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Role of Traditional Ag Markets: The Dry Edible Bean Industry

A major change underway in the U.S. food and agricultural sector is the rise of the production and marketing of products with specific characteristics. As more products and uses are developed, and as consumer tastes and preferences change, niche commodity markets will become increasingly important. As a result, agricultural markets are becoming more complex because they involve a wider range of differentiated commodities and uses.

Prices for standard commodities have long been the basis for signaling quality and product specification through market channels. The classic example is corn, which has traditionally been traded using broad quality standards such as U.S. #2. But broad quality grades that define basic commodities often do not adequately describe products destined for specific uses and niche markets. In the case of corn, part of the market in recent years has segmented into different value-enhanced products (e.g., high-oil, high-starch, waxy, and organic).

Conventional wisdom is that as non-standard products proliferate, they will be traded primarily with the use of production contracts, rather than through "spot markets" or marketing contracts.

Production contracts shift many of the management decisions to the buyer of the commodity. These contracts typically specify how the crop is to be produced—including the variety grown, inputs used, and timing of planting and harvest—and the compensation the grower will receive. This enables buyers to ensure that they are receiving the correct product for the niche market.

In contrast, marketing contracts usually specify only the price and quantity to be traded. With a spot market, there is no interaction between buyer and seller prior to the transaction, and the price is determined by current supply-and-demand conditions.

Although use of production contracts may expand, evidence from the U.S. dry bean industry indicates that spot-market-based transactions can be used for a far wider group of commodities than previously thought. Exploring the dry edible bean market sheds light on how changes in product specifications influence market transactions and why agricultural markets are changing.

Verifying Product Specifications

Increased consumption of processed foods, greater demand for ethnically diverse meals, and greater demand for higher quality food products have led to changes in industry specifications for dry beans. Traditionally, dry beans were traded using broad USDA-style grades. Now such grades are being replaced by specifications that are more complex and that more clearly reflect the types of products consumers are demanding.

For example, canning firms in the industry have developed their own product specifications, which vary from firm to firm. As a result of changing product specifications, trade between farmers, elevators, and canners now involves a high level of interaction between market participants (canners that purchase beans from elevators, which purchase beans from farmers).

Product specifications in the dry bean industry can be separated into three general categories. The first category consists of product attributes commonly found in USDA standards (but with more stringent tolerance levels) such as specifications on foreign matter, moisture content, broken seeds, color, and uniformity of size.

The second category is similar to the first but includes a specification for post-canning quality. Canning quality, or seed integrity, determines the appearance of the product after it has been canned. Because seed integrity consists of so many variables, it is difficult to develop an objective pre-canning test that identifies the beans' quality (which is why it has not been included in USDA specifications). Seed-coat checks—defined as small breaks in the seed coat—are an objective measure commonly used for this purpose. Unfortunately, seed coat checks do not always predict post-canning quality, and there is no consensus on what constitutes a seed coat check. The third category is specifications for organic dry beans, a small segment of the bean industry.

An important factor in determining what form of marketing will prevail (i.e., spot market or production contract) is related to how easily buyers can verify that their

specifications have been met. This varies by category.

Specifications in the first category (e.g., foreign matter or moisture content) are far tighter than USDA's, but one can easily test for them. This makes trade operate smoothly. Because it is easy to verify these product quality characteristics, the buyer can choose not to purchase from suppliers who are unable to provide the desired quality. In addition, price premiums can easily be used to induce growers to provide the desired product.

The canner-elevator relationship for category 1 is fairly simple. A canner issues a specification that defines tolerance levels for different attributes, and the elevator fills the order. Very little further interaction is required. Upon receiving a shipment, a canner inspects the product to see if it meets specification. Since the attributes are easily checked, the elevator has a powerful incentive to meet the canner's specifications. The elevator-farmer relationship for category 1 is also fairly simple. The fact that an elevator can easily identify the needed attributes means it can offer premiums to farmers who grow products with these attributes.

Product attributes in category 2 are slightly more difficult to test for because there is no standard definition for canning quality. Different canners have various expectations of canning quality and require elevators to perform various tests on the beans they purchase. Many elevators have developed canning labs to test the product to make sure it meets a given canner's specification. If an elevator is unsure whether or not the canning quality specification has been met, it will send a sample to the canner for product evaluation, which includes canning trials to see how the beans actually perform. These canning trials accurately identify quality, making seed integrity an observable attribute.

The relationship between canners and elevators regarding the second category of dry bean attributes is far closer than for category 1, because it is difficult for canners to specify exactly what they wish to purchase. A high level of interaction and coordination is required to communicate what product is needed and to agree upon a price, which is a very subjective process. However, while these specifications are complex, a production contract is rarely used. Instead, canners test products and monitor shipments. This works effectively because the specifications are observable.

Canning quality specifications also complicate the farmer-elevator transaction, but they do not necessitate the use of production contracts. Because farmers have a tremendous amount of control over canning quality—which is affected by seed variety, timing of harvest, and handling procedures—elevators have developed education programs to show farmers what types of products to grow, and offer premiums for high quality beans. Elevator managers have found that education programs are more effective than production contracts in obtaining nonstandard goods because a contract alone does not guarantee quality.

In contrast, attributes in the third category—specifications for organic products—are difficult to observe. There are no tests that can be used to verify that a product is organic, which complicates marketing relationships.

Interestingly, farmers growing organic products have moved into the elevator stage of production or "forward integrated." Trade for organic products requires a significant amount of monitoring for compliance, and forward integration eliminates one stage of the supply chain that the canner must oversee. The level of coordination between buyer (canner) and seller (farmer) is very high because it is impossible to tell by observation if the product being traded is organic.

Facts on Dry Bean Production

World's largest producers

India (25 percent of world total), Brazil (15 percent), and China (just over 10 percent), U.S. (10 percent), Mexico (10 percent)

Dry bean varieties grown in the U.S.

Most prominent: pinto, navy, great northern, kidney

Others: lima, blackeye, black, cranberry, garbanzo, pink, small red, small white

Major producing states

North Dakota, Michigan, Nebraska, California, Colorado

Pinto production

North Dakota (45 percent of U.S. total), Colorado (20 percent), Nebraska (10 percent)

Navy production

Michigan (57 percent), North Dakota (26 percent), Minnesota (10 percent)

Great northern production

Nebraska (85 percent), Idaho (6 percent)

Light red kidney production

California (23 percent), New York (20 percent), Nebraska (17 percent)

Dark red kidney production

Minnesota (45 percent), Michigan (16 percent), Wisconsin (16 percent)

Because all organic products must remain identity preserved and cannot be co-mingled with any other dry beans, organic beans are traded exclusively through contracts between growers and canners.

Even with contracts, canners are still concerned that growers might provide a non-organic product. To address this concern, buyers visit growers several times a year (even though growers have organic certification) to make sure that they are providing a product that is truly organic.

Implications for Commodity Marketing

If the desired attributes for a commodity can be identified through inexpensive testing procedures, then traditional market forces are more likely to coordinate transactions between buyers and sellers. But when testing procedures are not available, are too costly, or are difficult to use (as with organic beans), spot market trades encounter difficulties, with the potential for a supplier to provide an inferior product without the buyer's knowledge. In this case, it may be necessary for traders to engage in production contracts that clearly specify the product that is desired and how it is to be produced and handled.

Some nonstandard agricultural products with observable attributes (e.g., high-oil corn and waxy corn) are traded via production contract. However, this strategy is often employed by private firms to capture returns from seed development rather than to achieve efficiency in moving nonstandard products between buyers and sellers. This incentive to contract is not present in the dry bean industry because new seed varieties have traditionally come from land grant universities.

Evidence from the dry bean industry suggests that some observers may be underestimating the ability of traditional markets to handle a growing array of agricultural products. Even as commodity specifications have become increasingly complex, the use of spot markets and marketing contracts continues to effectively coordinate buying and selling of nonstandard dry beans. Rather than replacing market mechanisms with production contracts, buyers use education programs and monitoring activities to ensure customer demands are met. AO

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