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Using Vertically Coordinated Relationships To Overcome Tight Supply in the Organic Market

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Abstract

Rapid growth in the organic foods market has placed great pressure on farmers and handlers in the U.S. organic sector. Handlers are firms that produce, process, and distribute organic food. As the middlemen in the supply chain, organic handlers have been unable at times to provide as much of their final product as the market wants and have also found needed ingredients in short supply. An Economic Research Service survey of certified organic handlers in the United States collected information on those intermediaries' marketing and procurement practices for 2004. The data reveal that handlers widely use contracts as a means to not only procure needed ingredients but also to develop and maintain strong working relationships with their suppliers. Only a few organic handlers, however, have worked to assist farmers directly with farmers' transition to organic production.

Keywords: organic handler, organic intermediaries, marketing organic food products, procurement, contracts, supplier-handler relationships, vertical coordination, transition to organic

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Introduction

Anecdotal evidence suggests that some organic products are in short supply. At the retail level, critical supply shortages of organic milk and meat have occurred (Oliver, 2006; Organic Monitor, 2006). One factor contributing to the short supply of these final products is the scarcity of feed and grains, especially corn and soybeans, which are used in the production of milk and meat (Brasher, 2008; Clarkson, 2007). While recent products in short supply are milk, feed and grains, this is not a new problem in the organic industry. Indeed, securing an adequate supply of organic ingredients has been a long-standing problem. A lack of reliable supplies of organic raw materials has constrained some companies' growth, and high transportation and distribution costs have limited growth throughout the sector (Organic Trade Association, 2006, 2004, 2001). Firms have had and continue to have difficulty procuring large enough quantities of organic products to distribute to retailers, locating organic producers to buy from, and gaining access to shelf space in supermarkets (Dimitri and Richman, 2000).

Contributing to the shortages of organic products is the new competition faced by organic food marketers at all levels of the supply chain. Traditional purveyors of organic foods, such as natural foods stores, are facing competition from a wide range of retailers, including conventional food stores, such as Safeway, and "big box" stores, such as Wal-Mart, Target, and Costco. Organic manufacturers are doing business alongside conventional food manufacturers, such as General Mills, Kellogg's, and Dean Foods. Conventional firms initially gained market access by acquiring independent, successful organic companies, and more recently, have introduced organic versions of well-known products, such as Rice Krispies. Underlying these changes at the retail and intermediary levels of the supply chain is an intensifying consumer interest in organic food, which caused U.S. retail sales of organic food to increase from \$3.6 billion in 1997 to \$18.9 billion in 2007 (*Nutrition Business Journal*, 2008).

The impact of shortages and marketplace changes has been the subject of many discussions among those interested in the organic sector. At the 2007 Organic Summit, several speakers addressed the challenges of supplying the rapidly growing organic market.¹ In an April 2007 congressional hearing on organic agriculture, organic industry members testified that U.S. farmers were unable to keep pace with market demand for organic products, and urged lawmakers to make significant increases in funding for organic agriculture. Earlier, at a 2004 meeting hosted by USDA's Economic Research Service and the Farm Foundation, organic industry stakeholders similarly outlined the need for additional information and research on procurement methods used by organic firms and the supply constraints they face.

This report relies on data from an ERS survey of the 2004 population of certified organic handlers, which represents the most recent available information about organic handlers. A description of survey methodology, response rate, and a basic description of respondents is found in the appendix, "Survey Methodology and Respondent Characteristics," page 17. For more survey results, see *The U.S. Organic Handling Sector: Baseline Findings of the*

¹See <http://www.dailycamera.com/news/2007/jun/18/headline-here/> for conference synopsis.

Nationwide Survey of Manufacturers, Processors, and Distributors, available at: <http://www.ers.usda.gov/publications/EIB36/> (Dimitri and Oberholtzer, 2008). Summary statistics of the procurement and contracting data are available at: <http://ers.usda.gov/data/OrganicHandlers/>. A followup survey of organic handling facilities that studies 2007 practices was conducted in 2008.

Organic Handlers First To Experience Tight Supplies

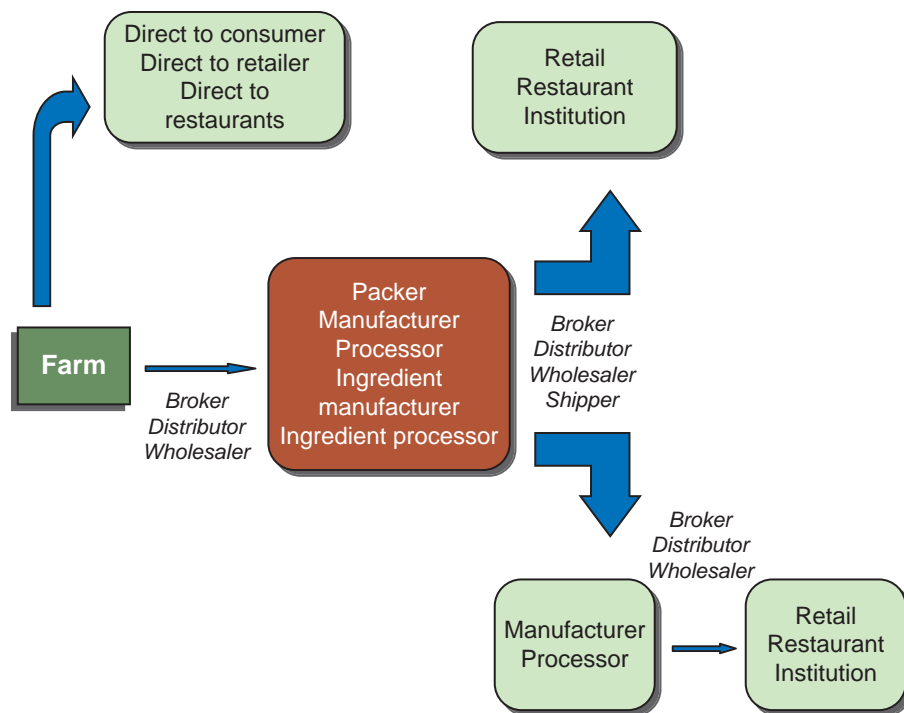
Organic handlers, the intermediaries in the supply chain, play a central role in the industry by purchasing ingredients, and packing, shipping, manufacturing, processing, and distributing organic products, connecting the farm level with retailers (fig. 1).² The functions performed by organic handlers are similar to those of their conventional counterparts, with the added requirement that the organic integrity of a product must be maintained as it moves along the supply chain, as specified by the national organic standards (see box, “Handlers Must Meet USDA Standards in Order To Use the Organic Label”). They are also the first to detect problems with the supply of organic products.

The results of the ERS survey of organic handlers confirm recent shortages in the sector, with 13 percent of all handlers unable to meet market demand (that is, they experienced critical shortages of at least one of their organic products) at some time during 2004. Another 16 percent of organic handlers experienced minor shortages. The survey data also show significant problems in some specific organic sectors. For example, 26 percent of milk handlers, 22 percent of feed and grain suppliers, and 16 percent of fruit and vegetable handlers experienced critical shortages of their products for sale

²Handlers purchase raw products or ingredients, depending on their use. Milk, for example, is a raw product to a dairy and an ingredient to a yogurt manufacturer.

Figure 1

Organic handlers move products through the supply chain



Note: The transactions along the supply chain are indicated by arrows; these transactions may be done by written contract, verbal contract, or anonymously. Handlers are all firms between the farm and the retailer, restaurant, or institution. A handler's supplier, as the chart shows, may be a farmer or another handler.

Source: USDA, Economic Research Service.

Handlers Must Meet USDA Standards in Order To Use the Organic Label

Implemented by USDA in October 2002, the National Organic Program (NOP) requires that organic growers and handlers be certified by a State or private agency accredited under the uniform standards developed by USDA. The standards apply to the methods, practices, and substances used in producing and handling crops, livestock, and processed agricultural products. Although specific practices and materials used by organic firms may vary, the standards require every aspect of organic production and handling to comply with the provisions of the Organic Foods Production Act (OFPA). OFPA was part of the 1990 Food, Agriculture, Conservation, and Trade Act.

As specified by the NOP standards, handling of organic products includes manufacturing, packaging, canning, jarring, or otherwise enclosing food in a container that may be used to process an organically produced agricultural product for the purpose of retarding spoilage or otherwise preparing the agricultural product for market.

Several categories of organic handlers are exempt from organic certification, including:

- entities with gross organic sales under \$5,000,
- final retailers of agricultural products, if the retailers do not process agricultural products, and
- traders and others who never take possession of the organic products.

For more information, visit USDA's Agricultural Marketing Service National Organic Program website at www.ams.usda.gov/nop/.

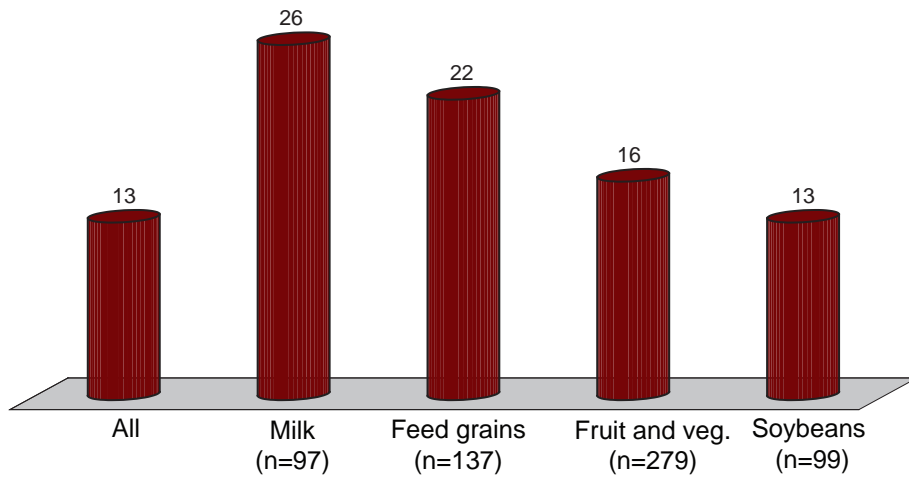
at some point during the year (fig 2)³. While basic economic theory suggests that prices should rise to eliminate shortages, in some sectors there has been reluctance to increase prices of organic products (Oberholtzer et al., 2006). This has resulted in periodic shortages of organic products (Dimitri and Richman, 2000). These product shortages are mirrored by handlers' difficulties procuring ingredients; 44 percent of handlers found needed ingredients or products in short supply during 2004. The main products and ingredients handlers found in limited supply were coffee, soybeans, milk, seeds (includes seeds for planting), corn, and nuts.

One question raised in the discussion about tight supplies is whether domestic suppliers have been able to increase supply quickly enough to meet demand, suggesting that handlers have needed to rely on imports to meet their needs (Starling, 2006). While statistics suggest that imports are increasing, with preliminary estimates from USDA's Foreign Agricultural Service (FAS) valuing U.S. organic imports in 2002 at between \$1.0 billion and \$1.5 billion (USDA, FAS, 2005), the survey data indicate that organic handlers relied primarily on domestic suppliers in 2004, with 38 percent of handlers importing some or all of their organic products (fig. 3). By volume, the average share of organic products purchased internationally was 20 percent, with 22 percent being procured locally (within a 1-hour drive of

³In this study, milk and fruits and vegetables were selected because these products made up a large share (56 percent) of organic retail sales in 2004 and were sold most frequently by organic handlers. Feed and grain, soybeans and soy products, and dairy were selected because anecdotal evidence suggests demand for these products is growing, and that supply shortages are commonplace (Clarkson, 2007; Oliver, 2006).

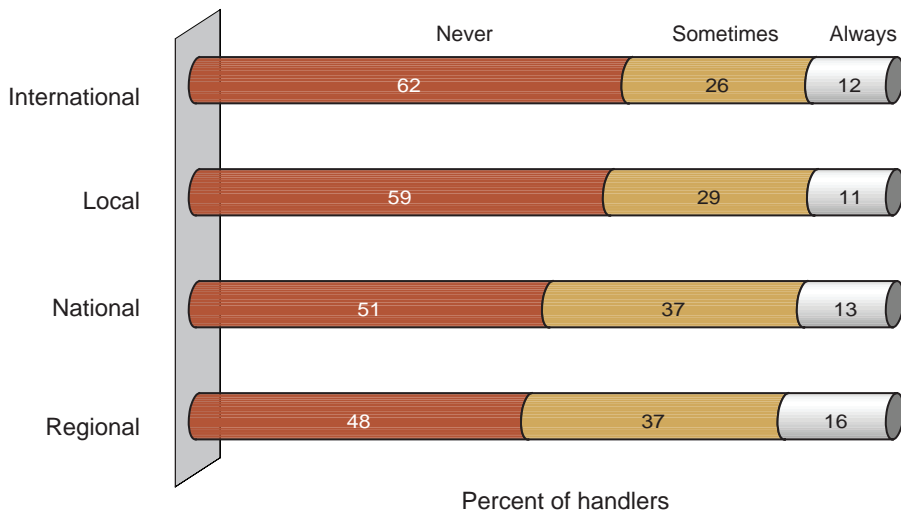
the facility), 27 percent nationally, and 31 percent regionally. The categories imported most often by handlers are coffee, tea, and cocoa and greenhouse, seeds, mushrooms, herbs, and extracts, while dairy and poultry and eggs were rarely imported (fig. 4). The majority of procurement in most categories is done locally and regionally, while poultry and eggs is the category most often procured locally.

Figure 2
Handlers unable to meet market demand, by product sold, 2004
 Percent of handlers



Note: Number of handlers procuring ingredients is 1,089.
 Source: USDA, Economic Research Service.

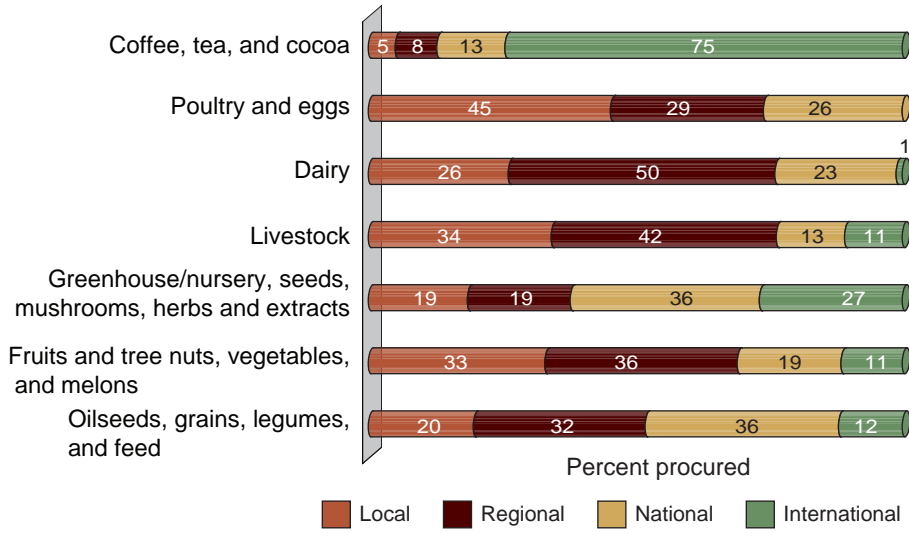
Figure 3
Handlers' sources of organic products, 2004



Note: Number of handlers procuring ingredients is 1,089.
 Source: USDA, Economic Research Service.

Figure 4

Where organic handlers buy specific product categories, 2004



Note: N=1,026. The figure reports category of top product/ingredient procured.
Source: USDA, Economic Research Service.

Contracting Is Widely Used in the Organic Sector

In order to obtain needed products and ingredients, organic handlers can rely on the spot market or arrange sales in advance. Spot market sales are anonymous transactions between buyers and sellers that might take place in a wholesale market, for example. The advantage of spot market sales is that competition among buyers and sellers determines market prices, which transmits signals along the supply chain about the product attributes consumers desire. For conventional agricultural products, spot market purchases are common, making up 60 percent of all purchases (MacDonald et al., 2004). However, in markets with limited competition, because of increased demand for a distinctive process or short supply, spot markets often fail to produce enough products with the attributes consumers desire (MacDonald et al., 2004). In such cases, market needs can be more effectively met through vertically coordinated transactions, such as through contracts or closely aligned transactions between buyers and sellers.

Contracts may specify products and their desired attributes, such as size, quality, or time of delivery, and may provide suppliers with assistance such as advice on the National Organic Standards or production methods, or provide inputs such as seeds (MacDonald et al., 2004). Contracts can be used to share risks such as fluctuating market prices among buyers and sellers. Contracts also can be used to reduce transaction costs, which are the costs of obtaining the needed quantity and quality of product. Given the tight supplies in the organic market, in combination with the requirement that all products must satisfy the organic certification requirement, transaction costs for procuring organic ingredients and products are likely quite high. Thus the supplier-handler relationship is important for both parties in the transaction.

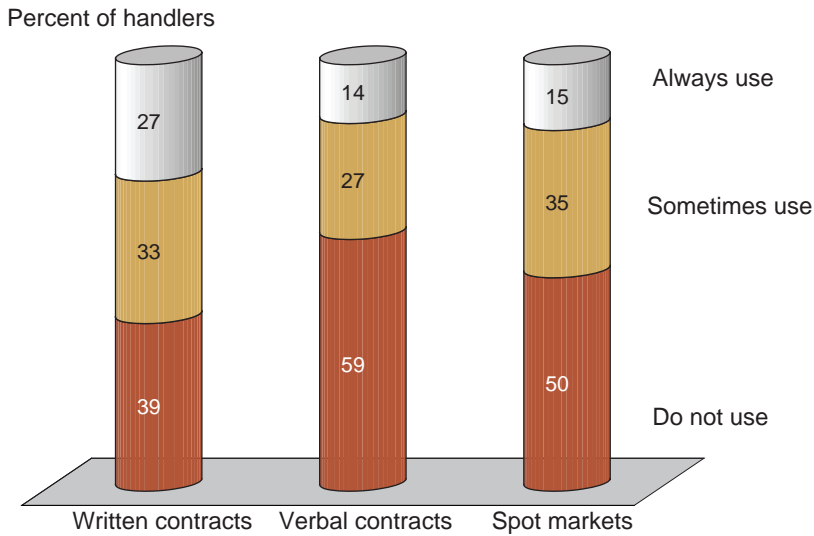
Based on survey results, the organic sector uses contracts at a much higher rate than the conventional sector. Nearly half of the volume (46 percent) of organic products bought by organic handlers is obtained with written, negotiated contracts. Another 24 percent is procured through verbal agreements or ongoing relationships between suppliers and handlers. The remaining 27 percent of ingredient volume is acquired through spot markets, or anonymous transactions. Coffee, soybeans, wheat, corn, and milk are the main products obtained through contracts.

Spot markets are used exclusively by 15 percent of handlers. Half of all handlers rely on contracts instead of using spot markets to procure their supplies (fig. 5). Twenty-seven percent of handlers procure all of their supplies through written contracts, and 39 percent of handlers never use formal contracts. Informal contracts, or ongoing verbal agreements, are used to procure all ingredients and products for 14 percent of handlers and part of the supply requirements for 27 percent of handlers. Fifty-nine percent of handlers never use informal contracts when procuring organic supplies.

Of the handlers procuring ingredients, the share of handlers using contracts (both written and verbal) ranges from 60 percent to 71 percent, depending on the main product sold (fig. 6). Overall, 67 percent of handlers use contracts,

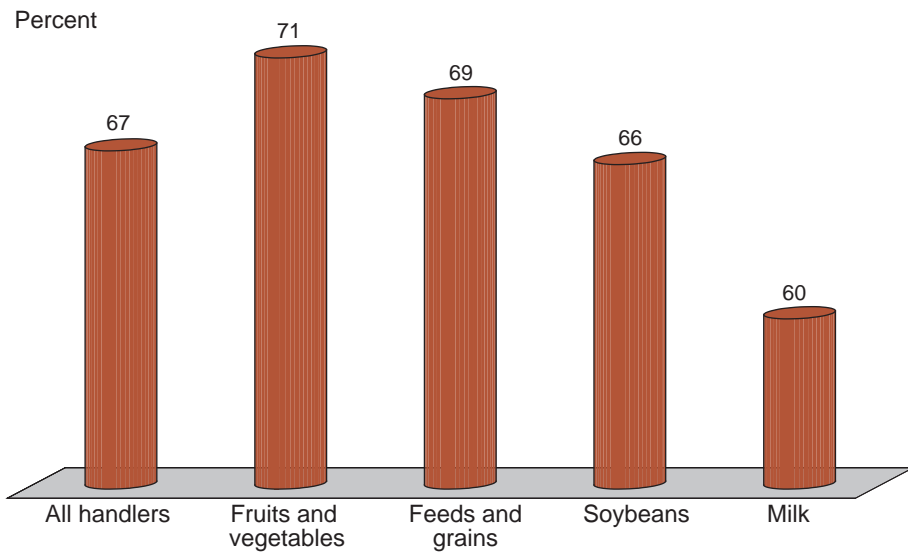
with fruit and vegetable handlers using contracts most often, followed by feed and grain handlers and soy handlers. Anecdotal evidence indicates that milk handlers have been unsuccessful at meeting market demand for organic milk, suggesting that handlers would use contracts to secure supplies of milk. Yet, surprisingly, handlers of organic milk use contracts only 60 percent of the time.

Figure 5
Use of spot markets and contracts by organic handlers, 2004



Note: Number of handlers procuring ingredients is 1,089.
 Source: USDA, Economic Research Service.

Figure 6
Percent of handlers using contracts, by main product sold, 2004



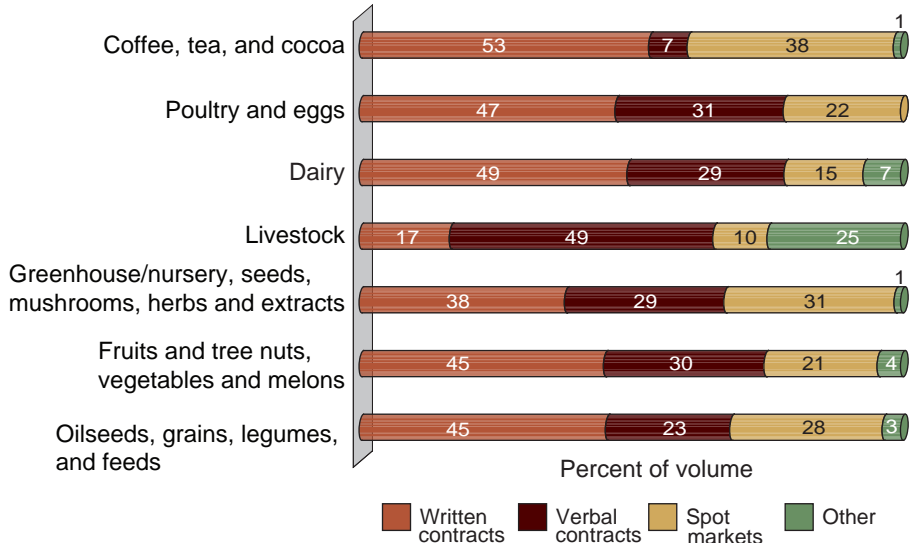
Note: Number of handlers procuring ingredients is 1,089. Data include both written and verbal contracts.
 Source: USDA, Economic Research Service.

When considering the main product and ingredient categories procured by organic handlers in 2004, those procuring coffee, tea and cocoa are most likely to use written contracts and to procure in the spot market, while procurement of livestock is most likely to rely on verbal agreements (fig. 7).

The reasons for using contracts (both written and verbal) are fairly constant across the different types of handlers, and suggest that most contracts are used to reduce the transaction costs of finding enough product rather than sharing risk. When asked to rate the importance of specific reasons for using contracts, over 80 percent of handlers report that contracts are an important way to secure products essential to their business. Approximately 70 percent of handlers report that contracts are a very important risk management tool for securing products or ingredients that are in limited supply and to ensure consistent quality of supplies (fig. 8). Feed and grain handlers are the most likely to report using contracts for securing products that are in limited supply. In addition, the survey asks facilities to provide the most important reason for contracting: 45 percent of handlers indicated they use contracts to ensure a supply of organic products or ingredients followed by 23 percent that report the most important reason as finding high-quality products.

When considering risk factors such as a supplier’s risk of price volatility or to reduce the handler’s risks associated with fluctuating price (fig. 9), handlers report using contracts to reduce their own price volatility (53 percent) more frequently than to reduce a supplier’s risk from changing prices (39 percent). Of the four product categories, milk handlers are the least likely to use contracts to stabilize their own prices or their suppliers’ prices.

Figure 7
Use of spot market and contracts by product/ingredient category, 2004

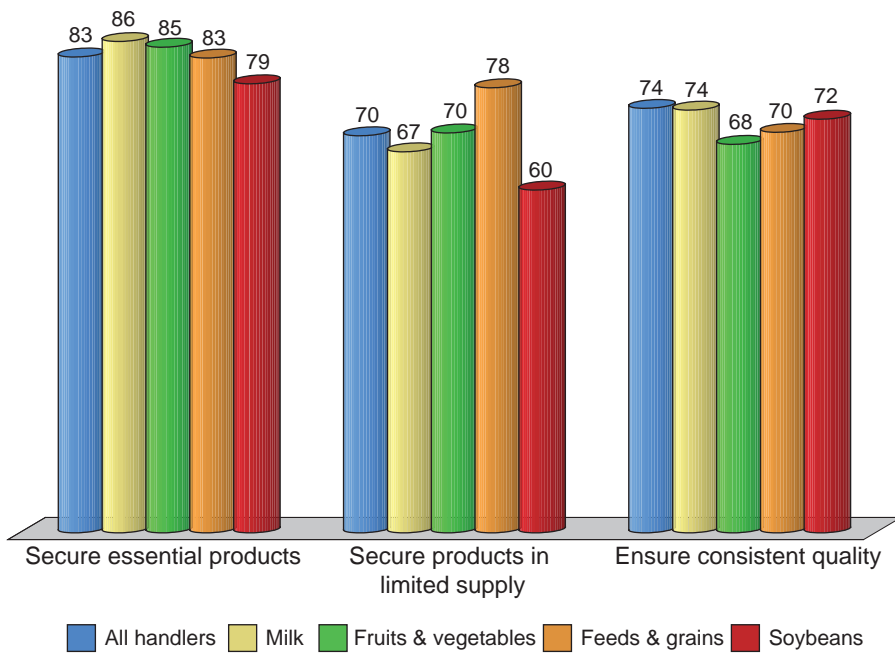


Note: N=1,002. “Other” represents difference between 100 percent and total of written contracts verbal contracts, and spot markets.
 Source: USDA, Economic Research Service.

Figure 8

Transactions costs influence handlers' contract use, 2004

Percent of handlers



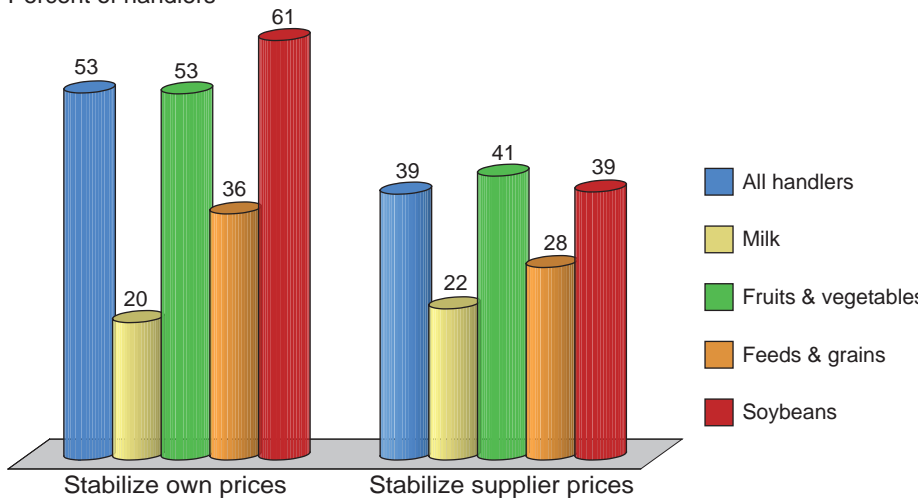
Note: Number of handlers using contracts is 729. Percentages show handlers who reported the reasons for using contracts as "very important."

Source: USDA, Economic Research Service.

Figure 9

Risk avoidance affects handlers' contract use, 2004

Percent of handlers



Note: Number of handlers using contracts is 729. Percentages show handlers who reported the reasons for using contracts as "very important."

Source: USDA, Economic Research Service.

Increasing Access To Existing and New Market Supplies Through Supplier Relationships

Beyond contracting, handlers can gain access to needed organic products and ingredients by working with suppliers in a number of ways. For example, handlers can cultivate new relationships or work with relatively inexperienced suppliers. Approximately 40 percent of handlers recruited suppliers in 2004, with milk handlers the least likely to do so (fig. 10). Handlers willing to work with suppliers new to the organic industry (i.e., those in business for less than 1 year) gain access to a wider range of supply, with approximately 30 percent of handlers willing to work with less experienced suppliers.

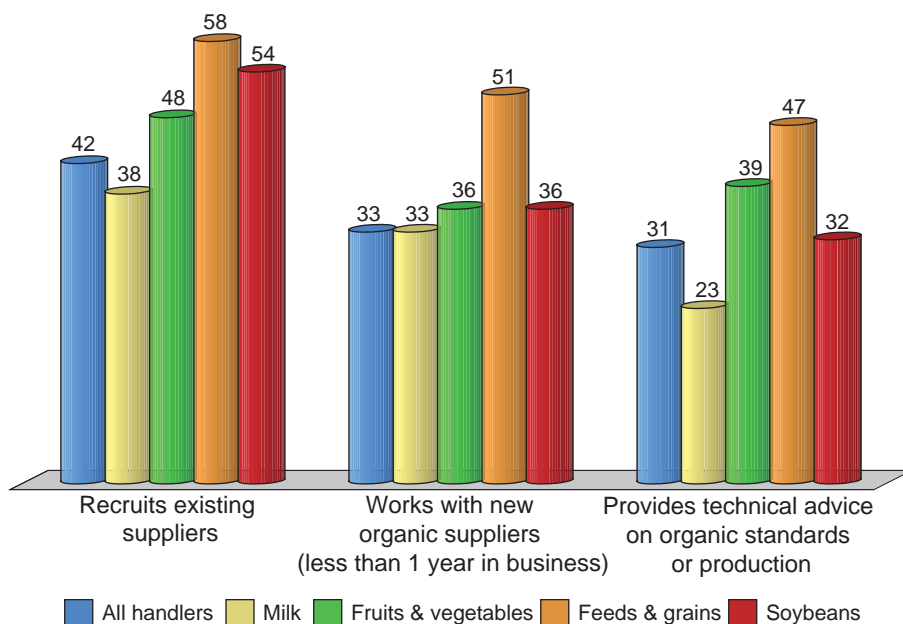
Of the four categories considered, feed and grain handlers are the most likely to provide assistance to their suppliers, while milk handlers are the least likely. The contrast between the two categories is interesting, in that milk and feed and grains are products that have most recently struggled to keep up with growing market demand. This difference is likely due to inherent variations in the way the feed grain and dairy sectors operate.

Despite the growing demand for organic food products, many farmers are reluctant to switch to organic production methods because they face a large financial risk as they learn a new way of doing business. During the transition years they may face lower yields for crops, which are sold at the lower conventional prices until conversion is complete (Wolf, 2006). Farmers generally do

Figure 10

How handlers interact with suppliers, 2004

Percent of handlers



Note: N = 1,089.

Source: USDA, Economic Research Service.

not reach their top organic production level for approximately 5 years once they begin farming organically (Siemon, 2006). Social pressures also influence the decision to convert, in that farmers converting to organic may be criticized by their neighbors (Siemon, 2006; Wolf, 2006). On top of this, recent high prices for conventional corn and soybeans have dissuaded potentially interested farmers from converting to organic production (Brasher, 2008).

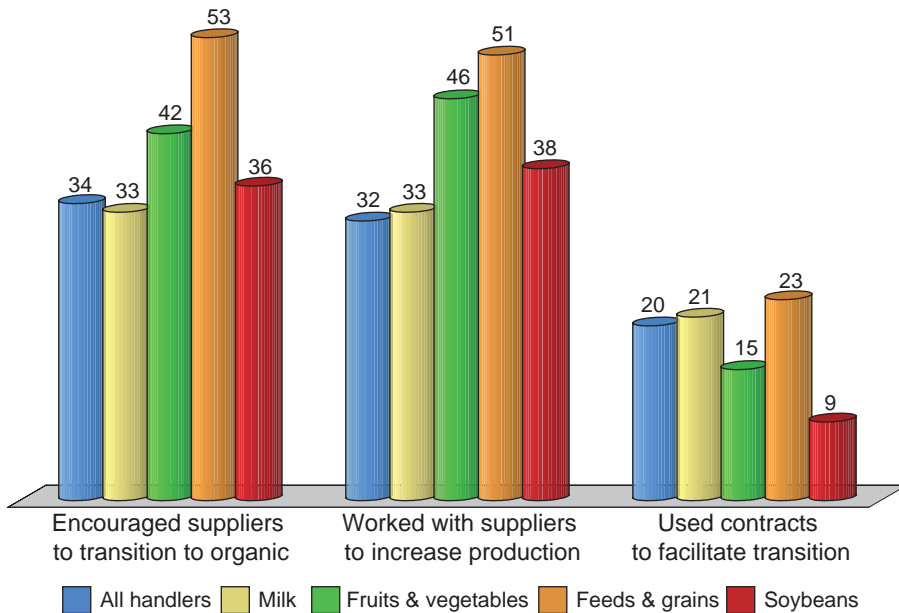
To overcome these obstacles and increase organic supply, handlers sometimes choose to work actively with farmers of conventional crops to help the farmers convert to organic production methods (Siemon, 2006). By providing farmers with an assured market for their output, handlers can reduce some of the risk farmers face in the transition to organic production. Handlers may simplify the conversion process for farmers by providing technical assistance with organic production methods and in gaining organic certification. Slightly more than 30 percent of handlers using suppliers in 2004 encouraged farmers to shift to producing organic products; feed and grain and fruit and vegetable handlers were most likely to work with their suppliers on transitioning to organic farming practices (fig. 11).

Alternatively, handlers can increase market supply by requesting that their existing suppliers increase production. Approximately 30 percent of handlers using suppliers adopted this approach in 2004, with more than half of feed and grain handlers indicating that they asked their suppliers to increase production. Handlers can also increase supply by signaling their intent to purchase the farmer's organic products with contracts. Of the handlers using contracts, only 20 percent used contracts to facilitate suppliers' conversion to organic production. Soy handlers (less than 10 percent) were the least likely to use contracts as a mechanism to facilitate transition.

Figure 11

Organic handlers increase their market supply, 2004

Percent of handlers



Note: N = 1,089.

Source: USDA, Economic Research Service.

Close Handler-Supplier Relationship Likely To Continue as Sector Grows

Growth in consumer demand for organic products has increased the quantity of organic products and ingredients flowing from farms to retail outlets. New survey data corroborate the anecdotal evidence pointing to supply shortages for different organic products, with milk, feed, and grains the most notable examples. This finding, in conjunction with the time lag in supply responses created by organic certification rules, suggests that handlers cannot rely on pure spot market transactions to secure their inputs.

ERS survey findings indicate that many handlers recognize the need to increase both the supply of products flowing to their firm, and while a smaller number of handlers try to increase the market supply by encouraging suppliers to transition their operations from conventional to organic production methods. The findings raise some questions, however. While feed and grain suppliers, who have faced some of the most recent shortages, are most active in their efforts to secure product supply, milk handlers, who also face tight supplies, are less likely to use contracts or work actively with suppliers to procure organic milk. Additional research may provide insight into why there are differences between the two sectors.

Retail sales of organic foods are expected to continue their rapid increases into the near future. As demand continues to grow, further pressure will be placed on producers and handlers to produce, process, and distribute greater quantities of organic food, bringing added strain to the supply chain. As long as the supply of organic products remains tight, handlers who develop close relationships with their suppliers may be better positioned to obtain the products they need. Certainly the close ties apparent in 2004 are likely to continue as the sector grows.

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Appendix—Survey Methodology and Respondent Characteristics

The first nationwide survey of organic processors, manufacturers, and distributors was conducted in 2005, and asked respondents to report information for 2004. The survey was funded by a competitive grant from USDA's Risk Management Agency. Prior to developing the survey instrument, USDA's Economic Research Service (ERS) and the Farm Foundation hosted a workshop in 2004 to get stakeholder input into important issues facing organic handlers. The participants voiced concern about the ability of organic handlers to procure needed ingredients. The types of survey questions workshop participants expressed interest in included:

- Are products obtained via contract sales vs. spot market sales?
- Is year-round sourcing important?
- What percent of inputs are procured locally, regionally, nationally and internationally?
- Have handlers experienced shortages of different products?

The participants also identified as important whether handlers:

- are willing to work with new suppliers or only deal with seasoned suppliers
- are recruiting new suppliers
- are offering incentives for new or transitioning producers

The survey instrument was then developed by ERS in consultation with the Social and Economic Science Research Center, Washington State University (WSU). The survey was pretested with nine organic handling facilities in late 2004, and was authorized by the U.S. Office of Management and Budget (control number 0563-0078). WSU administered the final survey in 2005, using Dillman's Tailored Design Method (TDM), (Dillman, 1999). In accordance with the TDM procedure, all firms holding certificates to handle organic products were prenotified by postcard of the survey. The postcard was followed by a letter from the administrators of USDA's ERS (Dr. Susan Offutt) and RMA (Mr. Ross Davidson), and support letters from the Organic Trade Association and the Organic Farming Research Foundation. The survey was sent by First Class mail, with a \$5 incentive, and was followed by multiple carefully timed contacts, including phone contacts.

The population of organic handlers was compiled by contacting 56 domestic accredited certified agents to gather their lists of certified organic handlers. Because of the way in which most handlers hold their organic certificates (at the facility level), each facility, whether it belonged to a larger company or was independent, was counted separately. Of the total population, 1,393 organic handlers provided a completed 16-page mail survey, representing a 63-percent return rate.

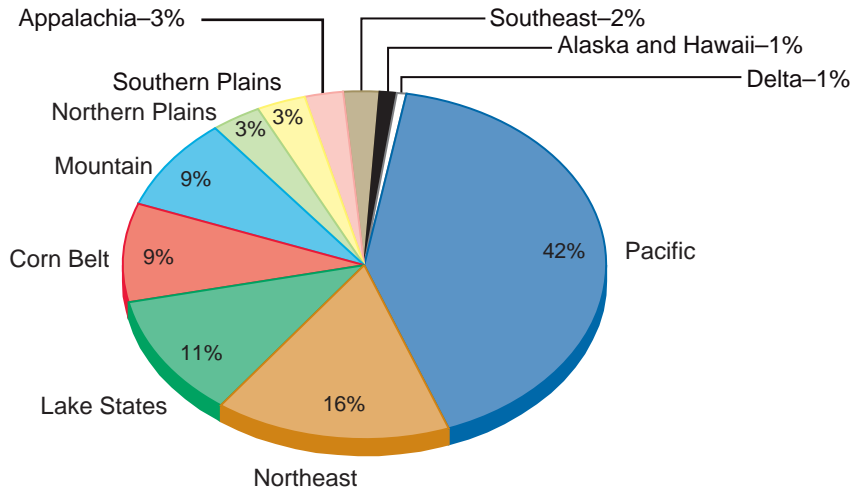
The facilities responding to the survey are located throughout the country, with most handlers responding located in the Mountain, Corn Belt, Lake States, Northeast and Pacific region (app. fig. 1). The main categories of products sold by the respondents are fruits, vegetables, mushrooms and beans; beverages;

spices, oils, herbs, and sweeteners; breads and grains, and dairy (app. table 1). A large share of handlers report functioning as a manufacturer or processor (app. table 2), with fewer handlers reporting performing other functions.

Oilseeds, grains, legumes, and feed, followed by vegetables, melons, fruits, and tree nuts, were the top product categories procured by handlers in 2004. Thirty-eight percent of handlers said oilseeds, grains, legumes, and/or feed were among the top three products they procured. Twenty-eight percent said vegetables, melons, fruits, and tree nuts were among the top three products procured (app. fig. 2).

Appendix figure 1

Where organic handlers are located, 2004



Note: N = 1,393. USDA's National Agricultural Statistics Service crop reporting regions are used: Appalachia: Kentucky, North Carolina, Tennessee, and Virginia; Corn Belt: Iowa, Illinois, Indiana, Missouri, and Ohio; Delta: Arkansas and Louisiana; Lake States: Michigan, Minnesota, and Wisconsin; Mountain: Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Utah, and Wyoming; Northeast: Connecticut, District of Columbia, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; Northern Plains: Kansas, North Dakota, Nebraska, and South Dakota; Pacific: California, Oregon, and Washington; Southeast: Alabama, Florida, Georgia, and South Carolina; Southern Plains: Oklahoma and Texas.

Source: USDA, Economic Research Service.

Appendix table 1

Main product sold by organic handlers, 2004

Product category	Number of handlers	Percent
Fruits, vegetables, beans and mushrooms	280	22
Beverages	241	19
Spices, oils, herbs, sweeteners	141	11
Breads and grains	126	10
Dairy	112	9
Packaged and prepared foods	93	7
Grains and feed	84	6
Snack foods	68	5
Seeds	58	4
Meat, fish, poultry	45	3
Other	20	2
Cosmetics and beauty supplements	18	1
Fibers	13	1

Note: N=1,299.

Source: USDA, Economic Research Service.

Appendix table 2

Functions of organic handlers, 2004

Function	Number	Percent
Packers/shippers	203	15
Manufacturers/processors	899	65
Broker, distributor, wholesaler	281	20
Other	155	11

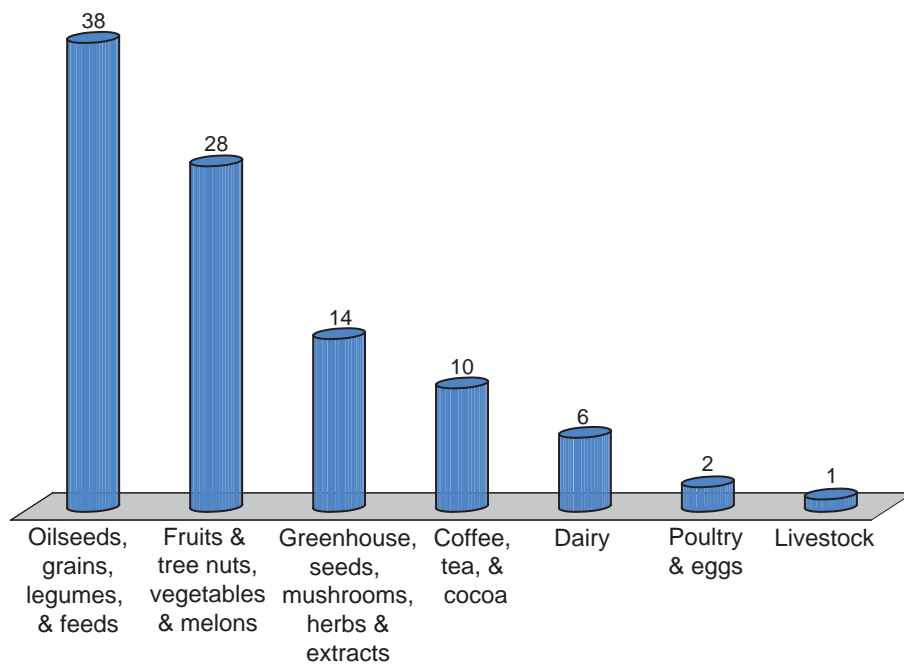
Note: N=1,393. The numbers reported in this table add to more than the total respondent population because facilities often carry out more than one function.

Source: USDA, Economic Research Service.

Appendix figure 2

U.S. organic handler procurement by category, 2004

Percent of handlers



Note: The survey respondents reported their top three products/ingredients procured, based on volume, which were then aggregated into broader categories. The figure represents the percentage of handlers who report procuring in the different categories. The number of handlers procuring ingredients/products was 1,089 in 2004.

Source: USDA, Economic Research Service.