



Producer Alternatives in Growing Specialty Corn and Soybeans

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Contents

Introduction	3
Description of Survey	3
Survey Procedures	3
Phone-Mail Response Comparison	3
Survey Results	3
Farm Characteristics	3
Farm type	3
Farm size	3
Generic corn and soybean production	4
On-farm storage	4
Specialty Crop Analysis	5
Overview	5
Producer participation, acreage and yield data for specialty corn	5
Producer participation, acreage and yield data for specialty soybeans	6
Summary of producer participation, acreage and yield data	7
Contracting information for specialty corn	7
Contracting information for specialty soybeans	8
Summary of contracting information for specialty corn and soybeans	10
Additional costs of production for specialty corn	10
Additional costs of production for specialty soybeans	12
Summary of additional costs of production for specialty corn and soybeans	13
Summary	14
Related Readings	16

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Introduction

Specialty corn and soybean markets have been increasing over the past decade due to both changing consumer tastes and improved technologies. High oil corn, food-grade corn, high lysine corn, tofu soybeans, STS soybeans, and organic soybeans represent just a few of the specialty corn and soybean crops available to producers. This growth in specialty markets has led to both new opportunities and new challenges for producers. Identifying which, if any, specialty crop to produce has increased the complexity of decision making for the producer. For example, a producer must decide which specialty crop to produce, whether or not production should be contracted, and identify what additional costs will be incurred. With the recent developments of genetically modified crops (GMOs), producers may even have to consider whether or not a market will be available for the specialty crop.

While some information has been published on marketing channels at the handler level [Good et al., 2000; Bender et al., 1999], little information has been provided on the activities of the production sector. The objective of this report is to provide information on the experiences of Illinois producers who have participated in specialty corn and soybean markets, including acreage and yield data, the use of contracting, and production cost figures for individual specialty corn and soybean crops. This information should prove to be valuable to producers in evaluating their production and marketing alternatives.

Description of Survey

Survey Procedures

During April, 1999, researchers in the Department of Agricultural and Consumer Economics, University of Illinois and statisticians at the Illinois Agricultural Statistics Service conducted a Specialty Corn and Soybean Survey. A random sampling procedure was used to select a sample of 2,947 Illinois producers to receive a mail survey. Three hundred and seventy-nine of these surveys were returned. A sample of non-respondents were contacted by phone providing an additional two hundred eighty-two completed questionnaires to generate a total of 670 usable surveys. Of the 670 usable surveys, 7 were from producers who operated no acreage in 1999. Since the survey was directed solely toward producers growing corn or soybeans, these surveys were deleted from the set, leaving a total of 663 surveys used for the analysis.

Phone-Mail Response Comparison

A comparison was made of survey results obtained by phone and by mail to determine if mail responses were biased. The results from the phone survey (comprised of non-respondents to the mail survey) were compared to the mail survey on primary attributes to determine if they differed. The total acres operated in 1999 averaged 532 for those producers surveyed by mail while producers surveyed by phone averaged 530 acres. Sixty-seven percent of mail survey respondents reported their farm type was primarily cash grain, while sixty-two percent of

phone survey respondents indicated they were cash grain farms. Mixed grain and livestock farms were the primary farm type of twenty-one percent of mail survey respondents and twenty-five percent of phone survey respondents. The percentage of farms producing specialty corn or soybeans was 17 percent for both mail and phone survey respondents. The similarity of these responses indicated that there were no statistically significant differences in survey results for mail and phone survey. Thus the two sets were combined and the responses assumed to be representative of the original randomly selected sample.

Survey Results

Farm Characteristics

Farm type

Producers were asked to identify the farming operation that best described their farm type. Producers were given a choice of: primarily cash grain, primarily livestock, mixed grain and livestock or other. Two-thirds of the producers described their operations as primarily cash grain; the remainder were comprised primarily of mixed grain and livestock operations (Table 1).

Farm size

The variable used to identify farm size was acres operated in 1999. Acres operated, as defined by the Illinois Agricultural Statistics Service, include the farmstead, all cropland, woodland, pastureland, wasteland and land that is in government programs. Of the 663 producers in the data set, 562 producers indicated they owned some or all of the acres operated, 419 rented acreage from others, and 45 rented acreage to others. Total acres operated

Table 1.
Farm Type

	Frequency	Percent
Primarily cash grain	431	65
Primarily livestock	52	8
Mixed grain and livestock	153	23
Other	27	4

Table 2.
Acres Operated in 1999

	Acres Operated			Number Responding
	Average	Minimum	Maximum	
Owned	239	1	6200	562
Rented from others	529	1	5930	419
Rented to others	176	2	1700	45
Total acres operated	526	3	6003	661

Table 3.
Corn and Soybean Production Averages

	1998			1999 Estimated Acres
	Acres Planted (acres)	Average Yield (bu/acre)	Percent of Production Used on Farm (%)	
Corn	259 (N=471)	136 (N=432)	12 (N=468)	264 (N=451)
Soybeans	246 (N=449)	52 (N=418)	1 (N=447)	245 (N=439)

ranged from only 3 acres up to 6003 acres, with an average of 526 acres operated (Table 2).

Generic corn and soybean production

In addition to total acres, producers were asked to report the number of acres they planted to corn and soybeans in 1998, the average yield and the percent of production used on farm for each crop. Respondents were also asked to estimate 1999 corn and soybean acres. The average acres planted to corn in 1998 was 259 acres, while the average planted soybean acreage was 246 acres (Table 3). There was no significant change in either corn or soybean acreage between 1998 and estimated 1999. The minimum 1998 corn acreage planted by an individual producer was 2 acres, while the maximum was 3600 acres. The minimum 1998 soybean acreage was 3, while the maximum was 1400 acres. Twenty-nine producers indicated they were growing only corn in both 1998 and 1999, while 13 producers indicated they were growing only soybeans both years.

The average 1998 corn yield of respondents was 136 bushels per acre, while soybean yields averaged 52 bushels per acre. Only 12 percent of corn and only 1 percent of soybeans were used on farm where grown. Four percent of producers reported they utilized all of their corn production on farm, while 49 percent used none of their corn on farm. For soybeans, less than 1 percent of producers used all of their soybean production on farm, while 64 percent marketed all of their production.

On-farm storage

Producers were asked to indicate if any of four characteristics described their on-farm storage, in an attempt to identify the availability of storage that

may be more suitable for storing specialty corn or soybeans. Approximately 40 percent of the survey respondents reported that their storage (1) was capable of low temperature drying, (2) enabled them to deliver from storage year-round, or (3) included smaller bins (5,000 – 10,000 bu) for segregation (Table 4). Only 5 percent of respondents indicated that their on-farm storage bins were equipped with monitoring equipment (temperature cables, etc.). The physical facilities for handling specialty crops appears to be available on a large proportion of farms, if the economic incentives provide the need.

Specialty Crop Analysis

Overview

Of the 663 usable surveys, 111 or 18 percent indicated that they produced specialty corn or soybeans in 1998 or intended to plant them in 1999. Specific information was received on 5 specialty corn crops and 3 specialty soybean crops (Table 5).

Producers were asked to provide the number of acres of these specialty corn and soybean crops that they produced in 1998, as well as the average yield and whether the crop was produced under contract. They were also asked to estimate acres of each crop to be planted in 1999 and whether a contract was required. For each specialty crop produced under contract, producers were asked to identify which of nine possible contract activities were required under terms of the contract. Additional costs incurred from producing specialty corn or soybeans versus generic crops were identified, regardless of whether the crop was produced under contract. Finally, producers were asked to identify whether or not a landlord or professional farm manager shared in the decision to produce specialty corn or soybeans.

Table 4.
Characteristics of On-Farm Storage

Characteristic	Percent of Respondents Indicating Available
Low temperature drying	40
Ability to deliver from storage year-round	41
Any smaller bins (5,000-10,000 bu.) for segregation	39
Bins equipped with monitoring equipment (temperature cables, etc.)	5

Table 5.
Listing of Specialty Corn and Soybean Crops

Specialty Corn Crops	Specialty Soybean Crops
High oil	Tofu or clear hilum
High lysine	STS
White food-grade	Organic or pesticide-free
Yellow food-grade	
Waxy	

Producer participation, acreage and yield data for specialty corn

• High oil corn

Twenty-nine percent of the producers that grew specialty corn or soybeans in 1998 indicated that they produced high oil corn, with a yield of 149 bushels per acre (Table 6). Although nineteen percent (6 of 32) of the producers who grew high oil corn in 1998 did not expect to continue high oil corn production in 1999, there was still an increase in percentage of producers who anticipated growing high oil corn in 1999 (Table 7). The average per farm acreage of high oil corn nearly doubled from 138 acres per farm in 1998 to an average estimated 1999 acreage of 244 acres per farm.

• High lysine corn

Only 2 percent of the specialty crop producers indicated that they had grown high lysine corn in 1998, and both intended to plant high lysine in 1999. The farm type for these producers was a mixed grain and livestock farm. High lysine corn is usually fed on the farm where grown. The average acreage planted to high lysine was around 30 acres in both years, with a maximum of 50 acres on an individual farm.

• White corn

Ten percent of specialty crop producers reported that they grew white corn in 1998, while 12 percent estimated producing it in 1999. Ninety-one percent (10 of 11) of the 1998 white corn producers continued production of white corn in 1999. During 1998, producers planted 154 acres on

average with an average yield of 135 bushels per acre (Table 6). The average estimated per farm acres for 1999 increased to 190 acres (Table 7).

- **Yellow food-grade corn**

Fifteen percent of the specialty crop producers reported they grew yellow food-grade corn in 1998 (Table 6). Almost one-fourth of these producers did not anticipate continued production of white corn in 1999. However, the addition of new producers of yellow food-grade corn in 1999, meant there was only a small decline in the percentage of yellow food-grade corn producers to 14 percent. (Table 7). The average acreage in 1998 was 126 acres, while the yield average was 127 bushels per acre. Average estimated acreage showed little change in 1999.

- **Waxy corn**

Seven percent of producers grew waxy corn in 1998 and six percent anticipated growing waxy corn in 1999 (Tables 6 and 7). Twenty-five percent

(2 of 8) of the 1998 producers were not expecting to continue production in 1999. In 1998 the average waxy corn acreage was 94 acres, with an average yield of 137 bushels per acre. However, the estimated average per farm acreage jumped substantially to 150 acres for 1999.

Producer participation, acreage and yield data for specialty soybeans

- **Tofu or clear hilum soybeans**

Eleven percent of specialty crop farmers produced tofu or clear hilum soybeans in 1998, while twelve percent expected to produce tofu in 1999 (Tables 6 and 7). Although the net percentage change between 1998 and 1999 was only one percent, one-third of the producers who grew tofu soybeans in 1998 did not continue tofu production in 1999. The average tofu or clear hilum soybean acreage in 1998 was 100 acres, with an estimated average of 119 acres in 1999. The aver-

age 1998 tofu soybean yield was 51 bushels per acre.

- **STS soybeans**

Thirty percent of specialty crop producers reported growing STS soybeans in 1998, while 26 percent of producers anticipated growing STS soybeans in 1999 (Tables 6 and 7).

Twenty-four percent of the 1998 producers did not continue STS production in 1999. The STS soybean acreage averaged 97 acres in 1998, with estimated acreage in 1999 averaging 121 acres per farm. The average yield in 1998 was 48 bushels per acre.

- **Organic or pesticide-free soybeans**

Four percent of producers reported planting organic or pesticide-free soybeans in 1998, while 3 percent anticipated producing them in 1999 (Tables 6 and 7). The average per farm acreage was 114 acres in 1998, with an increase to 143 estimated average acreage in 1999. The average 1998 organic soybean yield was 44 bushels per acre.

Table 6.
1998 Acreage and Yield Data by Specialty Crop¹

Crop	Percent	Acreage Per Farm			Yield Per Farm (bu/acre)		
		Average	Minimum	Maximum	Average	Minimum	Maximum
High oil corn	29	138	8	900	149	39	187
White corn	10	154	7	460	135	110	165
Yellow food-grade corn	15	126	1	250	127	6	190
Waxy corn	7	94	25	150	137	80	160
Tofu soybeans	11	100	20	400	51	38	68
STS soybeans	31	97	22	500	48	27	70
Organic or pesticide-free soybeans	4	114	36	240	44	10	60

¹Note: The percentage does not add to 100 since some producers grew multiple specialty crops.

Summary of producer participation, acreage and yield data

The average per farm acreage for each of the specialty corn and soybean crops, except yellow food-grade corn, was expected to increase from 1998 to 1999. The largest acreage gains accrued to high oil and waxy corn. However, the percentage of specialty crop producers actually fell slightly between 1998 and 1999 for yellow food-grade corn, waxy corn, STS soybeans and organic or pesticide-free soybeans. There was also a shift in which producers were growing different specialty crops between the two years. Almost 20 percent of the growers of high oil corn in 1998 did not continue high oil corn production for 1999. Similarly, one-fourth or more of the producers of yellow food-grade corn, waxy corn, tofu and STS soybeans discontinued production of these crops between 1998 and 1999. Particularly in the case of high oil corn, new producers entered the market in 1999, which explains the increase of producer involvement with this crop.

Contracting information for specialty corn

Most specialty crops are produced under contract, providing producers with some assurance of a market. The terms of the contracts varied among crops, and also among producers. This variability indicates that producers have some alternatives to consider when negotiating with their contractors.

- **High oil corn**

Approximately two-thirds of the producers growing high oil corn in 1998 and 1999 were producing it under contract (Table 8). The predominant farm type of high oil corn pro-

Table 7.
1999 Estimated Per Farm Acreage by Specialty Crop¹

Crop	Percent	Average	Minimum	Maximum
High oil corn	32	244	30	4000
White corn	12	190	35	720
Yellow food-grade corn	14	117	35	200
Waxy corn	6	150	50	350
Tofu soybeans	12	119	20	300
STS soybeans	29	121	8	500
Organic or pesticide-free soybeans	3	143	60	224

¹**Note:** The percentage does not add to 100 since some producers grew multiple specialty crops.

ducers who contracted was cash grain. Of the thirty-four percent of producers who did not contract, over 80 percent identified their farm type as mixed grain and livestock. A similar distribution of farm types was found for producers contracting and not contracting in 1999. None of those producing high oil corn in either year classified themselves as primarily livestock operations.

Table 9 presents the contract specifications included in producer contracts of high oil corn in either 1998 or 1999. The contract specifications most frequently reported include delivering to specific locations (89%), delivering on specific dates (74%) and on-farm storage (63%). Less than 20 percent of producers reported contracts that included pricing method, pricing window, specific harvesting requirements and variety specification.

- **High lysine corn**

Neither of the two producers of high lysine corn contracted production in either 1998 or 1998.

- **White corn**

Over 80 percent of the producers of white corn in 1998 contracted pro-

duction, while only 69 percent of producers contracted production in 1999 (Table 8). The predominant farm type for producers who contracted was cash grain. Both cash grain and mixed grain and livestock farms described the non-contracting producer farm type.

The contract specification most frequently specified by producers who contracted white corn in either 1998 or 1999 was the requirement of delivery to a specific location (Table 9). On-farm storage was reported as a requirement by 73 percent of the producers and delivery on specific dates was included in 64 percent of the contracts. Less than 40 percent of the producers indicated that intensive production management or specific pricing methods or pricing windows were part of the contract specifications.

- **Yellow food-grade corn**

Slightly less than half of the producers growing yellow food-grade corn contracted production in 1998 (Table 8). The percentage contracting dipped to 40 percent in 1999. All of the contracting producers described their farm type as primarily cash

grain. The majority of the non-contracting producers also reported their farm type as cash grain, but 3 also described their farm type as mixed grain and livestock.

Of the producers contracting production who reported the specifications included in their yellow food-grade corn contracts, 88 percent indicated that variety specification and delivery to a specific location were contract requirements (Table 9). One-half of the producers reported that providing samples for quality testing, using specific harvesting equipment or following specific harvesting instructions, and on-farm storage were contract specifications. Only 13 percent indicated that more inten-

sive production management activities were required.

- **Waxy corn**

Eighty-eight percent of producers in 1998 grew waxy corn under contract, while 100 percent of the 1999 waxy corn was produced under contract (Table 8). All of the contracting producers were on farms described as primarily cash grain, while the farm type of the sole non-contracting producer was a mixed grain and livestock farm.

The waxy contract specifications reported by producers contracting in either 1998 or 1999 are presented in Table 9. All producers indicated that delivery to a specific location was a contract requirement, while 88 percent

were required to store on-farm. Delivery on specific dates and a specific pricing method (such as only forward contracts) were specifications in contracts with 75 percent of the producers. More intensive production management and variety specification were the least specified criteria.

Contracting information for specialty soybeans

- **Tofu or clear hilum soybeans**

Ninety-two percent of tofu or clear hilum soybean producers contracted their production in 1998, while the contracting percentage dropped to 77 percent in 1999 (Table 10). A cash grain farm was the predominant farm type for contracting

Table 8.
Utilization of Producer Contracts by Specialty Corn Crop

	1998 Contracted	1998 Not Contracted	N	1999 Contracted	1999 Not Contracted	N
	-----percent-----			-----percent-----		
High oil	66	34	32	69	31	36
High lysine	0	100	2	0	100	2
White	82	18	11	69	31	13
Yellow food-grade	47	53	17	40	60	15
Waxy	88	12	8	100	0	7

Table 9.
Contract Specifications by Specialty Corn Crop

Crop	N	Percent of Respondents Whose Contract Included Each Specification								
		Variety	Production Management	Quality Testing	Harvesting Requirements	Delivery Location	Delivery Dates	On-Farm Storage	Pricing Method	Pricing Window
High oil	27	19	37	56	19	89	74	63	15	19
White	11	46	36	55	46	82	64	73	36	36
Yellow food-grade	8	88	13	50	50	88	25	50	38	25
Waxy	8	38	25	50	50	100	75	88	75	50

producers. Non-contracting tofu producers reported their farm types were cash grain or mixed grain and livestock operations.

Contract specifications for producers contracting tofu soybeans in either 1998 or 1999 are presented in Table 11. Ninety-three percent of the producers were required to plant a specific variety or deliver to a specific location. The only other requirement specified in contracts with more than one-half of the producers was delivering on specific dates. Providing samples for quality testing, specific harvesting requirements and on-farm storage was included in only one-third or fewer of the contracts.

• **STS soybeans**

Contract production of STS soybeans increased from 36 percent to 42 percent in 1998 and 1999, respectively (Table 10). In 1998, the farm type for all contracting producers was primarily cash grain, while the non-contracting producers were described as both cash grain and mixed grain and live-

stock farms. A similar distribution to 1998 occurred for both contracting and non-contracting producers in 1999. In 1998, the STS acres planted was very similar for producers that did and did not contract their production, averaging about 95 acres per farm. However, the total soybean acreage was higher on average (431 acres) for farms which did contract than did not contract (304 acres). Similarly for 1999, the average STS acreage per farm was 121 acres, whether or not the producer contracted. The total soybean acreage for producers who did contract their STS production averaged 483 acres, while the average total soybean acreage for producers who did not contract their STS production was only 267 acres.

One hundred percent of the STS producers who reported information about their contract indicated that they were required to deliver their STS soybeans to specific locations (Table 11). Planting a specific variety, more intensive production management, specific

harvesting requirements and delivering on specific dates were specified in contracts with one-half of the producers, while a requirement to provide samples for quality testing was included in contracts with 63 percent of the producers. Pricing method and window were the least frequently specified contract requirements.

• **Organic or pesticide-free soybeans**

Only 25 percent of the producers of organic soybeans used a contract in 1998, increasing to 33 percent in 1999 (Table 10). The average organic soybean acreage was larger for the contracting producer than was the average acreage for non-contracting producers. The only producer providing contract specifications reported that planting a specific variety, more intensive production management, providing samples for quality testing, using specific harvesting equipment or following specific harvesting instructions, delivering to a specific location, and using a specific pricing method were required in the contract.

Table 10.
Utilization of Producer Contracts by Specialty Soybean Crop

	1998			1999		
	Contracted	Not Contracted	N	Contracted	Not Contracted	N
	----- percent -----			----- percent -----		
Tofu	92	8	12	77	23	13
STS	36	67	33	42	58	31
Organic	25	75	4	33	67	3

Table 11.
Contract Specifications by Specialty Soybean Crop

Crop	N	Percent of Respondents Whose Contract Included Each Specification								
		Variety	Production Management	Quality Testing	Harvesting Requirements	Delivery Location	Delivery Dates	On-Farm Storage	Pricing Method	Pricing Window
Tofu	15	93	47	27	27	93	60	33	47	40
STS	16	50	50	63	50	100	50	44	31	38

Summary of contracting information for specialty corn and soybeans

The specialty corn and soybean crops that are most frequently produced under contract are high oil corn, white corn, waxy corn and tofu soybeans. For these crops, two-thirds or greater of the production was contracted in both 1998 and 1999. Organic or pesticide-free soybeans was the least contracted specialty crop, which is surprising given the high premiums and detailed quality control typically involved in this market. However, the small sample size for organic soybeans may not fully reflect the extent of contracting for this particular specialty crop.

The contract specification most frequently specified, regardless of crop, was delivery location. Over 80 percent of all specialty crop contracts included a requirement on specific delivery locations. Quality testing was a contract specification in at least half of all contracts for all specialty crops except tofu soybeans. Similarly, specific delivery dates were common contract requirements, included in at least half of the contracts for all crops except yellow food-grade corn and organic soybeans.

Additional costs of production for specialty corn

Producers were asked to estimate the additional production costs they incurred in the production of specialty corn above those incurred for generic corn. The costs were separated into two categories, which reflected production and marketing. The first category was per acre costs, which included additional seed, technology, fertilizer, herbicide, pesticide and production management costs. The second category consisted of per bushel costs, which encompassed harvesting and marketing costs.

• High oil corn

Producers who grew high oil corn in 1998 were asked to estimate the additional costs of producing high oil corn relative to generic corn. The largest additional cost reported by producers was the cost of seed (including the need for higher planting population), which on average added

\$7.00 per acre (Table 12). The technology fee, on average, added \$2.98 per acre while additional fertilizer costs added \$1.14 per acre. Pesticide and additional management requirements averaged less than \$1.00 per acre, while no additional herbicide costs were reported by any of the respondents. The total additional average

Table 12.

Additional Production Costs for High Oil Corn in 1998/99 (N=22)

Cost Category	Average	Minimum	Maximum
Seed cost (\$/acre)	7.00	0.00	20.00
Technology fee (\$/acre)	2.98	0.00	12.38
Fertilizer (\$/acre)	1.14	0.00	25.00
Herbicide (\$/acre)	0.00	0.00	0.00
Pesticide (\$/acre)	0.68	0.00	15.00
Production/management (\$/acre)	0.22	0.00	3.00
Total per acre costs	\$12.02/acre		
Harvesting (\$/bu)	0.01	0.00	0.07
Storage/segregation (\$/bu)	0.00	0.00	0.02
Transportation (\$/bu)	0.00	0.00	0.04
Risk (\$/bu)	0.00	0.00	0.10
Quality testing (\$/bu)	0.00	0.00	0.00
Marketing (\$/bu)	0.00	0.00	0.05
Total per bushel costs	\$0.01/bushel		

Table 13.

Additional Production Costs for White Corn in 1998/99 (N=4)

Cost Category	Average	Minimum	Maximum
Seed cost (\$/acre)	1.25	0.00	5.00
Technology fee (\$/acre)	0.00	0.00	0.00
Fertilizer (\$/acre)	0.00	0.00	0.00
Herbicide (\$/acre)	0.00	0.00	0.00
Pesticide (\$/acre)	2.50	0.00	10.00
Production/management (\$/acre)	0.50	0.00	2.00
Total per acre costs	\$4.25/acre		
Harvesting (\$/bu)	0.16	0.00	0.60
Storage/segregation (\$/bu)	0.04	0.00	0.10
Transportation (\$/bu)	0.09	0.05	0.12
Risk (\$/bu)	0.15	0.00	0.50
Quality testing (\$/bu)	0.02	0.00	0.07
Marketing (\$/bu)	0.00	0.00	0.00
Total per bushel costs	\$0.46/bushel		

per acre costs of producing high oil corn summed to \$12.02 per acre. The only additional per bushel costs were harvesting, which averaged 1 cent per bushel.

- **White corn**

The average additional per acre costs for white corn totaled \$4.25

based on costs reported by four of the 1998 white corn producers (Table 13). The greatest additional cost was pesticides, which averaged an additional \$2.50 per acre, while seed cost average an additional \$1.25 per acre, and more intensive production or management requirements added an average of \$0.50 per acre. Of the producers re-

porting per bushel costs, two-thirds of the average additional per bushel cost was comprised of risk (\$0.15/bushel), and additional harvesting costs (\$0.16 per bushel). Transportation added \$0.09 per bushel and storage/segregation requirements added \$0.04 per bushel. No additional costs were identified by any of the producers for marketing white corn relative to generic corn, and costs of quality testing only averaged \$0.02 per bushel more than for generic corn.

- **Yellow food-grade corn**

Additional costs for producing yellow food-grade corn compared to generic corn are presented in Table 14. Additional fertilizer and herbicide costs averaged \$30.00 per acre and \$14.60 per acre, respectively. These two costs accounted for the majority of the \$51.00 per acre average additional per acre cost of growing yellow food-grade corn. Additional per bushel costs averaged \$1.21 per bushel in total, which was comprised primarily of an average additional harvesting cost of \$1.00 per bushel. The maximum additional risk cost of \$0.50 per bushel likely represents the total premium paid to the farmer. However, at least one producer indicated that they had no additional risk in producing yellow food-grade corn. This contrast may reflect the breadth of yellow-food grade corn production, which may range from a non-variety specific low-temperature dried to a varietal specific very high valued product.

- **Waxy corn**

The additional seed cost, averaging \$7.81 per acre, was the primary additional per acre production cost of waxy corn relative to generic corn (Table 15). A small technology fee and additional production/management requirements were also additional per acre costs. The total per acre costs averaged \$8.37 per acre. Only two per

Table 14.

Additional Production Costs for Yellow Food-Grade Corn in 1998/99 (N=5)

Cost Category	Average	Minimum	Maximum
Seed cost (\$/acre)	1.00	0.00	5.00
Technology fee (\$/acre)	3.40	0.00	17.00
Fertilizer (\$/acre)	30.00	0.00	90.00
Herbicide (\$/acre)	14.60	0.00	51.00
Pesticide (\$/acre)	2.00	0.00	10.00
Production/management (\$/acre)	0.00	0.00	0.00
Total per acre costs	\$51.00/acre		
Harvesting (\$/bu)	1.00	0.00	5.00
Storage/segregation (\$/bu)	0.02	0.00	0.10
Transportation (\$/bu)	0.02	0.00	0.12
Risk (\$/bu)	0.16	0.00	0.50
Quality testing (\$/bu)	0.01	0.00	0.07
Marketing (\$/bu)	0.00	0.00	0.00
Total per bushel costs	\$1.21/bushel		

Table 15.

Additional Production Costs for Waxy Corn in 1998/99 (N=4)

Cost Category	Average	Minimum	Maximum
Seed cost (\$/acre)	7.81	0.00	31.25
Technology fee (\$/acre)	0.31	0.00	1.25
Fertilizer (\$/acre)	0.00	0.00	0.00
Herbicide (\$/acre)	0.00	0.00	0.00
Pesticide (\$/acre)	0.00	0.00	0.00
Production/management (\$/acre)	0.25	0.00	1.00
Total per acre costs	\$8.37/acre		
Harvesting (\$/bu)	0.00	0.00	0.00
Storage/segregation (\$/bu)	0.06	0.00	0.25
Transportation (\$/bu)	0.05	0.00	0.16
Risk (\$/bu)	0.00	0.00	0.00
Quality testing (\$/bu)	0.00	0.00	0.00
Marketing (\$/bu)	0.00	0.00	0.00
Total per bushel costs	\$0.11/bushel		

bushel costs were identified by any of the producers. Additional storage/segregation costs averaged \$0.06 per bushel, while additional transportation averaged \$0.05 per bushel. The average total per bushel costs summed to \$0.11.

Additional costs of production for specialty soybeans

- **Tofu or clear hilum soybeans**

The most significant additional costs incurred in the production of tofu or clear hilum soybeans relate to production costs rather than marketing costs (Table 16). The seed cost of tofu soybeans, on average, added \$8.22 per acre while the additional herbicide cost added \$7.88 per acre, and fertilizer costs were \$5.00 per acre greater, relative to generic soybeans. Additional per acre costs were also incurred by at least some producers for more intensive management or production requirements, technology fee, and pesticides. The total additional per acre costs of producing tofu or clear hilum soybeans averaged \$24.73 per acre. In comparison, the total per bushel costs averaged \$2.54 per bushel. Harvesting, segregation, transportation, and risk comprised the additional per bushel costs reported by tofu producers.

- **STS soybeans**

Additional herbicide costs, averaging \$2.10 per acre, was the major additional per acre cost from producing STS soybeans relative to generic soybeans (Table 17). Some producers did indicate they incurred additional costs due to price of seed, technology fee and fertilizers, but these costs all averaged less than \$1.00 per acre. The total additional per acre cost averaged \$3.28 per acre. The largest additional per bushel cost reported averaged \$0.07 for risk. Additional storage costs of \$0.02 per bushel and additional

Table 16.

Additional Production Costs for Tofu or Clear Hilum Soybeans in 1998/99 (N=8)

Cost Category	Average	Minimum	Maximum
Seed cost (\$/acre)	8.22	0.00	30.00
Technology fee (\$/acre)	0.63	0.00	5.00
Fertilizer (\$/acre)	5.00	0.00	40.00
Herbicide (\$/acre)	7.88	0.00	30.00
Pesticide (\$/acre)	0.50	0.00	4.00
Production/management (\$/acre)	2.50	0.00	20.00
Total per acre costs	\$24.73/acre		
Harvesting (\$/bu)	1.25	0.00	10.00
Storage/segregation (\$/bu)	1.25	0.00	10.00
Transportation (\$/bu)	0.03	0.00	0.10
Risk (\$/bu)	0.01	0.00	0.04
Quality testing (\$/bu)	0.00	0.00	0.00
Marketing (\$/bu)	0.00	0.00	0.00
Total per bushel costs	\$2.54/bushel		

Table 17.

Additional Production Costs for STS Soybeans in 1998/99 (N=15)

Cost Category	Average	Minimum	Maximum
Seed cost (\$/acre)	0.78	0.00	4.00
Technology fee (\$/acre)	0.37	0.00	3.00
Fertilizer (\$/acre)	0.03	0.00	0.50
Herbicide (\$/acre)	2.10	0.00	10.00
Pesticide (\$/acre)	0.00	0.00	0.00
Production/management (\$/acre)	0.00	0.00	0.00
Total per acre costs	\$3.28/acre		
Harvesting (\$/bu)	0.00	0.00	0.01
Storage/segregation (\$/bu)	0.02	0.00	0.25
Transportation (\$/bu)	0.00	0.00	0.04
Risk (\$/bu)	0.07	0.00	1.00
Quality testing (\$/bu)	0.00	0.00	0.00
Marketing (\$/bu)	0.01	0.00	0.20
Total per bushel costs	\$0.10/bushel		

Table 18.

Total Average Additional 1998/99 Production Costs by Specialty Crop

	Average Yield	Production Costs	Harvesting and Marketing Costs	Total Producer Costs
		Adjusted \$ Per Bushel (\$ Per Acre/Average Yield)	\$ Per Bu.	\$ Per Bu.
High oil corn	149	0.08	0.01	0.09
White corn	135	0.03	0.46	0.49
Yellow food-grade corn	127	0.40	1.21	1.61
Waxy corn	137	0.06	0.11	0.17
Tofu soybeans	51	0.48	2.54	3.02
STS soybeans	48	0.07	0.10	0.17

marketing of \$0.01 per bushel were also reported. Average additional per bushel costs thus summed to \$0.10 per bushel.

The total average additional incurred costs of production and marketing for specialty corn and soybean crops relative to generic corn and soybeans are presented in Table 18. The production costs were reported by survey respondents on a per acre basis (Tables 12 through 17). To compute total producer costs, the production costs were converted to a per bushel basis by dividing the average total production costs by the average yield of all respondents for each specialty crop. The per bushel production costs were then summed with the per bushel harvesting and marketing costs to compute the total additional per bushel producer costs (Table 18).

Summary of additional costs of production for specialty corn and soybeans

A wide range of additional incurred costs across the different specialty crops were reported by producers. Additional production costs averaged as low as \$0.03 for white corn and averaged as high as \$0.48 for tofu or clear hilum soybeans. Seed costs was the largest additional per acre cost for three specialty crops: high oil corn, waxy corn, and tofu or clear hilum soybeans. Fertilizer, pesticide and herbicide costs accounted for the largest additional costs for the remaining specialty crops. Additional per bushel harvesting and marketing costs averaged only \$0.01 for high oil corn, yet averaged \$2.54 for tofu soybeans. Risk was identified as the largest additional per

bushel cost for yellow food-grade corn and STS soybeans. Additional harvesting, storage and transportation costs were major costs for other specialty crops. Total producer costs were highest for yellow food-grade corn and tofu soybeans, averaging \$1.61 per bushel and \$3.02 per bushel, respectively. High oil corn averaged the lowest total producer costs of \$0.09 per bushel.

Summary

The results from this survey represent information provided by 663 Illinois producers, whose farm type is primarily cash grain or mixed grain and livestock. The total acreage operated for an individual farm averaged 526 acres, and the acres planted were divided equally among corn and soy-

beans. Of the 663 producers, 18 percent indicated that they had either produced specialty corn or soybean crops in 1998 or intended to do so in 1999.

High oil corn was grown by the largest percentage of producers involved in specialty corn production (Figure 1). Almost one-half of the producers growing specialty corn crops in 1999 were engaged in high oil corn

production. A larger per farm acreage was also committed to high oil corn relative to other specialty corn crops, with an average of almost 250 acres per farm estimated for 1999 (Figure 2). Yellow food-grade corn was the only specialty corn crop that displayed a reduction in per farm acreage between 1998 and 1999.

Of producers growing specialty soybeans, the majority were involved in the production of STS soybeans. Almost two-thirds of producers involved in specialty soybean produc-

Figure 1. Percentage of 1999 Specialty Corn Producers Growing Each Specialty Corn Crop

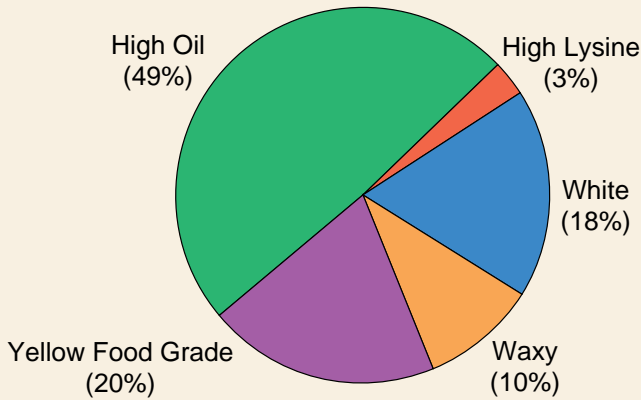
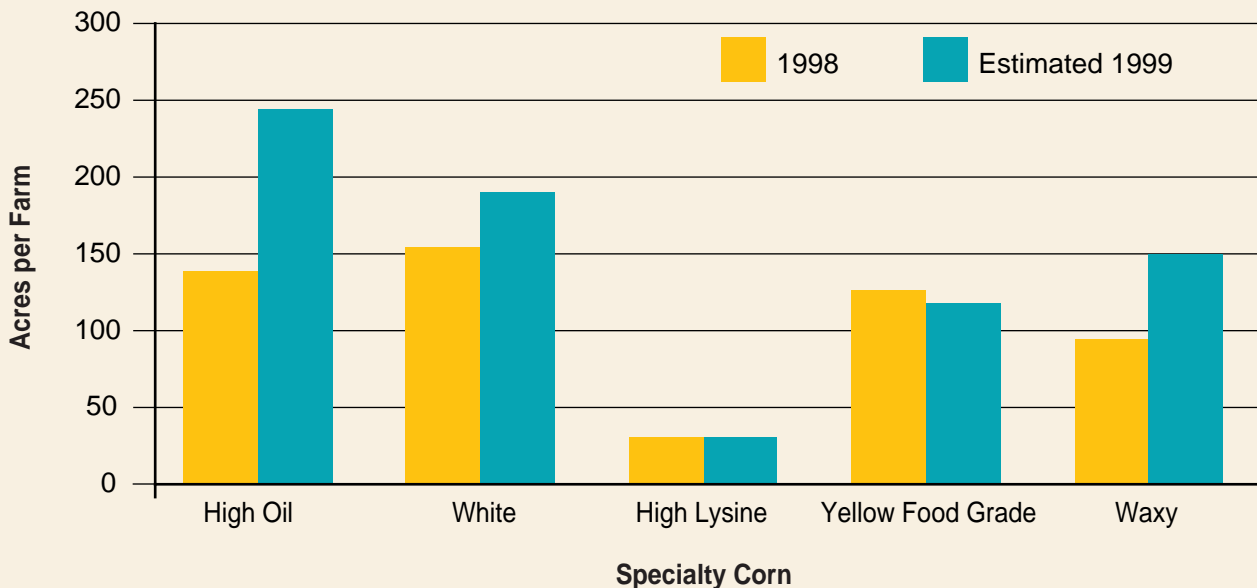


Figure 2. Acres Planted to Selected Specialty Corn Crops



tion anticipated growing STS soybeans in 1999 (Figure 3). The per farm acreage of all three specialty soybean crops were estimated to increase in 1999 from 1998 (Figure 4).

Although increases in per farm acreage between 1998 and 1999 were identified for all of the specialty corn and soybean crops, except yellow food-grade corn, there were significant shifts in producers planting the acreage. The percentage of producers who were not continuing production of a specific specialty crop between

1998 and 1999 was 19 percent for high oil corn, and greater than 20 percent for yellow food-grade corn, waxy corn, tofu or clear hilum soybeans and STS soybeans.

The majority of production in both 1998 and 1999 was contracted for high oil corn, white corn, waxy corn and tofu soybeans. Although there was some variation in the specific contract terms identified across specialty crops, over 80 percent of contracts for all specialty crops included a designation of particular delivery locations. Provi-

sions for quality testing and specification of delivery dates were also contract requirements for most specialty corn and soybean crops.

The total additional costs for producing specialty crops ranged from an average of \$0.09 per bushel for high oil corn to \$3.02 per bushel for tofu soybeans. The relative importance of additional production versus harvesting and marketing costs also ranged broadly. Added production costs were as low as \$0.03 per bushel for white corn and as high as \$0.48 per bushel for tofu soybeans. Additional harvesting and marketing costs were only \$0.01 per bushel for high oil corn, but totaled \$2.54 per bushel for tofu soybeans.

Figure 3. Percentage of 1999 Specialty Soybean Producers Growing Each Specialty Soybean Crop

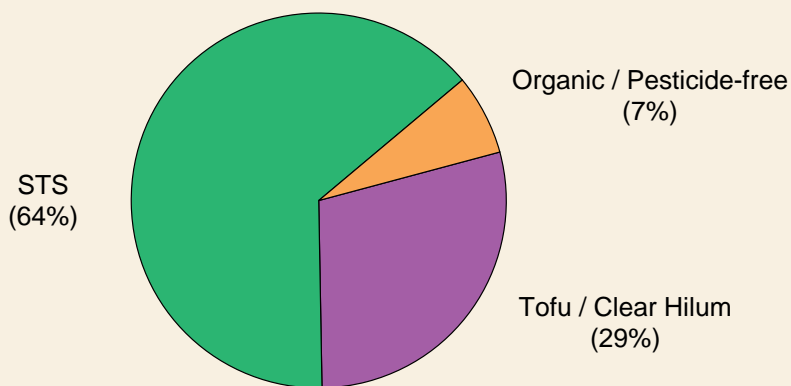
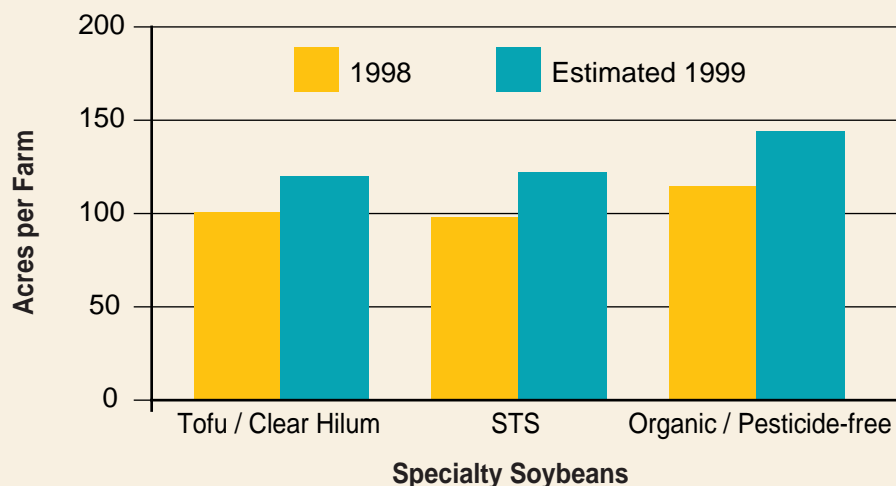


Figure 4. Acres Planted to Selected Specialty Soybean Crops



Related Readings

Good, Darrel, Karen Bender and Lowell Hill. "Marketing of Specialty Corn and Soybean Crops in Illinois - 1998/99", Department of Agricultural and Consumer Economics, College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign, forthcoming.

Bender, Karen, Lowell Hill, Benjamin Wenzel and Robert Hornbaker. "Alternative Market Channels for Specialty Corn and Soybeans", Department of Agricultural and Consumer Economics, College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign, AE-4726, February, 1999.

