Previous experience	18	4.05	21	63	5	5	0
Contract specifies variety	18	3.17	26	16	21	11	21
Yield	19	4.95	95	5	0	0	0
Seed price	19	3.11	26	58	16	0	0

Table 8.

Bloomington Group — Respondents’ Rating of Criteria in Soybean Seed Selection, Illinois, 1999.

Criteria	Number of Respondents	Average Rating	Percent Selecting Each Score				
			5	4	3	2	1
Maturity	7	3.86	0	86	14	0	0
Disease resistance	7	4.43	57	29	14	0	0
Oil/protein contents	7	1.86	0	0	29	29	43
Company reputation	7	4.14	14	86	0	0	0
Resistance to lodging	7	4.14	43	29	29	0	0
Resistance to shatter	7	3.86	14	57	29	0	0
Herbicide compatibility	7	4.00	43	29	14	14	0
Previous experience	7	4.00	29	43	29	0	0
Contract specifies variety	7	2.28	0	29	0	43	29
Yield	7	4.86	86	14	0	0	0
Seed price	7	3.43	0	43	57	0	0

Table 9.

Respondents' Rating of Factor Importance in Soybean Seed Selection in 1998 and 1999, Illinois.

Criteria	FRI Respondents		CCSP Respondents		IQS Respondents		Bloomington Respondents	
	1998	1999	1998	1999	1998	1999	1998 ^a	1999
Maturity	4.2	4.2	4.2	4.4	4.6	4.0*	NA	3.9
Disease resistance	4.4	4.5	4.5	4.5	4.5	4.7	NA	4.4
Oil/protein contents	2.6	2.8	2.7	2.5	1.8	2.5*	NA	1.9
Company reputation	3.9	3.8	3.9	4.0	3.8	3.4	NA	4.1
Resistance to lodging	4.2	4.2	4.0	4.3	3.9	3.9	NA	4.1
Resistance to shatter	4.3	4.3	4.2	4.3	3.8	4.1	NA	3.9
Herbicide compatibility	3.8	3.8	4.2	4.2	3.6	4.1	NA	4.0
Previous experience	4.1	4.0	4.3	3.8**	3.9	4.1	NA	4.0
Contract specifies variety	1.9	2.2***	2.5	3.1	2.8	3.2	NA	2.3
Yield	4.8	4.8	4.9	5.0	5.0	4.9	NA	4.9
Seed price	3.7	3.9***	3.8	4.0	2.9	3.1	NA	3.4

^a no response in 1998

*** percents responding among groups are significantly different at the 99% level

** percents responding among groups are significantly different at the 95% level

* percents responding among groups are significantly different at the 90% level

Demographics

In order to identify characteristics of respondents that might influence their use of different sources of information, the FRI data were sorted by size of farm (acres operated), education, income and age of operator. FRI was the only group for which demographic data were available. Farm size and income had a simple correlation coefficient of 0.71 so the survey responses for those two variables were expected to be similar. All of the other demographic variables had correlation coefficients less than 0.30.

Sources of Information

The sources of information about new soybean varieties were compared to determine if farm size, education, age or income were associated with the response.

Farm Size

There were three statistically significant differences among size categories: *seed company dealers*, *U of I performance trials* and *Co-op Extension agent* (Table 10). However, of these three differences, only *U of I perfor-*

mance trials had a consistent trend from small to large farm, increasing from 23 percent to 41 percent as size of farm increased from less than 500 to above 2000 acres. Importance of the *web site* for information also increased with farm size (from 2 percent to 9 percent) but that trend was not statistically significant.

The number of respondents indicating that the *Co-op Extension agent* was a source of information about new soybean varieties also differed between the largest and smallest farms, but the middle size group was lowest. Only six percent of the respondents in the 501–1000 acre size group listed *Co-op Extension agent* as a source compared to 23 percent in the group operating more than 2000 acres.

Education

There were two statistically significant differences associated with the level of education. Reliance on *U of I performance trials* did not show a consistent pattern. Use of a *web site* increased as the level of education increased (Table 11).

Age

Farmers in the middle age group (50–60 years of age) reported using *other soybean growers*, *seed company field*

Table 10.

Sources of Information by Farm Size (Acres Operated), FRI Data Set.

Source of Information	Size of Operated Land				All Respondents ¹
	Less Than 500	500–1000	1001–2000	Above 2000	
----- percent of those responding -----					
Seed company dealers*	84	94	84	86	88
Seed company field test	65	59	67	68	64
Other soybean growers	58	50	54	68	55
U of I performance trials*	23	28	37	41	29
Co-op Extension agent**	16	6	15	23	13
ICIA composition tests	13	11	15	27	14
Web site	2	4	6	9	4
Other	5	6	5	9	5

Number responding	132	125	67	22	346

¹ totals differ slightly among tables as a result of different number of respondents answering the question

** percents responding among groups are significantly different at the 95% level

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Table 11.

Sources of Information by Education, FRI Data Set.

Source of Information	Education Groups					All Respondents ¹
	Less Than High School	High School	Some College	4-Year Degree	Post Graduate Work	
----- percent of those responding -----						
Seed company dealers	80	88	92	88	75	87
Seed company field test	73	63	62	59	72	63
Other soybean growers	60	53	59	60	50	56
U of I performance trials***	20	19	30	42	38	28
Co-op Extension agent	13	10	10	15	25	13
ICIA composition tests	7	14	15	14	16	14
Web site**	0	1	4	7	9	4
Other	0	4	7	6	13	6

Number responding	15	150	71	81	32	349

¹ totals differ slightly among tables as a result of different number of respondents answering the question

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tests and *U of I performance trials* more frequently than farmers in either of the other two age groups. There were also significant differences among age groups on the use of the *web site*, with those in the category “over 60” reporting use of the *web site* less frequently (1 percent) than younger farmers (6 percent) (Table 12).

Income

There were two statistically significant differences in source of information associated with gross income — *U of I performance trials* and *web site*. As income levels increased, the use of *U of I performance trials* and *web sites* increased (Table 13).

Factors Considered When Selecting a Variety

The important criteria in selecting varieties for planting were expected to differ among the different demographic groups. The four variables tested were farm size (acres operated), education, age and level of income.

Farm Size

Significant differences among the size categories were found in *herbicide compatibility*, *yield* and *contract specifies variety* (Table 14). None of these showed a consistent trend from small to large farm. *Seed price* declined in importance as acres operated increased but was not statistically significant. The importance of *oil and protein contents* was highest in the group of farmers operating more than 2000 acres.

Education

The importance of *seed price* was the only factor that was significantly different among the educational levels of respondents. The rating for *seed price* was highest for those farmers with less than a high school education and there was no consistent trend as education increased (Table 15). The importance of *oil and protein contents* was highest among those farmers with less than a high school education, with a rating decreasing from 3.00 to 2.62 for those with a university degree.

Table 12.

Sources of Information According to Different Age Levels, FRI Data Set.

Source of Information	Age Group			
	Less Than 50	50–60	Above 60	All Respondents ¹
	----- percent of those responding -----			
Seed company dealers	88	85	87	87
Seed company field test*	56	72	64	63
Other soybean growers**	60	65	48	56
U of I performance trials**	23	39	27	29
Co-op Extension agent	10	13	15	13
ICIA composition tests	11	14	16	14
Web site**	6	6	1	4
Other	6	9	4	6

Number responding	117	88	142	347

¹ totals differ slightly among tables as a result of different number of respondents answering the question

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Table 13.

Sources of Information by Levels of Income, FRI Data Set.

Source of Information	Age Group			
	Less Than \$100,000	\$100,000–\$250,000	Above \$250,000	All Respondents ¹
----- percent of those responding -----				
Seed company dealers	83	88	87	87
Seed company field test	61	64	66	64
Other soybean growers	56	57	56	56
U of I performance trials**	20	28	35	29
Co-op Extension agent	16	12	12	13
ICIA composition tests	13	15	15	14
Web site*	0	5	6	4
Other	7	6	6	6

Number responding	90	109	143	342

¹ totals differ slightly among tables as a result of different number of respondents answering the question

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Table 14.

Rating of Selection Criteria by Farm Size (Acres Operated), FRI Data Set.

Criteria	Size of Operated Land in Acres				All Respondents ¹
	Less Than 500	500–1000	1001–2000	Above 2000	
Maturity	4.08	4.20	4.11	4.27	4.14
Disease resistance	4.43	4.50	4.41	4.68	4.47
Oil/protein contents	2.80	2.66	2.69	2.95	2.73
Company reputation	3.91	3.76	3.72	3.95	3.82
Resistance to lodging	4.27	4.25	4.08	4.31	4.23
Resistance to shatter	4.27	4.29	4.23	4.23	4.27
Herbicide compatibility*	3.57	3.92	3.62	3.86	3.73
Previous experience	4.01	3.98	3.95	4.09	3.99
Contract specifies variety***	1.83	2.17	2.58	2.43	2.15
Yield***	4.68	4.80	4.92	4.86	4.79
Seed price	3.93	3.89	3.82	3.77	3.88
Other factor	3.18	3.84	3.85	0.00	3.61

Number responding	128	124	67	22	341

¹ totals differ slightly among tables as a result of different number of respondents answering the question

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Table 15.

Rating of Selection Criteria by Education, FRI Data Set.

Criteria	Education Groups					
	Less Than High School	High School	Some College	4-Year Degree	Post Graduate Work	All Respondents ¹
Maturity	4.13	4.13	4.15	4.20	4.13	4.15
Disease resistance	4.73	4.51	4.41	4.44	4.51	4.48
Oil/protein contents	3.00	2.80	2.76	2.62	2.75	2.75
Company reputation	3.66	3.86	3.80	3.76	4.06	3.83
Resistance to lodging	4.46	4.18	4.17	4.33	4.21	4.23
Resistance to shatter	4.33	4.29	4.31	4.18	4.31	4.27
Herbicide compatibility	3.85	3.76	3.80	3.66	3.64	3.73
Previous experience	4.00	3.92	4.02	4.02	4.22	4.00
Contract specifies variety	2.63	1.97	2.38	2.32	2.03	2.17
Yield	4.61	4.78	4.85	4.82	4.80	4.80
Seed price**	4.53	3.86	3.95	3.74	3.89	3.88
Other factor	2.00	3.57	4.37	3.50	2.50	3.63
Number responding	15	148	70	81	30	344

¹ totals differ slightly among tables as a result of different number of respondents answering the question

** percents responding among groups are significantly different at the 95% level

Age

Age had a major influence on the rating of criteria for seed selection (Table 16). Ratings for *disease resistance*, *oil and protein contents*, *company reputation*, *resistance to lodging* and *resistance to shatter* showed a consistent upward trend with increasing age. The importance of *oil and protein contents* increased from an average rating of 2.61 for farmers under 50 years of age to a rating of 2.91 for farmers over 60. Younger farmers, on the other hand, rated *contract specifies variety* higher than older farmers. Farmers from the middle age group rated *yield* and *maturity* higher in importance in selection of soybean variety than other groups.

Income

Three factors differed significantly by income group: *resistance to shatter*, *yield* and *contract specifies variety* (Table 17). There was a consistent increase in the rating for *yield* and *contract specifies variety* as level of income increased.

Producers' Response to Price Premiums

Although premiums for higher oil and protein contents are not common in the commercial, generic market for soybeans, there are several examples of buyers who specify minimums and/or offer price differentials. There are significant differences among varieties in the levels of oil and protein contents, with a negative relationship between the two. However, there are many varieties with higher oil and higher protein contents, several of which rank in the top 25 percent with respect to yield. Without price differentials, producers have no incentive to select these varieties. The results of the surveys in this report show that few producers consider oil and protein contents when selecting varieties. A price incentive will be required to induce producers to select a variety on the basis of chemical composition.

The survey of the IQS group asked respondents to evaluate the trade-off between premium and yield loss, recognizing that some of the varieties with the highest

Table 16.

Rating of Selection Criteria by Age Groups, FRI Data Set.

Criteria	Age Groups			
	Less Than 50	50–60	Above 60	All Respondents ¹
Maturity*	4.06	4.28	4.16	4.16
Disease resistance***	4.34	4.49	4.58	4.47
Oil/protein contents**	2.61	2.68	2.91	2.75
Company reputation**	3.72	3.72	3.97	3.82
Resistance to lodging**	4.09	4.25	4.32	4.22
Resistance to shatter***	4.13	4.23	4.40	4.27
Herbicide compatibility	3.66	3.63	3.86	3.73
Previous experience	3.90	4.09	4.00	3.99
Contract specifies variety**	2.42	2.01	2.06	2.17
Yield**	4.83	4.86	4.72	4.79
Seed price	3.81	3.90	3.92	3.88
Other factor	3.90	2.83	3.71	3.62

Number responding	116	87	139	342

¹ totals differ slightly among tables as a result of different number of respondents answering the question

*** percents responding among groups are significantly different at the 99% level

** percents responding among groups are significantly different at the 95% level

* percents responding among groups are significantly different at the 90% level

Table 17.

Rating of Selection Criteria According to Income Levels, FRI Data Set.

Criteria	Income Groups			All Respondents ¹
	Less Than \$100,000	\$100,000–\$250,000	Above \$250,000	
Maturity	4.14	4.07	4.20	4.15
Disease resistance	4.47	4.46	4.51	4.48
Oil/protein contents	2.88	2.67	2.71	2.74
Company reputation	3.84	3.75	3.89	3.83
Resistance to lodging	4.26	4.30	4.18	4.24
Resistance to shatter*	4.23	4.40	4.21	4.28
Herbicide compatibility	3.61	3.76	3.80	3.74
Previous experience	4.11	3.94	3.99	4.00
Contract specifies variety***	1.82	2.11	2.41	2.17
Yield***	4.67	4.76	4.90	4.79
Seed price	4.00	3.89	3.78	3.87
Other factor*	3.18	3.38	4.21	3.63

Number responding	87	107	143	337

¹ totals differ slightly among tables as a result of different number of respondents answering the question

*** percents responding among groups are significantly different at the 99% level

* percents responding among groups are significantly different at the 90% level

Table 18.

Percent of Respondents Willing to Grow Higher Quality Soybeans Under Different Premium and Soybean Yield Scenarios, IQS Data Set.

Premium Cents/Bu.	50 Bushels	48 Bushels	46 Bushels	44 Bushels
0	0	0	0	0
20	28	0	0	0
40	61	39	6	6
60	67	56	50	17
80	94	72	61	39

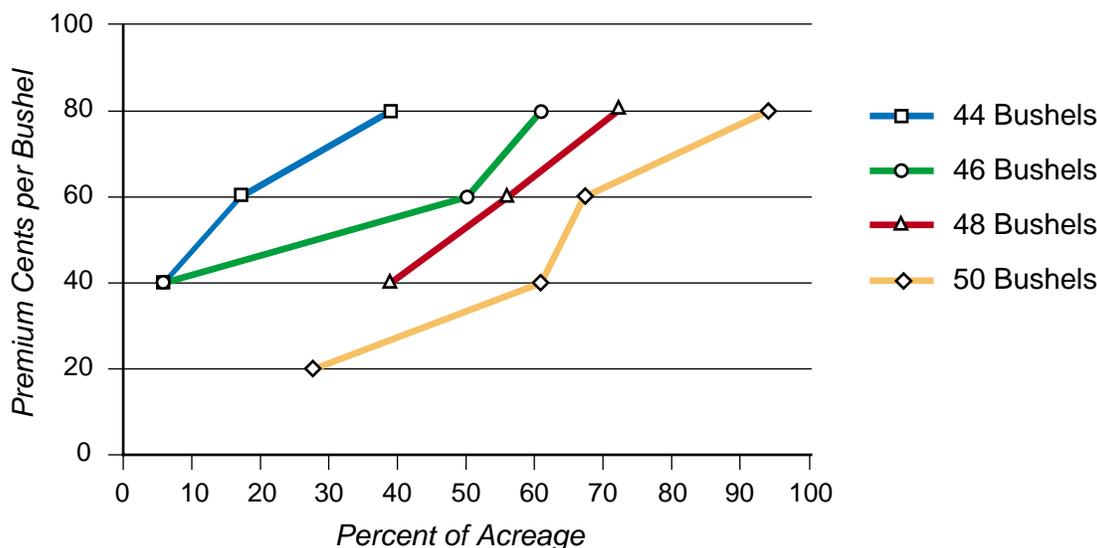
Table 19.

Median Percentage of Total Acres Devoted to Higher Quality Soybeans Under Different Premium and Soybean Yield Scenarios, IQS Data Set.

Premium Cents/Bu.	50 Bushels	48 Bushels	46 Bushels	44 Bushels
0	0	0	0	0
20	33	0	0	0
40	50	50	15	15
60	78	58	33	80
80	100	80	50	80

Figure 1.

Percentage of Total Acres Devoted to Higher Quality Soybeans Under Different Premiums



levels of oil content have below average yield. The average yield used as the base for comparison was 50 bushels per acre (Table 18). Respondents were asked to indicate the acres they would plant to a new variety at various combinations of price premium (starting at zero) and yield drag (base yield starting at 50 bushels per acre) (See question 5 of the survey in Appendix A). The results are based on a small number of responses but show that significant economic incentives are required to induce producers to change to a variety with a higher oil content.

Without a premium, all respondents indicated that they would not change to a variety higher in oil con-

tent, even if there were no loss in yield (Table 18). Given the many criteria other than composition that influences selection (Table 7), this is not surprising. Even at a 20 cents per bushel premium, no one was willing to change variety if there was a two-bushel yield loss, and only 28 percent would plant a different variety at equal yields. With no yield loss and an 80 cents per bushel premium, six percent of the farmers still would not change varieties. There is a significant upward trend in the percent of farmers changing varieties as premium increases, and a significant downward trend as yield decreases from 50 bushels to 44 bushels per acre (Figure 1).

The percent of total acres each producer would devote to a new improved-composition variety also increased as premiums increased, and decreased as yield decreased (Table 19). This is in part a reflection of risk, because producers know that average performance of a new variety may not hold for their farm. The mathematical break-even point for the yield-premium trade-off is easily calculated. It was evident that some respondents had done the calculation. However, on the average, it required significant premiums above the break-even level to induce a change. Using the figures supplied to the respondents (average yield of current varieties of 50 bushels per acre and a price of \$5.00 per bushel) the simple trade-off calculation would suggest that a premium of 68 cents per bushel would compensate for a yield loss of six bushels per acre. However, only 39 percent of the producers would shift to another variety with a six bushels per acre yield loss even at a premium of 80 cents per bushel.

Conclusions

The current information sources for producers are a direct reflection of the marketing channel for generic products. The three groups selected for the study were originally quite similar on the attributes and selection criteria in the 1998 survey. In the 1999 survey, all four groups still show that variety selection is based primarily on maximizing yield and minimizing crop losses regardless of the oil and protein contents.

The one group that showed a number of significant changes between 1998 responses and 1999 responses was the IQS group participating in the educational program in the Bloomington area. Perhaps as a result of the intensive educational programs with this group, they increased their reliance on University of Illinois performance trials as a source of information for selection of soybean varieties. They decreased their reliance on information from seed dealers and increased the importance assigned to oil and protein contents in their selection of varieties. Although the 1998 sample size for IQS was small, most of the respondents in 1998 were also included in the larger set in 1999. This would lend credence to the effectiveness of educational programs.

There were some notable exceptions to the lack of change between the two years in the other three groups. For example, the FRI respondents lowered their rating for the importance of contracts that specified va-

riety and increased their evaluation of the relative importance they attached to the price of seed.

For all groups the importance of commercial firms as a source of information and the overriding importance of yield in selection of varieties was a consistent pattern, regardless of age of operator, size of farm, educational levels and income levels.

Results of these surveys suggest that educational activities can influence farmers' decision criteria to a limited extent. However, economic incentives still appear to be the driving force behind variety selection. As more information becomes available to the producers delivering soybeans to the elevator in Christian County, as the educational program through IQS increases in intensity, and as producers in the Bloomington area gain experience, the survey in the year 2000 will better identify the role of information vs. economic incentives in altering farmers' decisions. The results of the 1999 survey show a significant response by producers, if they are offered economic incentives.

APPENDIX A

SOYBEAN SURVEY

Name: _____

1. Where do you obtain information about new soybean varieties? (*√ all that apply*)

<input type="checkbox"/> Other soybean growers	<input type="checkbox"/> Illinois Crop Improvement Association Composition Tests
<input type="checkbox"/> Seed company dealers	<input type="checkbox"/> U of I Department of Crop Sciences Performance Trials
<input type="checkbox"/> Co-op extension agent	<input type="checkbox"/> Web sites (e.g. Stratsoy, Optimum, Business sites)
<input type="checkbox"/> Seed company field day test plots	
<input type="checkbox"/> Other (please specify) _____	
2. Do any of your seed dealers provide information about differences in oil and protein contents among varieties?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------
3. Please indicate your 1998 acres planted, average yield, percent used on farm and estimated acreage for 1999 (include specialty corn and soybeans in all responses).

	1998			1999
	Acres Planted	Average Yield	Percent of Production Used on Farm	Estimated Acres
Corn				
Soybeans				
Total Cropland				

4. Please circle a number indicating how important you consider each of the following factors when you select soybean seed.

	Very Important	Somewhat Important	Not Very Important		
Maturity date	5	4	3	2	1
Disease resistance	5	4	3	2	1
Oil and protein contents	5	4	3	2	1
Company reputation	5	4	3	2	1
Resistance to lodging	5	4	3	2	1
Resistance to shatter	5	4	3	2	1
Herbicide compatibility (example: Roundup ready)	5	4	3	2	1
Previous experience (your or your neighbors)	5	4	3	2	1
I have a contract with a buyer that specifies the varieties I can plant	5	4	3	2	1
Yield	5	4	3	2	1
Seed price	5	4	3	2	1
Other: _____	5	4	3	2	1
5. We want to estimate the premium needed to increase the acreage of soybean varieties with oil contents higher than the 3-year average for your region. In the table we have listed alternative yields and premiums. In the blanks below, **please enter the number of acres** you would plant to high oil soybean varieties for each premium and at each yield level. Assume your current variety yields 50 bushels per acre, agronomic characteristics and seed price are the same for current and new varieties and the price of soybeans is \$5.00 per bushel.

Yield	Premium for Oil Content Above the Base (Cents/Bushel)				
	0 Cents	20 Cents	40 Cents	60 Cents	80 Cents
50 bushels/acre (no yield loss)					
48 bushels/acre (2 bushels yield loss)					
46 bushels/acre (4 bushels yield loss)					
44 bushels/acre (6 bushels yield loss)					