

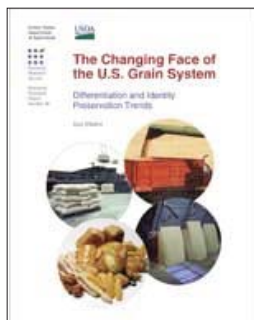
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The Changing Face of the U.S. Grain System: Differentiation and Identity Preservation Trends

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The U.S. grain system is increasingly marked by product differentiation and market segmentation. More specialty crops now require either some form of segregation or full-scale identity preservation to keep them separate from conventional commodities. Market segmentation within the grain system is driven by the need to preserve its market value, or ensure purity of the product. Internationally, U.S. grain markets must increasingly conform to a new regulatory environment reliant on traceability and identity preservation.

What Is the Issue?

Differentiated grain markets differ markedly from those for commodity grains. The commodity market is characterized by minimum common standards, a large number of buyers and sellers, and high flexibility. Price is the primary coordination mechanism, with commodity exchanges often the locus of price discovery. Pricing is with reference to standard grades (e.g., number 2 yellow corn) that are broadly accepted, enhancing market fluidity. By contrast, differentiated grain markets have fewer buyers and sellers, higher costs for segregation or full-scale identity preservation, and specific quality standards, compounded by higher risks in production and marketing. Differentiated grains usually command price premiums, based on the extra costs incurred by producers and shippers and willingness to pay at the processing or retail level. This report examines the economics of grain differentiation, including the cost implications of different protocols, the unique risk factors of adopting IP (identity preservation) grains, the use of contracts, and the role of government as a provider of market information and facilitator of product-differentiated markets.

What Did the Study Find?

To preserve the identity of a specialty crop, segregation from commodity grains or oilseeds is required. In some cases, this is necessary to protect purity and to preserve the value of the specialty crop. In other cases, the goal is to prevent contamination through accidental commingling (for example, biotech or not), or to protect products that are approved only for certain uses (for example, industrial use only).

The cost structure for IP grains differs with the degree of segregation and/or IP required. For high-value grains, costs encompass both segregation and identity preservation in the supply chain, and the costs to mitigate risks specific to IP grain markets. Volume shipped, shipping method, tolerance levels, testing, and documentation requirements can influence segregation costs. Costs

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associated with risk mitigation depend on the type of specialty crop as well as the purity level. Lack of compliance with a product specification can lead either to a price discount or rejection of a shipment by buyers.

Price setting under an IP grain system is characterized by premiums or discounts relative to standard commodities, whether or not production and marketing is under contract. Premiums are affected by various factors, including the proximity of suppliers to buyers and the cost and availability of substitutes. For many trait-specific crops, price premiums rise or fall depending on supply conditions for the generic commodity.

Differentiated grains require more coordination between growers and handlers or processors, and more sharing of information. This arises from the trait-specific quality attributes of IP grains: within the supply chain, information must be conveyed about raw materials, key ingredients, and production/manufacturing processes. Assurance of product quality and authentication of process/product claims is often required. Farm product suppliers (for example, seed producers) must demonstrate that product attributes are verifiable and show supporting documentation.

Production contracts are important for trait-specific grain to ensure that the attribute-specific commodity is delivered and that predetermined management practices are used. For the producer, contracts can ensure a return adequate to cover costs of identity preservation and any yield drag associated with trait-specific varieties. Contracts can also ensure that there is a market for a niche product.

Production and marketing of trait-specific grains involves risks associated with price, quality, and information. Testing and documentation bring greater transparency to the transactions (in terms of quality and production processes), but the loss of anonymity also exposes producers and handlers to new risks. Farmers' management ability can affect both yield performance and proficiency with contracts and relationships. On the buyer side, contracts help meet the demand for specific product qualities, improve cost efficiencies of product processing, and reduce transaction costs.

Risks are typically higher for specialty crops than for generic crops. Non-GM crops subjected to testing run the risk of rejection. Organic grain can be accidentally contaminated. Pharmaceutical crops are not licensed for food/feed use, so risk of contact with the food supply can make their handling far more costly. Sophisticated risk management practices are required to minimize the chance of potential gene outflow. This entails a closed-loop system with rigorous quality control and a tight chain of custody.

Increasing grain differentiation in the U.S. food and feed industry may put new demands on government, but it is not clear whether USDA's traditional roles in commodity markets should be extended to specialty grains. The collecting of price information for commodities is not easily extended to specialty grains, which are heterogeneous, small in scale, and locally concentrated. Moreover, price information can be proprietary, established through private supplier-buyer contracts. Likewise, USDA-approved grades for specialty grains may not be justified since desired traits are idiosyncratic.

As differentiated grain markets expand, the U.S. grain industry faces new demands for identity preservation, segregation, and product tracing. This will require adaptations in grain production and handling, closer market coordination, more extensive information systems, new risk management tools, a better understanding of costs, and more third-party services for auditing, verification, and quality assurance.

How Was the Project Conducted?

The project was based on an extensive analysis of the literature covering industry case studies, academic research, and government documents. Key findings—especially those relating to farm risk management, cost of segregation, and IP market dynamics—are drawn directly from analyses conducted at the Economic Research Service with outside collaborators.