

17 ■

Handwritten marks: a circled '10' and a signature.

# Alternative Market Channels for Specialty Corn and Soybeans

**Karen Bender  
Lowell Hill  
Benjamin Wenzel  
Robert Hornbaker**

Department of Agricultural and Consumer Economics  
Agricultural Experiment Station  
College of Agricultural, Consumer and Environmental Sciences  
University of Illinois at Urbana-Champaign

AE-4726 • February 1999

# Alternative Market Channels for Specialty Corn and Soybeans

Karen Bender  
Lowell Hill  
Benjamin Wenzel  
Robert Hornbaker

Department of Agricultural and Consumer Economics  
Agricultural Experiment Station  
College of Agricultural, Consumer and Environmental Sciences  
University of Illinois at Urbana-Champaign

AE-4726 • February 1999

---

Karen Bender is Senior Research Specialist; Lowell Hill is the L.J. Norton Professor Emeritus of Agricultural Marketing; Benjamin Wenzel is a graduate assistant; and Robert Hornbaker is an Associate Professor in the Department of Agricultural and Consumer Economics, College of Agricultural, Consumer and Environmental Sciences at the University of Illinois at Urbana-Champaign.

---

The Illinois Agricultural Experiment Station provides equal opportunities in programs and employment.

Cover illustrations copyright by Wheeler Arts

# Contents

<b>Introduction</b> .....	3
<b>Survey Results by Firm Type</b> .....	3
Importance of Specialty Crops .....	4
Origination Distance .....	4
Transportation Mode Used .....	5
Use of Contracting in Purchases .....	5
Bulk versus Bag Shipments .....	5
Storage Strategy Utilized .....	6
Pricing Strategy Utilized .....	6
Primary Buyers .....	7
Quality Attributes Specified in the Contract .....	8
Quality Control Methods .....	9
Cost of Handling Specialty Crops .....	10
Summary of Market Channels by Firm Types .....	11
<b>Survey Results by Specialty Crop Handled</b> .....	12
Importance of Specialty Crops .....	13
Origination Distance .....	13
Use of Contracting in Purchases .....	13
Bulk versus Bag Shipments .....	14
Storage Strategy Utilized .....	14
Pricing Strategy Utilized .....	14
Primary Buyers .....	14
Quality Attributes Specified in Contracts .....	16
Quality Control Methods .....	17
Costs of Handling Specialty Crops .....	17
Summary of Market Channels by Specialty Crops .....	18

---

## Acknowledgements

The authors express their appreciation to the specialty crop handlers who took time to respond to our survey. This research was funded by the Illinois Council on Food and Agricultural Research (C-FAR), and is a contribution to the Regional Hatch Project ILLU-05-0371, "Marketing and Delivery of Quality Cereals and Oilseeds".

# Introduction

Interest in markets for specialty crops has grown rapidly among firms in the grain and oilseed supply chain. How to enter specialty crop markets, what is the profitability among different specialty crops, which market sectors need to be linked and how should they be linked, are just a few of the questions that have been raised concerning specialty markets. One of the major uncertainties facing firms is what additional costs they will incur if they choose to participate. A C-FAR project was funded, in part, to begin to identify alternative market channels used and additional costs incurred by firms handling specialty grains or oilseeds.

During the spring of 1998, a mail survey was sent to over 200 U.S. firms that were identified as possible handlers of specialty grains and oilseeds. Eighty-four usable surveys were returned, representing handlers of specialty corn, soybeans, sunflowers, safflower and cottonseed. However, due

to the small numbers of firms handling specialty sunflower (5 firms), safflower (1 firm) and cottonseed (1 firm), these crops were not included in this analysis.

Survey questions were designed to identify the following information: (1) storage, transportation, purchasing and pricing methods utilized, (2) origination distance required to source specialty crops, (3) end-users, (4) quality factors included in contracts and quality control methods, and (5) additional costs incurred when handling specialty crops compared to that for generic commodities.

## Survey Results by Firm Type

The first analysis of the survey focused on how the origination, contracting, pricing, transportation and quality concerns differ by firm type, and how these factors are reflected in additional costs incurred by partici-

pating in specialty crop markets. The initial survey questions asked respondents to identify which firm type best described their firm and which specialty crops they handled. The firm type was separated into 5 categories: grain elevators, specialty grain firms, seed companies, brokers/traders and feed manufacturers. The category of "Grain Elevators", which included respondents who indicated that their firm type was a grain elevator, country elevator, or grain terminal, was the largest with 52 respondents. The second largest category was "Specialty Grain Firms" with 19 respondents. "Seed Companies" was next with 8 responses, followed by "Brokers" with 4 responses, and "Feed Manufacturers" with one response. Due to the limited number of responses for brokers and feed manufacturers, the analysis by firm type was limited to grain elevators, specialty grain firms and seed companies. The firm types along with the distribution of responses for both specialty corn and soybeans are presented in Table 1.

Table 1.  
Specialty Crops Handled by Firm Type.

	Total Number of Firms in Each Category	Number Which Handle Specialty Corn	Number Which Handle Specialty Soybeans
Grain elevators	52	42	34
Specialty grain firms	19	12	16
Seed companies	8	2	8
Brokers	4	2	4
Feed manufacturers	1	1	0
<b>TOTAL</b>	<b>84</b>	<b>59</b>	<b>62</b>

Note: Firms may handle more than 1 specialty crop.

## Importance of Specialty Crops

The percent of the firm's total business devoted to specialty crops is a measure of the degree of specialization. While all firms, on average, reported 35% of their volume handled was specialty crops, the volume committed to specialty crops differed by firm type (Table 2). On average, specialty grain firms reported 96% of their volume handled was specialty crops, with a minimum of 70% and a maximum of 100% of volume consisting of specialty crops. In contrast, grain elevators reported only 9% of their volume handled, on average, consisted of specialty crops, with the percentage ranging from less than 1% to a maximum of 40%. Seed companies reported 49% of their volume

handled, on average, was specialty crops. The seed companies were more differentiated, with some firms handling as little as 3% and some seed companies reporting up to 98% of their total volume handled was specialty crops.

## Origination Distance

The survey respondents were asked to indicate the percentage of their specialty crop origination which was sourced from each of four categories. "Local origination" was defined as specialty crops that were originated from 0 to 15 miles away. "Regional origination" was defined as specialty crops that were originated from 16 to 50 miles away. "Interstate origination" was specialty crops origi-

nated 51 to 250 miles away, and "national origination" indicated sourcing from over 250 miles away.

For all firm types, the majority of specialty crops were purchased locally, with an average of 56% of all purchases of specialty crops originating within a radius of 15 miles (Table 3). On average, grain elevators and seed companies originated over 90% of their specialty crops within a 50 mile radius, while specialty grain firms originated 40% of their specialty crops from a radius greater than 50 miles. The data therefore suggests that as the percentage of specialty crops handled increases, firms must originate from an increasingly larger radius.

Table 2  
Importance of Specialty Crops by Firm Type.

	Average Percent Handled		Minimum Percent Handled		Maximum Percent Handled	
	Specialty Crops	Generic Crops	Specialty Crops	Generic Crops	Specialty Crops	Generic Crops
	----- percent -----					
All firms	35	65	0	0	100	100
Grain elevators	9	91	0	60	40	100
Specialty grain firms	96	4	70	0	100	30
Seed companies	49	51	3	2	98	97

Table 3.  
Comparison of Origination Distances by Firm Type.

	Average Percent of Specialty Crops Originated From:			
	Local (0-15 miles)	Regional (16-50 miles)	Interstate (51-250 miles)	National (+ 250 miles)
	----- percent -----			
All firms	56	29	10	5
Grain elevators	63	30	7	0
Specialty grain firms	36	24	23	17
Seed companies	65	33	1	1

Table 4.  
**Comparison of Purchasing Method by Firm Type.**

	Farmer Contracts			Elevator Contracts			Open Market			Other Method		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
	----- percent -----											
All firms	85	0	100	8	0	95	5	0	63	2	0	100
Grain elevators	91	5	100	6	0	95	3	0	40	0	0	0
Specialty grain firms	65	0	100	13	0	70	14	0	63	8	0	100
Seed companies	98	90	100	1	0	10	1	0	5	0	0	0

### Transportation Mode Used

The firms that handled specialty crops were asked to indicate what percentage of their total volume of specialty grain was originated using each of the following transportation methods: truck, rail, and other. On average, for all firm types, 96% of specialty crops was originated by truck, 3% was originated by rail and 1% was originated by other methods (identified as barge). The primary reliance on truck was consistent across all firm types.

### Use of Contracting in Purchases

Respondents were asked to identify the percentage of specialty crops they purchased using each of the following methods: contracting with farmers, contracting with country elevators, open market or other. For all firms, the average percentage of specialty crops purchased through farmer contracts was 85%, the average percentage purchased through a contract with a country elevator was 8%, and the average purchased through the open market was 5%. Two percent was purchased through other methods (Table 4).

Specialty grain firms purchased less from farmers than the average of

all firms, with 65% of purchases made through farmer contracts. Grain elevators purchased 91% of their grain through farmer contracts, while seed companies also purchased a very high percentage from farmers (98%). Although the averages for seed companies and grain elevators are not significantly different, their range is different. No seed companies contracted less than 90% of their specialty crops through farmer contracts, while some grain elevators contracted as little as 5% of their specialty grains through farmer contracts.

There was also a relationship between purchasing method and distance required to originate the specialty crops. Firms that originated the majority of their grain from distances

less than 50 miles depended almost completely on contracts with farmers. However, the 4 firms that originated at least half of the specialty crops from 50 miles or greater, on average contracted no more than 30% from farmers.

### Bulk versus Bag Shipments

The average percentage of specialty crops shipped in bulk, for all firm types, was 80% (Table 5). Not surprisingly, grain elevators shipped a larger percentage of their specialty crops by bulk (93%) than did either specialty grain firms (62%) or seed companies (51%). Also, for the 2 firms that originated nationally, there was a much higher percentage of specialty crops shipped in bags.

Table 5.  
**Comparison of Shipping Method by Firm Type.**

	Average Percentage Shipped By:	
	Bulk	Bagged
	----- percent -----	
All firms	80	20
Grain elevators	93	7
Specialty grain firms	62	38
Seed companies	51	49

## Storage Strategy Utilized

On average, 61% of the specialty crops handled were stored on farm, 23% at the country elevator, and 14% received at harvest (no storage). Two percent was classified as other (Table 6). All firm types stored between 60%-70% on farm. The remaining storage for grain elevators was predominately country elevator storage (29%), while seed companies and specialty grain firms relied more on specialty crops received at harvest (25% and 19%, respectively).

Firms originating the majority of their specialty crops locally on average stored just over one-half on farm, another one-quarter at country elevators, and received the rest primarily at harvest. Those firms originating from a regional distance stored over 70% on farm, almost 20% at country elevators, and received less than 10% at harvest. No country elevator storage was used by the two firms that originated specialty grains from distances between 51-250 miles, with 3/4 of the storage

on farm and the remainder received at harvest. In contrast, the two firms originating from a national level (over 250 miles) relied heavily on country elevator storage (63%), and farm storage (33%). For the 25 firms which originated specialty crops from a mix of distances (i.e., no distance range accounted for more than 50% of receipts), farm storage was used for over 60% of the specialty crops, with most of the remainder split between receipts at harvest and country elevator storage.

## Pricing Strategy Utilized

The pricing strategies utilized by specialty grain handlers were well distributed across a number of options. On average, 26% of all firms used a strategy of a base price + or - a quality differential strategy, 23% used flat price contracts, 20% used basis contracts, 16% used acreage contracts, and 12% used forward contracts (Table 7). On average, specialty grain firms purchased almost half of their specialty crops using basis contracts,

with 25% of volume purchased through base price adjusted for quality and another 17% through flat price. Less than 5% of purchases by specialty grain firms were made with acreage or forward contracts. Grain elevators, on average, purchased between 20% and 30% using each of the following methods: flat price, acreage contracts and base price adjusted for quality. Sixteen percent of elevator purchases were made through forward contracts, while less than 10% of purchases were made with basis contracts. Seed companies relied the most heavily on base price contracts adjusted for quality, with half of their purchases using this method. Most of their remaining purchases were split between basis and flat price contracts.

The types of contracts used by the firms that handled specialty grains were related to the purchasing strategies used by firms. Firms that purchased primarily from country elevators used predominately basis contracts and flat price contracts for

Table 6.  
Comparison of Storage Strategy by Firm Type.

	Average Percent Stored			Average Percent Received at Harvest
	On Farm	At Country Elevators	Other	
	----- percent -----			
<b>Firm Type</b>				
All firms	61	23	2	14
Grain elevators	60	29	1	10
Specialty grain firms	64	14	3	19
Seed companies	69	6	0	25
<b>Origination Distance</b>				
Local	58	27	2	13
Regional	71	20	0	9
Interstate	77	0	0	23
National	33	62	0	5
Mix	64	18	1	17

their purchases. Those firms that purchased primarily through contracts with farmers used more acreage contracts and forward contracts to price their specialty crops than did those contracting with elevators.

### Primary Buyers

Survey respondents were asked to indicate what percentage of the specialty crop originated by their facility

was sold to the following buyers: brokers, livestock feeders or feed manufacturers, processors, exporters or other. On average, 47% of the specialty grain handled went to export, 33% went to processors, 6% went to brokers, 7% went to livestock feeders and 7% went to other (Table 8).

The end-use market differed among firm types. Firms for which specialty crops were a smaller per-

centage of total volume handled sold larger percentages to the export market. Grain elevators, on average, sold over one-half of their specialty crops to export, and another one-third to processors. Specialty grain firms sold almost one-half to processors and about one-third to export. Seed companies sold over 50% to brokers, with approximately 20% each to export and other.

Table 7.  
Comparison of Pricing Strategies by Firm Type.

	Average Percent Using Each Pricing Method					
	Basis Contracts	Flat Price Contracts	Acreage Contracts	Base Price + or -	Forward Contracts	Other
	----- percent -----					
<b>Firm Type</b>						
All firms	20	23	16	26	12	3
Grain elevators	8	26	27	21	16	2
Specialty grain firms	49	17	0	25	3	6
Seed companies	25	22	0	51	2	0
<b>Purchasing Method</b>						
Farmer contracts	18	20	18	28	13	3
Country elevator contracts	45	33	0	20	0	2
Other or open market	0	85	2	0	13	0
Mix	36	26	0	26	12	0

Table 8.  
Comparison of Buyers Among Firm Types.

	Average Percent of Specialty Crops Sold To:				
	Processors	Export	Brokers	Livestock Feeders	Other
	----- percent -----				
All firms	33	47	6	7	7
Grain elevators	33	54	1	7	5
Specialty grain firms	47	37	2	7	7
Seed companies	4	20	51	6	19

## Quality Attributes Specified in the Contract

Firms were asked to indicate if they contracted for any of the following attributes: variety, minimum oil, minimum protein, maximum stress cracks/breakage, maximum fatty acid, maximum foreign material, or maximum moisture (Table 9). Of the

seventy-nine responses to this question, 50 firms (63%) indicated that they contracted their specialty grains by variety, 42 firms (53%) specified minimum oil content and maximum moisture, 36 firms (46%) included maximum foreign material. Maximum stress cracks was specified by 27 firms (34%). In contrast, minimum protein content was specified by only 12 firms

(15%), and only 1 firm included a maximum free fatty acid in their contracts.

The use of contracting by variety differs by type of firm. All of the specialty grain firms responding to this question indicated they included variety in their contracts. Seventy-five percent of seed companies included variety, while only 50% of grain eleva-

Table 9.  
Quality Attributes Specified in Contracts.

	Average Percent Specifying Each Quality Attribute in Their Contracts						
	Variety	Minimum Oil Content	Minimum Protein Content	Maximum Stress Cracks	Maximum FFA	Maximum FM	Maximum Moisture
----- percent -----							
<b>Firm Type</b>							
All firms	63	53	15	34	1	46	53
Grain elevators	50	70	6	24	0	32	42
Specialty grain firms	100	6	25	69	6	75	81
Seed companies	75	38	25	50	0	63	63
<b>Primary Buyer</b>							
Livestock feeder	0	100	0	0	0	0	0
Broker	67	33	67	67	0	67	67
Exporter	45	71	13	29	0	48	61
Processor	85	20	10	35	0	25	35
Other	100	25	25	75	0	75	75

Table 10.  
Attribute Levels Included in Contract Specifications.

	Minimum Oil Content		Minimum Protein Content		Maximum Stress Cracks		Maximum FM		Maximum Moisture	
	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
----- percent -----										
All firms	7	6-16	38	35-40	17	1-30	2.2	0.5-5.0	14.9	13.0-20.0
Grain elevators	7	6-8			22	10-30	2.4	0.5-4.0	15.4	14.0-20.0
Specialty grain firms	6	6-6	35	35	12	7-20	1.3	1.0-1.5	14.1	13.0-15.0
Seed companies	11	6-16	39	39	11	10-20	2.5	1.0-5.0	14.4	13.5-16.0

tors included variety in their contracts. In contrast, 70% of grain elevators included minimum oil in their contracts, while only 6% of specialty firms included this attribute, reflecting the higher involvement of grain elevators in the high oil corn market. Specialty grain firms also included maximum moisture, foreign material and stress cracks in contracts more frequently than did grain elevators.

On average, if the destination for specialty crops from a given firm was primarily export (i.e. at least 50% of the specialty crop went to export), then maximum moisture and minimum oil contents were included in over 60% of the contracts, and variety and maximum foreign material were included in almost 50% of the contracts. If the buyer was primarily a processor, then 85% of the contracts included a varietal specification.

The level of attribute specified also differed by firm type (Table 10), with much tighter quality specifications required by specialty grain firms. For example, the allowable range of maximum foreign material identified by grain elevators was 0.5% to 4%, while specialty grain firms allowed only 1% to 1.5%. Maximum moisture content and stress cracks followed the same pattern, with the maximum moisture allowed by elevators ranging from

14% to 20% and maximum stress cracks ranging from 10% to 30%. In contrast, the maximum moisture allowed by specialty grain firms was restricted to 13% to 15%, and maximum stress cracks ranged from 7% to 20%.

There were 32 respondents who identified other quality attributes that were specified in their contracts. Table 11 shows the distribution among the responses.

### Quality Control Methods

On average, 93% of all firms tested specialty grains at their facility or at final destination, 83% of all firms required the use of variety specific seeds, 56% tested specialty grains at the farm, and 18% of the firms sealed bins (Table 12).

The type of firm had an influence on the quality control methods used by the firm. Grain elevators depended mostly on testing samples for specific quality factors upon delivery to their facility or to the end-user, with 96% of the firms indicating they used this quality control method. Seventy-five percent of grain elevators required use of a specific variety, and almost one-half tested samples at the farm. Specialty grain firms relied most heavily on varietal specification (95% of firms), although 89% did specify testing upon delivery to their facility or

Table 11.  
Additional Quality Attributes Included in Contracts.

Characteristic	No. of Responses
Purity	8
Damage	4
Test weight	4
Seed appearance/cleanliness	4
Seed size	4
Grade	3
Oleic content	3
Aflatoxin content	2
Non GMO	1
Modified oil content	1
Hardness	1
Density	1
Fumonisin content	1

end-user, and 79% tested samples at the farm. All seed companies required use of variety specific seeds, almost 90% tested samples at the farm, and 75% tested at delivery or end-use. The percentage of firms sealing bins after testing as a quality control method ranged from 16% to 25% for grain elevators, specialty grain firms and seed companies.

Table 12.  
Comparison of Quality Control Methods Among Firm Types.

	Average Percent Using Each Quality Control Method			
	Test at Farm	Test at Delivery or End Use	Require Variety	Seal Bins
	----- percent -----			
All firms	56	93	83	18
Grain elevators	45	96	75	16
Specialty grain firms	79	89	95	21
Seed companies	88	75	100	25

## Cost of Handling Specialty Crops

There were 55 firms that estimated costs, while 6 additional firms simply checked the costs which they incurred, but did not quantify them. The average additional cost incurred when purchasing specialty crops versus purchasing a generic commodity are presented in Table 13a. Respondents were instructed to include premiums paid in their estimate of additional purchasing costs. Because a number of firms handled numerous specialty corn and soybean crops, sometimes a range of purchasing costs was provided. In these cases, the midpoint of the range was used to calculate the average.

The average total additional cost of handling specialty grains was \$0.79 per bushel. This ranged, on average, from \$0.36 per bushel for specialty corn to \$1.22 per bushel for specialty soybeans. All costs for specialty soybeans were greater than for specialty corn, except the analysis/testing cost which was the same for both at \$0.01. The largest cost difference between corn and soybeans was incurred in the purchasing cost, which reflects the high premiums paid for food soybeans.

Only grain elevators and specialty grain firms had enough responses to compare costs by firm type. Table 13b presents the average additional costs incurred by these two firm types for specialty corn. The *additional costs* figures in all cases were based on a comparison with generic corn or soybeans. Grain elevators estimated additional costs for handling specialty corn totaled \$0.26 per bushel, which was smaller than the \$0.77 per bushel estimated by specialty grain firms. All costs were higher for specialty grain firms than for grain elevators except for risk management, with \$0.01 per bushel incurred by ele-

vators and no cost incurred by specialty grain firms, and analysis which both firm types estimated at \$0.01 per bushel. The most striking differences between the firm types in costs for handling specialty corn are in han-

dling/segregation, where average costs for specialty firms were \$0.18 per bushel higher than for elevators; and transportation where the cost difference between firm types was \$0.13 per bushel.

Table 13a.  
**Comparison of Additional Costs Incurred in Handling Specialty Corn and Soybeans.**

	Average (N=55)	Corn	Soybeans
----- dollars per bushel -----			
Storage (per month)	0.03	0.03	0.04
Handling/segregation	0.10	0.06	0.15
Risk management	0.04	0.01	0.07
Transportation	0.07	0.04	0.12
Analysis/testing	0.01	0.01	0.01
Marketing	0.03	0.02	0.04
Other	0.04	0.00	0.06
<b>Subtotal</b>	<b>0.32</b>	<b>0.17</b>	<b>0.48</b>
Purchasing (including premium)	0.47	0.19	0.74
<b>TOTAL</b>	<b>0.79</b>	<b>0.36</b>	<b>1.22</b>

Table 13b.  
**Comparison Among Firm Types of Additional Costs Incurred when Handling Specialty Corn.**

	Grain Elevators (N=35)	Specialty Grain Firms (N=8)
----- dollars per bushel -----		
Storage (per month)	0.01	0.09
Handling/segregation	0.03	0.21
Risk management	0.01	0.00
Transportation	0.01	0.14
Analysis/testing	0.01	0.01
Marketing	0.01	0.07
Other	0.00	0.00
<b>Subtotal</b>	<b>0.08</b>	<b>0.53</b>
Purchasing (including premium)	0.18	0.24
<b>TOTAL</b>	<b>0.26</b>	<b>0.77</b>

Grain elevators had an average additional cost of 57 cents per bushel for handling specialty soybeans, while for specialty grain firms the additional cost was \$2.75 (Table 13c). This primarily reflects the difference in specialty soybeans handled by the two firm types. Grain elevators primarily handle STS soybeans, while a much higher percentage of specialty firms handle food soybeans. The major difference between the two firm types is purchasing cost, which specialty firms identified as \$1.67 per bushel and elevators reported as \$0.36. The only cost which is higher for grain elevators than for specialty grain firms is risk management (\$0.08 versus \$0.01, respectively). This may be due to the price risk faced by grain elevators, which purchased specialty crops primarily through flat price, acreage contracts, and base price adjusted for premiums, while specialty grain firms relied more heavily on basis contracts. The "other" category cost for specialty grain firms was identified as conditioning expense.

## Summary of Market Channels by Firm Types

A comparison of primary market channels and additional costs incurred when handling specialty crops reveals that there are differences across firm types. Due to the smaller number of responses from seed companies, brokers and feed manufacturers, only the market channels for grain elevators and specialty grain firms will be summarized.

### Grain Elevators

Specialty crops represented only 9% of total volume handled, on average, for the grain elevators responding to this survey. That percentage ranged from a minimum of less than 1% up to 40% of volume handled. Grain elevators originated over 90% of their specialty crops from a distance of 50 miles or less, and almost all was delivered by truck. When purchasing specialty crops, most elevators rely on contracts with farmers (average contracted with farmers was 91%), al-

though at least one grain elevator contracted as little as 5% of their specialty crop through farmer contracts. Specialty crop shipments are almost entirely shipped in bulk, with less than 10% shipped in bagged form.

Grain elevators relied heavily upon on-farm storage, with 60% of the specialty crops they handled stored at the farm location. Another 29% was stored at country elevators, while 10% was received at harvest and required no storage. The pricing strategy varied widely among grain elevators, with elevators, on average, pricing between 20%-30% of their purchases through each of the following methods: flat price, acreage contracts and base price adjusted for quality. Less than 20% of specialty crops were purchased using forward contracts, and less than 10% using basis contracts.

The primary market for specialty crops handled by elevators was the export market (54%), although processors were also a significant end-user (33%). When contracting for specialty crops, the attributes specified by at least one-half of the elevators were minimum oil content (70%) and variety (50%). Maximum moisture was included in contracts by 42% of all grain elevators, maximum foreign material by 32%, and maximum stress cracks by 24%. Less than 10% of the elevators contracting for specialty crops included minimum protein content, and none of the elevators included free fatty acid restrictions. For those grain elevators that identified their quality control methods, almost all (96%) tested samples for specific quality factors upon delivery to their facility or at the end user's plant. Seventy-five percent required use of variety specific seeds, and 45% tested quality at the farm. Only 16% sealed bins after specialty crops in bins had been checked for quality.

Table 13c.  
**Comparison Among Firm Types of Additional Costs Incurred when Handling Specialty Soybeans.**

	Grain Elevators (N=24)	Specialty Grain Firms (N=10)
----- dollars per bushel -----		
Storage (per month)	0.02	0.10
Handling/segregation	0.06	0.27
Risk management	0.08	0.01
Transportation	0.02	0.39
Analysis/testing	0.01	0.02
Marketing	0.02	0.09
Other	0.00	0.21
<b>Subtotal</b>	<b>0.21</b>	<b>1.08</b>
Purchasing (including premium)	0.36	1.67
<b>TOTAL</b>	<b>0.57</b>	<b>2.75</b>

The additional costs incurred by grain elevators when purchasing specialty crops averaged \$0.26 per bushel for specialty corn and \$0.57 per bushel for specialty soybeans. Not surprisingly, the largest expense was the purchasing cost (including premium), which accounted for over 60% of the additional cost of purchasing specialty corn and soybeans. The additional costs elevators incurred for specialty soybeans were greater than for specialty corn for all factors except analysis/testing, which was estimated at \$0.01 per bushel for both specialty crops.

### **Specialty Grain Firms**

Specialty grain firms are appropriately named, with specialty crops on average, accounting for 96% of all crops handled. The minimum percentage of specialty crops handled by firms in this category was 70%. Specialty grain firms originated soybeans from wider distances than did elevators, with 60% originated from within 50 miles and 40% originated from over 50 miles. Specialty firms depended almost exclusively on trucks when originating their specialty crops. Farmer contracts played a significant role, with 65% of specialty crops purchased using this method. The remaining purchases were divided primarily between contracts with country elevators and the open market. Shipments in bagged form were utilized more frequently by specialty grain firms than by grain elevators. Almost 40% of specialty crops shipped by specialty grain firms were transported by bag.

Specialty grain firms also relied heavily upon on-farm storage, with 64% of their specialty crops stored at the farm location. A larger percentage of specialty crops were received at harvest (19%), while 14% was stored at country elevators. The pricing strategy utilized by specialty grain firms

was less varied than with country elevators. Almost 50% of the specialty crops purchased by specialty grain firms was priced using basis contracts. An additional 25% was priced using base price adjusted for quality, while 17% was purchased using a flat price strategy.

The two primary markets were the same for specialty grain firms as for elevators, although the relative importance was reversed. Processors were the largest destination for specialty crops (47%) handled by specialty grain firms, followed by the export market where 37% of specialty crops were sent. Over half of the specialty grain firms originating specialty crops through contracts included the following quality attributes in their contracts: variety, maximum moisture content, maximum foreign material and maximum stress cracks. Three quality control methods were frequently used: 95% of firms specified variety specific seed, 89% tested at deliver to their facility or at end-use, and 79% tested quality at the farm.

The additional costs incurred by specialty grain firms averaged \$0.77 per bushel for specialty corn and \$2.75 per bushel for specialty soybeans. These costs were substantially higher than those incurred by grain elevators. Interestingly, for specialty corn, the purchasing premium was not the predominant additional cost, representing only 31% of the additional cost incurred. The combined handling/segregation and transportation costs represented over 40% of additional costs. However, for specialty soybeans, the purchasing cost accounted for 60% of the additional cost incurred by specialty grain firms. As with grain elevators, costs associated with specialty soybeans were greater than for specialty corn.

## *Survey Results by Specialty Crop Handled*

In addition to analyzing the marketing channels for specialty crops used by different firm types, marketing channels for specific specialty corn and soybeans were also compared. Since the survey included questions at the aggregate crop level, i.e. specialty corn or specialty soybeans, a subset of firms was created. Any firm that handled only one type of either specialty corn or specialty soybeans was included in the subset. For example, if a firm provided data for specialty corn, and indicated they only handled high oil corn, they were included in the high oil corn subset for specialty corn. However, a firm that indicated they handled both high oil corn and food corn could not be included in either subset, since it was not possible to determine which of their corn responses applied to high oil corn and which applied to food corn.

Seventy-six firms could be identified as handling a specific type of either specialty corn or soybeans. Four specialty corn and soybean categories were evaluated: high oil (HO) corn, food corn (FC), food soybeans (FS) and STS soybeans (STS). The food corn category included the following specialty products as specified by the respondents: white food corn, yellow food corn, hard endosperm, waxy, high amylose, and organic corn. The food soybean category included the following specialty products: food soybeans, organic, clear hilum, modified oil, chemical free, high oleic, high sucrose, low saturated fat, genetically altered, tofu, natto, high oil, and vari-

ety specific soybeans. Table 14 shows the distribution of specialty crops by firm type.

### Importance of Specialty Crops

For specialty corn, 29 firms handled only HO corn while 11 firms handled only food corn as their specialty corn product. Of the specialty soybean handlers, 45 firms indicated the only specialty soybeans they handled were food soybeans, while 12 firms handled only STS soybeans. Grain elevators were the only firm type that handled STS soybeans and they were also the predominant han-

dlers of HO corn (23 of 29 firms). Specialty grain firms were the primary handler of food corn (9 of 11 firms). However, food soybeans were handled by a range of firm types, with 19 elevators, 15 specialty grain firms, 8 seed companies and 3 brokers all indicating the only specialty soybeans they handled were food soybeans.

### Origination Distance

Food corn and food soybeans were originated from a greater distance than HO corn or STS soybeans (Table 15). One-fourth of all food corn and food soybeans were originated from

at least a 50 mile radius, while only 7% of HO corn and no STS soybeans were originated from a distance greater than 50 miles.

### Use of Contracting in Purchases

Use of contracting methods differed by specialty grain crops handled. Those firms whose only specialty soybeans were STS soybeans or whose only specialty corn product was HO corn, utilized farmer contracts for almost all their purchases, while 80% of food soybeans were purchased through farmer contracts

Table 14.  
Distribution of Specialty Crop Categories by Firm Type.

	Total No. Firms	Elevators	Specialty Grain Firms	Seed Companies	Brokers	Feed Manufacturer
HO corn	29	23	1	2	2	1
Food corn	11	2	9	0	0	0
STS soybeans	12	12	0	0	0	0
Food soybeans	45	19	15	8	3	0

Table 15.  
Comparison of Origination Distances Among Specialty Crops.

	Average Percent of Specialty Crops Originated From:			
	Local (0-15 miles)	Regional (16-50 miles)	Interstate (51-250 miles)	National (+ 250 miles)
	----- percent -----			
HO corn	59	34	4	3
Food corn	44	30	20	6
STS soybeans	82	18	0	0
Food soybeans	49	26	14	11

Table 16.  
Comparison of Purchasing Method by Specialty Crop.

	Farmer Contracts			Elevator Contracts			Open Market			Other Method		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
	----- percent -----											
HO corn	96	5	100	4	0	95	0	0	1	0	0	0
Food corn	71	20	100	6	0	50	23	0	80	0	0	0
STS soybeans	100	100	100	0	0	0	0	0	0	0	0	0
Food soybeans	80	0	100	12	0	90	7	0	75	1	0	50

(Table 16). Only 71% of food corn was contracted with farmers, and surprisingly, 23% of food corn was not contracted but was purchased on the open market.

### Bulk versus Bag Shipments

Almost 40% of food soybeans were shipped by bag, while only 12% of food corn and 7% of HO corn were transported by bag (Table 17). All of the STS soybeans were shipped in bulk.

### Storage Strategy Utilized

The location of storage sites differed among the specialty crops (Table 18). On-farm storage was the primary storage site for HO corn (73%), food corn (61%) and food soybeans (61%). Country elevator storage was the most important storage location for STS beans (over 57%), while another 31% was stored on farm. Over 20% of total food corn purchases were received at harvest. The large percentage of food corn delivered at harvest provided one explanation for the limited involvement of grain elevators with this type of specialty corn, since grain elevators were likely not interested in accepting large volumes of specialty crops requiring segregation during their peak generic crop delivery time.

### Pricing Strategy Utilized

Pricing strategies also differed among specialty crops. Flat price and base price adjusted for quality were the primary pricing methods used for HO corn (over 30% were purchased using each method). These two methods, along with acreage contracts, were frequently utilized when purchasing STS soybeans (Table 19). Firms purchasing food soybeans relied most on the method of base price adjusted for quality (30%) and basis contracts (25%). The most dominant pricing strategy for any of the four specialty crops was the use of basis contracts in purchases of food corn, where one-half of all food corn was purchased using this pricing strategy.

### Primary Buyers

Processors were the primary destination for STS soybeans (75%) and food corn (69%). The remaining STS soybeans were delivered to exporters, while food corn was delivered to exporters, livestock feeders, and other (Table 20). In contrast, exporters were the predominant users of high oil corn (73%), followed by livestock users (20%). Food soybeans were more evenly distributed among alternative buyers, with exporters accounting for about 40% of food soybeans, processors almost 30%, and brokers and other markets each accounting for over 10%.

Table 17.  
Comparison of Shipping Method by Specialty Crop.

	Average Percentage Shipped By:	
	Bulk	Bagged
	----- percent -----	
HO corn	93	7
Food corn	88	12
STS soybeans	100	0
Food soybeans	62	38

Table 18.  
**Comparison of Storage Strategy by Specialty Crop.**

	Average Percent Storing			Average Percent Received at Harvest
	On Farm	At Country Elevators	Other	
	----- percent -----			
HO corn	73	19	0	8
Food corn	61	14	4	21
STS soybeans	31	57	3	9
Food soybeans	61	20	2	16

Table 19.  
**Comparison of Pricing Strategies Specialty Crops.**

	Average Percent Using Each Pricing Method					
	Basis Contracts	Flat Price Contracts	Acreage Contracts	Base Price + or -	Forward Contracts	Other
	----- percent -----					
HO corn	5	33	13	31	14	4
Food corn	50	21	10	19	0	0
STS soybeans	2	30	33	22	13	0
Food soybeans	25	15	17	30	10	3

Table 20.  
**Comparison of Buyers Among Specialty Crops.**

	Average Percent of Specialty Crops Sold To:				
	Processors	Exporters	Brokers	Livestock Feeders	Other
	----- percent -----				
HO corn	4	73	0	20	3
Food corn	69	17	0	3	11
STS soybeans	75	25	0	0	0
Food soybeans	28	42	13	1	16

## Quality Attributes Specified in Contracts

There was wide variation among some of the quality attributes specified in contracts across the four specialty crops (Table 21). For example, although at least 80% of firms handling food corn, food soybeans or STS soybeans included varietal specifications in their contracts, only 15% of firms originating HO corn included variety. Not surprisingly, all but 1 firm originating HO corn included minimum oil specifications in their contracts, while 15% of firms handling food soybeans also included a minimum oil

specification. Minimum protein and maximum free fatty acids (FFA) were only specified in contracts by those firms handling food soybeans.

The respondents were also asked to indicate the levels of attributes specified in their contracts. The average minimum oil content included in HO corn contracts was 7%, with a range from 6 to 8% (Table 22). The average maximum FM for HO corn was 2.3%, with a contracted maximum range across firms from 0.5% to 4.0%. The maximum moisture level contracted for HO corn ranged from 14% to 15%. There were no contract limitations for stress cracks, protein content or FFA

for HO corn for any firm responding to this question.

Although firms handling food corn indicated they specified variety and maximum levels of FM and moisture in their contracts, the only attribute level provided by respondents was for stress cracks. All firms responding indicated that the contracted maximum level of stress cracks in food corn is 30%.

Firms handling food soybeans identified attribute levels included in contracts for all attributes except FFA. All firms responding to this question indicated that the minimum oil content for food soybeans was 16%. The

Table 21.  
Quality Attributes Specified in Contracts Among Specialty Crops.

	Average Percent Specifying Each Quality Attribute in Their Contracts						
	Variety	Minimum Oil Content	Minimum Protein Content	Maximum Stress Cracks	Maximum FFA	Maximum FM	Maximum Moisture
	----- percent -----						
HO corn	15	96	0	7	0	33	44
Food corn	89	0	0	67	0	78	78
STS soybeans	92	0	0	0	0	8	0
Food soybeans	83	15	28	25	3	55	55

Table 22.  
Attribute Levels Included in Contract Specifications Among Specialty Crops.

	Minimum Oil Content		Minimum Protein Content		Maximum Stress Cracks		Maximum FM		Maximum Moisture	
	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
	----- percent -----									
HO corn	7	6-8					2.3	0.5-4.0	14.8	14-15
Food corn					30	30				
STS soybeans										
Food soybeans	16	16	38	35-40	10	1-20	1.9	1.0-5.0	13.9	13-16

Table 23.  
**Comparison of Quality Control Methods Among Specialty Crops.**

	Average Percent Using Each Quality Control Method			
	Test at Farm	Test at Delivery or End Use	Require Variety	Seal Bins
	----- percent -----			
HO corn	43	96	61	0
Food corn	73	91	82	9
STS soybeans	25	83	75	25
Food soybeans	67	93	91	23

average minimum protein content was 38%, with a range from 35% to 40%. The average maximum stress cracks was 10%, but a wide range from 1% to 20% maximum stress cracks was specified. The range of maximum FM was from 1% to 5%, with an average of 1.9% FM. The average maximum moisture content was 13.9%, and ranged from 13% to 16% in individual contracts.

None of the firms identified any quality attributes levels in contracts for STS soybeans, although one firm indicated they included maximum FM in their contract.

### Quality Control Methods

Over two-thirds of the firms handling food corn or food soybeans tested samples at the farm (Table 23). In contrast, only 43% of firms handling HO corn and 25% of firms handling STS soybeans tested at the farm. At least 90% of firms tested samples upon delivery at their facility or at end-use for food corn, HO corn and food soybeans, while over 80% used this method for STS soybeans. Almost 90% of firms handling food soybeans required use of a specific variety. The percentage declined to 82% for firms handling food corn, 75% for firms handling STS soybeans, and only 61% for firms handling HO corn. Sealing bins

on farm after they've been tested was the least utilized quality control method: around 25% of firms that handled either food soybeans or STS soybeans, less than 10% of firms that handled food corn, and no firms which handled HO corn used this method.

### Costs of Handling Specialty Crops

On average, the greatest additional costs incurred were \$1.68 per bushel for food soybeans and \$0.74 per bushel for food corn (Table 24). Addi-

tional costs for STS soybeans averaged \$0.33 per bushel, while additional costs for HO corn averaged \$0.18 per bushel. The purchasing cost (including premium) represented the largest additional cost regardless of specialty crop. Additional costs for food corn and food soybeans were higher than for HO corn and STS soybeans for all factors except risk management (differed by 1 cent per bushel) and analysis/testing for the specialty corn crops (both were 1 cent per bushel). Interestingly, the risk management costs were

Table 24.  
**Comparison Among Specialty Crops of Additional Handling Costs Incurred.**

	Food Corn (N=7)	HOC (N=21)	Food Soybeans (N=26)	STS Soybeans (N=10)
	----- dollars per bushel -----			
Storage (per month)	0.04	0.01	0.04	0.02
Handling/segregation	0.19	0.02	0.20	0.06
Risk management	0.00	0.01	0.06	0.07
Transportation	0.06	0.00	0.15	0.00
Analysis/testing	0.01	0.01	0.02	0.01
Marketing	0.09	0.01	0.05	0.02
Other	0.00	0.00	0.09	0.00
<b>Subtotal</b>	<b>0.39</b>	<b>0.06</b>	<b>0.61</b>	<b>0.18</b>
Purchasing (including premium)	0.35	0.12	1.07	0.15
<b>TOTAL</b>	<b>0.74</b>	<b>0.18</b>	<b>1.68</b>	<b>0.33</b>

higher for both specialty soybean crops than for the specialty corn crops.

## Summary of Market Channels by Specialty Crops

Handlers of HO corn are primarily grain elevators, with 23 of the 29 firms in this subset of specialty crop analysis classified as elevators, 2 each identified as brokers and seed companies, 1 specialty grain firm and 1 feed manufacturer. Over 90% of the HO corn was originated within 50 miles, and almost 60% within a radius of only 15 miles. High oil corn is purchased almost exclusively by contracts with farmers, with 73% of HO corn stored on farm. Approximately one-third of the HO corn purchases were priced using a flat price contract, and another one-third using a base price adjusted for quality. The primary buyer was exporters (73%), with livestock accounting for another 20% of use. Shipments were predominately in bulk form. Not surprisingly, almost all of the handlers (96%) indicated they included a minimum oil specification in their contracts, with the minimum oil specified ranging from 6% to 8%. Maximum moisture and maximum FM were included in contracts by at least one-third of the firms. All but one firm controlled quality by testing upon delivery at their facility or at end use. Other quality control methods included varietal specification (61%), and testing at farms (43%). The additional costs incurred from handling HO corn versus generic corn resulted primarily from additional purchasing costs, which included the premium they must pay producers. All other additional costs were only 1 to 2 cents per bushel.

Handlers in the subset of specialty crops whose only specialty soybeans were STS beans were all identified as grain elevators. All of the STS soybeans were originated within 50

miles, with over 80% originated within a 15 mile radius. Contracts with farmers were the exclusive purchasing method. The storage method differed from HO corn, with the majority of STS soybeans stored at country elevators (57%), while on farm storage accounted for only 31%. The pricing method also varied from HO corn purchases, with 33% of STS soybeans priced using acreage contracts, although flat price and base price adjusted for quality were also used by at least 20% of firms. Processors were the primary buyer of STS soybeans, accounting for 75% of demand, with the remainder shipped to export. All shipments of STS soybeans were delivered in bulk form. The only two quality attributes specified were variety, which was included in contracts by 92% of the handlers, and maximum FM, which was only included by 1 firm. The primary quality control methods used were testing at delivery to their facility or end use (83%) and specifying variety (used by 75% of firms). One-fourth of the firms did test quality at the farm, and one-fourth sealed bins after checking samples. As with HO corn, the largest additional cost incurred was the purchasing cost. However, risk management and handling/segregation costs were much higher than for HO corn, at 7 cents per bushel and 6 cents per bushel, respectively.

In contrast to HO corn and STS soybeans, the primary handler of food corn was specialty grain firms. Nine of the responding firms whose only specialty corn was food corn were classified as specialty grain firms, while 2 were classified as grain elevators. The greater involvement of specialty grain firms is reflected in over one-fourth of food corn purchases originating from greater than 50 miles, while less than half were originated from within 15 miles.

A smaller percentage (71%) contracted with farmers, relative to HO corn or STS soybeans, and 23% of food corn was purchased in the open market. On farm storage was still the most typical storage location, with 61% of food corn stored on farm. However, a much higher percentage of food corn (21%) was received at harvest. As with STS soybeans, the processor was the major buyer, followed by exporters and other. Most food corn was shipped in bulk form. More quality attributes were included in food corn contracts by a greater number of firms than occurred for firms handling either HO corn or STS soybeans. Almost 90% of firms included varietal specifications in their contracts, 78% included maximum FM and maximum moisture contents, and 67% included maximum stress cracks. Over 90% of firms handling food corn tested at end use, while over 70% required variety specific seed and/or tested at the farm. The largest additional cost incurred when handling food corn versus generic corn results from the purchasing cost. However, the handling/segregation cost was very high, averaging 19 cents per bushel, and additional marketing costs averaging 9 cents per bushel were also reported.

The most diverse mix of handlers were involved in the food soybean market, with 19 grain elevators, 15 specialty grain firms, 8 seed companies and 3 brokers represented in this subset. As with food corn, one-fourth of food soybeans were originated from a radius greater than 50 miles, with about one-half originated from within 15 miles. Contracts with farmers were the primary purchasing method, accounting for 80% of purchases. Over 60% of storage occurred on farm, while 20% was stored at country elevators, and 16% was received at harvest. The primary pricing

mechanisms for purchases were base price adjusted for quality and basis contracts. The export market accounted for 42% of food soybean end use, followed by 28% to processors and 13% to brokers. A much larger percentage of food soybeans are bagged, relative to the other three specialty crops analyzed, with almost 40% shipped in bags.

Three quality attributes were specified in contracts by over half of the firms, with 83% including variety and 55% specifying a maximum FM level and moisture content. Minimum protein content and maximum stress cracks were included in contracts by around 25% of the firms. There are three primary quality control methods used by firms handling food soybeans. Testing at delivery to their facility or at end use and using variety specific seed were identified by over 90% of firms, while 67% tested quality at the farm. The predominant additional cost incurred from handling food soybeans versus generic soybeans was the purchasing cost. However, an average of 20 cents per bushel was identified for additional handling/segregation costs and 15 cents per bushel for transportation. A nine cent per bushel "other" cost was primarily for conditioning.