

Markets for Trait Specific Grains Produced in Kansas

by

Matt Domine, Michael Boland
and Tim Herrman*



Introduction

One method to expand the market for food and feed grains and oilseed crops is the development of varieties for specific end uses that add end-user value. These varieties are different from #2 yellow corn, soybean, grain sorghum and other grains because of certain unique characteristics (Table 1). In this publication, we will refer to these as trait specific grains.

End-users of corn, soybean, and grain sorghum include livestock producer/feeders, feed and food manufacturers, and industrial processors. Different end-users procure grain and oilseeds with properties specific to their individual uses. Technological progress has introduced crops with traits desirable to specific end-users. However, economic incentives for producers and processors are necessary to justify production of trait specific grains. Incentives include price premiums and/or decreased price risk through contracting opportunities. The objective of this research was to determine the extent of markets for trait specific grains in Kansas. We surveyed processors and merchandisers that serve as end-users or intermediaries for Kansas corn, soybean, and grain sorghum.

Corn, soybean, grain sorghum, and sunflower varieties developed for certain end uses have been available for several years. These are described in MF-2430—Economic Issues with Value-Enhanced Corn; MF-2497 — Economic Issues with White Corn; MF-2512 — Economic Issues with Soybeans; MF-2513 — Economic Issues with Grain Sorghum; and MF-2514 — Economic Issues with Sunflowers.^a Some of the traits discussed in these publications were developed for use by end-users in feed, food, and industrial products. Many of the traits, however, are still considered “unproven” to producers compared to commodity crops. For example, elite varieties that have consistent yields are not available for some hybrids. In addition, many grain elevators cannot segregate all of these crops and markets are lacking in Kansas for food and industrial uses. More than 75% of United States wet and dry milling capacity is in Illinois, or within 100 miles of its borders. Markets for trait specific grain for food or industrial use likely will not develop quickly in Kansas. However, trait specific grains for livestock feed and on-farm feeding are viable outlets for Kansas’ producers and represent potential contract opportunities for trait specific grain premiums.

^a Available through local County Extension Office or on-line at <http://www.oznet.ksu.edu> (select Publications)

Table 1. Summary of Trait Specific Grains Produced in Kansas for Specific End Users.

Corn	<u>Primary Use</u>	<u>Markets Exist in KS</u>
High oil corn	Feed	Yes
Waxy corn	Food, feed, industrial	No
White corn	Food, feed	Yes
Food grade yellow corn	Food, feed	Yes
Nutritionally dense corn	Feed	Yes
High lysine corn	Feed	Yes
Organic corn	Food, feed	No
Soybean		
Tofu/clear hilum soybeans	Food	Yes
STS Soybeans	Feed	Yes
Low saturated fat soybeans	Food	No
High sucrose soybeans	Food	No
High oil soybeans	Food, industrial	No
Organic soybeans	Food, feed	Yes
Grain Sorghum		
Food-grade/white sorghum	Food, feed	Yes
Yellow/cream sorghum	Feed	Yes
Red/bronze sorghum	Feed	Yes

Kansas Grain Markets Survey

During the winter of 2000-2001, a survey of corn, soybean, and grain sorghum end-users (food and industrial processors) and intermediaries (grain elevators and merchandising firms) was conducted to determine what trait specific grains were marketed in Kansas. Topics addressed in the survey included: 1) description of the individual respondent's business activities, 2) existence of market opportunities and trends, 3) factors affecting market participation, and 4) specific terms of contract opportunities. Questions addressed specific issues as well as soliciting opinions about the current state and future of different trait specific grains.

Grain merchandising firms that had one or more elevators with storage capacity of at

least 1.5 million bushels were included in the sample. Managers from 24 firms participated in the survey. These intermediaries varied in location, business organization and activities, and number of station locations.

Processors surveyed included the top 15 processors of Kansas corn, soybean, and grain sorghum. These end users create a variety of food, feed, and industrial products. Most end users were physically located outside of Kansas, but purchased a significant portion of their crops from Kansas producers and intermediaries.

Trait Specific Grain Opportunities

Although a number of trait specific crops are produced in Kansas, only a few are both procured and segregated by intermediaries and processors. Segregation is separation of

the grain after it has been delivered to the intermediaries. Table 2 shows the number of respondents that purchased different trait specific grains in Kansas.

The economics of handling and processing will likely dictate the use and value of these different trait specific grains in the future. In the survey, intermediaries and end-users were asked about their opinion on which trait specific grains would be utilized in the year 2005 in Kansas (Table 3).

Factors Affecting Participation by Intermediary or End User

Reasons for Not Utilizing Trait Specific Grains

Firms that did not handle or segregate corn, soybean, or grain sorghum classes were asked their primary reason for not doing so. The choices included the following options:

1. facility constraints
2. management not interested
3. too much investment/not profitable
4. location—lack of supply or markets

Most respondents (78 %) stated that a lack of economic incentives at the producer level was the most important limiting factor for market development of trait specific corn, soybean, and grain sorghum. There were also indications that several trait specific cereals and oilseeds were handled on a trial basis and had either not proven economically viable or were still under evaluation (11 %). Another common response was that price premiums were not available in specific years based on market factors, which means that products may or may not be segregated based on the existence of an economic incentive (10 %).

Location was the second most popular reason cited for not handling trait specific cereals or oilseeds. This response is somewhat related to the issue of economic incen-

tives. Proximity to an end user is one reason why an intermediary might choose to provide incentives for a particular type of corn, soybean, or grain sorghum.

Facility constraints were also a reason for not handling trait specific grains. The absence or uncertainty of economic incentives is magnified when additional costs are added for facility upgrades. Facility constraints were more prevalent for intermediaries than end-users.

Improvements Required to Segregate Crops

End-users who handled different trait specific grains most often operated facilities that were built for segregation. Cleaning equipment and personnel investments were most common for those end-users who did have to make improvements to handle different trait specific grains.

In contrast to end-users, intermediaries who handled trait specific grains made significant investments in facility improvements. If the intermediary did not currently handle different trait specific grains, they were asked which improvements would be needed if the decision to handle these grains were made. The most popular improvements, with 33 % of the intermediaries needing to make these changes, were adding dump pits and training personnel. Testing equipment, storage, cleaning, and drying were other investments reported by some intermediaries.

Both intermediaries and end-users used a variety of testing technology both on and off-site. The widest application of testing equipment was for risk management. Tests for genetically modified crops, toxins, and other grade factors were used by most respondents. Crop component tests were also used by a number of end-users and intermediaries. Fifty-eight percent of end-users surveyed use near infrared (NIR) technology. Many of them had NIR whole grain analyzers on-site. A smaller portion of intermediaries, 33 %, used NIR and other component tests. The high cost of this equipment forced some intermediaries to employ professional laboratory services.

Table 2. Different Trait Specific Corn, Soybean, and Grain Sorghum Procured in Kansas in 2001.

Crop	Procured by Intermediaries	Procured by End-users
High Oil Corn	3	1
Waxy Corn	0	4
White Corn	2	3
Food Grade Yellow Corn	1	3
Tofu/Clear Hylum Soybean	0	0
Yellow/Cream Sorghum	3	0

Table 3. Potential for Selected Corn, Soybean, and Grain Sorghum Trait Specific Grains

Crop	Handled 1998 to 2001 ^a	Handled 2005 ^b	Change ^c
Corn			
High Oil Corn	4	8	+
Waxy Corn	3	3	0
White Corn	5	9	+
Food Grade Yellow Corn	4	6	+
High Lysine Corn	0	3	+
Organic Corn	1	3	+
GMO vs. non-GMO	4	9	+
Other (Hard endosperm)	0	1	+
Other (Nutrition traits)	0	1	+
Soybean			
High Oil Soybean	1	1	0
GMO vs. non-GMO	0	3	+
Grain Sorghum			
Food Grade/White	0	2	+
Yellow/Cream Seed Coat	3	3	0
White Seed Coat	4	4	0
Red Bronze Seed Coat	6	6	0

^aNumber of respondents that handled this trait specific grain over the 1998 to 2001 time period.

^bNumber of respondents that anticipate handling this trait specific grain in 2005

^cA + denotes that more of the trait specific grain will be handled in 2005 while a 0 denotes no change.

Numerous sources of information for marketing opportunities were available (Figure 1). Nearly all survey respondents indicated that they used multiple information sources. The most popular sources of information were land grant university research and other grain industry firms. More than 50 % of all respondents cited at least one of these two sources. Another 55 % identified industry publications as an important source of information. Other popular sources included private research, grain producers, and other government research entities.

Specific Terms of Contracts

Market conditions and the number of food and industrial markets available in and near Kansas limit the amount of trait specific grains that are actually segregated through the grain logistics system at the present time. Many of the trait specific grains are produced and fed on farm, where value is not easily visible. For this reason, contract information was only available for white and food grade yellow corn. Other classes may have contract opportunities, but these offerings were not common.

Contracts for White and Yellow Corn

Most of the white and yellow corn produced is for food use. Much of this corn is contracted directly on farm, but occasionally food grade corn is marketed similar to commodity corn. Much of the food grade corn produced in Kansas is dry milled into corn meal or used in the alkaline processing for masa production.

The quality attributes are related to food processing, which included damage, cleanliness, and kernel characteristics affecting milling. The relatively small size of the dry mill market means that price premiums are dependent on supply and demand conditions. If present, premiums are most often paid over the #2 yellow corn price.

Summary

End-users of corn, soybean, and grain sorghum include livestock producer/feeders, feed and food manufacturers, and industrial processors. Different end-users procure grain and oilseeds with properties specific to their individual uses. Markets for trait specific grains exist in Kansas but the markets are much smaller when compared to similar surveys done in other states such as Iowa and Illinois. Opportunities will likely increase in the future as long as economic incentives exist for all participants.

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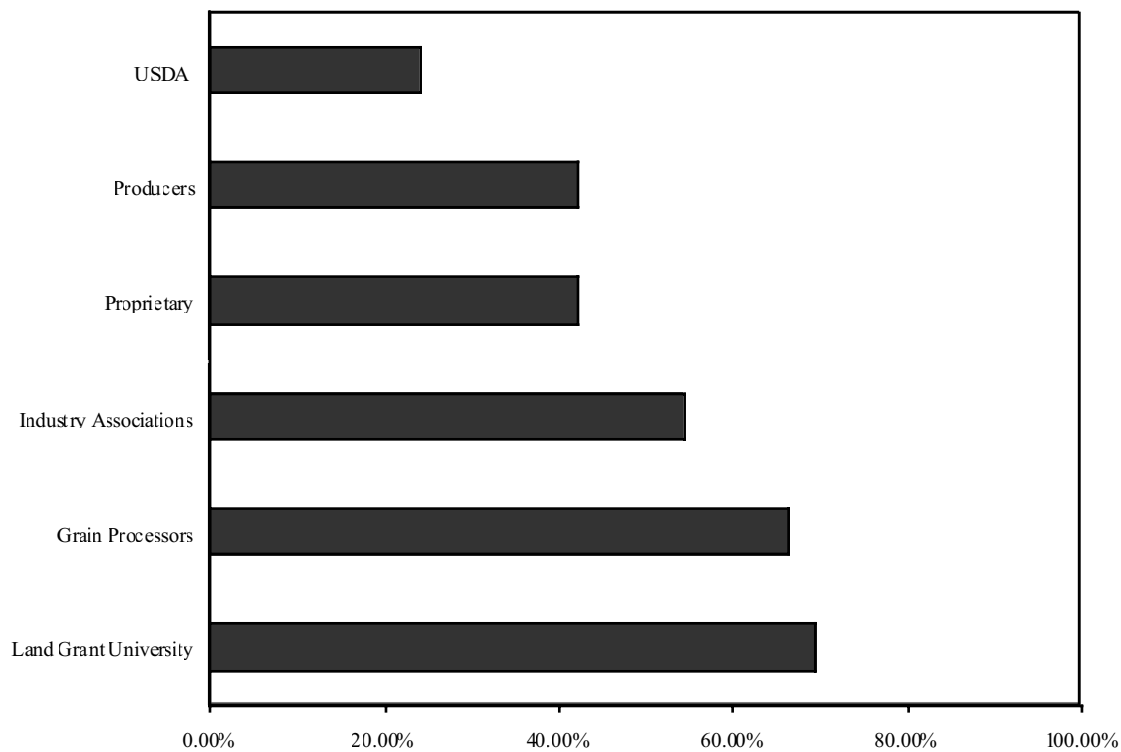


Figure 1. Sources of Information Used by Survey Respondents

*Matt Domine is a M.S. graduate research assistant in the Department of Agricultural Economics. Michael Boland is an associate professor of agricultural economics. Tim Herrman is an associate professor of grain sciences and industry.

This publication was funded by the Kansas Corn Commission, Kansas Grain Sorghum Commission, and Kansas Soybean Commission.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Contribution No. 02-41-D

August 2001

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