



Standards and corporate reconstruction in the Michigan dry bean industry

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Abstract. Since the turn of the last century, Michigan farmers, elevators, and state government have used production and process standards to shape the dry bean industry to their interests and set a worldwide standard for quality dry beans. Over the last 20 years, however, multinational agro/food firms have introduced their market criteria into standards setting, and recent changes in Michigan bean standards largely accommodate the interests of these firms. A review of the changes in these standards over time allows us to explore how concepts of accountability and control improve our understanding of changes in the structure and operation of food production and marketing. What is the measure of state government accountability to corporate capital and to the state's bean farmers? In what ways can farmers use standards to re-assert their priorities and gain a greater measure of influence over marketing? What challenges do changing quality standards pose for public research as well as for the institutions representing Michigan farmers and elevators?

Key words: Accountability, Bean elevators, Dry beans, Food and agricultural standards, Grades, Negotiation, Processors and canners, Regulations

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Introduction and problem

During the summer 1999, over 250 bean growers in the Thumb area of Michigan launched the Michigan Edible Bean Cooperative. The growers established this cooperative elevator as a way for them to get “a bigger piece of the pie” by taking more control over the conditions for marketing their beans (Battel, 1999). As a new generation cooperative, it is part of a broader, contemporary movement by many of the state's and the region's farmers to add and capture more value from their production (Cobia, 1997; Agri-Food Research & Development Initiative (ARDI) and Manitoba, 2000).

In many ways, this new cooperative follows in a long tradition of efforts by farmers to secure a greater share of the consumer food dollar and to increase their profits by controlling their products from production through collection or assembly and the initial processing, or cleaning and sorting. Beginning in the early

1900s, for example, a farm group called the Gleaners, and later the Michigan Farm Bureau, helped farmers to create elevator cooperatives throughout the state. Through these kinds of efforts, by the mid-1930s some of the strongest elevators in the State were cooperatives, and approximately 90 of them were united in a Central Exchange (Hedrick, 1931, 1938).

The earlier farmer cooperative movement, however, occurred during an era of proprietary capitalism when local, entrepreneurial elevator operators relied on specialized features of their storage and sorting facilities as well as the location or “place” of operations to distinguish and create a market for their product. Moreover, during this earlier era growers commonly relied heavily on these local, country elevators for annual production loans. In today's era of corporate capitalism, on the other hand, growers confront two significant and different challenges. The first involves maintaining a competitive position in

an industry where the level and conditions of capital investment have spurred farm consolidation and the corporate, vertical integration of the food and fiber system. The second involves bringing the craft of production and the significance of place back into the definition of a “Michigan dry bean.”

A study of how private firms, in collaboration with private and governmental agencies, have used standards to create Michigan dry beans as a valued commodity helps us to consider the dimensions of power in the corporate restructuring of the Michigan dry bean industry. Specifically, what are the opportunities for the independent family farmer to re-assert popular control over this process? What are the policy issues posed for public research and extension as well for those groups and agencies representing state growers and elevators?

This paper presents some of the results from the first of four commodity studies undertaken by the Michigan State University Institute for Food and Agricultural Standards with grants from the National Science Foundation and the Michigan Agricultural Experiment Station.² In addition to documentary research (published articles, books, reports, official regulations, and archival materials), the discussion in this paper draws on observations of grading procedures, participation in industry meetings, interviews with Michigan growers and elevator operators, as well as with some of the major buyers or canners of Michigan dry beans.

Thinking about food and agricultural standards – some preliminary ideas

Everyday we use standards to evaluate the quality of our food purchases. Whether these standards are embodied in a brand name or through a trusted relationship, they facilitate much of our daily business. Such standards are ubiquitous, and we spend little if any time thinking about them. For many economists, these standards are seen as ways to reduce the “transaction costs” involved in inspecting and verifying our purchases. This means that food and agricultural standards embody known rules of measurement and thereby provide the information required to order production processes, ensure consistent product quality, and facilitate the distribution of production around the globe (Jones and Hill, 1994).

The industrialization of agriculture and the focus of multinational agro/food firms on creating new and globally diverse consumer products encourages us to consider a second dimension of standards: how they are used to create markets. In addition to accepting standards as a way to reduce or eliminate personal,

local, and arbitrary considerations, Callon (1998) suggests that we explore how standards provide the structure and stability required for market competition to take place. These two dimensions of standards help us formulate a “negotiation model of standards” that can generate new insights in two inter-related domains: the relationships between science, technology, and institutions; and the empowerment of bean farmers, i.e., the opportunities for these farmers to exercise influence over decisions that affect their livelihoods. By drawing our attention to the different technical and economic points at which different actors exercise control, such a model may enhance our political understanding of the process of agro-industrialization. More broadly, the application of this model to the Michigan bean industry should improve our understanding of “who is going to have the power to make decisions about *what* food is produced, *who* will produce it, *where* and *under what conditions* it will be produced . . .” (Hendrickson et al., 2001).

Elements of a negotiation model

We start by considering agro/food standards as signposts that represent agreed-upon rules for both the production process and the product characteristics of a particular commodity. Like a stop sign, a standard conveys information. But in contrast to the determinate message of a traffic sign, a standard can be seen to embody “interpretative flexibility” that is expressed through three closely inter-related properties (see Latour, 1997).

First, agro/food standards stipulate a measure of discipline around which negotiations can take place. As rules, standards help us to monitor and order our exchange relationships. They help define the boundaries of discourse and decision. The discipline provided by standards, however, is not absolute, unambiguous, or universal. Instead, it moves to reflect the diverse values and political interests that emerge during continuing negotiations among multiple actors (Bowker and Star, 1999). Consequently, as an analytical tool, standards are a way to identify the play of interests and values in an agro/food system or a commodity sub-sector (Eymard-Duvernay, 1995). We can use standards as one way to explore whose interests are articulated or who has the power to define the boundaries of discourse and decision in an agro/food system.

Second, and closely related to the above feature, standards represent some value(s). They reflect a judgment made about a product for the purpose of economic exchange. Thus, products are not inherently commodities, but become so – or reflect “commodity candidacy” – as they manifest the values and interests negotiated by actors or organizations both within and

across different “domains of value” (Appadurai, 1986; Thévenot, 2000). In short, a bean is not just a bean; it is defined in different ways by different actors along the commodity chain, throughout its life from production through various processing and marketing domains.

Within any one of these domains, negotiations can be contentious. But when the discussions cross domains, and actors or organizations are unable to find sufficient grounds for agreement, the stage is set for major and continuing debates. In order to keep this from happening, actors in one domain of value may seek to enlarge their domain (e.g., through vertical integration) in order to accommodate other values (Eymard-Duverney, 1995). In this way, agro/food standards provide a means to explore the implications of these negotiations for different values in the domains of food quality, food safety, labor, and the environment.

Third, the debates, judgments, and standards used to define a product as a commodity must be understood within a particular social and historical context. As Appadurai argues, commodities have careers. That is, a commodity is not one kind of thing, but a phase in the life of some thing (Appadurai, 1986). This perspective allows us to see the production and exchange of a “commodity” along a continuum in which the value of a product is defined and redefined throughout its life history. More specifically, this continuum can be seen as a series of critical standards points at which decisions are being made affecting different interests with different ethical implications.

Following a brief overview of the history and nature of dry bean production in Michigan, we use the above ideas to explore how access to changing technology has allowed various actors to use and change standards for dry beans to accommodate their specific economic and livelihood interests. With the consolidation of the sub-sector around a few corporate interests, bean standards increasingly represent corporate interests. We focus on standards as a way to identify whose interests are being served in this process and what the implications are for independent family farmers, for representative institutions, and for public research.

Dry beans in Michigan

By 1828, settlers of English heritage from Indiana, Ohio, and upstate New York followed the “Saginaw Trail” and brought dry pea bean cultivation into the southern portion of Michigan’s Lower Peninsula. During this early “pioneer” period, farmers rotated dry beans, sugar beets, and potatoes, but limited their production largely to home consumption and local trade.

The US Civil War created a significant demand for dry beans as a staple food for the Union forces and pushed farmers out of these pioneer production practices and into more commercial production for export beyond local markets. At about the same time, the Michigan “Thumb” area emerged as the heart of Michigan’s bean and sugar beet industry. The lumbering industry and a series of great fires by the late 1800s had effectively cleared the land for more farming, and bean disease problems had become increasingly problematic in the pioneer bean counties in the central and southern parts of the state (Albrecht, 1993).

By the late 1800s, Michigan growers had taken the lead in national navy bean production (Shaffer, 1998), and both peacetime and war-related demands created regular markets for these Michigan beans for almost one century.³ After a series of difficult crop years and a declining market for navy beans as a food staple in the mid-1980s, the new Mexican market for black beans re-vitalized the Michigan bean industry and helped farmers to diversify their bean production. Currently, Michigan bean farmers can grow over 8 classes of dry beans.⁴ The most common classes of beans – navy, black, and cranberry – allow farmers the flexibility to plant on the same type of soils and use the same equipment (Kelly, 1999 – Interview notes).

Dry beans are not the major cash crop for any farmer in Michigan, and there are no farmers who rely on beans as their main source of farm income. Instead, beans are a complementary crop for farms that are organized primarily around sugar beets, livestock, and sometimes corn or soybeans for their principal income. Most bean farmers, however, have grown up in the Thumb area of Michigan, dry beans have been “in the family” for generations and the crop helps define who they are. Each year, the choice is less one of whether they should grow beans, but one of how many acres of what class(es) of beans to grow. Thus, farmers’ decisions depend heavily upon the demand expressed by, and information received from the elevators that buy their beans.

Standards, technology, and industrialization in Michigan dry beans

Our examination of dry bean production, harvesting, and processing suggests that the biological (plant) and machine (production and processing) technology assures that farmers and elevators depend heavily upon negotiation in their relationships. In so doing, the more general trend in American agriculture away from many small production and processing units linked by decentralized markets to fewer and larger firms increasingly linked by contracts or ownership

manifests itself differently in the dry bean industry. Dry bean farmers and elevators rely on a variety of chemical, mechanical, biological, and electronic technologies that allow them to attain both cost (economies of scale) and marketing advantages (sufficient production) for different classes of beans. This technology allows both farmers and elevators “to meet standards of quality, uniformity, and cost” (Urban, 1991).

In contrast to the factory-like technology that characterizes much of the US poultry production and processing industry, the biological and mechanical technology available to dry bean farmers and elevators permits flexibility in production and processing decision-making. Since both growers and processors can exercise numerous, almost craft-like decisions, individual judgment and values continue to play an important role in how standards are applied in the relationship between growers and processors. For both sets of actors, this ability to draw upon and express their experience captures the essence of their professions and represents a key way to embody value in their products. Thus, in their contractual dealings, bean growers and processors have the incentive to adopt strategies that expand the value domains upon which standards are applied. More specifically, dry bean production and processing technology has allowed quality values to set the boundaries for negotiations between growers and processors.

Production, harvesting, and processing technology

Standards and biological technology

Since the late 1800s, quality standards have driven the development of biological technology. Three sets of quality standards distinguish the variety breeding and development program in Michigan, and in each case these standards help to define the different value domains for farmers, elevators, and canners.

The first set focuses on production standards related to disease resistance and growing cycle. This set of standards dates from the end of the 20th century when anthracnose and bean bacterial blight were the major concerns in the MSU bean breeding program (Albrecht, 1993).⁵ While yield is always an issue in breeding and variety development, this is a relatively “new” concern among Michigan farmers. It has taken second place for almost one hundred years to breeding for date of maturity and for fitting a variety into a farmer’s harvesting schedule. Michigan farmers prefer early maturing varieties that allow them to retain a measure of flexibility in their production practices. Elevators as well prefer earlier varieties, since an early harvest helps to assure the processing and shipment of higher volumes of navy beans through the St. Lawrence Seaway (Kelly, 1999 – Interview notes).

A second set of standards emerged with mechanized harvesting. As farmers began to use more mechanized equipment for pulling or cutting beans with a two-row, sub-surface knife, they expressed an interest in more upright (standing) varieties that permitted access with horse-drawn harvesting equipment. The introduction of this characteristic, however, created some unexpected side effects. Several years ago, one grower reported on the somewhat mixed blessing of the new upright varieties developed for mechanical harvesting:

When we first started farming [1949], the bean varieties were practically all vine-type beans; now they’re practically all bush-type beans. We used to get better yields with the navy beans on the vines! They were more work; the vines used to lay right down to where you couldn’t tell hardly where a row was. They’d all be tangled together and would plug everything up. It was a lot of work but you always got more beans than you get now. I’ve got to wonder if maybe it was not worth a little more work to get a little more beans (Michigan Bean Commission, 1981).

Improved plant architecture that permits easier harvesting continues to be a research theme. Michigan growers prefer varieties that stand up at maturity, that ripen uniformly, and that drop their leaves before pulling. All of these features ease harvesting and permit the delivery of a “cleaner” load to the elevator.⁶ As discussed below, the cleanliness of the beans delivered plays an important role in the grading decision (negotiations) and the price received by farmers.

The third set of standards deals with processing quality. When dry beans were sold in small packages for home preparation, breeders sought varieties with uniform size, shape, and color. When soaked, they had to take up water uniformly and present other “processing” characteristics, such as retaining wholeness and reasonable firmness in cooking and canning, and acceptable physical appearance, flavor, and color. Significant progress along these dimensions was not made until the introduction of the *Michelite* variety in 1937 (Albrecht, 1993). As home preparation has declined, the standards have shifted to canning quality. Today, if a variety does not meet canning standards along several lines, it is not released (Sterns and Reardon, 2002).

Harvesting technology

The development of field equipment that allows farmers to reap the benefits of mechanization while retaining their preference for flexibility in production and harvesting decisions, as well as enhancing

their ability to meet quality standards at the elevators, has also been an important feature in the development of the Michigan bean industry. As one grower commented over 20 years ago:

It's the machinery that's made beans a good crop Back when my father started raising beans we used a stationary bean thresher. A custom operator would set up the machine in your yard and you would bring the beans to the machine. The local farmers would be busy for days, helping each other with the harvest. In 1949, we bought a pull-type combine We used to do 4–5 acres of beans a day, but with (the Allis Chalmers gleaner), we can handle 5 acres an hour or about 30–35 acres a day" (Michigan Bean Commission, 1980).

Today, bean farmers have access to several types of harvesters, and most look for equipment options that allow them to handle different classes of beans, to operate under various weather conditions and time constraints, and to harvest cleaner and minimally damaged beans. The newer equipment, for example, permits farmers to make precise adjustments to harvesting equipment as harvesting conditions change.⁷ Thus, in addition to helping farmers fit bean production into their overall farming operation, the investment in either specialized or adapted harvesting machinery enhances the importance of each farmer's expertise in the combined production and harvesting process.

Processing technology

Setting the standard for Michigan dry beans has always involved a blend of investments by elevators in their processing machinery and in their professional expertise to judge the quality of the beans delivered by farmers. For almost 80 years, elevators relied principally upon simple, relatively low cost mechanical cleaning technology and upon considerable human skill in both grading a farmer's beans and in hand-picking or sorting beans by different grades (Hedrick, 1931). For many years this blend of mechanical technology and human skills was sufficient to allow Michigan elevators to pick and package their own brand of dry beans to retail suppliers or directly to local groceries. Elevators used standards of appearance, uniformity, and cleanliness to promote their product, but most consumers expected to pick and clean packaged beans before home preparation.

As the role of dry beans in the American diet declined, and as canners and processors were creating and capturing new markets for more easily prepared canned, processed, and frozen foods, elevators had to supply beans that conformed to somewhat different and stricter standards for size, integrity, flavor, color, and cleanliness. This meant that if elevators wanted

to stay in business, they needed to invest in more sophisticated mechanical and electronic cleaning and sorting technology that allowed them to improve upon and replace hand picking (Sterns and Reardon, 2002). Consequently, over a period of 20–30 years, canning and processing firms began replacing elevators as the standard setters for the Michigan bean industry.

More sophisticated electro-mechanical cleaning and sorting equipment has set the conditions for elevators to respond to canning and processing standards, but it has also strengthened the role for individual expertise in grading. Instead of supplanting individual judgment, the investments in more sophisticated technologies require continued reliance on human expertise ("the human eye") for grading beans and determining the basis upon which farmers will be paid for their delivered beans. Human judgment still determines what counts as a quality bean.

Critical standards point

Clearly, both the farmers and the elevators seek to maximize the earnings from their technological investments. But equally important, the ability to use more sophisticated technology reinforces the ability of each to rely upon, and express their different values during the negotiating process. This juncture, or critical standards point, is where the technologies in use, and judgments expressed by different actors converge. This is the point where the standards negotiated for the purposes of a specific exchange embody different values and interests arising from the farmer's and the elevator's investments in technology and expertise. In Appadurai's terms, this is one point when different values from different value domains are applied to define a dry bean. With respect to the biological and mechanical technology in use, elevators seek a product that allows them the most efficient use of their processing technology, while farmers likewise seek the maximum benefit from the use of their production and harvesting technology and expertise.

In order to mediate these different domain interests, both commercial and cooperative elevators engage in several practices. At the time or point of exchange, i.e., when the farmers deliver beans to the elevator for sale, the elevators commonly rely upon only the most senior, experienced personnel, usually an elevator manager, to do the grading and negotiate the exchange. This individual uses three criteria for grading a farmer's beans. As specified in the State of Michigan Regulation No. 523 (1987), a load of beans is graded in terms of stipulated levels of foreign matter (FM), moisture, defects, damage, average color, and overall consistency of the beans. The grader's decision based on the first two criteria – foreign matter and moisture level – is subject to empirical verifica-

tion. The elevators use various mechanical screening devices and an electronic moisture meter. A direct visual inspection, or pick, however, is the means by which the other criteria are applied. Consequently, the grader's judgment of quality will determine the mutually satisfactory nature of the exchange. For the elevators, this personal judgment provides some consistency in grading by someone who understands the capacity of the elevator for cleaning and drying.

For the farmers, the "pick" – the personal judgment – varies widely among elevators. As one farmer commented, 10 different graders can make ten different picks. Consequently, a senior grader – and usually someone from the area – can help in building trust and a continued business relationship. In the absence of such a relationship, farmers shop around their production among different elevators – even though they recognize that the consolidation of elevators renders this strategy increasingly ineffective.

The elevators recognize that despite their efforts to rely on personal expertise and trust in order to acquire a more uniform product, the uncertainty in grading does not provide an incentive for farmers to invest in quality beyond what they feel can be negotiated (Hennessy, 1996). In response many elevators seek to increase this incentive through newsletters or winter season training workshops that improve a farmer's knowledge base and expertise. That is, many elevators seek to enlarge their domain by accommodating to farmers' values.⁸

To summarize: the biological and mechanical technology available to farmers permits considerable flexibility, and expands the importance of their personal expertise in production decisions. Similarly, the electro-mechanical cleaning and sorting technology helps elevators respond to changing and more rigorous demands from canners and processors, and reinforces the importance of the expert personal judgment in grading the beans delivered by farmers. The grading process continues to be a point for negotiation, but the greater capital investment required for elevators to stay in the market has created a basis for consolidation among elevators that has resulted in fewer real opportunities for farmers to negotiate. The next section examines the establishment and evolution of the public and private institutional relationships that have helped to define and change the standards around which these negotiations take place.

Standards, institutions, and the creation of the Michigan bean industry

Standards and the emergence of the industry's institutions

Standards helped to lay the foundations of the Michigan bean industry by providing the basis for negotiating a broad, pro-regulatory, or corporate liberal consensus among national and state government, elevator owner/operators, and bean farmers.⁹ Comparable to business interests in other industries around the turn of the 20th century, Michigan bean shippers and processors established a voluntary membership association and then created dry bean standards to order their business affairs and set the terms for competition. In addition, by establishing their own standards, this business group deliberately fixed the terms for negotiating evolving regulatory relationships with both state and federal government.

In December 1892, a group of twelve firms who called themselves the Jobbers of Hand-Picked Beans met in Lansing and established the Michigan Bean Jobbers Association to cultivate friendly and social relations and advance the general interests of its members. Membership was open to anyone involved in buying, processing (hand picking), and shipping beans. In the early 1900s, the Association included over 100 members. By 1928–1929, the MBJA counted 258 members and approximately 70 associate members from wholesale grocers, bean brokers, canners, and firms dealing in elevator supplies (Hedrick, 1931; Albrecht, 1993).

By 1896, only four years after its inaugural meeting, the Association had agreed upon standards for the "Choice Hand Picked Pea Bean." The Association identified procedures for compulsory arbitration of commercial disputes between members and established a permanent Arbitration Board comprised of representatives from the National Canners Association, the National Wholesale Grocers Association, and the MBJA. Moreover, as a benefit of membership, the Association published daily bean prices, promoted the use of uniform sales and purchase contracts, issued bean storage receipts, and managed the statewide bean inspection service through six regional chapters.

The MBJA reviewed standards annually, but since significant advances in the variety development of beans would take almost 40 years, the grades focused more on the type of process for selecting beans than on the variety-defined characteristics of the beans. By the early 1930s, for example, beans were still being graded as Choice Hand Picked Michigan Pea Beans, Prime Hand Picked Michigan Pea Beans, Michigan Choice Re-cleaned Pea Beans, Fancy Screened Michigan Pea

Beans, and Choice Screened Michigan Pea Beans. Beans in all grades had to be “sound, dry, and well screened” and were then distinguished by color and the percentage of splits based on whether they were screened or hand-picked.¹⁰

In response to Depression era efforts by the federal government to stimulate the economy, the MBJA gradually accepted a limited and largely instrumentalist regulatory role for government. The 1925–1935 decade was a period of “almost unprecedented economic difficulty” in Michigan farming and in addition to the widespread abandonment of farms, it created the first major shakeout among the almost 300 elevators that were scattered around the lower part of the state (Hedrick, 1938). To address this farm problem, the federal government Farm Board, through the Agricultural Marketing Act of June 1929, proposed establishing a single continental bean sales agency in St. Louis that would provide the marketing outlet for Michigan’s cooperative bean marketing elevators. This proposal immediately stimulated a swift reaction among the Michigan commercial elevator interests, including the Michigan Farm Bureau, to pre-empt federal plans through a business-state government alliance that would develop state-based solutions for state problems (Hedrick, 1938).

A year later in 1930, the Jobbers also successfully fought off proposed federal bean standards. Then in 1934, the association incorporated itself as the non-profit, Michigan Bean Shippers Association, and moved to establish a cooperative grading and inspection service with the Michigan Department of Agriculture. Public Act 91 (1938) of the Michigan Public Acts of 1915 insured the quality of beans to consumers and permitted MBSA inspection of beans under supervision of MDA in a new office within the department’s Bureau of Foods and Standards (Michigan Bean Shippers Association, 1983).

With the broad pro-regulatory consensus worked out between the members of the bean shippers and the state government by the end of the 1930s, it was only months after the end of World War II that the new public-private sector partnership would bring growers into their alliance through the Michigan Bean Producers Association.

Strengthening the alliance

With the establishment of the Bean Producers Association in 1946, the new business-government-grower alliance acquired the legitimacy and the means for making a series of intertwined economic and institutional decisions to benefit and enhance the state bean industry. Principal among these decisions was a collaborative public-private arrangement – the com-

modity check-off or assessment (cess) that would assure funding for a solid, state agricultural research and an aggressive marketing program. As the Jobbers had done almost 75 years earlier, this new alliance looked to setting the standard as a way to create and maintain a Michigan market advantage for dry beans that would directly benefit all members of the alliance.

A commodity check-off – Public Act 114 – the investment in agricultural research

In 1948, shortly after its creation, the Bean Producers’ Association launched the Cooperative Bean Disease and Breeding Program at Michigan State University (MSU) to fund and encourage variety development, cultivation, and harvesting methods, as well as food science research on dry beans. The same year, the USDA Agricultural Research Service joined with the Michigan Agricultural Experiment Station in a bean disease and breeding program.¹¹

In the early 1950s, Michigan farmers and shippers initiated a voluntary assessment plan to continue this agricultural research program at MSU. But it took another 15 years for the industry to garner enough popular support for a state-enforced check-off system on sales that would assure continued support for dry bean research, as well as finance marketing and promotional activities.¹² Under Public Act 114 of 1965, the Bean Producers Association became the Michigan Bean Commission – one of the first of a series of commodity check off programs in Michigan.¹³ Similar to other Michigan commodity check-off programs, the Bean Commission’s responsibility for collecting assessments is subject to a regular referendum among all bean growers.¹⁴

With funding from the check-off (mandated by PA 114) and a regular contribution from the Shippers Association, the Production Research Advisory Board, hosted by the Commission and composed of MSU researchers, shippers and growers, has always focused its support for research of direct benefit to farmers. The establishment in 1971 and continued joint support of the 120-acre Bean and Beet Research Farm illustrates the significance of this “farmer first” priority. As noted earlier, most bean farmers are also sugar beet farmers, and a research site jointly financed by the sugar beet and bean industries helps researchers respond to farmers joined bean and beet production concerns.

The Board must balance its response to farmers’ direct research needs, however, with attention to marketing priorities identified by processors and canners. As the Bean Commission recognizes, investments in technology must be based on the market understanding that “consumers don’t buy navy beans – they buy canned beans under various labels.” Consequently,

research to be supported must be designed with a clear view to its market contribution, or how it meets the product preferences of processors and consumers.

The investment in markets

This orientation to marketing directly influences the research program and the technology available to farmers in two ways. First, the Commission encourages the search for new varieties and different types of beans, as well as improved cultivation and harvesting practices. The ability of Michigan producers to respond immediately to the Mexican demand for black and pinto beans in the early 1980s, for example, was a direct result of the Commission's commitment to "new markets." Encouragement for a diverse variety research program allowed the Michigan industry to respond and to begin growing and processing more than one class of beans.

Similarly, the Commission encourages research that will help keep Michigan producers competitive with other new production areas. Until the 1970s, the Michigan dry bean industry self-assuredly assumed that few other areas of the country could challenge dry beans as "Michigan's crop." The dry bean blight in the mid-1970s and then the "wet years" of the 1980s, however, showed how quickly corporate agro-food interests could move their investments to the Red River Valley in Minnesota and the Dakotas in order to assure a stable supply of dry beans. Recognizing this need to compete as a reliable source of supply, the Commission continues to encourage several types of weather-related research, including rainfall patterns, frost dates, and temperatures.

Setting the standard – Regulation 523

Underlying all of its work to strengthen research, to assure a market supply, and to seek new markets, the Commission nevertheless has consistently publicized the quality standard of Michigan beans. As promoted by the Commission, Michigan bean standards capture the value of the history as well as the knowledge and experience in the production, marketing, and shipping of dry edible beans. Since 1938, State Regulation 523 has stipulated the criteria for defining Michigan's quality standards and laid the basis for generating revenue to support the state's certification program as well as the support for agricultural research.¹⁵

When bean farmers became more vocal members of the alliance in the post-WWII era, they pushed for revisions to the 1938 state standards that would reinforce the state government's role in assuring the superior quality of, and the unique identity for Michigan beans. Farmers and elevator operators agreed that the certification to "set the standard" for Michigan beans required mandatory grading, strict

sampling and labeling procedures, and stricter criteria for levels of foreign matter and levels of blending different types of beans.

As amended in 1987, Regulation 523 stipulates standards for 11 distinct classes of dry beans.¹⁶ Similar to earlier regulations, the "523 grades" focus on elevator processing criteria – defects and damage, blended or mixed classes, foreign matter, and average color. Equally important, the regulation calls for mandatory inspections by state certified inspectors and identifies the inspection procedures to be followed. As noted earlier, this regulation provides the "quality assurance" incentive for elevators to invest in efficient cleaning and sorting equipment and as well as in efforts encouraging the delivery of "quality beans" by farmers.

In addition to setting the terms of business, Regulation 523 embodies a set of political relationships that have assured accountability within the state-elevator-farmer alliance. The regulation stipulates the "rules of the game," the role played by all standards. But with state-enforced grading and certification that generates revenue for specific purposes, these rules become open to public discussion. In particular, state-sanctioned mandatory grading gives farmers a place at the table in discussions concerning the use of funds generated from grading. In addition, mandatory grading officially legitimizes the farmer's expertise and investment in production and harvesting technology. Thus, the regulation does more than set standards. It distinguishes the farmers' role in the alliance as much more than an actor in an economic exchange, but as a partner in promoting a product.

Corporate consolidation

Shifts in the alliance

Since the establishment of the Bean Jobbers Association in 1892, elevator owner-operators, and consolidation in the organization and structure of elevator ownership, have been part of the profile of the Michigan dry bean industry (see Michigan Bean Commission, 1998). The shift from Michigan family-based to national corporate ownership that started in the 1970s and 1980s, however, has profoundly changed this profile. The change in the source and structure of capital ownership among the largest elevators has redefined the values and interests of the elevators (and the Michigan Bean Shippers Association), and in doing so has unexpectedly and fundamentally altered the nature of accountability in the alliance among farmers, elevators, and government.

The story of the Michigan Bean Company and its long-time president, Albert Reidel, a "captain of

industry," illustrates this slow shift from family to corporate capital in the Michigan dry bean industry.¹⁷ Founded in 1915 by seven Michigan entrepreneurs who combined the assets of four elevators, Riedel became president in 1938 and slowly transformed the company into the state's largest bean exporter by acquiring nineteen elevators around the state. This type of local, family ownership, and shifts in ownership, characterized the Michigan elevator industry until the mid-1950s when Riedel sold the Michigan Bean Company to the Wicks Corporation, a division of ConAgra.¹⁸ Despite these slow shifts in ownership, in the 1980s considerable competition continued to characterize relations among Michigan-held elevators.

The agricultural depression of the 1980s, however, including a succession of difficult bad crop years for beans that changed the competitive nature of the industry, also set the stage for a final shaking out among elevators and the emergence of corporate ownership. By this time, many of the local, family elevators had been fully depreciated, and the required remodeling and repair could not be supported by the low margins in the business, especially during poor crop years. In the struggle to stay in business, elevators engaged in considerable speculative activity that ultimately led to a rash of bean elevator bankruptcies and a series of strategic corporate capital buyouts. In addition to two cooperative elevators, two private corporations, Agri-Sales (Archer, Daniel and Midland, ADM) and KBC (ConAgra), emerged as the major elevator owners in Michigan – and Agri-Sales elevators alone handle 50% of the state's dry beans. Consequently, Michigan's formerly family-owned elevators have become integral parts of complex, vertically integrated multinational agro/food corporations that are more interested in assured supplies of beans than they are in the "Michigan label."¹⁹

In an effort to respond to these changes, as well as to protect loyalty to the "Michigan brand" and a privileged place for Michigan bean growers in these integrated agro/food chains, the Bean Shippers and the Bean Commission host an annual Quality Assurance Tour at the end of each growing season. This one-day event attracts dry bean buyers from around the world and provides them with a first-hand and personal opportunity to learn about the growing season and to assure the quality of beans directly from farmers and elevator operators. Given the relatively high turnover among buyers in the canning and food industry, elevator owners and managers value the annual tour as a means to personalize their relationships with the buyers and create a basis for trust and mutually understood expectations for future negotiations. As Eymard-Duvernay (1995) reminds us, the tour is an important standards-setting tool for everyone

in the industry. Specifically, it allows both buyers and sellers to be assured of a certain quality within boundaries that are important for their specific purposes. The tour illustrates one more way in which standards setting is an on-going process based on both past and future expectations.

Parallel to the shift from family to corporate ownership, two additional trends – for which little information is available – appear to reinforce the overall corporate shift in the alliance that was once responsible for setting the Michigan standard. Production and/or marketing contracts to growers are effective mechanisms that allow the local elevator of a multinational agro/food company to help assure and level out its supply of product. Production contracts commonly stipulate adherence to certain production practices, and they may provide production inputs.

Marketing contracts stipulate that the farmer's product be sold to a particular elevator and they ignore the farmer's managerial and production decisions. For farmers, marketing (or "pool") contracts represent one way to protect themselves from price swings instead of investing in costly on-farm storage facilities that permits them to hold stocks until prices rise. With these contracts, farmers pass control of their beans upon delivery and sale to the elevators. The limited available data for US dry beans and peas suggests that a growing number of farmers are attracted to marketing rather than production contracts. In 1993/1994, only 2% of the total dry bean/pea output was under production contract, up only 0.5% from 1960. In contrast, marketing contracts increased by 50% over the same period, rising from 24% of the dry bean/pea output in 1960 to 36% by 1993/1994 (Welsh, 1997).

The move to marketing or pool contracts is consistent with other changes in the relationship between elevators and their buyers, and between elevators and farmers. In order for the elevators to respond more effectively to their buyers' standards and specifications, they focus more on providing farmers with production information/advice that will presumably enable farmers to deliver a higher quality product consistent with elevator standards. This includes selling seed, but not other production supplies, to farmers. As a result, farmers must seek other supplies (fertilizers, pesticides) from other farm supply sources. It is not clear how these changes, plus those in the banking sector, have affected the conditions and availability of annual production credit. As found throughout much of the Midwestern part of the United States, even when consolidated banks retain community branch offices, farmers find not only that decision authority has shifted away from the local bank, but also that the conditions and purposes of the consolidated banks' lending exposure have changed. "The implication is that local

banks involved in mergers and acquisitions may be losing part of their identification with the rural community in which they were located.” (Duncan, 1997: 23).

The corporatization of Michigan bean standards

Recent changes in Regulation 523 reflect the new corporate capital profile of the Michigan dry bean industry and raise questions about accountability and control among farmers, elevators, and state government.

As multinational agro/food companies acquired Michigan elevators, they expressed concerns about what they perceived to be the restrictive provisions of Regulation 523 with respect to the for-fee required inspection of all shipped beans. With the increasing use of specific supply contracts either from within their corporation or from other buyers, the elevator owners felt they were shipping to standards of buyers that were at last equal to, if not higher than the standard stipulated by Regulation 523.

Introduced to the Michigan Department of Agriculture by the Bean Shippers Association, in consultation with the Bean Commission and the Michigan Farm Bureau, in early 1997, the principal change embodied in the 1999 amendment to Regulation 523 reflects the elevators’ interest to change from a mandatory point of origin inspection to a voluntary inspection program.²⁰ Elevators – usually in response to the demands from buyers – have three grading options under the amended regulation. They may continue a point of origin inspection by a licensed bean inspector, or submit a sample to the Michigan Bean Shippers Association for inspection. The cost of these options would be double (\$0.12/cwt instead of \$0.06/cwt) that incurred prior to the amendment. Or, the shippers may forego any inspection.

During the regulatory and legislative deliberations, the amendment raised two relatively straightforward concerns that only in retrospect represent profound changes in the institutional composition of the Michigan dry bean industry. First, it was clear that most elevators, speaking through the MBSA, were determined to remove mandatory point of origin inspection from the regulation. On the other hand, most farmers, as well as those representing farmers – the Michigan Bean Commission and the Michigan Farm Bureau – were apprehensive about the changes. For these groups, Regulation 523 had helped to create a public perception of Michigan as a producer of quality beans; removing mandatory inspection with the state’s certification stamp reflected a loss of the special identity for Michigan beans.

But these concerns involve more than an effort to hold on to a valued tradition. When it is recalled

that the Bean Jobbers and later the Bean Shippers associations established the standards and demanded mandatory inspection as the basis for creating the “Michigan bean,” this new position in itself embodies a fundamental shift in interests and values. Built and sustained on the importance of place and origin, the Michigan bean business now reflects the importance of a regular and adequate supply of (any) beans that meet standards set for processing without regard to place of production. The Michigan dry bean becomes just another dry bean. Furthermore, without mandatory inspection, the Michigan Department of Agriculture and the Bean Commission must rely on individual corporate reports to assess stocks or identify and track shipments. Consequently, both the Bean Commission and state government lose access to basic information that could help in their marketing promotion efforts. In short, the regulatory change undermines their work to promote a product identified with a place.

Second, no one foresaw the full impact of the regulatory change on the Michigan Bean Shippers Association as an independent organization speaking for the Michigan bean industry. At the time the amendment was approved, most observers expected that voluntary inspections would eliminate 66% of all bean inspections and save elevators approximately \$250,000 annually. Most actors in the industry still believed that the Michigan point of origin certification stamp would mean something to buyers and processors. It is now estimated, however, that inspections have declined by at least eighty percent. Inspections have fallen off so much that they can be handled by one inspector who is housed in the Department of Agriculture, instead of the MBSA, and who certifies beans along with other inspection responsibilities. More important, the precipitous and dramatic loss of earnings from inspections obliged the MBSA to merge with the Michigan Agri-Business Association in order to maintain a measure of organizational viability. From the driving force of the Michigan dry bean industry for over 100 years, it has taken only two years for the MBSA to become just another agri-business voice.

Without question, corporate interests that rely on their own standards have dramatically altered the nature of the historic alliance that set the Michigan bean standard. What is less clear is how this shift in the alliance will affect the ways in which representative groups for farmers (e.g., the Bean Commission) and land-grant university food and agricultural researchers go about their business and in response to whose interests.

Concluding observations

Standards and accountability

For over a century, standards have made and shaped the structure of dry bean farming and processing in Michigan. In just 20 years, however, corporate standards for corporate purposes have replaced the importance of “place” or the Michigan location in setting the dry bean standard. Corporate buyers may still prefer beans from Michigan, but vertically integrated firms require a reliable supply of (simply) quality beans. While there is still “room for negotiation” around the standard when farmers deliver their beans to the elevator, the consolidation and integration of Michigan elevators into multinational agro/food companies substitutes corporate-based relationships for largely contextualized, or personalized and place-based transactions.

This new, corporate system of relationships poses at least two questions for the Michigan bean industry and for students of American agricultural policy and development. First, is a concern over the loss of the specific Michigan-based standard “backward looking”? Perhaps. Standards evolve to induce and to reflect changes in political and economic relationships. Thus, as more firms replace open buying with marketing contracts, farmers may be able to rely more on market prices to make their annual decisions concerning the classes of beans and number of acres under production. In short, corporate capital has essentially simplified, clarified, and thereby set the conditions for controlling the ways in which bean farmers will market their beans. Without relying on the more commonly observed and higher profile production contracts found in the poultry and hog industries, a simple regulatory change has allowed bean processors to establish a similar, but less obvious, type of control over production.

Second, does this new system of corporatized farm decisions erode both economic and political democracy? Perhaps the new government sanctioned standards simply reflect a way in which a public government agency serves a handmaiden role to corporate capital and will facilitate corporate decisions to seek secure sources of beans that marginalizes the once important “standard-setting” identity of the Michigan bean farmer and industry. As the Bean Shippers Association becomes just another agri-business group, who speaks for bean farmers and if they are interested in the importance of place, what are the institutional options for them to put place back into their product?

Emergence of new standards

Because beans continue to be a minor crop in most farmers’ production systems, and because of the large number of classes of beans that an individual farmer can decide to grow each year, it is expected that most Michigan bean farmers will choose price over place in their planting and marketing decisions. Price has a powerful appeal, especially for a crop like dry beans that is meaningful but marginal for most farm enterprises. In response to specific processors (canners), the elevators can easily use the requested standards (specifications) to define the boundaries of discourse with farmers. Under these conditions, beans are just beans and price adequately captures and expresses the values of importance to both buyers and sellers.

On the other hand, for those farmers seeking to add value to their production, or for those farmers and elevators committed to (re)developing quality and branded regional products, it will be important to explore other relationships among themselves. New, value-added cooperative ventures, such as the Michigan Edible Bean Cooperative, represent one option for achieving this objective. With the now muted role of the MBSA, perhaps more or similar forms of collective action may be the only way for bean farmers to have a policy voice or exercise bargaining power. Essentially, this will involve re-defining the boundaries of discourse – enlarging the domain of value – for farmers, and finding standards that capture their interests and values. In response, agricultural researchers may need to adapt research programs to accommodate a broader and more integrated set of biological, social, and economic concerns and standards.

What institutions, if any, are in place that might help define such a new research agenda as well as solicit public capital to support it? Just as the Shippers Association might find a productive partnership with agri-business, perhaps the Bean Commission could find an equally productive partnership with a variety of marketing and rural affairs groups. Some bean farmers have started to question the kind of food system in which they operate, and they are seeking to re-design this system. Perhaps these farmers – following the example of the bean jobbers of the last century – will lead a new alliance that recaptures the importance of place in renewing our food and agricultural system.

Notes

1. The authors appreciate the research assistance of Ting Bienvenida and Kristina Durocher in preparing some of the background materials for this article.
2. The other crops include grapes, potatoes, and corn in Michigan as well as cotton in Mali and soybeans in Brazil. "Making the Grade – Science and Values in Agricultural Grades and Standards." National Science Foundation, Ethics and Values Studies, SBR-98 10149. MAES grant, "Grades and Standards for Selected Michigan Commodities." We seek to: (1) understand the relationships that connect science and technology (S&T) to the creation, maintenance, and modification of food and agricultural standards; (2) identify and make explicit the ethical and value issues raised by food and agricultural standards in domestic and international agricultural production and marketing; (3) identify the sociopolitical dynamics surrounding the development, maintenance, and change of food and agricultural standards; and (4) explore the policy implications of the above so that the process of standards setting and enforcement may be made more accountable, transparent, and democratic.
3. The name "navy beans" is a legacy of the many years during which the US Navy was the largest buyer of dry pea beans.
4. These include: navy, black, pinto, great northern, pink, dark and light red kidney, white kidney, cranberry, small red, adzuki, yellow eye, tebo, and kontoki.
5. Several varieties – *Seafarer*, *Sanilac*, *Gratiot*, *Montcalm*, and *Mecosta* – carry resistance to common mosaic virus and anthracnose. There is still no resistance, however, to bacterial blight and white mold; as part of the national "White Mold Initiative" dealing with several crops, research is underway to bring in a gene from barley to control for white mold in dry beans.
6. The development of uniformly sized seeds that allows uniform planting rates with mechanical planters has also been a continuing theme in variety development.
7. Bean farmers either purchase a specialty bean combine or adapt a traditional combine. The most popular specialty harvester has been the Lilliston. It harvests with a bar/rod puller that is considered superior to direct harvest and a knife puller in terms of both quality and quantity of output as well as its adaptability for harvesting several classes of beans. In addition, some feel that it produces less grime and a cleaner product to deliver to the elevator. Equally important, the Lilliston provides a wider window in which to harvest; it can even be run in muddy conditions (see Dygert, 2001).
8. Profit-sharing allows cooperative elevators to exercise another option for building loyalty. While a farmer might disagree with the "pick" by the cooperative's grader, there will be an end-of-the-year benefit not available through private, commercial elevators from overall cooperative profits that include the sale of the damaged, discolored, and split beans.
9. As the American economy moved from proprietary to corporate capitalism, interests and priorities within this public-private, state-federal alliance have shifted, but a corporate liberal outlook continues to define their institutional relationships (Sklar, 1988).
10. Choice Hand-Picked Michigan Pea Beans: good average color, well-hand-picked; not more than 2% discolored or split and not more than 7% large or medium; Prime Hand-Picked: fairly good average and well hand-picked; not more than 3% discolored or split and not more than 7% large or medium; Michigan Choice Re-cleaned: good average color of crop year; well-screened; not more than 2% discolored or split and not more than 7% large or medium; Fancy Screened: fair average color; well screened; not more than 3% discolored, splits, or foreign substances and not more than 10% large or medium; Choice Screened: fairly good average color; well screened; not more than 5% discolored, splits, or foreign matter and not more than 10% large or medium (Hedrick, 1931).
11. The popular *Sanilac* variety, a bush-type navy bean that facilitated harvesting was one direct result of these new investments in research.
12. The 1950s also witnessed the decade for the establishment of national dry bean research and marketing promotion organizations. The National Dry Bean Council was organized in 1951 when the Michigan Bean Shippers Association joined New York, Rocky Mountain, Western Dealers, and California Bean Dealers Association with the aim "to coordinate the activities of the regional associations, growers, processors and distributors on a national scope." In 1958 the National Bean Research Committee was established to foster coordination in bean research, planning the agenda for national research program, and to serve as clearing house for information and planning the future meetings.
13. The Bean Commission board includes eight farmers and one representative from an elevator/processor. After the Bean Commission and the Michigan Potato Industry Commission (PA 29 of 1970) had been established under separate acts, the Michigan State Legislature passed an umbrella check-off act, Public Act 232, the Agricultural Commodities Marketing Act, in 1996 to set guidelines for all state commodity check-off programs.
14. Equally important, the Commission's mandate specifically excludes political lobbying activities and limits the Commission to promoting agricultural research and commodity marketing.
15. A separate state regulation provides the authority for assessing and collecting the inspection fees and for transferring these fees to the Michigan Bean Shippers Association. The MBSA uses these fees, in part, to pay the state-certified inspectors who work out of the MBSA offices.
16. A "class" of bean would be referred to by most consumers as a "type" of bean. For example, types include navy beans, pinto beans, black beans, etc. Regulation 523 identifies four categories for similar bean classes: one category includes Navy, Small White, and Great Northern Beans; another includes only Pinto Beans; a third includes Black, Kidney, Pink, and Small Red Beans; the fourth category includes Cranberry, Yellow Eye, and Marrow Beans.
17. The following is drawn from an unpublished research paper prepared by Kristina Durocher.

18. These elevators are currently known under the name KBC. The other major, Michigan-owned elevators at this time were the Farm Bureau's Michigan Elevator Exchange and the Frutcheley Bean Company; another company, Wallace and Mortley had been purchased by the Borroughs Corporation.
19. Consolidation in the canning and processing industry has paralleled the consolidation among elevators.
20. In addition to re-defining some of the terms in the regulation, the amendment also eliminates mandatory inspection for sales to federal agencies.

References

- Agri-Food Research and Development Initiative (ARDI) and U. O. Manitoba (2000). *New Generation Cooperatives on the Northern Plains*. Manitoba, Canada: ARDI and University of Manitoba.
- Albrecht, K. (1993). "The first 100 years – Michigan Beans and the MBSA from whence . . . through the 20th century." *Michigan Dry Bean Digest* 17(2–3): 2–7, 9–12.
- Appadurai, A. (1986). "Introduction: Commodities and the politics of value." *The Social Life of Things: Commodities in Cultural Perspective* (pp. 3–63). Cambridge: Cambridge University Press.
- Battel, S. S. (1999). "Dry bean farmers banding together for more profits." *Michigan Farm News*. Lansing: 11.
- Bowker, G. C. and S. L. Star (1999). *Sorting Things Out. Classification and Its Consequences*. Cambridge: The MIT Press.
- Callon, M. (1998). "Introduction: The embeddedness of economic markets in economics." *The Laws of the Markets* (pp. 1–57). Oxford: Basil Blackwell.
- Cobia, D. W. (1997). *New Generation Cooperatives: External Environment and Investor Characteristics. Cooperatives: Their Importance in the Future of the Food and Agricultural System, Food and Agricultural marketing Consortium*. Las Vegas, Nevada: University of Wisconsin Center for Cooperatives.
- Duncan, M. (1997). "Where are rural capital markets headed?" *Financing Rural America* (pp. 11–45). F. R. B. O. K. City. Kansas City, Federal Reserve Bank of Kansas City.
- Dygart, H. (2001). *Making Beans: Discipline and Negotiation in the Michigan Dry Beans Industry*. East Lansing, Michigan. Unpublished manuscript.
- Eymard-Duvernay, F. (1995). "La négociation de la qualité." In F. Nicolas and E. Valceschini (eds.), *Agro-alimentaire: une économie de la qualité* (pp. 39–48). Paris: INRA.
- Hedrick, W. O. (1931). *Marketing Michigan Beans*. East Lansing, Michigan: Agricultural Experiment Station, Michigan State College of Agriculture and Applied Science, Section of Economics.
- Hedrick, W. O. (1938). *A Decade of Michigan Cooperative Elevators*. East Lansing, Michigan: Michigan State College, Agricultural Experiment Station.
- Hendrickson, M., W. D. Heffernan, P. H. Howard, and J. B. Heffernan (2001). *Consolidation in Food Retailing and Dairy: Implications for Farmers and Consumers in a Global Food System*. Columbia, Missouri: Department of Rural Sociology, University of Missouri.
- Hennessy, D. A. (1996). "Information asymmetry as a reason for food industry vertical integration." *American Journal of Agricultural Economics* 78(November): 1034–1043.
- Jones, E. and L. D. Hill (1994). "Re-engineering marketing policies in food and agriculture: Issues and alternatives for grain grading policies." In D. I. Padberg (ed.), *Re-Engineering Marketing Policies for Food and Agriculture*. College Station, Texas: Food and Agricultural Marketing Consortium.
- Latour, B. (1997). *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge: Harvard University Press.
- Michigan Bean Commission (1980). "Profiles: Grower-Joe Harag." *Michigan Bean Commission Journal* 4(1(January)): 5–6.
- Michigan Bean Commission (1981). "Profiles: Grower-Bill Elbers." *Michigan Bean Commission Journal* 5(2(May)): 8–9.
- Michigan Bean Commission (1998). "How did we get here?" *Bean Commission Newsletter* 4: 1.
- Michigan Bean Shippers Association (1983). "Way back in the beginning." *1892–1983 MBSA 90th Annual Meeting*. Bay City, Michigan: MBSA.
- Michigan Department of Agriculture, F. D. (1987). *Dry Edible Beans*. Lansing, Michigan: MDA, Food Division.
- Shaffer, T. (1998). "Thumbs up to agriculture." *1998 Michigan FolkLife Annual*: 6–15.
- Sklar, M. J. (1988). *The Corporate Reconstruction of American Capitalism, 1890–1916. The Market, the Law and Politics*. Cambridge: Cambridge University Press.
- Sterns, P. A. and T. Reardon (2002). "Determinants and effects of institutional change: A case study of dry bean grades and standards." *Journal of Economic Issues* 36(1): 1–16.
- Thévenot, L. (2000). "Which road to follow? The moral complexity of an 'equipped' humanity." In J. Law and A. Mol (eds.), *Complexities in Science, Technology and Medicine*. Durham, North Carolina: Duke University Press.
- Urban, T. N. (1991). "Agricultural industrialization: It's inevitable." *Choices* 6(4): 4–6.
- Welsh, R. (1997). *Reorganizing U.S. Agriculture. The Rise of Industrial Agriculture and Direct Marketing*. Washington, DC: Henry A. Wallace Institute for Alternative Agriculture.

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