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Abstract

Food hubs represent a business model through which farmers can collectively market product to access new supply chains and buyers can efficiently access locally sourced foods. Many farmer marketing cooperatives fit within the food hub definition and have existed for decades. Accordingly, much can be learned from them to support food hub business planning efforts. We developed and synthesized case studies of three successful cooperatives in order to match key food hub operational challenges with recommended best management practices. Such information is useful for Extension education efforts supporting the development of economically viable food hub businesses.

Keywords: food hubs, cooperatives, local foods, best management practices

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Introduction

The desire to purchase local foods has expanded beyond direct-to-consumer markets to intermediary buyers, including wholesalers, retailers, and institutions. Food hubs have emerged as a means for aggregating, marketing, and distributing products from primarily small- and mid-sized farms. Many farmer cooperatives have been providing such services for decades. The learned experiences of cooperatives as food hubs provide useful guidance for emerging food hub planning efforts—guidance Extension educators can use in building personal knowledge and providing technical assistance.

Cooperatively structured businesses are formed when a group of people act together to overcome a problem or secure an advantage they could not achieve by acting independently. One can see that the overlap between such entities and food hubs is undeniable by examining the definition of *food hub* provided by the U.S. Department of Agriculture (USDA): "business(es) or organization(s) that actively manage the aggregation, distribution, and marketing of source-identified food products primarily from local and regional producers to strengthen their ability to satisfy wholesale, retail, and institutional demand" (Barham et al., 2012, p. 4). Farmer cooperatives address issues common to food hubs, including taking advantage of economies of scale and transaction cost efficiencies and improving market access for producers.

Background

Lower marketing labor costs associated with wholesale markets are appealing to smaller scale producers; however, assembling a critical mass of product is necessary for entering such markets given resistance by buyers

to working with a number of small producers (LeRoux, Schmit, Roth, & Streeter, 2010). Beyond the general difficulty of achieving an adequate amount of product, producers also face challenges with production seasonality and in understanding the purchasing practices of these buyers (Gregoire, Arendt, & Strohbehn, 2005). Overall, accessing these desired markets individually is increasingly difficult as supply chains become more polarized (King et al., 2010; Knight & Chopra, 2013).

The commonalities between farmer cooperatives and food hubs have not been sufficiently taken advantage of to support food hub development. The overlaps in opportunities and challenges are clear. Hilchey, Gillespie, and Henehan (2006) found that 80% of small-scale grower cooperatives in the northeastern United States recognized that their strongest competitive advantage was providing a quality product with quality service and that their primary challenges included achieving product consistency and becoming a supplier of choice. A recent study of U.S. food hubs indicated that 20% were organized as cooperative corporations and that 21% and 36% were identified, respectively, as limited liability companies and nonprofits, entities that often have governance components similar to cooperatives (Hardy et al., 2016).

Research Methods

We examined the experiences of three successful northeastern U.S. cooperatives that fit the USDA definition of *food hub* by developing individual case studies and comparing recommended management practices among them. The case study method is well established as useful for promoting better understanding of complex relationships between individual entities (Stake, 1978). The method supports deconstruction and reconstruction of topics and is appropriate when the focus is to answer "how" and "why" questions or when the boundaries are not clear between the entities and the environment in which they exist (Baxter & Jack, 2008).

We developed three survey instruments for in-person interviews to build consistency across the cases, and included several open-ended questions to allow for disclosure of complex relationships and practices. General managers (GMs) completed two surveys. One focused on baseline data of the cooperative (e.g., sales, employees, scale of facilities). The other focused on the history of the cooperative, operational logistics, and cooperative and member responsibilities. Board chairpersons (BCs) completed the third survey, which addressed member attitudes regarding supplying product to the cooperative and the board's role in governance and decision making. Open-ended questions were more qualitative in nature, and we derived common phrases and meanings from the associated responses.

Discussion of Findings

The three cooperatives had aggregated, marketed, and distributed product on behalf of their members for between 14 and 61 years. In 2013, annual sales and numbers of members ranged from $1.3 million to $6.6 million and 10 to 44, respectively. Average annual sales per member ranged from $72,000 to $660,000. Vegetables accounted for the majority of product handled, with over three quarters marketed as fresh. Following the three definitional components of food hubs, we summarize herein the findings of the case studies.

Aggregation

A food hub is a mechanism for aggregating products sourced from a number of farms. Table 1 summarizes successful practices the cooperatives used in this regard.

Table 1.

Aggregation Practices Used by Three Cooperative Food Hubs

Cooperative	Preseason growing plan?	Marketing agreement?	Product from nonmembers?	Product pricing	Packing for shipment	Food safety protocols
Eden Valley Growers	Yes	Yes	Yes	Pooled	At farm	Harmonized GAP
Tuscarora Organic Growers	Yes	No	Yes	Pooled	At farm	U.S. organic and co-op standards
Upstate NY Growers & Packers	Yes	No	Yes	Pooled and other[a]	At farm and at co-op facility	GAP, member preference[b]

Note. GAP = good agricultural practices.

[a] Product repacked at cooperative facility is pooled. Growers disclose preferred prices to receive as part of the preseason growing plan. [b]GAP certification is not required; however, some growers choose to be so certified.

All the cooperatives used preseason growing plans to manage product supply and deliveries. Staggered planting times occurred within and across members to match deliveries expected by buyers. These plans were a good faith effort on the part of the farmer as formal contractual arrangements were deemed ineffective due to unpredictable weather events affecting yields and planting/harvest dates. Farmers were not allowed to bring surplus product to a cooperative unless a ready market already had been identified. Each cooperative had a list of nonmembers from whom they could purchase in case of product shortfalls.

Similar product supplied by producers was pooled and marketed together. Each producer was paid the average pool price received for all product of like quality delivered. A member's share of the pool proceeds was adjusted to reflect quality premiums/discounts. The pool systems provided for advanced payments to producers near the time of delivery. Final payments were made once the product was sold and marketing and handling costs were deducted. Farms maintained identity of their product primarily for food safety tracking purposes; however, such information also facilitated source identification for marketing purposes by buyers.

Producers washed, sorted, and packed product at their farms in accordance with industry standards or prearranged buyer preferences. Deliveries were inspected upon arrival to ensure quality and then assigned a tracking number and moved into storage. Product not meeting standards was refused and returned to the farmer for repacking. Members recognized the cost and inconvenience of repacking produce rejected at the dock. Specialty orders were repacked to buyer specifications at the cooperatives' facilities.

Many producers were certified as compliant with good agricultural practices although the formal stringency of protocols by cooperative differed. In the case of noncertified growers, their product was segregated and sold to buyers not requiring third-party certifications. Members of the organic cooperative delivered product meeting the criteria of the National Organic Standards and the cooperative's guidelines defining postharvest handling, grading, packing, storage, and food safety protocols.

Marketing

Marketing staff at the cooperatives were responsible for identifying and securing appropriate markets for member product given a set of interdependent factors, including pricing, volume, quality, and timing. Table 2 summarizes the sales volumes by each cooperative and the percentage of sales by channel for 2013. GMs designated channels as either primary, secondary, or tertiary to their organization.

Table 2.

Cooperative Sales and Marketing Channels Used by Three Cooperative Food Hubs

				Percentage of sales by marketing channel[a]							
Cooperative	Sales ($M)	Members (no.)	Sales per member ($K)	Wholesale distributor	Institution	Restaurant	Food processor	Grocery store	Specialty store, caterer	Food bank	Direct to consumer
Eden Valley Growers	6.6	10	660.0	Secondary 35%	5%	0%	Tertiary 10%	Primary 50%	0%	0%	0%
Tuscarora Organic Growers	3.3	44	75.0	Secondary 11%	<5%	Primary 28%	<5%	Primary 50%	Secondary 13%	0%	Tertiary 9%
Upstate NY Growers & Packers	1.3	18	72.2	<5%	0%	0%	<5%	Primary 95%	0%	<5%	0%

Note. Data reflect the 2013 marking year. $M = million U.S. dollars. $K = thousand U.S. dollars.

[a]General manager assigned the cooperative's primary, secondary, and tertiary market channels and delineated the percentage of total sales associated with each channel.

Grocery stores were identified by all three cooperatives as a primary marketing channel, with sales through this channel ranging from 50% to 95% of a cooperative's total sales. A consistent source of large product demand was essential to form a strong sales base. The marketing channels identified beyond grocery stores were fairly heterogeneous. Upstate NY Growers & Packers almost exclusively relied on sales to grocery stores, Eden Valley Growers sold to two other wholesale channels, and Tuscarora Organic Growers sold through four other channels. All the cooperatives relied on buyers both in their respective states and along the Atlantic seaboard given the area's high population concentrations.

Little to no product was marketed to institutions, a reflection of institutional requirements for contracts and bidding processes that were difficult to manage with preseason growing plans and weather-related risks. The implication for Extension educators is clear: There is no magic marketing recipe. Local buyer demands and supply conditions dictate feasible marketing strategies, and the goals of the organization provide further direction regarding channel selection and the relative concentration of marketing efforts used to mitigate risk. In the case of Tuscarora Organic Growers, providing local ingredients to restaurants was important for them to better connect with consumers, as their continuing emphasis was on direct-to-consumer sales.

Building and maintaining strong relationships between buyers and suppliers was identified as critical to

cooperative success. Several interviewees indicated that there are no secrets in the produce business. Ongoing communications maintain and strengthen relationships, particularly communications related to identifying changes early in expected member deliveries and buyer demands relative to preseason planning and marketing efforts. Examining historical procurement patterns of buyers, regularly measuring buyer satisfaction, and ensuring timely corrective actions were all stressed.

Strong relationships also support buyers' willingness to provide supplemental information on the purchasing behaviors of their customers and ways in which the growers can adapt to support buyer adjustments. Attendance at industry trade shows was also noted as increasingly important to accessing and building relationships with larger buyers. Human resource management and salesmanship training were identified as critical elements for building a strong marketing staff. Accordingly, Extension educators should consider providing food hub personnel with soft skills training in addition to education on financial management and supply and demand logistics.

Because product is pooled and sold, the cooperative's brand distinguishes its merchandise. However, the retailer determines how the product will be marketed once at the store, as well as the packaging required to meet consumer preferences. Accordingly, effective brand management should be stressed by Extension educators to their food hub clientele. The brand can be featured to raise awareness of the source of the product, and/or the retailer may prefer to feature individual farmers in point-of-sale promotions.

Distribution

Product distribution is the third element of the food hub definition and particularly involves trade-offs between owned structures and vehicles and those that are contracted. The scale and scope of a food hub operation play a large role in distribution decisions, as economies of scale are important for these types of operations. In some situations, contracting for distribution services can be an effective strategy, even for larger operations, if there is ample service capacity from nearby firms. Table 3 summarizes the distribution mechanisms used by the three cooperatives.

Table 3.

Distribution Resources Used by Three Cooperative Food Hubs

		Facilities		Transportation	
Cooperative	**Business volume ($M)**	**Ownership**	**Description (ft^2)**	**Owned (no.)**	**Contractual**
Eden Valley Growers	6.6	Cooperative	Cold storage (15,875), dry storage (7,200), office (1,035)	Box trucks (4), tractor trailers (5), pick-up trucks (2)	For long haul-deliveries
Tuscarora Organic Producers	3.3	Cooperative	Cold storage (3,857), dry storage (1,000), office (1,800)	No vehicles owned	Box trucks (6) for regular deliveries, outside jobbers for supplemental deliveries
Upstate NY Growers & Packers	1.3	Contractual	Cold storage (3,500), dry storage and packing (1,500), office (1,000)	No vehicles owned	All deliveries

Note. Data reflect the 2013 marking year. $M = million U.S. dollars.

Storage facilities and transport mechanisms were diverse across the cooperatives. The smallest cooperative contracted for all facility and transportation services, whereas the largest cooperative used contractual relationships only for long-haul deliveries. The mid-size cooperative had a mix of owned facilities but contracted for transportation services. Although some of the differences can be explained by scale economies and local service availability, differences in organizational goals, capital available by members for investment, and product-specific infrastructure needs also played a role. The smallest cooperative had the largest storage space per million dollars of sales (3,846 ft^2), albeit on a contracted basis. Comparably, the largest cooperative was at 3,496 ft^2 per million dollars of sales, and the mid-sized cooperative was at 1,472 ft^2 per million dollars of sales. Differences are likely a result of variation in product mix and the availability and timing of trucking services.

Key storage and distributional requirements commonly mentioned by the GMs included (a) using individual-room thermostats to ensure product-specific quality, (b) having multiple loading docks to minimize receiving and loading conflicts, and (c) regularly monitoring transportation costs, particularly in light of changing regulations and prices of transport vehicles. Food hub operators must consider all these components when making distribution-related decisions.

Implications and Conclusions

As a result of the input we received from the cooperative food hubs, we were able to synthesize six key challenges that are relevant regardless of a food hub's business structure. These are

- balancing supply and demand,
- maintaining product quality protocols and adherence to evolving food safety standards,
- dynamically aggregating sufficient quantities of product that is marketed at competitive prices for suppliers and buyers,
- monitoring changing consumer preferences and evolving food hub business operations,
- accessing cost-feasible infrastructure through ownership or contractual arrangements, and
- maintaining business stability through evolving suppliers' needs and market conditions.

As Extension educators work with food hub start-ups, thorough responses to these challenges are necessary to improve the feasibility of food hub planning efforts. In Table 4, we summarize the recommendations provided to us by the GMs and BCs we interviewed. Managers and organizers can use the recommendations as a checklist to ensure that they have adequately addressed them in their planning efforts. Extension educators can use them as a starting point with their food hub clientele and supplement them with specific details tailored to individual circumstances and organizational goals.

Table 4.

Key Food Hub Challenges and Best Management Practices for Addressing Them

Challenge	Best management practices
Balancing supply and demand	Work collaboratively with growers to construct preseason commitment plans identifying the level of supplies and expected delivery dates to construct weekly sales forecasts. Contact buyers in the off-season to evaluate their buying experience and gain knowledge of products needed in the next season.
Maintaining consistent product quality and food safety standards	Wash, sort, grade, and pack product at the farm prior to delivery to the aggregation facility. Inspect product upon delivery, and assign a tracking number when accepted. Handle product to maintain quality and safety standards of the buyer and to minimize risk and liability of food-borne outbreaks.
Aggregating sufficient quantities of product to be sold at competitive prices	Devote sufficient time to establishing and maintaining strong relationships with buyers and suppliers. Trust and reputation are very important. Most buyers will not contract to purchase product. Use sales staff to manage expectations of buyers as producers may not have the capacity to deliver desired quantities at specified times. Recognize that long-term growth requires the food hub to encourage members to expand production, along with securing additional buyers. Develop a brand for marketing purposes, recognizing that the brand may not transcend the market channel in which the product is sold.
Monitoring and responding to changing consumer preferences	Recognize that the palate of the consumer is becoming more diverse. Understand that producers will grow limited quantities of new products until they gain experience in production and have confidence that there is sustained demand.
Accessing infrastructure at reasonable cost	Operate cooling and refrigeration facilities with the capacity to adjust temperature and moisture levels for a diverse range of products. Understand that transportation costs, especially for long-distance hauls, are one of the largest costs to the business. Conduct careful analysis of costs when evaluating investments in buildings, equipment, and vehicles relative to contracting for equipment and services with outside firms.
Maintaining business stability	Recognize that member production capacity and the hub's facilities and staff need to be in balance across the business. Hire staff with expertise in the food system, and provide regular technical and human

resource training.

Note. Adapted from *Building Success of Food Hubs through the Cooperative Experience—A Case Study Perspective* (p. v), by R. M. Severson & T. M. Schmit, 2015, Extension Bulletin EB15-04, Charles H. Dyson School of Applied Economics and Management, Cornell University.

Food hubs are ultimately successful when they secure and deliver high-quality products in a timely manner, negotiate prices attractive to buyers and suppliers, maintain strong supplier and customer relationships, and secure sufficient returns on investment to satisfy capital reinvestment and business growth. Extension personnel can assist in food hubs in achieving these results.

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