

3

Comparison of Grain Marketing in Major Grain-producing Countries

Vera Krischik, USDA-FGIS and the Institute of Ecosystem Studies

This chapter evaluates handling practices, technologies, institutions, and government policies affecting grain quality. Major differences exist between countries in the use of technologies, inspection, and policy (Tables 1 through 5). The remainder of the chapter focuses on the comparison of the U.S. system to other grain-producing countries. This chapter comes from a study by the Office of Technology Assessment, Congress of the United States. Two published reports containing the results of the study are available for purchase. They are “Enhancing the Quality of U.S. Grain for International Trade,” and, “Grain Quality in International Trade: A Comparison of Major U.S. Competitors.”

Differences Between the U.S. and Other Grain-marketing Systems

Policy

The United States farm price policy affects grain quality in at least two ways: 1) it provides economic incentive for both yield and quality, and 2) it provides economic incentive for on-farm storage. In other countries, premiums and discounts are not reflective of market conditions. In the U.S., even with price differentials, the economic incentive is for yield, and low-quality grain moves into government loan storage programs.

On-farm storage is a unique characteristic of the U.S. and Canadian systems. This allows grain to enter the market channel with a greater likelihood that it will be handled and stored with a minimum of quality deterioration. Other countries do not provide incentives for on-farm storage. In fact, Australia has built its entire system around the concept of managing the grain to maintain quality.

Another distinguishing characteristic of the U.S. system is that grain has the potential for carry-over from one year to the next—sometimes for as long as three to four

years. Other countries do not have the storage capacity for such carry-over. This forces the marketing of most grain within a year of production and nearly eliminates any problem regarding quality.

Institutions

The U.S. grain system has three major institutional characteristics regarding quality:

- 1) lack of a seed variety development and release program,
- 2) lack of a variety identification mechanism, and
- 3) no minimum receival standards for grain.

These major, fundamental differences from other grain-exporting countries have a considerable influence on quality.

Seed Variety Development and Release. Plant breeding programs for corn, soybeans, and wheat are in use in both the public and private sectors in the United States. A loose mechanism exists for the development and release of new varieties. Committees, particularly at land-grant schools, can evaluate new varieties, but there is no state or federal involvement in any formal way. The government basically sets no formal criteria for release. The criteria come indirectly through the price support program, which emphasizes yield and the agronomic characteristics to achieve higher yields. In contrast, governments of other countries have formal input into the criterion for development, release, and approval of new varieties. For wheat, quality is a major criteria considered in the release of new varieties.

Variety Identification. In some countries (mainly in France and Australia), not only is variety controlled for use by farmers, but variety is also important as a factor in

determining end-use value. An important feature of the French marketing system is that variety is often a contract term. In practice, varieties are specified as either an individual variety, a category of varieties, or excluded varieties. Given that varieties are generally not distinguishable by visual inspection, various mechanisms are used at the first point of receipt to ensure the integrity of variety specification. First, in most cases, the cooperative receiving the grain in France has sold the seed to the producer and knows its variety. Second, producers must declare the variety at the time of sale via an affidavit. Third, the buyer can perform a rudimentary testing procedure or request an electrophoresis test from a laboratory to verify the variety. By knowing the varieties at the time of receipt, country elevators are capable of binning by varieties or categories of varieties and selling on that basis. The United States has no mechanism for variety identification and instead relies on grade structure for segregating quality. This is becoming more difficult, since new varieties, especially of wheat, are not easily distinguishable.

Grain Receival Standards. As noted earlier, the United States is the only country that does not have minimal receival standards for grain. Producers can deliver any quality of grain and it will be accepted with appropriate discounts. In other countries, grain that does not meet the established minimum quality may be rejected at the first point of sale. Keeping low-quality grain out of the market channel eliminates most quality problems at the export elevator and reduces the opportunity for blending diverse qualities. Once low-quality grain is in the system, it is much more difficult to keep it segregated from higher-quality grain or to keep it from being blended with grain destined for export.

Technologies and Grain-handling Practices. The policies and institutional structure of the U.S. grain system provide the framework for various grain-handling practices. The technologies for producing and handling are quite similar everywhere. The main difference is that the

United States is slightly more efficient in their use. Differences do exist, however, as to when the technologies are used in the marketing channel.

A case in point is cleaning. Most countries, except the United States, clean grain at the first point of receipt. Canada and Australia are two exceptions, but for different reasons. However, upon studying the economic feasibility of cleaning grain in the country versus at export, Canadians will probably change their practices. Australia does not clean grain because, unlike in the United States, farmers deliver grain that does not need to be cleaned. Basically, no economic incentive exists to clean grain in the United States.

The other major handling practice in which the United States differs from all other exporters is in blending. Blending of grain over wide margins of quality to create a uniform product for sale is necessitated by the lack of any minimum receival standards. Blending does exist elsewhere, but not to the same extent. Blending in other countries is done over narrow ranges in quality. These countries basically have a uniform quality moving through the system at all times. The U.S. system lacks uniformity in quality throughout the market channel. When grain reaches export, blending is used in an attempt to produce a uniform quality meeting the buyer's specifications. The OTA survey of foreign and domestic buyers of U.S. grain clearly indicates that lack of uniformity between shipments is the buyers' biggest complaint.

References

- U.S. Congress, Office of Technology Assessment, Enhancing the quality of U.S. grain for international trade. OTA-F-399 (Washington D.C., U.S. Government Printing Office, February 1989).
- U.S. Congress, Office of Technology Assessment. Grain quality in international trade: a comparison of major U.S. competitors. OTA-F-402 (Washington D.C., U.S. Government Printing Office, February 1989).

Table 1. Comparison of production technologies of major grain-exporting countries.

Activity	United States	Argentina	Brazil	France	Canada	Australia
Soils and topography . . .	Major production areas are on stable soils. Low erosion. Fertility stabilized. Soybeans usually incorporated in a rotation with corn or other crops. Winter wheat grown under dryland conditions.	Flat, fertile soils in the corn belt. Rolling land farther south in wheat and sorghum area. Long rotations, including legume pasture. Soybeans and wheat are often double-cropped.	Expanding production on newly cleared soils. Long slopes, year-round erosion, and leaching create more problems in maintaining fertility. Extensive terracing required. Continuous soybeans not unusual in Parana and Mato Grosso do Sul.	Major production areas for wheat located north and southwest of Paris on stable, low-erosion soils. Rolling land farther south in corn-producing area.	Wheat grown for export in four soil zones in western Canada. All wheat grown under dryland conditions.	Major wheat production areas include southern and eastern coast, and western Australia. Rolling, dry land. Extended rotations with clover.
Cultural practices	Fertilizers, insecticides, and herbicides used as needed. Mechanized soil preparation, seeding, and cultivation.	Limited use of fertilizers on corn, increasing use on wheat. Limited use of herbicides and insecticides. Mechanized tillage seeding and cultivation.	Fertilizers, insecticides, and herbicides used as needed. Mechanized soil preparation, seeding, and cultivation.	High use of fertilizers, insecticides, and herbicides. Mechanized soil preparation, seeding, and cultivation.	Fertilizers, insecticides, and herbicides used as needed. Mechanized soil preparation, seeding, and cultivation.	Phosphatic fertilizers, insecticides, and herbicides used as needed. Mechanized soil preparation.
Harvesting	Self-propelled combines. Wheat crop in Northern plains is swathed before harvest.	Self-propelled combines.	Self-propelled combines.	Self-propelled combines.	Self-propelled combines. Wheat crop is swathed before harvest.	Self-propelled combines.
On-farm storage	On-farm storage available for about 50 percent of corn and soybeans.	Only 5 to 10 percent stored on farms. Only very large farms use on-farm storage.	Virtually no on-farm storage.	Very little on-farm storage.	On-farm storage for the majority of wheat.	Virtually no on-farm storage.

Source: Office of Technology Assessment, 1989.

Table 2. Comparison of handling technologies and practices at first point of receipt of major grain-exporting countries.

Activity	United States	Argentina	Brazil	France	Canada	Australia
Receiving	Truck dumps and hoists for virtually all farm wagons and trucks.	Truck dumps and hoists at larger facilities. A few receiving stations lack hoists. Waiting lines are common at harvest.	Truck dumps and hoists at larger facilities. Many vehicles unloaded by hand.	Truck dumps and hoists for farm wagons and trucks.	Truck dumps and hoists for farm wagons and trucks.	Truck dumps and hoists for farm wagons and trucks.
Drying	The majority of corn is dried and stored on farms. Most of the corn delivered at harvest is dried by first handler in gas-fired dryers. Little drying of soybeans or wheat.	Majority of corn and some soybeans and wheat are dried in high-temperature dryers. Nearly all country elevators have dryers. Usually oil-fired.	Majority of soybeans dried. Wood and coal used for fuel.	Some drying of wheat if harvested about 15 percent moisture. Majority of corn dried with high-temperature dryers similar to those used in the U.S.	The majority of wheat is dried and stored on farm. Propane dryers are most common.	Generally, wheat does not need to be dried. No dryers at bulk handling authority (BHA) facilities.
Cleaning	Generally, grain is not cleaned when it comes off the farm. It is placed in bins according to quality so that it can be blended with grains of different quality when loaded out.	Since there is a premium for No. 1 grain, most grain is cleaned to less than 1 percent foreign material.	Soybeans that exceed Brazilian export quality (foreign material 1 percent) are cleaned. Corn is cleaned to less than 1 percent.	Most wheat cleaned going into country elevator and come cleaned going out. Corn routinely cleaned because of broken kernels.	Very little cleaning done at first point of receipt.	Generally, wheat does not need to be cleaned. No cleaners at BHA facilities.
Storage	Flat and upright storage. Upright predominates.	Flat and upright storage. Determined by relative costs and handling requirements.	Flat and upright storage. Flat predominates.	Upright storage predominates. Grain often turned and sampled for end-use quality tests. Also use flat storage with numerous vertical bins.	Vertical cement bins; flat storage and steel tanks. Vertical predominates.	Upright, flat, and bunker. Predominance of any type varies by state.
Handling	Use augers, conveyors, belts, and vertical legs.	Use augers, conveyors, belts, and vertical legs.	Use augers, conveyors, belts, and vertical legs.	More use of chain conveyors than belts.	Use augers, conveyors, belts, and vertical legs.	Use augers, conveyors, belts, and vertical legs.
Transportation to ports	Trucks for short hauls. Rail and water for long distance.	Truck and rail choice determined by cost and shortage of rail service. Barge available for movement to Buenos Aires.	Truck predominates for all distances. Water available only in southern district moving beans to Rio Grande do Sul.	Grain predominately transported by truck.	Grain predominately moved by rail over long distances.	Most wheat is moved by rail, some by truck.

Source: Office of Technology Assessment, 1989.

Table 3. Comparison of handling technologies and practices at export of major grain-exporting countries.

Activity	United States	Argentina	Brazil	France	Canada	Australia
Storage	Vertical storage with multiple bins, high speed in and out. Segregated by quality to expedite blending at time of shipping.	Vertical silos predominate. few bins for quality segregation.	Vertical and flat storage. Small number of bins limits segregation by quality.	Upright bins predominate; stored according to end-use qualities.	Vertical, cement bins predominate. Blending is very limited-grades must be kept separate.	Vertical storage segregated by quality.
Drying	Most export facilities have large drying capacity. Corn is often dried if received directly from farmer, but soybeans and wheat are seldom dried.	Grain dried by first handler; dryers at export are seldom used.	Grain dried by first handler; dryers at export seldom used.	Very few export elevators have dryers; grain is conditioned by first handler.	Most export facilities have modest drying capacity.	No dryers at export facilities.
Cleaning	Most export facilities have capacity for cleaning. Grain (mostly corn) often cleaned prior to exporting.	Grain cleaned by first handler. Relatively small capacity cleaners.	Grain cleaned by first handler. Little or no cleaning capacity.	Most export elevators do not have cleaners; grain cleaned by first handler.	Most cleaning of wheat is done at export.	No cleaners at export facilities.
Blending	Normal practice. Economic incentive for blending of wide range of quality due to the extremes in quality of grain accepted into the system.	Limited blending because of uniform grain received and lack of physical facilities for blending.	Limited blending because of uniform grain received and lack of physical facilities for blending.	Some blending of wheat moving to export, but no incentive to blend wide margins of differing qualities.	Blending at primary elevators, but at export only 2 percent of higher grade can be a blend from a lower grade.	Limited blending at export but only for a few factors.

Source: Office of Technology Assessment, 1989.

Table 4. Comparison of institutions and regulations affecting grain quality of major grain-exporting countries.

Activity	United States	Argentina	Brazil	France	Canada	Australia
Seed variety control . . .	No state or federal control. Release of varieties influenced to some extent by land-grant universities. The market largely determines adoption of varieties.	Committee of government and industry must approve agronomic properties. Quality factors of minor influence.	Committees with broad representation direct research and approve varieties. Quality is potential criterion, but not currently effective.	Formal mechanism exists that regulates release of varieties based on agronomic and quality criteria.	Formal mechanism used to license new varieties. Agronomic and quality criteria given equal weight in testing new varieties.	Formal mechanism followed as a prerequisite for release of varieties. Quality and agronomic criteria are used.
Grain receival standards	None. All types of quality are accepted with appropriate discounts for low-quality grain.	Grain not meeting a specific minimum quality (Condition Camara) is rejected at first point of sale.	Soybeans not meeting a minimum quality are rejected at first point of sale.	Grain not meeting export contract specifications can be rejected by surveying company or receiving elevator.	Developed eight grades for CWRS to differentiate quality. Lowest grade goes to feed market.	Wheat must meet minimum quality standards. If not, it is allocated to feed market.
Marketing by variety . . .	No mechanism exists for variety identification.	Variety is not identified in marketing channel.	Variety is not identified in marketing channel.	Very common. Variety often specified in wheat contracts.	Licensed grain must be visually distinguishable.	Very common-use variety control scheme to facilitate segregation by classes.
Grain inspection authority	Federal Grain Inspection Service (FGIS. U.S. Department of Agriculture).	Junta Nacional de Granos - Government agency responsible for agriculture.	Private inspection agencies.	Private inspection agencies.	Canadian Grain Commission.	Export Inspection Service of Department of Primary Industry.
Grade standards	Official standards established by the FGIS.	Official standards established by Junta.	Official standards are not used in export. Quality is based on Association Nacional dos Exportadores de Cereais contract.	No official standards. Only official quality criteria are requirements for intervention mechanism.	Grain standards established by Canadian Grain Commission.	Official standards established by Department of Primary Industry.

Source: Office of Technology Assessment, 1989.

Table 5. Comparison of government policies affecting grain quality of major grain-exporting countries.

Policy	United States	Argentina	Brazil	France	Canada	Australia
Price	Loan rate is principal price policy. Includes premiums and discounts for major grains, but has not been responsive to market conditions.	Government establishes minimum prices for farmers and exporters. Government also establishes premiums for high-quality grain.	Government establishes a minimum price to planting. It is adjusted during the crop year to account for inflation and political pressure.	Key policy is European Community Intervention price, which includes premiums and discounts for quality factors. Lower qualities of wheat equated to feed values.	Initial producer price is the principal price policy. Separate prices established for each grade of grain. Lower qualities of wheat equated to feed values.	Guaranteed minimum price (GMP) is key price policy. It is established by class and provides differentials for quality. Lower qualities of wheat equated to feed values.
Farm storage	Farm policy in past decade has encouraged extensive on-farm storage and inter-year storage.	Government policy through pricing does not encourage on-farm or inter-year storage.	No incentive for farmers to store on farm.	Farm policy through the Common Agricultural Policy (CAP) has not encouraged development of extensive on-farm storage. Also relatively limited inter-year storage due to CAP.	Producer deliveries are regulated to primary elevators via quotas. On-farm storage is substantial.	Use of GMP provides no incentives for delivery in post-harvest period, leading to minimal use of on-farm storage.

Source: Office of Technology Assessment, 1989.