Building Marketing Capacity of Local Food Systems: Case Studies from the Shenandoah Valley

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ABSTRACT

Small and medium-sized farms are an important demographic of the agricultural sector in the Shenandoah Valley and Chesapeake Bay watershed. Having sufficient food system infrastructure available and accessible to these farm operations is essential to help them add value to their farm products; diversify their operations and differentiate their farm and food products in an increasingly competitive and commodity-based food system. Despite its importance, however, local food systems (LFS) frequently have incorrect types or insufficient amounts of the equipment and facilities needed to support these systems. Through the use of two case studies, this study investigates current circumstances, future needs, and offers recommendations for two important components of LFS infrastructure in the Shenandoah Valley. The first study inventories and assesses existing infrastructure capacity available in the region. Using data collected from farmers, LFS organizations, and institutional foodservice organizations, a needs assessment is then completed to determine the specific amounts and types of equipment and facilities which would be needed to meet current LFS infrastructure needs. The second study explores current and potential benefits, and future challenges of a produce auction to impact Mennonite communities in the Shenandoah Valley. This analysis of the Shenandoah Valley Produce Auction (SVPA) was conducted using data obtained from both interviews and surveys.

Results indicate that producers, existing infrastructure, and institutional buyers in the region would like to own, use, or rent food system infrastructure. There is unmet LFS infrastructure demand in due to the current lack of enough food cleaning, processing, packaging, and storing equipment in this area. For the SVPA, most of participants were satisfied with the auction. Buyers, however, reported that their procurement from the SVPA is limited by fluctuating prices, demand outpacing supply of produce, insufficient delivery services.

Overall, food system infrastructure in general, and the SVPA in particular, were reported to have an important role in the region in supporting market access for local small and medium sized farmers, improve viability of local food system and the regional economy, and facilitating connections between consumers and their local food system. Several recommendations to strengthen the region's LFS are derived from these results.

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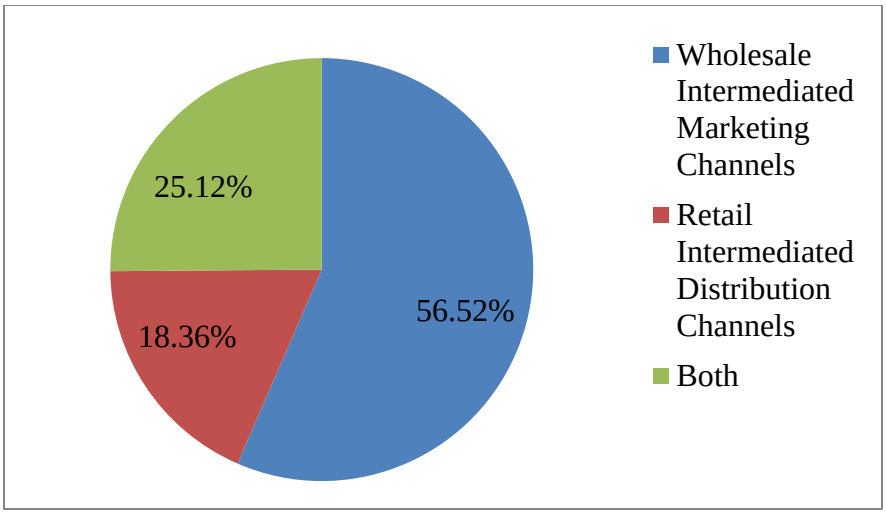
CHAPTER I: Introduction

According to a recent USDA Economic Research Service (ERS) report (2010), there is no generally accepted consensus on the definition of "local food." Current definitions are usually related to the geographic distance between site of production and sales, sales and differ by regions, companies, consumer, and local food markets. A conservative definition of "locally or regionally produced agricultural food produce" has been defined as less than 400 miles from its origin, or within the State in which it is produce (Food, Conservation, and Energy Act, 2008). In addition to geographic proximity, some production methods are also connoted as local food based on sustainable production and distribution practices that include reduced use of synthetic chemicals and fossil fuel-based fertilizers. For others, locally grown food may be defined by the characteristics of who produced the food and intermediated stages of the supply chain.

In 2008, the most recent year of agricultural census, 22,600 farms reported $4.8 billion in local foods sales through both direct-to-consumer (i.e., roadside stands, farmers' markets, on-farm stores, and community-supported agriculture arrangements) and intermediated channels (i.e., sales to local retail, restaurant, and regional distributors; Low and Vogel, 2011). Of this, $2.7 billion in local food sales was marketed through wholesale intermediated channels; this value is three time higher than the value of local foods sold through direct-to-consumer channels, and two times higher than the value of sales by farms who market though through both direct-to-consumer and intermediated channels (Figure 1.1).



Data Source: Low and Vogel (2011)

Figure 1.1 Farm sales of local foods through major marketing channels (%).

Small farms, which had less than $50,000 in gross annual sales, accounted for 81% of total local food sales in 2008 (Low and Vogel, 2011). Medium-sized farms which had gross annual sales from $50,000 to $250,000, accounted for 14% of total local food sales, while large farms with over $250,000 in gross annual sales only accounted for 5% of total local food sales in 2008. These findings indicate that small and medium sized farms are critical components of the local foods market. Enhancing access to fresher and better quality products which can be purchased foods through direct-to-consumer marketing channels can help build relationships between farmers and consumers, and help create customers who care deeply about farmers who provide products (Irshad, 2010).

1.1 Direct Marketing

Direct-to-consumer marketing channels have been adopted widely in the U.S. Direct-to-consumer marketing channels includes farmer markets, farm stands, roadside stands,

CSA (Community Supported Agriculture), "Pick-your-own" farms, internet marketing, and other niche markets (USDA-AMS, 2014).

Using date from the 2008 Agricultural Resource Management Survey, Low and Vogel (2011) report that small and medium sized farms respectively sell 78% and 70% of their output through direct-to-consumer outlets; the reminder of their output is sold through an intermediated marketing channel. While large farms also sell a bulk of their output through direct-to-consumer channels, they tend to sell a lower percent of their output through these channels (55%), and to sell through more outlets (Low and Vogel, 2011).

1.2 Importance of Locally Grown Food to Consumers

Locally grown food is very important to consumers and can provide other benefits to the development of the local economy. Local food, through improved access and consumption of fruits and vegetables, may provide health benefits from improved nutrition; help to prevent obesity, and reduce chronic diet-related diseases, especially for children (Martinez et al., 2010). Local food also provides opportunities for consumers to know more information about the food they bought, especially with direct-to-consumer sales. Consumers who value high-quality foods produced with low environmental impact are have been found willing to pay more for locally produced food (Martinez et al., 2010).

1.3 Importance of Food System Infrastructure to the Area of Study

Food system infrastructure describes supply chain activities between the consumer and the producer, i.e., production, processing, aggregation, distribution, retailing, marketing,

and capital (George et al., 2010). It is very important for food system infrastructure to be available and accessible in areas and regions with large numbers of small and medium sized farms because the costs of food infrastructure equipment can be unaffordable to these farmers on an individual farm basis. Presently, much of the existing food infrastructure in the U.S. is larger in scale, more national in scope and may be too large to accept and process smaller amounts of product; too distant for smaller transportation networks to reach; and unable to process and preserve local foods produced by small and medium sized farms. Small and medium-sized farms are an important demographic of the agricultural sector in the Shenandoah Valley and Chesapeake Bay watershed. Having sufficient food system infrastructure available and accessible to these farm operations is essential to help them add value to their farm products; diversify their operations and differentiate their farm and food products in an increasingly competitive and commodity-based food system. Therefore, it is critical to identify and assess the existing food system infrastructure and residents' needs for food system infrastructure in the Shenandoah Valley and Chesapeake Bay.

1.4 Locally Grown Food in VA

To better assist the state's diverse agricultural sector, several marketing programs related to local foods have been established. These programs include Virginia Grown, Virginia's Finest, farm-to-school programs, Shenandoah Valley's Buy Fresh Buy Local, among others. These programs are briefly introduced below.

The Virginia Grown and Virginia's Finest programs are run by the Virginia Department of Agriculture and Consumer Services (VDACS). The Virginia Grown program is a marketing tool promoting fresh, locally grown in-state products to

consumers and has a proven track record for increasing visibility, developing additional media attention and enhancing marketing opportunities for Virginia Grown products. Started in 1989, the Virginia's Finest trademark program promotes the development of Virginia-produced and processed products and aims to provide opportunities to increase sales of Virginia specialty food products (VDACS, 2014). To increase the volume of locally-grown products served in school cafeterias and dining halls across Virginia, several farm-to-school (F2S) programs have been initiated and developed in Virginia with the aim of bringing food from local farms to schools, including K-12 schools, colleges and universities. Presently, 976 public schools, 6 private schools, and 3 universities[1] are participating in these programs across the state. At the same time, farm-to-school programs can also benefit communities by reducing food transportation costs and indirectly protecting local farms and farmland (VDACS, 2014). Also worth highlighting, are regional (sub-state) marketing initiatives. By way of example, the Shenandoah Valley, a Buy Fresh Buy Local program was developed as consumer education initiative to connect consumers to locally grown foods in the area through several of market channels, including CSAs, farmers markets, restaurants, retailers, and institutions. In 2012, the total value of raw food products sold directly to individuals in Virginia was $41,728,000. This value reflects a 54.89% increase since 2007. On a per-capita basis, this reflects spending on local foods products in Virginia of $5.22; per capita spending has increased by 39.57% since 2007.[2]

[1] Number of schools was calculated by the study author based on information of http://www.vdacs.virginia.gov/marketing/farm-schools-co.shtml#accomack

[2] Calculated by the study author based on information of Table 2: Market Value of Agricultural Products Sold Including Landlord's Share and Direct Sales: 2012 and 2007: 2012 and 2007, 2012 Census Volume 1, Chapter 1: State Level Data. Available online at :

1.5 Introduction to the Shenandoah Valley

The Shenandoah Valley is located in the heart of west-central Virginia. The 4,264 square mile region is comprised of seven counties and five independent cities (Community Profile,). The studies conducted as part of this thesis focused ten counties located in the Shenandoah and Rappahannock River basins including Augusta, Bath, Shenandoah, Rockingham, Clarke, Frederick, Rockbridge, Madison, Page, and Warren (Figure 1.2). Due to the recent development of the fresh vegetable production market in this region, there is increasing demand in local food and questions about infrastructure needs in the region.

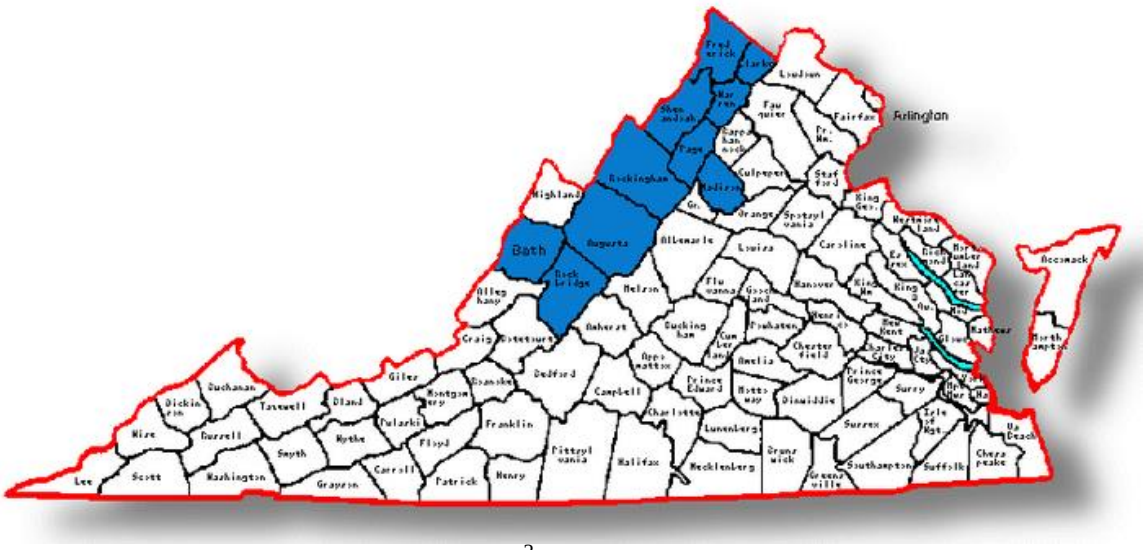


Figure 1.2 Geographic focus of this study[3]

1.5.1 Locally Grown Food in the Shenandoah Valley

In the Shenandoah Valley, there are 772 farms that sell their products through direct-to-consumer marketing channels; these sales were valued at $5,602,000 in 2012. The

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http://www.agcensus.usda.gov/Publications/2012/Full_Report/Volume_1,_Chapter_1_State_Level/Texas/st48_1_002_002.pdf

[3] The map was developed by the study author and is available at: http://diymaps.net/userimages/513168.gif

number of farms marketing through these channels has increased by 24.87%, and total value of direct-to-consumer sales have increased 44.14% since 2007 (Table 1.1).

Table 1.1 Number of Farms and Value of Sales in Shenandoah Valley, 2012

County	Number of farms	Change in number of in farms since 2007 (%)	Value of direct-to-consumer sales ($1,000)	% change in direct-to-consumer sale from 2007
Augusta	152	29.91%	990	-8.42%
Clarke	72	33.33%	414	135.23%
Frederick	60	-10.45%	866	18.14%
Madison	55	41.03%	549	0.37%
Page	31	19.23%	143	204.26%
Rockbridge	72	20.00%	243	37.29%
Rockingham	208	48.57%	1,610	28.70%
Shenandoah	91	18.18%	703	8.66%
Warren	31	24.00%	84	-26.96%
Total	772	5,602	44.14%	24.87%

Source:
Table 2. Market Value of Agricultural Products Sold Including Direct Sales: 2012 and 2007, 2012 Census Volume 1, Chapter 2: County Level Data (USDA-NASS, 2014).

To help farmers in the Shenandoah Valley to meet consumer demand and strengthen the overall food system, they are encouraged to participate in local, regional, and state-based marketing programs, such as Shenandoah Valley Buy Fresh, Buy Local, and Page County Grown. Farmers producing locally grown can sell their products through market channels including farmers markets, CSAs, restaurants, retailers, and other foodservice establishments. In addition to these standard channels, in this region consumers and produce buyers can also get access to fresh local foods through the Shenandoah Valley Produce Auction (SVPA). The SVPA is a wholesale food marketing and aggregation organization for which more than 65% of the food marketed through the auction produced within 5 miles of the auction site.

1.6 Overview of Thesis

This thesis contains three chapters. Chapter 1 provides an introduction to the topic of locally-grown food marketing which is generally examined in this thesis. The Shenandoah Valley is the area of geographic focus for this study and is particularly highlighted due to its food system infrastructure and local food market development needs. Chapter 2, "Local Food System Infrastructure: Assessing the Inventory and Needs of Local Food System Infrastructure in the Chesapeake Bay (VA)", explores market opportunities for farms and other organizations in Chesapeake Bay area and Shenandoah Valley by identifying existing infrastructure, and assessing local food infrastructure needs in the area. Chapter 3, "Shenandoah Valley Produce Market: Case Study of a Mennonite Produce Auction", reviews the history and current market status of the Shenandoah Valley Produce Auction (SVPA), discusses the benefits and challenges currently faced by the SVPA, and explores possible constraints to the future success of the SVPA. A discussion of conclusions, implications, and future research recommendations are presented at the end of each case study.

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CHAPTER II: Local Food System Infrastructure: Assessing the Inventory and Needs of Local Food System Infrastructure in the Shenandoah Valley Region

ABSTRACT

Infrastructure for locally grown foods is the equipment, facilities, and services needed to transform and transfer food from the producer to the final consumer. Access to this form of infrastructure benefits small and medium scale (SMS) farmers by enabling them to better meet their customers' needs. As such, local food system (LFS) infrastructure can help to expand markets for locally-produced food and may increase procurement of these products. This is particularly true of institutional foodservice operations which are potentially large markets but have specific needs of their suppliers which are often challenging for SMS farms to meet. This study inventories current local food infrastructure in the Shenandoah Valley, and assesses what infrastructure is needed and wanted by SMS in this area to conduct cleaning and processing, packaging, and storage activities. Particular attention is placed on identifying particular equipment needed to by these farms to serve as suppliers to institutional food-service operations. To accomplish this, this study analyzed data from surveys which were separately developed and disseminated to: SMS farmers, local non-government and other organizations which currently own food infrastructure, and buyers for institutional foodservice operations. Results indicate that there is considerable unmet demand for local food system infrastructure in the area. Total needed equipment costs for rental market is$721,537; of this, $323,102.09 is needed for food cleaning and processing equipment, $229,309 for packaging equipment, and $169,126 for storage facilities. While there is considerable interest by stakeholders in owning or renting this equipment, innovative approaches will be needed generate the financing needed for the initial purchase and maintenance of this LFS infrastructure.

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2.1 Introduction

A food system includes everything from farm to table with additional inputs and outputs to complete each step and the final disposition of food and food packages (Staatz, 2009). In 2008, U.S. Congress announced, through the 2008 Farm Bill, that the maximum distance that a product can be transported and still be considered a "locally or regionally produced an agricultural food product" is less than 400 miles from its origin, or within the State in which is produced (2008 Farm Act). However, according to USDA, there is no legal or universally accepted definition of local food. Not just limited to distance, other characteristics that are more social in nature and relate to the supply chain are also defined or attributed as "Local", such as the people who produced the food, the personality and ethics of the farmer, the attractiveness of the farm and surrounding landscape, and other factors that make up the "story behind the food" (Martinez et al., 2010). Local and regional food systems may have economic, environmental, and health impacts depending on how and to what extent consumers' purchase and consumption decisions are altered in support of these systems (O'Hara, 2011).

In addition, LFSs potentially offer environmental and health benefits. According to Irshad (2010), agriculture and the food system are significant energy users and contributors to greenhouse gas emissions, which in turn affect the environment and possibly climate change. By developing and supporting local food systems, "food miles", the distance that food travels from the location where it is grown to the location where it is consumed, may actually decrease. Further, ERS (2010) claimed that local food systems may provide health benefits from improved nutrition, obesity prevention, and a reduced

risk of chronic diet-related disease by providing consumers improved access to local foods and healthy food items. Other than these benefits, local food system decreases the need for packaging, as well as increases diversity in land use and varieties of specialty crops.

According to Hamm (2009), a healthy food system is vibrant, regenerative, and growing, and is predicated on having farming operations of diverse scales and production methods. Local food system infrastructure is needed to increase the net income for farmers and provide them opportunities to diversify and stabilize their revenue streams, and receive a premium price for products.

Local food systems are frequently considered to be synonymous with smaller farms that are committed to a sense of place and community well-being through social and economic relationships (Hughes et al., 2007). Two channels are generally used to market local food products: those transactions, which are conducted directly between farmers and consumers (direct-to-consumer), and direct sales by farmers to restaurants, retail stores, and institutions such as government entities, hospitals and schools (direct-to-retail/foodservice) (Martinez et al., 2010). Each of these marketing channels offers unique opportunities and challenges to farmers who opt to sell their products through them. In an effort to diversify their income streams and reduce their income risk, farmers frequently make use of both types of channels.

During the last half of the 20th century, the food system in the U.S. changed dramatically with increasingly centralized production and processing operations, and with farmer control over production, marketing, and labor decisions replaced by corporate control (Welsh, 1997). According to the 2007 Census of Agriculture, the number of

medium sized farms decreased significantly by 80,000 farms. Due to the impacts of the market and the changing demographics of agriculture, thousands of farmers get out of farming annually, especially farmers of middle-sized farms under suburban development pressures. This problem is recognized as a challenge for agriculture in the middle. As the middle-sized farms disappear, consumers lose opportunities to choose foods unique attributes, local residents and communities will lose open spaces and working landscapes that are easily accessible; wildlife habitat, air quality and soils may also be negatively influenced; and tax rates are likely to increase because farmland generally requires fewer services than residential areas. Those farms of the agriculture of the middle also face challenges due to increasing transportation and logistical costs, and global market competition.

2.1.1 Importance of local food system (LFS) infrastructure

Broadly conceived, food system infrastructure covers everything needed to channel food from the producer to the final consumer (George, V. et al., 2010). This infrastructure includes processing equipment, equipment repair, transportation and storage equipment, retail outlets; professional services such as logistics, advertising services, and waste handlers; and financial, workforce, civic, and land and energy resources. With the consolidation of the food and fiber industry through time, larger food and fiber firms have established supply chains that move bulk commodities around the globe (Kirschenmann et al., 2004), while more localized and regional infrastructure became outdated. Hence, access to food system infrastructure for small- and mid-sized farms is relatively underdeveloped in many regions of the U.S.

Infrastructure plays an important role in the local food system by connecting producers and final consumer, including in bulk purchasing and distribution system. Access to infrastructure can benefit farmers by opening new markets and providing a higher return on the products they produce and sell. Local food system infrastructure also brings benefits to the community by contributing to the strength of the local economy by paying local taxes, hiring local employees, purchasing local inputs and services, creating value-added markets for producers, and providing an expanding local products.

Large-sized farms can invest in infrastructure to improve profitability and meets the needs of their consumers. Small farms in the United States, which frequently market only raw product and to direct-to-consumer channels, generally do not require a large amount of infrastructure. Small and medium sized farms who wish to sell into anything other than direct-to-consumer marketing channels, however, do need access to cleaning, processing, packaging equipment and storage facilities. These farms, however, generally do not have sufficient revenue to purchase this equipment on their own; rather, these farms may need to share facilities to share risk and investment costs due to their smaller volume. Indeed, the scale and type of equipment small and medium scale farms need is often not yet available in the marketplace (George et al., 2010). To try to address these demographic changes and market challenges, the Centerpiece project was initiated in the Shenandoah Valley region of Virginia to investigate the feasibility of a sustainable market for fresh, local "Bay friendly" products that are produced by small and medium-sized farms in the Shenandoah Valley and Bay watershed.

In order to help Chesapeake Bay area residents have a better understanding of where their food comes from, Buy Fresh Buy Local marketing and consumer education

initiatives have been developed, and efforts have also been made to develop a software platform to facilitate local food distribution and marketing. The platform would contain a retail, purchasing and distribution system that connects farmers, institutions and consumers. The food system-based approach would benefit the community in job creation, business expansion, and economic vitality while also providing environmental benefits for the Chesapeake Bay area.

2.1.2 Study Objectives

The overall objective of this study is to assess the local food system infrastructure needs for the Shenandoah Valley. The analysis includes:

1. An inventory of currently available local food system infrastructure;
2. Identifying the current needs for local food system infrastructure;
3. Assessing and monetizing the region's unmet local food system infrastructure needs.

2.2 Literature Review of the Local Food System

Geographic proximity is only one component of defining a local foods system (Thompson et al., 2008); consumers to define local food systems may use many other characteristics. Thompson et al. (2008) mentions the personality and ethics of the grower, the attractiveness of the farm and surrounding landscape, and other factors make up the story behind local food. According to Low and Vogel (2011), small sized farms are the main sources local food, and small farms are more reliant on direct-to consumer marketing channels, including farmers' markets and roadside stands. Medium-sized farms are using both direct-to-consumer marketing channels and a mix of direct-to-consumer and intermediated marketing channels. Based on that trend, Low and Vogel

indicated and predicted a declining frequency of farms selling through direct-to-consumer marketing channels and increasing frequency of sales through intermediated marketing channels if the size of local food sales farms increase.

2.2.1 Local Food System Policies and Programs

Several federal and state programs encourage demand for products from LFS and help SMS farmers market their output. In recent years, Federal, state, and private agencies have provided funds to LFS. For example: $19.8 million was funded for Farmers' Market Nutrition Program (FMNP) in fiscal year (FY) of 2009, the USDA Rural Development provided a $665,229 loan for the Community Facilities Program, and $18 million for the Value-Added Agricultural Market Development Program by various USDA agencies (Martinez et al., 2010).

Many existing government programs and policies provide support for local food system development and/or access to local food system products. Federal programs include the Community Food Project Grant Program, Women, Infants and Children (WIC) Farmers' Market Nutrition Program (WIC FMNP), Senior Farmers' Market Nutrition Program (SFMNP), Federal-State Marketing Improvement Program, National Farmers' Market Promotion Program, Specialty Crop Block Grant Program, and the Community Facilities Program. The WIC Farmers' Market Nutrition Program aims to provide certified recipients coupons and benefits targeted to low-income pregnant, breastfeeding and no breastfeeding postpartum women, infants, and children up to 5 years of age (Boys and Donovan, 2014; Martinez et al., 2010). In the Senior Farmers' Market Nutrition Program, low-income seniors are provided vouchers to buy fresh fruit and

vegetables at farmer's market, roadside stands and community supported agriculture (Boys and Donovan, 2014).

Other federal agencies have also recently made awards to support direct or indirect development of local food systems. The United States Departments of Commerce, Labor, Health & Human Services (the Administration for Children and Families, the Centers for Disease Control and Prevention), the United States Department of Housing and Urban Development, National Oceanic and Atmospheric Administration (NOAA), Interior, Treasury and Transportation (Boys and Donovan, 2014). In addition, many foundations, firms and private donors have supported LFS infrastructure development including the Kresge Foundation, Henry P. Kendall Foundation, Van Buren Charitable Foundation, and Land O'Lakes Foundation Hunger Grants (Boys and Donovan, 2014).

State and local governments have also initiated several programs to support local food systems. In Virginia, for example, several such programs has been established, such as Farm-to-School program. Farm to Institution encourages institutions across the state to make a commitment to source Virginia Grown produce. Also, Farm-to-School Projects that support Virginia Grown food to increase access to healthy local foods in public school systems (VDACS, 2014).

2.2.2 Local Food System Infrastructure

Local food infrastructure is composed of all the interdependent steps and actors that go into producing the food item that is grown, raised, distributed and sold in a region including land, input suppliers, tools and machinery and storage facilities. It also includes processing and packaging facilities to transform raw products into value-added

products, shipping and packaging and distribution methods to deliver products to buyers and retailer outlets where products are sold (Dillon, 2007). According to Ostrom (2006), due to regulatory and processing barriers, value-added product sales present significant obstacles to increasing local sales. In particular, small-scale meat processing activities are often challenged by a lack capacity, equipment, inspection status, and human/financial capital to meet demand requirements (Matteson and Heuer, 2008).

According to O'Hara (2011), local and regional food systems have scalability challenges with limitations in processing infrastructure, or regulations for allowing local and regional food systems to prosper, such as lacking sufficient capacity. Martinez et al. (2010) proposed that the presence of adequate infrastructure is a basic need for local food system development. To address these concerns, communities are initiating diverse projects that develop connections between different parts of a region's local food system.

By reducing the concentration of ownership in the food system, community food infrastructure can provide opportunities for small and mid-sized food businesses. Community involvement and help in coordinating community food system is a key principle for successful community food system (Hanson, 2010). Public kitchens have, for example, been supported as a way to encourage the growth of LFS and value-added processing businesses by providing kitchen facilities and cool and dry storage, hydro-cooling, flash freezing and food recovery (Hughes et al., 2012).

Much of America's existing large-scale food infrastructure is not structured to accept smaller product volumes and preserve the identity of the local foods. Further, accessing this infrastructure often results in higher transportation costs for smaller volumes and thus adds inefficiencies (KYF Compass). Investments in LFS infrastructure

may provide possible opportunities for local economic growth with value-added products produced and sold locally.

2.2.3 Institutional Food Services

Institutional foodservice is the service provided by an institution to feed its own relevant customer group(s), and intend to fulfill the objectives of the institution itself and take care of its customers' nutritional needs. An institutional food operation is typically focused on school students, patients in hospitals, residents in a nursing home or healthcare facility , recipients of home-delivered meals, inmates in a correctional facility, employees of a company, or others who have a reason to be part of the institution and a need to be fed (Grossbauer, 2001). Schools, colleges, hospitals, corporate cafeterias and government agencies that serve numerous meals daily can potentially provide opportunities for farmers and LFS to engage institutions and expand the market for local foods.

Strategic partnerships between schools, hospitals and grocery stores, and SMS farms can be a basis for economic development and help facilitate building LFS distribution and processing infrastructure. According to a 2010 report from ERS (Martinez et al., 2010), institutional buyers who choose to purchase more locally sourced food creates business opportunities for farmers that, in turn, keep a greater share of food dollars in the local economy.

SMS farmers may find it challenging to meet the product volume and product, packaging and other specifications required by institutions buyers. In addition, some institutional foodservice operations may require farms to provide food safety certifications and/or to carry food product liability insurance. Also, SMS farms face challenges in meeting transport specifications and requirements for institutional buyers.

Institutional food service operations themselves face constraints limiting them from sourcing directly from farms. They have limited storage and processing facilities and unprocessed/fresh local foods require extra preparation time and expertise (Martinez et al., 2010). These operational challenges are the source of much of the current dependence on large suppliers of packaged and often precooked food among schools and hospitals (Hurst, 2009).

Despite these constraints, however, selling directly into an institutional market is appealing for these farms because they provide a higher prices than the comparable wholesale markets and require less marketing time than is required to sell the same volume of product in direct-to-consumers markets (Martinez et al., 2010).).

2.2.3.1 Farm-to- School

Farm-to-School programs are intended to bring healthful, farm-fresh foods to school cafeterias and to create new market opportunities within the federal school food program for small and mid-sized family farmers (Allen and Guthman, 2006). According to Morgan and Sonnino (2008), efforts in local foods infrastructure have the potential to become one of the most important social movements in the US as it fuels the growth of more sustainable food chains and helps communities, through their schools, to reconnect to producers of their food.

Ng et al. (2010) identified particular challenges to implementing farm-to school programs including limited local product supply and distribution methods, constraints in the foodservice operation, limited budget for purchasing and administrative support. Of these, the lack of available supply form local farmers was identified as the largest challenge. The problem of seasonality of small and medium scale farms products

availability and timing of the school year is also faced by farm to school programs. Based on the suggestion provided by Tropp and Olowolayemo (2000), small and mid-sized farmers will need to adjust their production, processing, and packaging methods to face these challenges.

2.2.3.2 Farm-to-Hospital and Other Institution Marketing

Hospitals are finding that direct-from-farm purchasing programs can increase access to healthy, fresh food for patients, visitors and staff. Importantly, healthcare institutions can influence better eating habits through purchasing local foods for use in cafeteria or food-court service and patient meals (Martinez et al., 2010). In purchasing directly from farms, however, hospitals faces challenges including: budget constraints; need for large product volumes; inefficiencies in ordering, delivery, and billing when purchasing directly from farms; provisions in contracts with existing vendors; lack of staff skills or labor availability to preparing fresh foods; limited or no food storage or food processing equipment, and lack of administrative support (Sachs and Feenstra, undated; Vogt and Kaiser, 2008). These challenges are similar to those faced by schools.

2.3 Research Methodology

Individual surveys of producers, local non-government and other organizations which currently own food infrastructure, and institutional foodservice buyers were conducted to assess the local food system infrastructure needs, and to identify the current conditions and future challenges within the local food system infrastructure for the study area[4]. The

[4] Augusta, Bath, Shenandoah, Rockingham Clarke, Frederick, Rockbridge, Madison, Page, and Warren

following discussion introduces how these surveys were developed, implemented, and analyzed.2.3.1 Survey Development

The survey consisted of forty-four questions and the survey instrument is presented in Appendix. Three surveys questionnaires were developed and distributed to producers, buyers and organizations focusing on local food infrastructure in accordance with methods described by Dillman (2009). The buyer's survey focused on their experiences and willingness in purchasing food processed through food infrastructure. The producer survey asked about their willingness and experiences in selling their processed products through food infrastructure. The organization survey elicited responses about challenges and difficulties while providing food infrastructure services to both producers and buyers.

Due to their knowledge of the area's food system, each survey was pre-tested with 8-10 farmers, food buyers, and others who are active in the study area's LFS. In response to feedback obtained from the pre-tests several questions were reworded to ensure proper question interpretation and the order of some questions was adjusted to improve survey logic and flow.

2.3.1 Survey of Small and Medium-Scale (SMS) Farmers

A survey for small and medium-scale (SMS) farmers was designed to explore issues related to production and marketing practices, value-added processing activities, and current and desired access to LFS processing, packaging and storage infrastructure. Specifically, the survey began with questions exploring the types of products produced by the farm business. The questionnaire asked producers about their current use and access to specific local food system infrastructure, including raw food cleaning, processing, and packaging equipment, and storage facilities, as well as, future needs for

infrastructure access. Demographic information about participants and their operation was the focus of the third part of this survey. In the last section, participants were provided an opportunity to offer additional comments, suggestions, and feedback about the survey, the study, or other items of interest. The survey was anonymous; no identifying information was collected.

Multiple choice and open-ended questions were used to collect a majority of the data. All participants were offered an opportunity to receive choose to get an electronic copy of this study's final report and an opportunity to enter a raffle for a $100 Visa pre-paid gift card.

The producer survey was distributed in both electronic and paper version. The primary means by which the survey was distributed was through an electronically administered survey using online software named "Qualtrics". In this survey format of the producer survey, skip logic and display logic was used to more efficiently guide professionals through questions based on their circumstances. In the paper survey format, other than three questions to agree to be in research study, the number of questions was reduced from 44 to 39. The eliminated questions were those exploring more in-depth the types of value-added activities producers do and the facilities at which they are conducted, value added processing of aquaculture products and arrangements for slaughtering animals. Hardcopies of the survey were distributed and collected by Virginia Cooperative Extension (VCE), the Valley Conservation Council (VCC), and the Shenandoah Valley Produce Auction staff.

2.3.2 Survey of Organizations with LFS Infrastructure

The target audience for the LFS Organization survey are nonprofit organizations, cooperatives, and other groups with known interest in supporting the study area's LFS. The questionnaire was designed to elicit information from organization about what types of food cleaning, processing, packaging equipment and storage facilities and services these currently offer and would like to own in the future, and their willingness to allow outside organizations to access their infrastructure. Participants were encouraged to answer open-ended question concerning specific challenges experienced by their organization.

Through project partners, a list of organizations engaged in the study area's LFS was developed. This survey was administered electronically through Qualtrics™ and sent to a key leader within each organization. Hard copies of the survey were available should any of the potential respondents preferred this format.

2.3.3 Institutional Buyers Survey

The survey of institutional foodservice buyers was conducted to better understand the specific food and type and extent of processing wanted by these organizations. Specifically, the questionnaire was designed to gather information about products purchased from SMS farms by institutional buyers, and forms of processed food they currently buy and would like to purchase directly from local farmers. Participants were also asked about their current procurement practices, their willingness and requirements in purchasing local products directly from farmers, and their food budgets.

Through project partners, a list of institutions with foodservice operations in the study area was developed. This survey was administered electronically through

Qualtrics™ and sent to the primary food buyer within each organization. Hard copies of the survey were available should any of the potential respondents preferred this format.

Promotion of Surveys

Several methods of distribution were used for each of the three surveys. For the producer survey, the general distribution method included a paid advertisement in local and regional newspapers: i.e., the Daily News Record (readership of about 23,000 households), Shenandoah Journal (10,000 households), North Fork Journal (12,500 households). An announcement publicizing the producer survey was released to 52 media outlets including newspapers and radio stations throughout the area of study. In addition, the three surveys were announced and shared with the Shenandoah Valley Food and Farm Work Group. This group of 194 individuals was reached through email distribution, and included farmers, food business owners, state agencies and community-based organizations. Three surveys were also posted and shared through social media: three main Facebook pages: Shenandoah Valley Buy Fresh Buy Local (n = 2,022), Virginia Farm to Table (n= 816), and Virginia Food System Council (n = 616). In these announcements, the purpose of the three surveys, the targeted groups, and contact information for the study leaders were shared. Potential participants were also provided links to the surveys on all of the describe promotion methods. Copies of the final surveys are presented in Appendix A1, A2, and A3.

2.3.4 Institutional Review Board Approval

The Chair of the Virginia Polytechnic Institute Institutional Review Board (IRB), using exempt review procedure, validated the data collection protocol #14-267 for producer survey and Phase II, and protocol #14-362 for existing infrastructure and institutional

buyers' survey. An approval was granted on March 25, 2014 for Phase I (farmer survey) and March 27, 2014 for Phase II (organization and foodservice buyer surveys).

2.4 Results and Discussion

This chapter focuses on the results and discussion from three surveys collected from producers, existing infrastructure, and institutional buyers in study conducted area using both web-based and paper survey instrument.

2.4.1 Producers Survey

In the Producers survey, the total final sample size is 96 observations (48 completed surveys). The response rate of this survey is 13.72%.

Demographic characteristics of producer respondents are summarized in Table 2.1. The majority of the respondents are male (65%) and 35 percent are female. This result is generally consistent with the rate of male producers in the counties where the study was conducted. Compared with average age of farmers in the10 counties of the studied area, respondents had a younger average age (49) than the average age of Virginia farmers (60). A majority of respondents were Caucasian (93%); the distribution of respondents by their race was similar to that of farmers in the studied area. There are 34% of surveyed producers stated that their annual gross revenue is less than $10,000, while producers with less than $10,000 annual gross revenue accounts for 53.19% of farms in the study conducted region.

Table 2.1 Demographic and business characteristics of surveyed producers compared with farm operator characteristics in the examined region

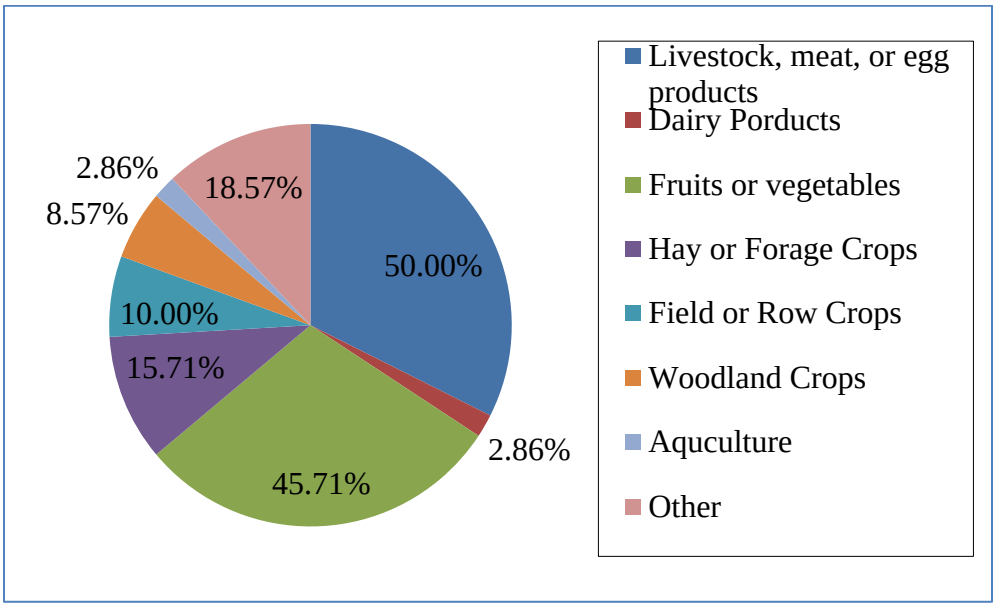
Demographic Characteristic	Category	Study Respondents	All Farm Operators in Region (2012)
Gender	Male	31 (64.58%)	84.65%
	Female	17 (35.42%)	15.35%
Average Age (in years)		49	60
Race	American Indian	1 (2.22%)	0.31%
	Asian	0 (0.00%)	0.48%
	Black or African American	0 (0.00%)	0.80%
	White	42 (93.33%)	151.48%[1]
	Of Spanish, Hispanic, or Latino origin (regardless of race)	0 (0.00%)	0.00%
	Other (Foreigner)	2 (4.44%)	N/A
Annual Gross Revenue	< 10,000	14 (34.15%)	53.19%
	10,000 - 49,999	11 (26.83%)	24.50%
	50,000 - 99,999	5 (12.20%)	5.02%
	100,000 - 249,999	5 (12.20%)	4.67%
	250,000 - 449,000	2 (4.88%)	3.73%
	500,000 or more	4 (9.76%)	8.90%

Note:
[1] Data were collected for a maximum of three operators per farm.
Source: Table 2. Market Value of Agricultural Products Sold Including Direct Sales: 2012 and 2007, 2012 Census Volume 1, Chapter 2: County Level Data (USDA-NASS, 2014).

According to the result of producer survey, 50% of producers stated that their farm revenue comes from livestock, meat, or egg products, 45.71 % of producers' farm revenue comes from fruits or vegetables. Survey respondents reported that hay or forage crops (15.71%), field or row cops (10%) and woodland crops (8.57%) accounted for the remainder of their farm revenue. Aquaculture and dairy products each only generate 2.86% of the respondent's farm revenue (Figure 2.1).

Of the 13 respondents who indicated that they produce "Other" products, five reported producing plants or operating a greenhouse operation, two reported offering

horse boarding services, the remainder indicated that they are engaged in ties in niche agriculture production or value-added activities including wild game processing, culinary herbs, farm winery, honey bees, and the production of sauces and crafts.



Note: Total question respondents=70
Figure 2.1. Activities through which respondent farm revenue is generated

Table 2.2 and Figure 2.2shows the percentage of special production practices, certifications and regional, state or local marketing programs that respondent's farms have participated in. Among these, 42.6% of surveyed producers reported using cover crops, 31.5% are practicing "No or Reduced (Conservation) Tillage, and a 31.5% use "Grass or Tree (Riparian) Buffers". Among respondents, only 5.56% of farms have organic certification, 11.11% of farms are transitioning to organic. Among those who indicated that are using "other" practices or certifications for their farm, use of green roofs, rain gardens, storm water catchments, permaculture, stockpiled forages, Integrated Pest Management (IPM), no chemicals, pastured, pesticide free and rotational grazing were reported. A significant number of respondents (18.5%) indicated that their farms are not using any special production practices or certifications.

Table 2.2 Farm use of special production practices and/or certifications (%)

Practice	Farm Participation (%)
GAPs	14.81%
Certified Organic	5.56%
Transitioning to Organic	11.11%
Green Certifications	7.41%
Cover Crops	42.59%
Nor or Reduced Tillage	31.48%
Grass or Tree Buffers	31.48%
Nutrient Management Plan	18.52%
Livestock Exclusion	18.52%
Water Stewardship	11.11%
Other	14.81%
None	18.52%
Note: Total question respondents=54	

The Shenandoah Valley Buy Fresh Buy Local was reported the most used marketing program (Figure 2.2). "Other" programs used by participants included the Buy Fresh Buy Local program in Loudoun County and the Piedmont Environmental Council (PEC). Some respondents noted that they are participating in the Shenandoah Valley Produce Auction, selling abroad, or selling through the Shenandoah Valley Beef Cooperative.

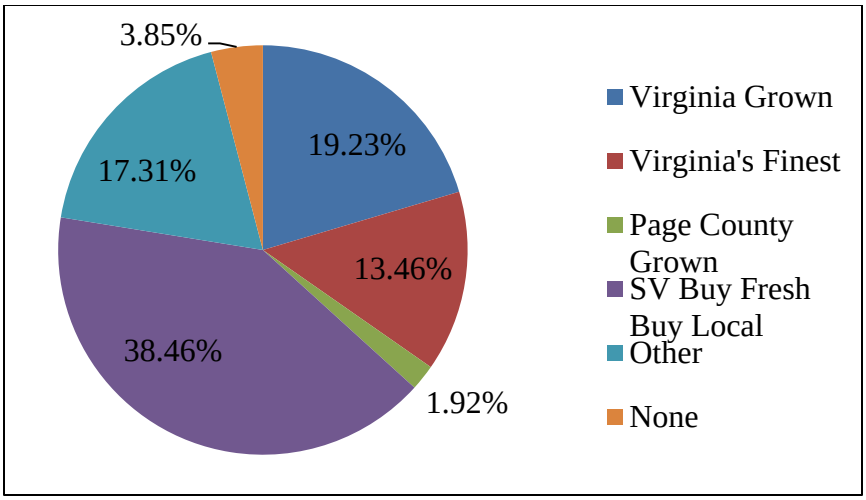


Figure 2.2 Percentage of farms' participation in regional, state or local marketing programs

Table 2.3 summarizes producers' current and potential production by type of product. The respondent farmers were quite diversified and many produced both meat and fruit and vegetable products. None of the respondent reported that they are currently producing dairy products (ice cream, butter, milk and yogurt) and only one indicated that they are currently producing cheese. Among the responding group, none indicated interest in extending their operations to include production of any additional dairy products in the future.

Table 2.3 Producers' current production and interest in producing meat products, fruits and vegetables.

Products	Currently Produce	Interested in producing
	Meat Products[1]	
Poultry	11 (68.75%)	3 (18.75%)
Beef	16 (100.00%)	3 (18.75%)
Pork	15 (93.75%)	1 (6.25%)
Eggs	15 (93.75%)	1 (6.25%)
Lamb, Goat	6 (37.50%)	1 (6.25%)
	Fruits and Vegetables[2]	
Berries	12 (48.00%)	5 (20.00%)
Cruciform Vegetables	12 (48.00%)	2 (8.00%)
Leafy greens	17 (68.00%)	3 (12.00%)
Legumes	18 (72.00%)	0 (0.00%)

Products	Currently Produce	Interested in producing
	Fruits and Vegetables[2]	
Melons	13 (52.00%)	2 (8.00%)
Squash, gourd	21 (84.00%)	2 (8.00%)
Stalk vegetables	13 (52.00%)	2 (8.00%)
Tomatoes	25 (100.00%)	1 (4.00%)
Tree Fruits	9 (36.00%)	4 (16.00%)
Tuber, root vegetables	15 (60.00%)	1 (4.00%)
Herbs	3(23.00%)	0 (0.00%)
Other	6(24.00%)	0 (0.00%)

Notes:
[1] Total question respondents= 16. There are 5 people are currently producing lamb or goat, 1 person is producing quail, rabbit and squab currently. Only one person is interested in producing ducks and geese.
[2] Total question respondents= 25. There are 6 people currently producing cucumber, watercress, mushrooms, micro greens, hot peppers and sweet corn.

Producers current willingness to use value-added practices was also explored. Among respondents 40.4 % indicated that they are currently doing some value-added activities, 21.3% of expressed interested in doing so, while 38.3 % were not interested in incorporating any value-added activities into their business.

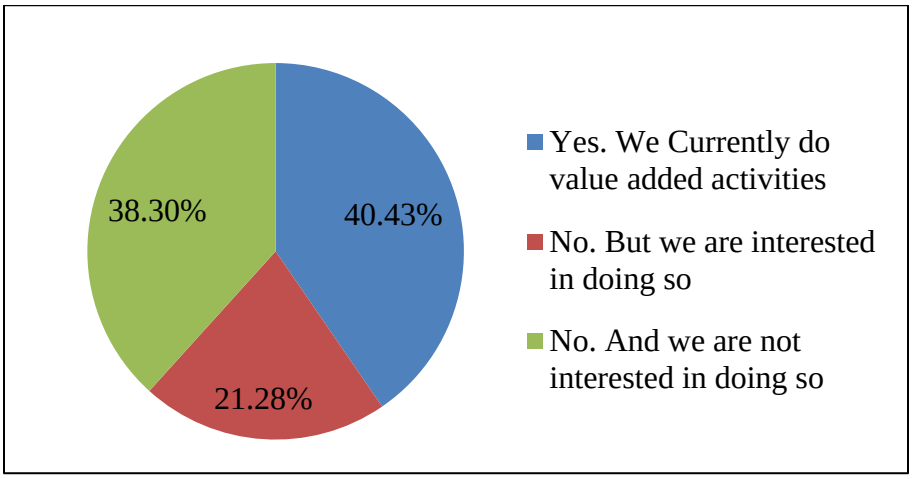


Figure 2.3 Producers' willingness to do value added activities

As is indicated in Table 2.4, most producers indicate that they have access or have interest in having access to further processing equipment for value-added activities.

More than 30% of producers own food processing equipment, or dry or cold storage. Among surveyed producers, few of them rent, borrow, or contract food processing, packaging equipment and/or cold storage at another facility. More than 40% of respondents are interested in using food processing, packaging equipment, and frozen storage. A notable number of responding producers (25%) indicated that they are not interested in using dry storage. In addition, one respondent owns dehydration equipment and one is interested in using cheese-making equipment.

Table 2.4 LFS Value-Added Infrastructure Access for by Producers

	Own equipment	Rent/ Borrow/ Contract equipment	Interested in using this equipment	No interested in using this equipment
Raw Product Cleaning	12 (42.86%)	0 (0.00%)	7 (25.00%)	4 (14.29%)
Food Processing	9 (32.14%)	3 (10.71%)	14 (50.00%)	3 (10.71%)
Food Packaging	7 (25.00%)	1 (3.57%)	13 (42.86%)	3 (10.71%)
Storage – Dry	6 (21.43%)	0 (0.00%)	4 (14.29%)	7 (25.00%)
Storage – Cold	10 (35.71%)	1 (3.57%)	9 (32.14%)	4 (14.29%)
Storage – Frozen	9 (32.14%)	0 (0.00%)	12 (42.86%)	3 (10.71%)
Note: Total question respondents= 28.				

Respondents were queried about their need for additional labor, should access to LFS infrastructure become available. Among surveyed producers, a notable number (33.3%) indicated that they would not need to hire additional labor. Twenty percent of respondents would likely hire less than 10 hours per week of additional labor, and 16.67% of respondents would like to have 10 to 20 additional hours of labor per week. Only 3.33% respondents indicated that they would hire more than 20 additional hours of labor per week (Figure 2.4).

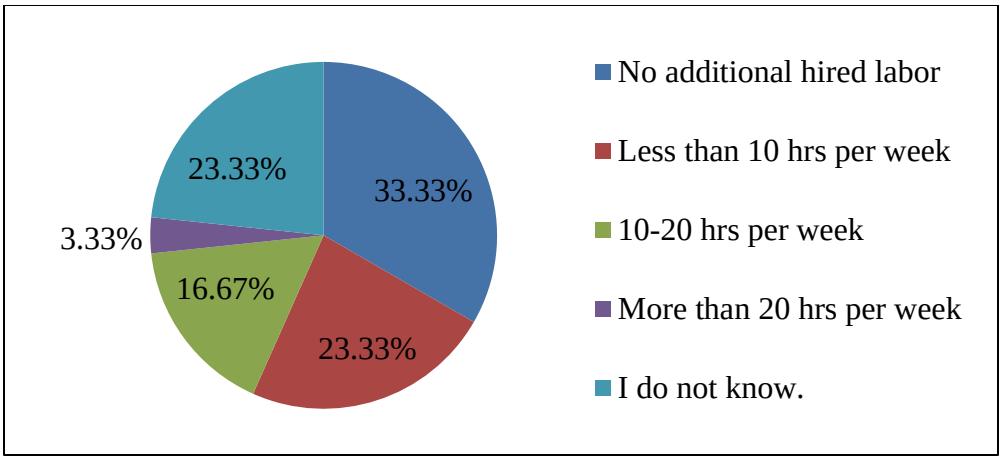


Figure 2.4 Percentage of producers who would like to hire additional hour of labor

Figure 2.5 presents information about the maximum travel time that producers indicate they would be willing to drive (each direction) to use these facilities. The bulk of producers (42.86%) are willing to drive 15 to 30 minutes to use those facilities; very few people (3.57%) would like to drive 1 to 1.5 hours to reach the location. In addition, 7.14% of respondents stated that it depends on the equipment, but closer is better.

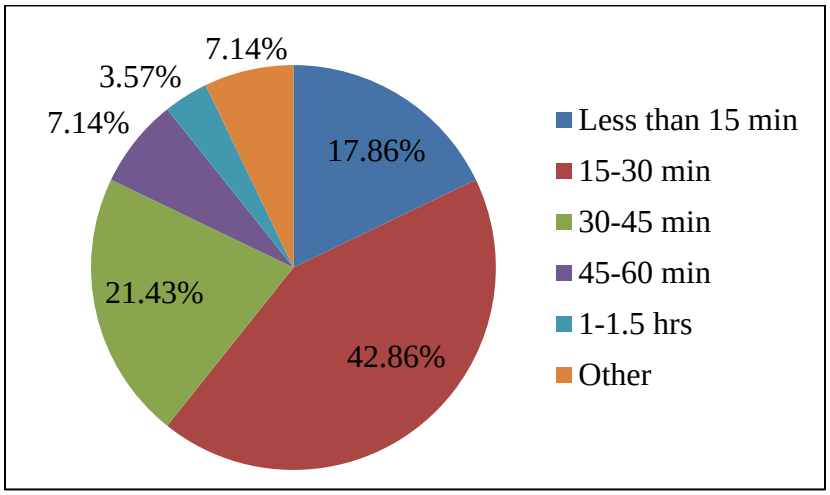


Figure 2.5 Distance that producers would like to drive to use food cleaning, processing, packaging, and storage facility.

Few producers (n=4) indicated that they are already renting facilities for value-added activities, Among these, two have been using Gourmet Central in Romney, WV. These producers have been using this facility for 2 and 3 years, and they like that the cost

at this facility is based on items packed. The other producer has rented or utilized his facility free for 2 years, but did not specify the actual facility used. The last producer from Timberville, Rockingham has used Rinkers for 3 years and not sure about the costs. Interestingly, one producer that has his/her his own facility, estimated that their cost to do processing and packaging is $3 per jar.

More than 50% of surveyed producers show their interests in using a shared use kitchen, while 27.91% of respondents are not at all interested in it, 13.95% of respondents have not thought about it (Figure 2.6).

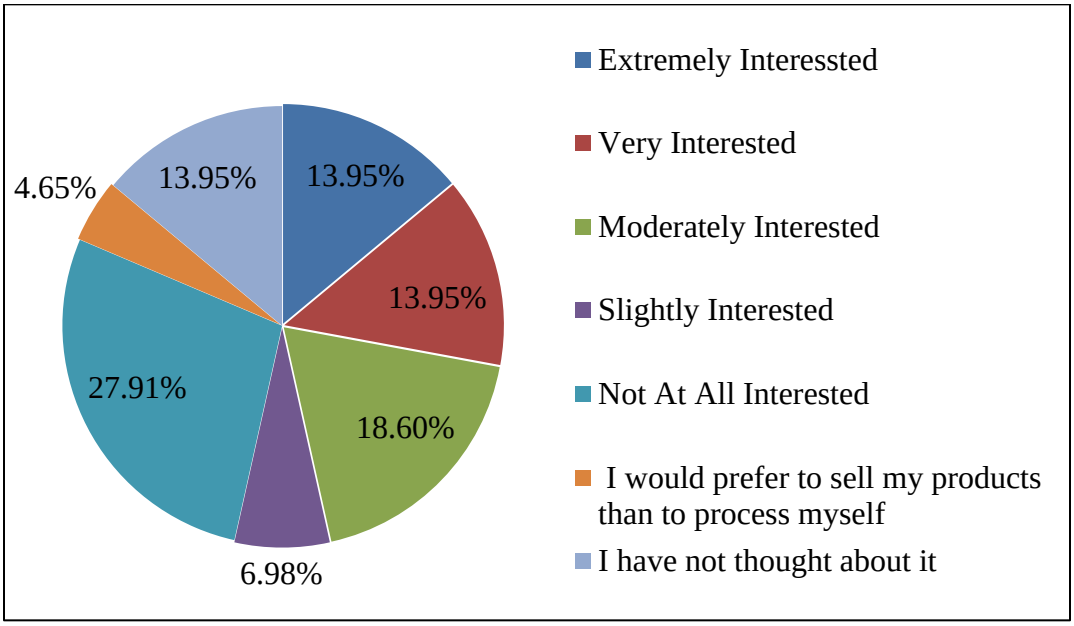


Figure 2.6 Respondent interest in using a shared use kitchen (%)

As depicted in Figure 2.7, about 40% of respondents indicated at least some interest in using a kitchen incubator, while 22.73% of surveyed producers are not at all interested, 18.18% of them have not thought about it.

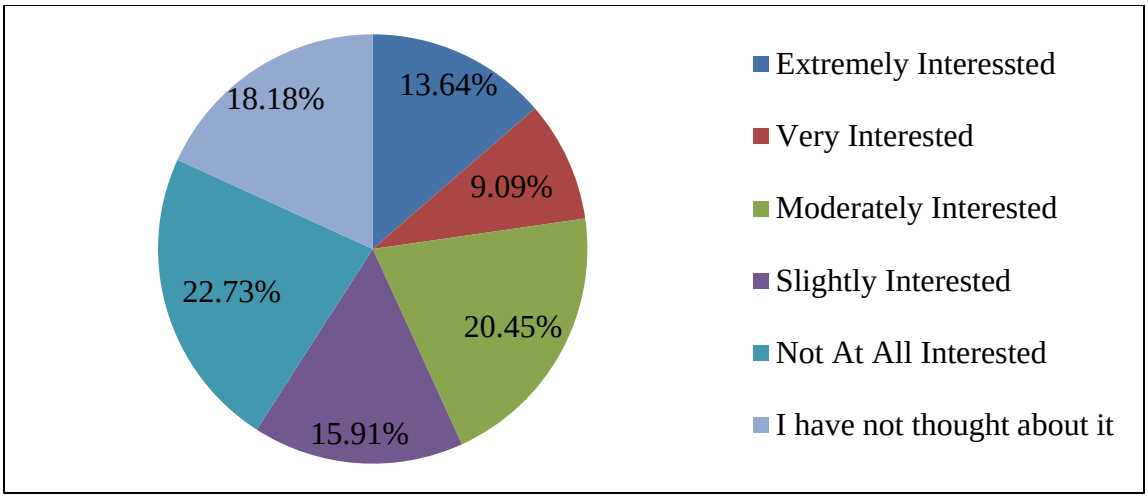


Figure 2.7 Farmer interest in using a kitchen incubator

2.4.2 Organization Survey of Existing Infrastructure

A total of 26 organization surveys were completed. This reflects a response rate is 96.30%. As summarized by Figure 2.8, 40% of survey respondents are working for Nonprofit Organization, and respondents who work in cooperative and sole proprietor or partnership accounted for 20% for each. Ten percent of respondents work for a corporation, and rest 10% respondents are working for their own organization.

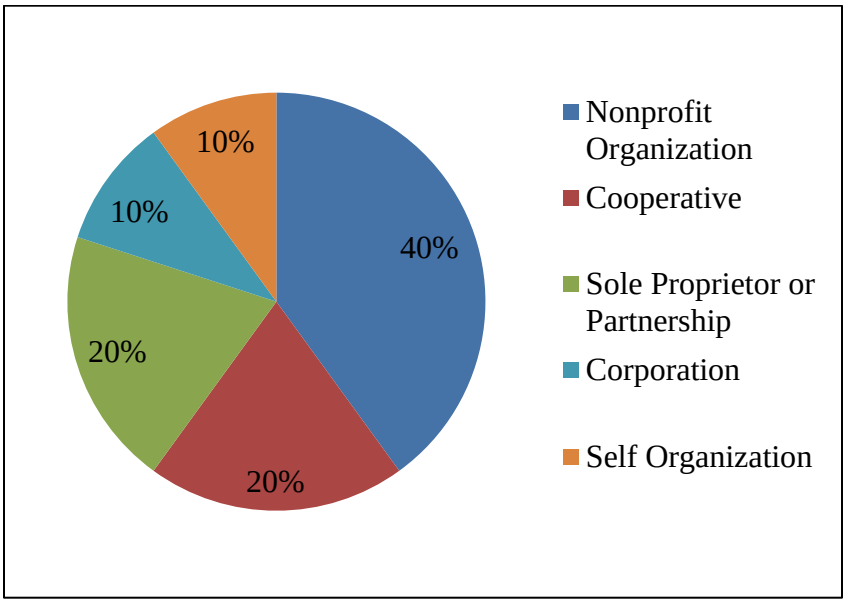


Figure 2.8 Legal structure of responding community organizations

According to the surveyed respondents, only one indicated that their organization would like to own or operate new or additional equipment or facilities.

2.4.3 Institutional Foodservice Buyers Survey

The institutional buyer survey was sent electronically to 62 people including representatives from public and private schools, universities and colleges, and hospitals within the targeted 11-county area of the Shenandoah Valley. A total of 13 completed surveys were completed yielding a response rate is 20.97%.

Table 2.5 Percentage of food products bought from different type of suppliers

Operation	30%	30%-50%	50-75%	75-100%
Foodservice distributor			3 (30.00%)	5 (50.00%)
Wholesaler or broker	4 (40.00%)		1 (10.00%)	
Cooperatives	2 (20.00%)			
Specialty foods distributor	2 (20.00%)			
Buy directly from growers or farmers	3 (30.00%)	1 (10.00%)		
Other distributors[1]	2 (20.00%)			

Note:
Total question respondents= 10.
[1] Other distributors includes produce source partners and cavalier produce, pet dairy, Flowers bread, McKee foods, Hershey's ice cream.

More than 60% of responding institutional buyers purchased at least 50% of their food from a food service distributor. Wholesalers or brokers, cooperatives, specialty foods distributors, are other common sources of food. Thirty percent of farmers report purchasing at least 30% of their food directly from farmers (Table 2.5).

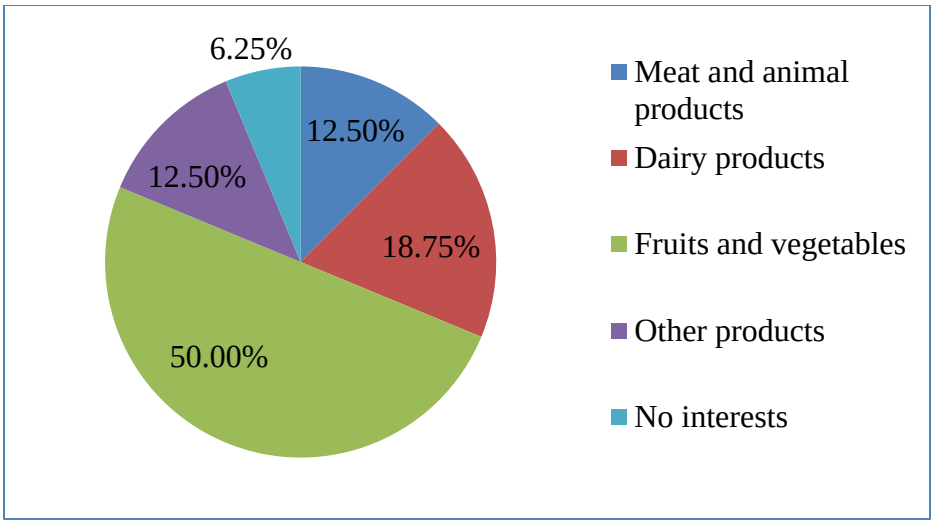


Figure 2.9 Products buyers currently purchase, or would like to purchase, from local, SMS farms

A significant number of respondents (50%) currently purchase or are interested in purchasing fruits and vegetables from local, SMS farms. Approximately 19% of respondent buyers are interested in purchasing dairy products, and the percentage of people who would like to buy meat and animal products is 12.50%. There are 6.25% of respondents showed no interest in purchasing product directly from local SMS farms. Other products that respondents would like to buy locally are flour, baking goods and grains (Figure 2.9).

To gauge the potential benefits and challenges that foodservices operation might experience by buying produce directly from Local SMS farms respondents were asked to rate a series of potential statements. In summarizing the results of this assessment, the following scale was used: Agree=5 points, Somewhat Agree = 4 points, Neither Agree nor Disagree = 3 points, Somewhat Disagree= 2 points, and Disagree= 1point. Those who indicated “I Do Not Know” were offered 0 points. Table2.6 and Table2.7, summarizes the average ratings for each statement (Table 2.6).

Surveyed buyers ranked their highest (4.57) potential benefits as good for the institution's public image, they also agree with contribution in rural community viability if they purchase products directly from Local SMS farms (4.29). However, they remain neutral in Local SMS farms products meet needed product specifications(3.57), and disagree with they can change higher prices (1.57).

Table 2.6 Institutional Foodservice Buyer Rating of Potential Benefits from Using Local SMS Farm Products

Potential Benefits	Average Rating
Purchasing directly from Local farms is good for our institution's public image.	4.57
Purchasing directly from Local SMS farms contributes to rural community viability.	4.29
Products form Local SMS farms are fresher.	4.14
Our customers appreciate our response to their requests for food grown on Local SMS farms.	4.14
Purchasing directly from Local SMS farms benefits the economy.	4.14
Products from Local SMS farms meet needed product specifications.	3.57
We can charge higher prices because we purchase from Local SMS farms.	1.57
Note: Total question respondents=7	

According to buyers' responses in Table 2.7, most of them somewhat agree, that less competitive prices of products (4.29), adequate quantities or volume of products was the greatest challenge (4.14), lack of wholesaler or brokers (4.00), limited delivery options (4.00), lack of adequately document Local SMS farms' food safety practices (3.86), no enough Local SMS farms (3.71). Some of them remain neutral when talk about challenges in contractual obligations (3.57), lack of adequate food safety practices (3.57), complicated order placing and billing (3.57), lack of varieties of produce that operation uses (3.14), and variability in important characteristics (2.86).

To gauge the level of required services by Local SMS farms to market, bid or sell directly to foodservice operation, the following scale was used: Required = 3 points, Not Required, But Preferred= 2 points, Not Required, Not Preferred= 1point, and I Do Not Know= 0 point. In Table2.8, it shows the average rating points of each statement.

Table 2.7 Challenges from buying produce directly from local SMS farms reported by institutional foodservice buyers.

Challenges	Average Rating
Prices of products from local SMS farms are not competitive with other bidders.	4.29
Local SMS farms are not able to supply adequate quantities or volume of products.	4.14
There is a lack of wholesalers or brokers in my area that sell local SMS products to institutional food services.	4.00
Delivery options from local SMS farms are too limited.	4.00
Local SMS farms do not adequately document their food safety practices.	3.86
There are not enough local SMS farms in my area that sell to institutional food service operations.	3.71
Local SMS farms do not use adequate food safety practices.	3.71
I am unable to buy from local SMS farms due to contractual obligations with my current supplier.	3.57
Local SMS farms do not offer cut, packaged, or other value added processing options.	3.57
Placing orders and /or billing from local SMS farms is too complicated.	3.57
Local SMS farms do not offer the varieties of produce that our operation uses.	3.14
Products from local SMS farms are too variable in important characteristics (e.g. size, consistency).	2.86
Note: Total question respondents=7	

Table 2.8 shows that institutional foodservice buyers would require proof of a food product liability insurance policy, reliable traceability system, and approved Hazard Analysis Critical Control Points (HACCP) Plan. They would prefer to have Good Agricultural Practices (GAP) certification, participating in regional, state, or local marketing program, and providing precut produce options, prewashed and prepackaged

product options, and packaged product options. However, they do not require or prefer entering a contact for two or more years and storage provided.

Table 2.8 Services required of local SMS farms for buyers to market/bid/sell directly to buyers' foodservice operation.

Services	Average Rating
Have an approved Hazard Analysis Critical Control Points (HACCP) Plan.	2.86
Provide proof of a food product liability insurance policy (food safety assurance).	2.57
Have a reliable traceability system in place.	2.57
Have Good Agricultural Practices (GAP) certification.	2.29
Participates in a regional, state, or local marketing program (i.e. Virginia Grown, Buy Fresh Buy Local)	1.71
Can provide precut produce options	1.57
Can provide prewashed and prepackaged product options.	1.57
Can provide packaged product options.	1.57
Willing to enter a contract for two or more years.	1.29
Can provide storage.	1.14
Note: Total question respondents=7	

According to the results of form of purchased food preferred by surveyed institutional buyers, two of them prefer to have all meat and animal products packed, and beef and pork with vacuum sealed. Three buyers would like to purchase packed cream or butter, two of them prefer to purchase packed milk, cheese, and yogurt (Table 2.9).

Table 2.9 Institutional Foodservice preferred form of meat and animal products, and dairy products

	Packaged	Other Form	Preferred Grade	Number of Responses
		Meat and Animal Products[1]		
Poultry	2		8 cut	2
Beef	2		vacuum sealed	2
Pork	2		vacuum sealed	2
Eggs	2		any grade	2
		Dairy Products[2]		
Cream/Butter	3		Warp in 1 or 2# blocks	3

	Packaged	Other Form	Preferred Grade	Number of Responses
Dairy Products[2]				
Milk	2		1/2 pts. (a must for schools)	2
Cheese	2		5# Graded	2
Yogurt	2		4 oz. individual or 5# bulk	2

Note:
[1] Only one respondent indicates preferred grade that prefers to purchase meat and animal products.
[2] Only one respondent indicates preferred grade that prefers to purchase dairy products.

Most of institutional buyers would like to purchase washed and packaged vegetables and fruits, and one of them would prefer to purchase cut vegetable sand fruits. There are some buyers would like to purchase vegetables and fruits unwashed, uncut or unsliced, or packaged with vacuum sealed bags (Table 2.10).

The amount that institutional buyers would be willing to pay for these value-added services was also assessed. In comparing the price buyers would be willing to pay for an apple which had undergone various types of processing, the value of these steps to an institutional foodservice organization can be indirectly determined. Compared to a raw, whole, unwashed apple that was available for sale for $0.50, buyers indicated that they would be willing to pay an average of $0.49 (min. $0.25, max $1.25) for a washed and ready to serve apple, $0.61(min. $0.27, max $1.00) for a washed, individually wrapped apple, and ready to serve apple, and $0.60 (min. $0.30, max $1.00) for an apple that is washed, sliced, and packaged in an individually serving pouch. One respondent indicated that they are not interested in washed and ready to serve apples, five buyers are not interested in washed, individually wrapped, and ready to serve apples, and four respondents are not interested in apples prepared for sale in individual serving pouches.

Table 2.10 Form institutional foodservice buyers would prefer to purchase vegetables and fruits

	Washed	Cut	Packaged	Other Form	Preferred Grade	Number of Responses
Berries	4 (57.14%)		2 (28.58%)	1 (14.29%)	unwashed	7
Cruciform Vegetables	4 (57.14%)	1 (14.29%)	2 (28.58%)		5# bag floret	7
Leafy Greens	3 (42.86%)		3 (42.86%)	1 (14.29%)	whole with root	7
Legumes	2 (28.58%)		3 (42.86%)		5# vacuum sealed bag	5
Melons	3 (42.86%)		2 (28.58%)	1 (14.29%)	whole, uncut	6
Squash, Gourds	2 (28.58%)		3 (42.86%)		5# sliced	5
Stalk Vegetables	3 (42.86%)		3 (42.86%)		5# cut stalks	6
Tomatoes	4 (57.14%)		2 (28.58%)	1 (14.29%)	whole, uncut	7
Tree Fruits	4 (57.14%)		3 (42.86%)		apple sliced individual	7
Tubers	3 (42.86%)		2 (28.58%)	1 (14.29%)	whole	6
Other[1]				1 (14.29%)		1

Note:
Only one respondent indicates preferred grade.
[1] The respondent who chooses "Other products" did not specify which products.

2.4.4 Integrating Results across Stakeholder Groups

A total of nine producers responded to the to the question about fair cost to rent a food cleaning and processing facility. Of these two were willing to pay $10 per hour to rent this facility, five were willing to pay between $ 20-$100 per hour, and one stated that s/he would pay less than $2.96 per pt. and less than $3 total. One respondent indicated that their willingness to pay for a rented facility would depended on value-added by the processing activities they were doing (Table 2.11).

Table 2.11 Frequency and costs of producers would like to use food cleaning and processing, packaging and storing facilities

Facilities	Hours per week	During What Months	Willing to Pay
	Cleaning and Processing[1]		
Cleaning and Processing	98 hours	April to November	$35.36/hour
	Packaging[2]		
Packaging	25 hours	May through November	$14/hour
	Storing[3]		
Storing	41 weeks/year	July to October May to January	$100/month

Note:
[1] One respondent would like to have food cleaned or processed more than 20 hours per week. A few respondents indicated they would use cleaning or processing facilities all year around.
[2] There is one respondent would like to use food packaging facilities all year around. Very few responses to storing facilities please see discussion below.
[3] There are only two producers responded to this question.

Willingness to pay for use of food packaging facilities only four people responded: they are willing to pay $10, $12, $20 hourly, and one producer claimed that he requires cost analysis to make a decision.

For food storage facilities, there are very few observations. One producer would like to use storage facilities for 35 hours per week between July and October. Another producer would like access for 6 weeks during May through January, but did not specify the number of hours of use. One producer is willing to pay $100 per month, and the other producer will pay $5 per month per cubic foot for 20 cubic foot.

Among organizations that could offer facilities to conduct these value-added three provided information about the availability of their facilities. One respondent stated that they would not be willing to make their facility is available, but their facility is used 66% of the time during Mid-August to the end of July . Another organization reported that their facility has 866 hours available to be used from June to November. This facility is currently used 40% of time and costs $100 per hour to rent. The last respondent reported that their facility is available up to 100 hours during the whole year, and it is used 100% of time and costs $10 per hour (Table 2.12).

Table 2.12 Availability of food cleaning and processing, packaging and storing facilities by LFS organizations.

Observation	Number of hours facility is available (Month)	Percent of time that facility is used	During What Months	Average Costs
		Facilities		
1	0	66%	Mid-August to End of July	
2	866	40%	June to November	$100
3	Varies to 100 in season	100%	12 Months	$10

As summarized in Table 2.13, produce wash sinks are the most available (52) of the cleaning and processing equipment in the study area. Also generally available are freezers (50), scales (41), and pressure cookers (37). There are very few shredders and

vegetable cutters available in the area of study. For packaging equipment, more than 30 scales, cookers, and canners are available in the study area, while only one liquid bottle filler, manual sauce filler, and retort Producers and organizations have access to 72 refrigerator storage (shelf) units, 66 units of refrigerator (pallet) storage, and 49 units of dry storage. The studied region has a very limited quantity of both shelf and pallet freezer storage.

In additional to the equipment noted in Table 2.13, individual producers and organizations noted their use and desire for less common pieces of equipment. Among producers, one respondent would be like to own a marinator or brine injector, one person is currently using a tenderizer, and one person noted that they would like to use other cleaning and processing equipment, but did not specifically indicate which types. There are also two producers who would like to own cold storage and dishwashers, and three producers would like to use or rent cheese making equipment, large pressure canners, and a pulper or finisher. Organization respondents are currently using vegetable steamer, filling machine and PH meters. One organization respondent would like to rent a smoker.

Table 2.13 Total LFS Infrastructure Available in the Study Area

Equipment	Producers	Producers[1] Regionally Scale	Organization Currently Own	Total
Cleaning and Processing				
Animal Slaughter	1	6	2	8
Baking Rack and Proofer	2	12	0	12
Blender	4	24	3	27
Dehydrator	4	24	1	25
Food Processor	3	18	4	22
Freezer	8	47	3	50
Grinder	2	12	1	13
Oven	5	29	2	31
Oven- Convection	2	12	0	12
Pressure Cooker	6	35	2	37
Produce Wash Sink	8	47	5	52
Range (commercial)	2	12	2	14
Scale	6	35	6	41
Shredder	0	0	1	1
Slicer	1	6	1	7
Tenderizer	1	6	0	6
Vegetable Cutter	0	0	1	1
Packaging				
Cooker, Canner	6	35	1	36
Form-Fill-Seal (FFS) machine	4	24	0	24
Heat Sealer	2	12	1	13
Labeling Equipment	1	6	2	8
Liquid Bottle Filler	0	0	1	1
Manual Sauce Filler	0	0	1	1
Retort	0	0	1	1
Scale	6	35	4	39
Water Bath	3	18	1	19
Storing				
Dry Storage	8	47	2	49
Refrigerated Storage – Shelf	12	71	1	72
Freezer Storage – Shelf	2	12	0	12
Refrigerated Storage – Pallet	11	65	1	66
Freezer Storage – Pallet	1	6	0	6

Note:
[1] The currently own infrastructure by producers in region= currently own infrastructure by producers * scale factor of this region (5.893617021)

Table 2.14 Total LFS Infrastructure Wanted for Individual Farm Use

Total Wanted			
Equipment	Organizations	Producers (Regional Sum)	Total
Cleaning and Processing			
Blender	0	12	12
Dehydrator	3	12	15
Food Processor	0	12	12
Freezer	3	6	9
Freezer – Flash	2	18	20
Grinder	0	12	12
Marinade or Brine Injector	0	6	6
Mixer (commercial)	1	12	13
Oven	0	6	6
Oven- Convection	1	0	1
Pressure Cooker	3	6	9
Produce Wash Sink	1	12	13
Range (commercial)	1	6	7
Scale	0	24	24
Slicer	2	6	8
Vegetable Cutter	1	0	1
Dishwasher for Sterilizing Jars	0	6	6
Cheese Making Equipment	0	6	6
Packaging			
Cooker, Canner	2	6	8
Form-Fill-Seal (FFS) machine	2	24	26
Heat Sealer	1	12	13
Labeling Equipment	1	30	31
Labeling Equipment – Nutrition	3	12	15
Scale	0	6	6
Water Bath	0	18	18
Cheese Packaging Equipment	0	6	6
Storing (cubic feet)			
Dry Storage	1	6	7
Refrigerated Storage – Shelf	2	12	14
Freezer Storage – Shelf	0	18	18
Refrigerated Storage – Pallet	2	18	20
Freezer Storage – Pallet	0	6	6
Cheese Storing Equipment	0	6	6

Note:
[1] The total infrastructure wanted by producers in region= total infrastructure wanted by

producers * scale factor of this region (5.893617021)

According to the results of infrastructure wanted by individuals in the future, scales, flash freezers, and dehydrators were most requested. Among packaging equipment, results indicate that there is demand for labeling equipment, Form-Fill-Seal (FFS) machines, and water baths by both producers and organizations. In addition, both producers and organizations want to own additional shelf and pallet refrigerator storage, and freezer shelf storage. One producer would like to own cheese making, packaging, and storing equipment.

2.4.4.1 Considering Demand from Local Institutions

Table 2.15 shows the cleaning and processing equipment requested by the rental market for organizations and producers, as well as the average price information, and total expense request for each type of equipment in this region. Produce wash sinks, flash freezers, dehydrators, and pressure cookers are in highest demand by the rental market. Within all the cleaning and processing equipment requested, flash freezers, pulpers, steam kettles, and a dishwasher for sterilizing jars were the highest value items.

Table 2.16 shows the packaging equipment and storage facilities requested by the rental market for both organizations and producers. Form-Fill-Seal (FFS) machine (5), manual sauce filler (4), and liquid bottle fillers (4) have the highest rental demand in packaging the equipment category. Producers and organizations in the region indicated that shelf freezer storage and shelf refrigerated storage were the most frequently requested storage services. This Table also shows the average price information, and total expense requested for each type of equipment. The total expenses request of Form-Fill-Seal (FFS) machine has accounted for more than two thirds of the total expenses request

in packaging equipment. Among all the storage demanded, shelf freezer storage and shelf refrigerated storage valued at more than $120,000, which is around 75% of total expenses request for all storage facilities.

Table 2.15 Total Regional Cleaning and Processing Equipment Rental Market Needs

Total Available to Rent						
Equipment Type	**Number Requested by Producers**	**From Organizations**	**From Producers**	**Total Number Needed to Purchase**	**Purchase Price**	**Total Expense Request**
Baking Rack and Proofer	2	0	0	2	$184.99	$369.98
Blender	3	1	1	1	$164.03	$164.03
Cheese Equipment	1	0	0	1	$2,849.95	$2,849.95
Dehydrator	5	0	0	5	$174.00	$870.00
Dishwasher for Sterilizing Jars	3	0	0	3	$13,439.00	$40,317.00
Food Processor	3	2	0	1	$3,213.68	$3,213.68
Freezer	3	2	1	0	$1,066.66	$0.00
Freezer-Flash	6	0	1	5	$18,717.5	$93,587.50
Grinder	3	0	0	3	$639.29	$1,917.87
Large Pressure Canner	2	0	0	2	$393.99	$787.98
Mixer (Commercial)	3	0	0	3	$597.50	$1,792.50
Oven	3	1	1	1	$7,465.24	$7,465.24
Pressure Cooker	5	0	1	4	$208.49	$833.96
Produce Wash Sink	8	2	0	6	$462.66	$2,775.96
Pulper/Finisher	3	0	0	3	$26,385.00	$79,155.00

Total Available to Rent						
Equipment Type	**Number Requested by Producers**	**From Organizations**	**From Producers**	**Total Number Needed to Purchase**	**Purchase Price**	**Total Expense Request**
Range (Commercial)	3	1	0	2	$4,665.83	$9,331.66
Scale	3	4	0	0	$106.31	$0.00
Shredder	3	0	0	3	$142.99	$428.97
Slicer	2	0	0	2	$136.66	$273.32
Steam Kettle	3	0	0	3	$25,341.34	$76,024.02
Tenderizer	1	0	0	1	$159.00	$159.00
Vegetable Cutter	3	0	0	3	$261.49	$784.47

Note:
Total Expense Request = Purchase Price * Total Number Needed to Purchase

Table2.16 Total Regional Packaging and Storing Equipment Rental Market Needs

		Total Available to Rent				
Equipment Type	**Number Requested by Producers**	**From Organizations**	**From Producers**	**Total Number Needed to Purchase**	**Purchase Price**	**Total Expense Request**
PACKAGING EQUIPMENT						
Cheese Packaging Equipment	1	0	0	1	$16,935.00	$16,935.00
Cooker, Canner	3	0	1	2	$1,464.00	$2,928.00
Form-Fill-Seal (FFS) Machine	5	0	0	5	$30,000	$150,000.00
Heat Sealer	4	1	1	2	$159.49	$318.98
Labeling Equipment	3	1	0	2	$1,167.50	$2,335.00
Labeling Equipment-Nutrition	3	0	0	3	$1,045.69	$3,137.07
Liquid Bottle Filler	4	0	0	4	$4,327.00	$17,308.00
Manual Sauce Filler	4	0	0	4	$3,627.00	$14,508.00
Retort	2	0	0	2	$3,375.00	$6,750.00
Scale	3	2	0	1	$9,995.00	$9,995.00
Water Bath	3	0	0	3	$1,698.00	$5,094.00
STORAGE EQUIPMENT						
Cheese Storage	2	0	0	2	$8,834.50	$17,669.00
Freezer Storage-Pallet	2	0	0	2	$11,069.00	$22,138.00
Freezer Storage-Shelf	8	0	0	8	$9,539.00	$76,312.00
Refrigerated Storage-Shelf	7	1	0	6	$8,834.50	$53,007.00

Note:
Total Expense Request = Purchase Price * Total Number Needed to Purchase

2.4.1.2 Considering LFS Infrastructure Demand from Institutional Buyers

The equipment available in the region, such as produce wash sink, slicer, Form-Fill-Seal (FFS) machine, and scale, fulfilled most of the equipment needed by institutional buyers. As there are very few available vegetable cutters and manual sauce filler in the region, additional equipment of this type may be needed. In addition, institutional buyers noted their interest in purchasing LFS products which have undergone processing that requires a liquid bottle filler and vacuum packing machine. As such, one each of these two pieces of equipment have been added to the list of equipment needed in the region (Table 2.18).

Table 2.17 Needed Equipment for Institutional Buyers

Equipment Needed by the Buyers	Number Available in the Region	Number of Additional Needs
Produce Wash Sink	52	0
Slicer	7	0
Vegetable Cutter	1	1
Form-Fill-Seal (FFS) Machine	24	0
Liquid Bottle Filler	0	1
Manual Sauce Filler	1	1
Scale	39	0
Vacuum Packing Machine	0	1

2.4.1.3 Combining LFS Infrastructure Demand Across All Sources

Adding together the monetized needs for all equipment and facilities, it was determined that the region of study will require a minimum of $730,621.63 to satisfy individual producer and organization needs. The total expense of the requested cleaning and processing equipment is $323,363.58. The total cost of the needed packaging equipment is $37,263.05, and $169,995.00 is needed to purchase required storage facilities.

Table 2.18 Total Needed Equipment Costs for Rental Market

Equipment	Total Estimated Costs of Producer Needs	Total Estimated Costs Included Institutional Needs	Estimated Value of Available Equipment in the Area
Cleaning and Processing	$323,102.09	$323,363.58	$49,828.26
Packaging	$229,309.05	$237,263.05	$22,940.48
Storage	$169,126.00	$169,995.00	$8,834.50
Total	$721,537.14	$730,621.63	$81,603.24

To identify unmet storage capacity needs in the regional, we assume each user needs 250 sq. ft. of refrigerated shelf and freezer shelf storage, and 430 sq. ft. of freezer pallet storage.[5] From July to October, there is huge unmet demand in storage compared with other months, especially for both freezer and pallet freezer storage. During days from February to April, November to December, the area has sufficient storage capacity.

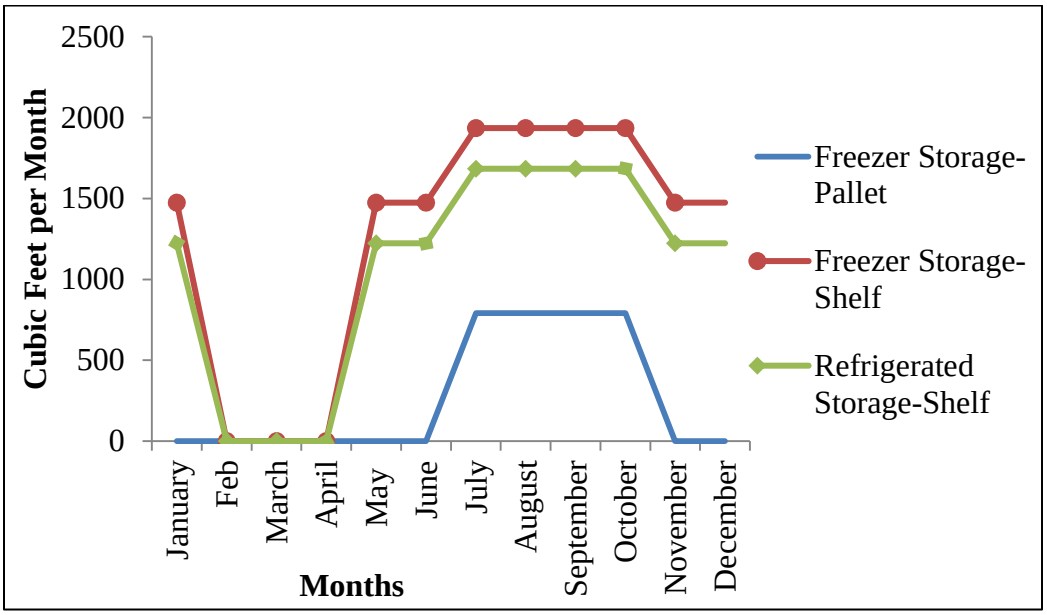


Figure 2.10 Regional Unmet Storage Capacity Needs by Month (cubic feet/month)

[5] Standard size of refrigerated shelf and freezer shelf storage

2.4.5 Discussion

Respondent producers made their farm revenue from livestock, meat, egg products, fruits, vegetables, and other crops. Less than 50% of producers used special production practices or certifications, and even fewer of them participated in regional, state or local marketing programs. To be competitive in the market, the majority of surveyed producers are currently engaged in value-added activities or indicate their interested in doing so.

Producers also showed their interest in using equipment for value-added activities, including food cleaning, processing, packaging, and storing. The surveyed institutional buyers purchased a majority of their food products from foodservices distributors, and wholesalers than from growers or farmers. Because products from local SMS farms are deemed to be fresher and are desired by their customers, respondent buyers indicated interest in increasing their procurement from these farms. This is particularly true of fruits and vegetables. They also agree with potential benefits of local sourcing in positively impacting an institution's public image, and in contributing to rural community viability.

There is some food cleaning, processing, packaging, and storage equipment in the study area which is owned by both producers and LFS organizations. This available infrastructure, however, is insufficient to meet local demand from both producers and, in a few cases, organizations in this area. At present there are few producers and organizations in the area who are (or would be) willing to rent their equipment and facilities.

A numbers of equipment pieces were requested for the rental market in order for organizations and producers to produce their desired value-added food products. It is

estimated that more than $721,000 would be required to purchase the equipment and facilities required to meet the studied region's rental market needs. The costs in reality will be even higher due to expenses of equipment maintenance. Producers and organizations will need to creatively seek financial support to generate this level of funding.

2.5 Conclusions

This study assesses the needed and available inventories of LFS infrastructure in the area of study. Produce wash sinks, freezers, commercial ranges, pressure cookers, scales, cookers, canners, shelf and pallet refrigerated storage are owed in the greatest quantity in this area. Producers and organizations would like to own the following equipment the most: a scale appropriate flash freezer, dehydrator, labeling equipment, Form-Fill-Seal (FFS) machine, water bath, shelf and pallet refrigerated storage, as well as shelf freezer storage. In the rental market, needs by producers and organizations were expressed for produce wash sink, flash freezer, dehydrator, Form-Fill-Seal (FFS) machine, manual sauce filler, liquid bottle filler, shelf refrigerated storage, and shelf freezer storage were requested by. Most of the available equipment could fulfill the needs of institutional buyers. Satisfying the food processing requests of institutional foodservice buyers, however, will require that additional vegetable cutters and a manual sauce filler also be added to the region's capacity.

Most institutional buyers agreed that there are important potential benefits from purchasing products directly from local small and medium scale farms. The top two potential benefits they agreed with are that doing so is good for their institution's public image and that these purchases contribute to rural community viability. Institutional

buyers also showed their interest in purchasing products from those farms because they perceived that locally grown food is fresher. However, small and medium scale farms still face challenges in supplying institutions of limited quantities or volume of products, less competitive prices of products, limited delivery options, sometimes a lack of adequate food safety practices, and frequently inadequately documented Local SMS farms' food safety practices.

The institutional buyers demand of their suppliers proof of a food product liability insurance policy, a reliable traceability system, and approved Hazard Analysis Critical Control Points (HACCP) Plan. Simultaneously, Good Agricultural Practices (GAP) certification, participating in regional, state, or local marketing program, and providing precut produce options, prewashed and prepackaged product options, and packaged product options were preferred by those buyers. It is important to address these issues to improve Local SMS farms and meet the needs of consumers.

According to the survey results, producers had some access to the local food system infrastructure. Demand for LFS infrastructure, however, far exceeds supply in the region. To expand local markets for value-added locally grown food, it is important and necessary to improve local food system infrastructure by purchasing and making accessible equipment and facilities which were identified as required by the region.

2.5.1 Implications

Access to LFS infrastructure can contribute to the development of a region's LFS, profitability and sustainability of small and medium sized farmers, the community's economy, and indirectly benefit the residents in the region. LFS infrastructure can particularly benefit medium sized farms and help offset the trend of the hollowing out of

"Agriculture of the Middle". Compared with a raw food, value-added products can bring a better price to producers and meet the needs of buyers. This is particularly true for institutional buyers who have limited need for or capacity to use raw foods in their operations. Food system infrastructure can also launch new food business, such as central kitchens, community kitchens, and other facilities. Cleaning, processing, packaging, and storage facilities or transportation networks provide more job opportunities to the community.

Due to the interest and demand in owning and renting food system infrastructure equipment, there is a need for this region to purchase more requested equipment to meet the needs of the community. Where the equipment would be specifically located, a plan of equitable access to this equipment, and methods to support training and maintenance of these facilities need to be discussed in this region.

2.5.2 Study Limitations

There were limitations to the study. Many participants in the producer survey were involved in the growing season during survey collecting period. The sample size was relatively small because some of the surveyed producers did not complete the whole survey; there were some questions where only a very few producers responded. In the institutional buyer survey, the response rate was very low.

Further, while results of this study has identified the specific equipment and facilities needed by the studied region, no insight can be offered regarding the specific locations within the studied region where these facilities should be located.

2.5.3 Recommendations for Future Research

According to the results of this study, it will be difficult producers and organizations to individually afford their needed cleaning, processing, packaging, and storage equipment.Improving community financing and help those people who would like access to local food infrastructure, is needed. Micro -financing may provide a good approach for this. Many of producers and organizations in the region have shown their interested in micro-financing. More understanding alternative models of micro-financing is necessary for considering joint community-producer-organization financing options. The analysis can focus on identifying and assessing existing micro-financing alternatives for local food system infrastructure, donor's willingness to support LFS infrastructure development, and the effectiveness of alternative means of recognizing donors for LFS infrastructure investments, and .

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APPENDICES

Appendix A1: Shenandoah Valley Food System Infrastructure Assessment Producers Survey

Appendix A2: Shenandoah Valley Food System Infrastructure Assessment Existing Infrastructure Survey

Appendix A3: Shenandoah Valley Food System Infrastructure Assessment Institutional Buyers Survey

Appendix A4: Costs of Food Cleaning and Processing Equipment

Appendix A5: Costs of Food Packaging Equipment and Storing Facilities

Appendix A1: Shenandoah Valley Food System Infrastructure Assessment Producers Survey

PRODUCER SURVEY

1. **Where is your farm located?**
   City, Town, or County _____
   Zip Code _____

2. **Approximately what percent (%) of your farm revenue comes from each of the following products?**

Products	**Percentage**
Livestock, meat, or egg products	_____
Dairy products	_____
Fruits or vegetables	_____
Aquaculture	_____
Woodland Crops	_____
Hay or Forage Crops	_____
Field or Row Crops	_____
Other(s) (*Please describe*) _____	_____
Total	100

3. **What special production practices and/or certifications does your farm use? (*Select all that apply.)***
   - ❑ Certified Organic
   - ❑ Transitioning to Organic
   - ❑ Water Stewardship Continuous Improvement Plan
   - ❑ No or Reduced (Conservation) Tillage
   - ❑ Good Agricultural Practices (GAPs)
   - ❑ I don't know
   - ❑ Grass or Tree (Riparian) Buffers
   - ❑ Nutrient Management Plan
   - ❑ Green Certifications (eg. Certified Naturally Grown)
   - ❑ Cover Crops
   - ❑ Other (*Specify*): _____

4. **Does your farm participate in any regional, state or local marketing programs? (*Please select all that you currently participate in.)***
   - ❑ Virginia Grown
   - ❑ Virginia's Finest
   - ❑ Other (S*pecify*) _____
   - ❑ Other (S*pecify*) _____
   - ❑ Page County Grown
   - ❑ Shenandoah Valley Buy Fresh, Buy Local
   - ❑ I don't know
   - ❑ None

5. **What percentage of your products do you sell through each of the following venues? (*Total to sum to 100.*)**

Farmers' market	_____
Roadside Stand	_____
Pick-Your-Own Operation	_____
Community Supported Agriculture Program (CSA)	_____
Shenandoah Valley Produce Auction (SVPA)	_____
Online – Own Website	_____
Online – Third Party Website	_____
Direct to a grocery store	_____
Direct to distributor or wholesaler	_____
Direct to restaurant(s)	_____
Direct to school(s)	_____
Direct to hospital(s)	_____
Direct to long-term care facility	_____
Other (S*pecify*) _____	_____
Total	100

6. **If you sell through the Shenandoah Valley Produce Auction (SVPA):**
   a) What are the greatest benefits of selling through this auction?

_____

_____

_____

   b) What, if any, are difficulties of selling through this auction?

_____

_____

_____

   c) What recommendations would you have for changes to the SVPA? (Consider facilities, operations, management, etc.)

_____

_____

_____

7. **What types of MEAT OR ANIMAL PRODUCTS do you currently produce, or would you be interested in producing? (*Select all that apply*.)**

	Currently produce	Would be interested in producing
Poultry (e.g. chicken, turkey, duck)	❑	❑
Beef	❑	❑
Eggs	❑	❑
Pork	❑	❑
Other (*Please specify*.) _____	❑	❑
Other (*Please specify*.) _____	❑	❑

8. What types of DAIRY PRODUCTS do you currently produce, or would you be interested in producing? (*Select all that apply*.)

	Currently produce	Would be interested in producing
Milk	❑	❑
Cream, Butter	❑	❑
Cheese	❑	❑
Yogurt	❑	❑
Other (*Please specify*.) _____	❑	❑

9. What types of FRUIT OR VEGETABLES do you currently produce, or would you be interested in producing? (*Select all that apply*.)

	Currently produce	Would be interested in producing
Berries (e.g. strawberries, blueberries)	❑	❑
Cruciform vegetables (e.g. broccoli)	❑	❑
Leafy greens (e.g. lettuce, spinach, kale)	❑	❑
Legumes (e.g. peas, beans)	❑	❑
Melons (e.g. watermelon)	❑	❑
Squash, gourd (e.g. pumpkins, eggplant)	❑	❑
Stalk vegetables (e.g. celery, fennel)	❑	❑
Tomatoes	❑	❑
Tree Fruits (e.g. apples)	❑	❑
Tubers, root vegetables (e.g. potatoes)	❑	❑
Other (*Specify*)_____	❑	❑

Other (*Specify*)_____	❑	❑

10. What types of FRUIT OR VEGETABLES do you currently produce, or would you be interested in producing? (*Select all that apply*.)

VALUE ADDED ACTIVITIES include raw food cleaning, processing, packaging, and storage.

11. Do you do any value added activities to your raw farm products?

- ❑ Yes - We currently DO value added activities → *Skip to Question 12*
- ❑ No - We DO NOT currently do any value added activities, but we ARE INTERESTED in doing so → ***Skip to Question 12***
- ❑ No - We DO NOT do any value added activities, and we ARE NOT INTERESTED in doing so

12. **Why you are not interested in doing any value added processing of your raw products**.

_____

_____

_____

13. If you do value added processing, please describe facility you have been using. If you use more than one facility, please describe the one that you primarily use.

Name of facility (Indicate "Own" if it is your own) _____

How long have you been using this facility? (years) _____

Driving time from your farm to this facility (minutes) _____

Cost for using this facility? (For example, $ /month for 5 hours of facility use.) _____

Are any supplies included in this cost (e.g. bottles, lids)? If so, please describe.

_____

14. What, if any, challenges have you had in gaining access to or using food cleaning, processing, packaging, or storage equipment or facilities?

_____

_____

_____

A **SHARED USE KITCHEN** is a facility which offers a licensed and fully equipped ***COMMERCIAL KITCHEN*** which provides the equipment necessary for clearing, processing, packaging, labeling, and storage of food products. These facilities are available for rental at reasonable rates.

15. **Overall, how interested would your farm be in using a SHARED USE KITCHEN?**
    - ❑ Extremely Interested
    - ❑ Very Interested
    - ❑ Moderately Interested
    - ❑ Slightly Interested
    - ❑ Not At All Interested
    - ❑ I prefer to sell my products raw than to process them
    - ❑ I have not thought about it

A KITCHEN INCUBATOR is a facility that offers a shared use ***COMMERCIAL KITCHEN***, and
provides business services, training (financial, marketing, product development), and mentoring services that could be useful to food entrepreneurs.

16. Overall, how interested are you in using a KITCHEN INCUBATOR?
- ❑ Extremely Interested
- ❑ Very Interested
- ❑ Moderately Interested
- ❑ Slightly Interested
- ❑ Not At All Interested
- ❑ I prefer to sell my products raw than to process them
- ❑ I have not thought about it

17. If you currently or are interested in raw food CLEANING and PROCESSING, what type of equipment would your business use? (*Please check all that apply.*)

	Currently Own	Currently Rent	Would like to Use (Rent)
Baking Rack and Proofer	❑	❑	❑
Blender	❑	❑	❑
Dehydrator	❑	❑	❑
Food Processor	❑	❑	❑
Freezer	❑	❑	❑
Freezer - Flash	❑	❑	❑
Fryer (Commercial)	❑	❑	❑
Grinder	❑	❑	❑
Mixer (Commercial)	❑	❑	❑
Oven	❑	❑	❑
Oven - Convection	❑	❑	❑
Pressure Cooker	❑	❑	❑
Produce Wash Sink	❑	❑	❑
Range (Commercial)	❑	❑	❑
Scale	❑	❑	❑
Shredder	❑	❑	❑
Slicer	❑	❑	❑
Steam Kettle	❑	❑	❑
Vegetable Cutter	❑	❑	❑
Deep Fryer	❑	❑	❑
Marinade or Brine Injector	❑	❑	❑
Other (*describe*): _____	❑	❑	❑
Other (*describe*): _____	❑	❑	❑

18. How frequently would you use a food CLEANING and PROCESSING facility that had your needed equipment?
Please note the average hours per week, and during what months you would use these facilities (i.e. 5 hours / week from August through October)

Hours per Week _____

During what Months _____

19. What do you feel would be a fair cost to rent this food CLEANING and PROCESSING facility?
Please note cost per period of time. For example: $/hour or $/month for 5 hours of facility use.

_____

_____

20. **If you currently or are interested in PACKAGING, what type of equipment does/would your business use?** (*Please check all that apply*.)

	Currently Use	Currently Rent	Would Like to Use (Rent)
Cooker, Canner	❑	❑	❑
Form-Fill-Seal (FFS) machine	❑	❑	❑
Labeling Equipment	❑	❑	❑
Heat Sealer	❑	❑	❑
Retort	❑	❑	❑
Scale	❑	❑	❑
Water Bath	❑	❑	❑
Liquid Bottle Filler	❑	❑	❑
Manual Sauce Filler	❑	❑	❑
Labeling Equipment - Nutrition	❑	❑	❑
Other (*describe*): _____	❑	❑	❑
Other (*describe*): _____	❑	❑	❑

21. How frequently would you use a food PACKAGING facility that had your needed equipment?
Please note the average hours per week, and during what months you would use these facilities (i.e. 5 hours / week from August through October)

Hours per Week _____

During what Months _____

22. **What do you feel would be a fair cost to rent this food PACKAGING facility?**
Please note cost per period of time. For example: $/hour or $/month for 5 hours of facility use.

_____

_____

23. What type of equipment does your business currently use, or would like to use, for STORING of food products? (*Please check all that apply*.)

	Currently Use	Currently Rent	Would Like to Use (Rent)
Dry Storage	❑	❑	❑
Refrigerated Storage - Shelf	❑	❑	❑
Freezer Storage - Shelf	❑	❑	❑
Refrigerated Storage - Pallet	❑	❑	❑
Freezer Storage - Pallet	❑	❑	❑
Other (*Describe*):_____	❑	❑	❑

24. How frequently would you use a food STORAGE facility that met your needs?
Please note the average number of weeks and during what months you would use these facilities (i.e. 7 weeks from August through October)

Number of Weeks _____

During what Months _____

25. What do you feel would be a fair cost to rent food STORAGE?
Please note cost per period of time. For example: $/week or $/month of facility use.

_____

_____

26. If food processing facilities were affordable, on average how many additional hours of labor would you hire for food cleaning, processing, packaging, and/or storage activities?

- ❑ No additional hired labor would be necessary
- ❑ Less than 10 hours per week
- ❑ Between 10 to 20 hours per week
- ❑ More than 20 hours per week
- ❑ I do not know.
- ❑ Other estimate (*Please specify*) _____

27. How far would you be willing to drive by car to use a food cleaning, processing, packaging, and/or storage facility?

- ❑ Less than 15 minutes (each direction)
- ❑ 15 to 30 minutes (each direction)
- ❑ 30 to 45 minutes (each direction)
- ❑ 45 to 60 minutes (each direction)
- ❑ 1 to 1.5 hours (each direction)
- ❑ Other amount of time (*Please specify*) _____

28. If you sell fruits or vegetables: what do you think are the most important attributes of produce buyers? (*What characteristics would you would you prefer in your customers?*)

_____

_____

_____

29. If you sell fruits or vegetables: ideally, what terms or other features would you prefer in contracts with your produce buyers? (*What contract duration? Price setting process? Packaging and delivery terms? etc.*)

_____

_____

_____

ABOUT YOU AND YOUR OPERATION

30. How long has your farm been in operation?

- ❑ Less than a year
- ❑ 1-5 years
- ❑ 6-10 years
- ❑ 11-19 years
- ❑ 20 or more years
- ❑ Prefer not to respond.

31. How many people are employed at your operation?

	Full-Time	Part-Time
Year-Round		
Seasonal		

32. How many acres do you have access to for your farm's production?

	Fruits and Vegetables	Row Crops	Livestock	Other
Acres Currently in Production				
Additional Acres that could be added to Production				

33. What is your farm's the annual gross revenue from the sale of farm products?

- ❑ Less than $10,000
- ❑ $10,000-$49,999
- ❑ $50,000-$99,999
- ❑ $100,000-$149,999
- ❑ $150,000-$249,999
- ❑ $250,000-$349,999
- ❑ $350,000-$499,999
- ❑ $500,000 or $999,999
- ❑ $1,000,000-$4,999,999
- ❑ $5,000,000 or more
- ❑ Prefer not to respond.

34. What portion of this revenue was earned through sales within Virginia?

Sales to VA customers and businesses (%) _____

35. What is your gender?

- ❑ Male
- ❑ Female

36. What is your age?

- ❑ 18-24 years
- ❑ 25-39 years
- ❑ 40-59 years
- ❑ 60-69 years
- ❑ over 70 years
- ❑ Prefer not to respond.

37. What is your race? (*Please check all that apply*.)

- ❑ American Indian
- ❑ Asian
- ❑ Black or African American
- ❑ Of Spanish, Hispanic, or Latino origin (regardless of race)
- ❑ Other (*Please describe.)* _____
- ❑ Prefer not to respond

COMMENTS AND FEEDBACK

38. This marks the end of survey. Do you have any further comments, suggestions or feedback?

_____

_____

_____

_____

_____

39. **As thanks for your participation, we would like to offer you the following**:

1) An opportunity to enter a raffle for a $100 Visa pre-paid gift card to be awarded
2) An electronic copy of this study's final report

- ❑ Yes - I would like to be entered in the gift-card raffle
- ❑ Yes - I would like a copy of the final report
- ❑ No thank you. I'm not interested in either item.

40. If yes, please provide your contact information in order that we can send your award and/or the report. *This information will be used for no other purpose other than to distribute these items.*

Email Address _____

Street Address _____

City or Town _____

Zip Code _____

SURVEY COMPLETE

Thank you for participating in this survey!

Your responses will help us to better understand the food system infrastructure resources and needs for the Shenandoah Valley.

We greatly appreciate your time and feedback!

If you have any questions or concerns about this study, please contact one of the project leaders:

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Extension Specialist, Community Viability
Virginia Cooperative Extension
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Appendix A2: Shenandoah Valley Food System Infrastructure Assessment Existing Infrastructure Survey

VCC Survey of Existing Infrastructure

ABOUT YOUR ORGANIZATION

Q1 Where is your organization located?
** Please ensure items indicated with '*' are completed.*

Street Address _____
City, Town, or County* _____
Zip Code* _____
Organization Name (optional) _____

Q2 Briefly describes your organization, its mandate, and the geographic area you serve.

_____

_____

_____

Q3 Who are your organization's major stakeholders? (*Please describe.*)

_____

_____

_____

Q4 What is the legal structure of your organization?

- ❑ Nonprofit Organization
- ❑ Cooperative
- ❑ Sole Proprietor or Partnership
- ❑ Limited Liability Company (LLC)
- ❑ Corporation
- ❑ Other (Please describe) _____

Q5 How long has your organization been in operation? (*Number of years.*)

_____

Q6 How many people currently contribute to your organization?

Number of full-time employees _____

Number of part-time employees _____

Number of volunteers _____

Q7 Does your organization own or operate a commercial kitchen, or a food cleaning, processing, packaging or storage facility that is used by local farmers?

- ❑ Yes
- ❑ No. We do not own or operate this type of facility.
- ❑ No. Our organization owns and/or operates this type of facility, but it is not used by local farmers.

Q8 Would your organization be interested in owning and/or operating a commercial kitchen or food processing facility?

- ❑ Yes
- ❑ No

Q9 What type(s) of food processing equipment would your organization be interested in owning and/or operating?

	Would like to Own / Operate
Raw Product Cleaning Equipment	❑
Food Processing Equipment	❑
Food Packaging Equipment	❑
Storage Facilities	❑

Q10 Could this facility be made available to local farmers? (*Please check all that apply*.)

- ❑ Yes
- ❑ No. Please describe why not. _____
- ❑ Would like to offer facilities in addition to what we currently own / operate.

Q10 Could this facility be made available to local farmers? (*Please check all that apply*.)

- ❑ Yes
- ❑ No. Please describe why not. _____
- ❑ Would like to offer facilities in addition to what we currently own / operate.

Q11 What type(s) of food processing facilities does your organization currently own or operate? What type(s) would you like to own or operate?

	Currently Own / Operate	Would Like to Own / Operate
Animal Slaughter	❑	❑
Raw Product Cleaning	❑	❑
Food Processing	❑	❑
Food Packaging	❑	❑
Raw or Processed Food Storage	❑	❑
Other (*please describe*)	❑	❑

Q12 Is your organization currently selling any processed or value added agriculture products (*including cuttings, fruits or vegetables*)?

- ❑ Yes
- ❑ No
- ❑ Not sure

EQUIPMENT AND BUILDING FACILITIES

Q13 What type of equipment does your facility currently have, or would like to make available, for CLEANING or PROCESSING food product(s)? (*Please check all that apply.*)

	Currently Own / Operate (Note Quantity)	Would Like to Own / Operate (Note additional quantity)
Baking Rack and Proofer		
Blender		
Deep Fryer		
Dehydrator		
Food Processor		
Freezer		
Freezer - Flash		
Fryer (Commercial)		
Grinder		
Marinade or Brine Injector		
Mixer (Commercial)		
Oven		
Oven - Convection		
Pressure Cooker		
Produce Wash Sink		
Range (Commercial)		
Scale		
Shredder		
Slicer		
Steam Kettle		
Tenderizer		
Vegetable Cutter		
Other (*please describe*):		
Other (*please describe*):		
Other (*please describe*):		

Q14 What type of equipment do currently have, or would you like to make available, to PACKAGE food products? (*Please check all that apply.)*

	Currently Own / Operate	Would Like to Own / Operate
Cooker, Canner	❑	❑
Form-Fill-Seal (FFS) machine	❑	❑
Heat Sealer	❑	❑
Labeling Equipment	❑	❑
Labeling Equipment - Nutrition	❑	❑
Liquid Bottle Filler	❑	❑
Manual Sauce Filler	❑	❑
Retort	❑	❑
Scale	❑	❑
Water Bath	❑	❑
Vacuum Machine	❑	❑
Other (*please describe*):	❑	❑
Other (*please describe*):	❑	❑

Q15 How much of each type of storage does your facility currently offer and need?

	Currently Capacity (sq. feet)	Additional Capacity Needed (sq. feet)
Dry Storage		
Refrigerated Storage - Shelf		
Refrigerated Storage - Pallet		
Freezer Storage - Shelf		
Freezer Storage - Pallet		
Other (*please describe*):		

CHARACTERISTICS OF YOUR FACILITY AND OPERATIONS

Q16 On average, how many farms or other business make use of your food facilities each month?

Farmers _____

Other Individuals or Businesses _____

Q17 To what extent is your facility available and used?

	Response
Number of hours facility is available to be used each month (Total)	_____
Percent of time that facility is used	_____
Months during which facility is primarily used	_____

Q18 How much does your organization charge for the use of your value added facilities or equipment? (*Please complete all that are relevant.)*

- ❑ $ / hour _____
- ❑ $ / month _____
- ❑ Other fee structure (Please describe.) _____
- ❑ We do not charge for using our facilities

Q19 What, if any, SUPPLIES, TECHNICAL OR OTHER SUPPORT does your organization offer to those using your facilities or equipment? (*Please describe.)*

_____

_____

_____

_____

Q20 What, if any, CHALLENGES does your organization face in BUYING and MAINTAINING your food facility equipment? (*Please describe*.)

_____

_____

_____

_____

Q21 What, if any, OTHER CHALLENGES does your organization face in OPERATING your food facility? (*Please describe.*)

_____

_____

_____

This marks the end of our formal survey. Is there any other information or comments that you would like to share with us?

_____

_____

_____

_____

_____

Q22 Would your organization be interested in receiving a electronic copy of this study's final report?

- ❑ Yes
- ❑ No

Q23 Please provide your contact information in order that we can send you a copy of this report. This information will be used for no other purpose other than to distribute this item.

Email Address_____

Appendix A3: Shenandoah Valley Food System Infrastructure Assessment Institutional Buyers Survey

VCC Institutional Buyers Survey

Q1 What is your job title? _____

Q2 Do you have the authority to make major food purchasing decisions for your food service operation?

- ❑ Yes
- ❑ No

Q3 What percentage of food products do you buy from each type of supplier for your institutional food service operation? (*Please enter numbers such as "0" or "50." Responses must add up to 100*%.)

_____ Foodservice distributor (e.g. Sysco, U.S. Food Service)
_____ Wholesaler or broker (e.g. USA Produce, Severts Produce)
_____ Cooperatives (e.g. Friendly City Food Co-Op)
_____ Specialty foods distributor (Global Organics, Southeast Frozen Foods)
_____ Buy Directly from growers or farmers
_____ Other distributors (*please specify*):

Q4 Which of the following statements best describes you foodservice operation's definition of "locally grown"?

- ❑ Products which are grown less than 100 miles from where they are sold.
- ❑ Products grown in the same state as where it is sold.
- ❑ Products from the same region it is sold (i.e. from within VA).
- ❑ I don't know
- ❑ Other (*Describe*): _____

For the purpose of this survey:
Small- and medium-scale (SMS) have less than $500,000 in gross sales of agricultural products. According to the 2007 Census of Agriculture, approximately 95% of farms in VA are SMS farms.
"Local" farms refers to farms located in Virginia.

Q5 Do any of your suppliers sell food products from Local, Small- and Medium- Scale (SMS), farms?

- ❑ Yes
- ❑ No
- ❑ I do not know

Q6 Does your business purchase food products directly from any Local, Small- and Medium-Scale (SMS), farms?

- ❑ Yes
- ❑ No
- ❑ I don't know

Q7 What products do you currently, or would you like to, purchase from Local, Small- and/or Medium-Scale (SMS) farms? (*Please select all that apply*.)

- ❑ Meat and animal products
- ❑ Dairy products
- ❑ Fruits and Vegetables
- ❑ Other products (*Please specify*) _____
- ❑ We are not interested in purchasing product directly from Local SMS farms.

Q8 Why is your organization not interested in purchasing from Local Small- and Medium- Scale farms?

_____

_____

_____

_____

Q9 The following statements describe potential benefits your foodservices operation might gain from buying produce directly from Local Small- and/or Medium- Scale (SMS) farms. To what extent do you agree with the following statements?

	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Disagree	I Do Not Know
Products from Local SMS farms is fresher.	❑	❑	❑	❑	❑	❑
Products from Local SMS farms meets needed product specifications (size, consistency, etc.)	❑	❑	❑	❑	❑	❑
Our customers appreciate our response to their requests for food grown on Local SMS farms.	❑	❑	❑	❑	❑	❑
Purchasing directly from Local SMS farms benefits the economy.	❑	❑	❑	❑	❑	❑
Purchasing directly from Local farms is good for our institution's public image.	❑	❑	❑	❑	❑	❑
Purchasing directly from Local SMS farms contributes to rural community viability.	❑	❑	❑	❑	❑	❑
We can charge higher prices because we purchase from Local SMS farms.	❑	❑	❑	❑	❑	❑

Q10 Please describe any other benefits that can be gained from selling products sourced from Local SMS farms:

_____

_____

_____

_____

Q11 The following statements describe potential challenges that your foodservice operation might experience when buying products from Local SMS farms. To what extent do you agree that these statements are challenges for your organization?

	Agree	Somewhat Agree	Neither Agree nor Disagree	Somewhat Disagree	Disagree	I Do Not Know.
I am unable to buy from local SMS farms due to contractual obligations with my current supplier.	❑	❑	❑	❑	❑	❑
Local SMS farms are not able to supply adequate quantities or volume of products.	❑	❑	❑	❑	❑	❑
Products from local SMS farms are too variable in important characteristics (e.g. size, consistency).	❑	❑	❑	❑	❑	❑
Prices of products from local SMS farms are not competitive with other bidders.	❑	❑	❑	❑	❑	❑
Local SMS farms do not offer cut, packaged, or other value added processing options.	❑	❑	❑	❑	❑	❑
There are not enough local SMS farms in my area that sell to institutional food service operations.	❑	❑	❑	❑	❑	❑
There is a lack of wholesalers or brokers in my area that sell local SMS products to institutional food services.	❑	❑	❑	❑	❑	❑
Placing orders and /or billing from local SMS farms is too complicated.	❑	❑	❑	❑	❑	❑
Local SMS farms do not offer the varieties of produce that our operation uses.	❑	❑	❑	❑	❑	❑
Delivery options from local SMS farms are too limited.	❑	❑	❑	❑	❑	❑
Local SMS farms do not	❑	❑	❑	❑	❑	❑

use adequate food safety practices. Local SMS farms do not adequately document their food safety practices.	❑	❑	❑	❑	❑	❑

Q12 Please describe any other challenges from sourcing products directly from Local SMS farms.

_____

_____

Q13 Which of the following would be required of Local SMS farms for them to market/bid/sell directly to your foodservice operation?

	Required	NOT Required, But Preferred	NOT Required, NOT Preferred	I Do Not Know.
Provide proof of a food product liability insurance policy (food safety assurance).	❑	❑	❑	❑
Willing to enter a contract for two or more years.	❑	❑	❑	❑
Have a reliable traceability system in place.	❑	❑	❑	❑
Have Good Agricultural Practices (GAP) certification.	❑	❑	❑	❑
Have an approved Hazard Analysis Critical Control Points (HACCP) Plan.	❑	❑	❑	❑
Participates in a regional, state, or local marketing program (i.e. Virginia Grown, Buy Fresh Buy Local)	❑	❑	❑	❑
Can provide precut produce options	❑	❑	❑	❑
Can provide prewashed and prepackaged product options.	❑	❑	❑	❑
Can provide packaged product options.	❑	❑	❑	❑
Can provide storage.	❑	❑	❑	❑
Other (*please describe*):	❑	❑	❑	❑

Q14 Are there any other requirements Local SMS farms would need to meet to sell directly to your foodservice operation? If so, please describe:

_____

_____

_____

_____

Q15 How much food product liability insurance (for food safety assurance) is required of your fresh produce distributors?

- ❑ We do not require food product liability insurance
- ❑ Less than $1 million
- ❑ $1 million to $2 million
- ❑ $3 million to $4 million
- ❑ $5 million
- ❑ $5 million to $10 million
- ❑ Greater than $10 million
- ❑ I do not know.

Q16 What types of MEAT AND ANIMAL PRODUCTS do you currently, or would you like to, purchase directly from Local SMS farms? (*Please select all that apply*.)

	Currently buy	Would like to buy
Poultry (e.g. chicken, turkey, duck)	❑	❑
Beef	❑	❑
Pork	❑	❑
Eggs	❑	❑
Other (*please specify*) _____	❑	❑
Other (*please specify*) _____	❑	❑

Q17 Which DAIRY PRODUCTS do you currently, or would you like to purchase, directly from Local SMS farms? (*Select all that apply*.)

	Currently buy	Would like to buy
Cream or Butter	❑	❑
Milk	❑	❑
Cheese	❑	❑
Yogurt	❑	❑
Other dairy products (*Please specify*) _____	❑	❑
Other dairy products (*Please specify*) _____	❑	❑

Q18 What types of FRUITS AND/OR VEGETABLES do you currently, or would you like to purchase, directly from Local SMS farms? (*Select all that apply.)*

	Currently buy	Would like to buy
Berries (e.g. strawberries, blueberries, blackberries)	❑	❑
Cruciform vegetables (e.g. broccoli, cauliflower, artichoke)	❑	❑
Leafy greens (e.g. lettuce, spinach, kale)	❑	❑
Legumes (e.g. peas, beans)	❑	❑
Melons (e.g. watermelon)	❑	❑
Squash, gourds (e.g. pumpkins, eggplant)	❑	❑
Stalk vegetables (e.g. celery, fennel, asparagus)	❑	❑
Tomatoes	❑	❑
Tree Fruits (e.g. apples)	❑	❑
Tubers, root vegetables (e.g. potatoes, carrots)	❑	❑
Other fruits or vegetables (*Please specify*) _____	❑	❑
Other fruits or vegetables (*Please specify*) _____	❑	❑

Q19 In what form(s) would your foodservice operation prefer to purchase MEAT AND ANIMAL PRODUCTS? (Please select all that apply.)

	Form (Indicate form		For selected	For	For
	Packaged	Other Form	Preferred Packaging	Preferred Form	Preferred Grade
Poultry (e.g. chicken, turkey,	❑	❑	_____		
Beef	❑	❑	_____	_____	_____
Pork	❑	❑	_____	_____	_____
Eggs	❑	❑	_____	_____	_____
Other fruits or vegetables (*Please*	❑	❑	_____	_____	_____
Other fruits or vegetables (*Please*	❑	❑	_____	_____	_____

Q20 In what form(s) would your foodservice operation prefer to purchase DAIRY PRODUCTS? (*Please select all that apply.*)

	Form (Indicate form you prefer the product to be in.)		For selected products... Describe the FORM in which you would prefer to receive this product	If relevant... Indicate preferred GRADE	For selected products... Describe how your would prefer this product to be PACKAGED.
	Packaged	Other Form	Preferred Form	Preferred Grade	Preferred Packaging
Cream or Butter	❑	❑	_____	_____	_____
Milk	❑	❑	_____	_____	_____
Cheese	❑	❑	_____	_____	_____
Yogurt	❑	❑	_____	_____	_____
Other fruits or vegetables (*Please*	❑	❑	_____	_____	_____
Other fruits or vegetables (*Please*	❑	❑	_____	_____	_____

Q21 In what form(s) would your foodservice operation prefer to purchase FRUITS AND/OR VEGETABLES? (*Please select all that apply.)*

	Form (Indicate the form(s) you would prefer the product to be in.)				For selected products... Describe the FORM in which you would prefer to receive this product.	For selected products... Describe how you would prefer this product to be CUT	For selected products... Describe how you would like this product to be PACKAGED	If relevant... Indicate preferred GRADE
	Washed	Cut	Packaged	Other	Preferred Form			
Berries	❑	❑	❑	❑				
Cruciform	❑	❑	❑	❑				
Leafy Greens	❑	❑	❑	❑				
Legumes	❑	❑	❑	❑				
Melons	❑	❑	❑	❑				
Squash,	❑	❑	❑	❑				
Stalk	❑	❑	❑	❑				
Tomatoes	❑	❑	❑	❑				
Tree Fruits	❑	❑	❑	❑				
Tubers	❑	❑	❑	❑				
Other fruits or vegetables (*Please specify*) _____	❑	❑	❑	❑				
Other fruits or vegetables (*Please specify*) _____	❑	❑	❑	❑				

Q22 Assume a raw, whole, apple costs you $0.50 to purchase for resale. How much would you be wiling to pay for an apple if it had the following characteristics:

	Price ($)	OR I would not be interested in purchasing this product
Apple washed and ready to serve (whole fruit)		
Apple washed, individually wrapped, and ready to serve (whole fruit)		
Apple washed, sliced, and packaged in an individual serving pouch		

Q23 What do you think are the most important attributes of produce suppliers? *(What characteristics would you prefer in your suppliers?*)

_____

_____

_____

_____

Q24 Ideally, what term or other features would you prefer in contracts with your produce suppliers? (*What contract duration? Price setting process? Packaging and delivery terms? etc.)*

_____

_____

_____

_____

About your food service operation

Q25 Where is your foodservice operation located?

City, Town or County _____

Zip Code _____

Organization Name (optional) _____

Q26 What best describes the facilities currently used by your foodservice organization?

- ❑ Conventional Foodservice System (Ingredients Assembled and Food Produced Onsite)
- ❑ Centralized (Commissary) Foodservice System (e.g. central kitchen, central food production or community kitchen)
- ❑ Ready-Prepared Foodservice System (e.g. Heat-and-serve facility)
- ❑ Other (Please describe) _____
- ❑ I don't know

Q27 What best describes the ownership of facilities used by your organization?

- ❑ Your organization owns your food service facility
- ❑ Facility is rented
- ❑ Other (Please describe) _____
- ❑ I don't know

Q28 Is your food preparation facility currently able to be RENTED to other organizations?

- ❑ Yes
- ❑ No. We are not interested in doing so.
- ❑ No. Not currently, but we would consider doing so
- ❑ I don't know

Q29 Which is the best description of the type of institution where your operation provides foodservices?

- ❑ Hospital
- ❑ Public primary or secondary school
- ❑ College or University
- ❑ Long-term care facility
- ❑ College or University
- ❑ Other (Please specify) _____

Q30 How many meals does your operation serve? (*Please complete measure most appropriate for your organization.*)

Meals per day _____

Meals per week _____

Meals per year _____

Q31 What meals do you serve each day that you are open? (*Check all that apply.*)

- ❑ Breakfast
- ❑ Morning snack
- ❑ Lunch
- ❑ Afternoon snack
- ❑ Dinner
- ❑ Evening snack

Q32 Does your school participate in a summer feeding program?

- ❑ Yes
- ❑ No

Q33 Please indicate the approximate annual budget for each of the following: If you are uncertain, please indicate "I Don't Know". If you would rather not respond, please indicate "No".

Annual budget for whole foodservice operation ($) _____

Annual budget for purchasing locally grown fruits and/or vegetables ($) _____

Annual budget for purchasing locally produced meat and animal products ($) _____

Annual budget for purchasing local produced dairy products ($) _____

TOTAL annual budget for purchasing local foods ($) _____

Q34 In an average year, approximately how much does your organization spend on the following:
If you are uncertain, please indicate "I Don't Know". If you would rather not respond, please indicate "No".

Purchase of new equipment for food preparation and/or storage ($) _____

Maintance of food storage and/or preparation equipment ($) _____

Food safety assurance (Including supplies, training, equipment upgrades etc.) ($) _____

Q35 This marks the end of our formal survey. Is there any other information or comments that you would like to share with us?

_____

_____

_____

_____

_____

Q36 Are you are interested in receiving the results of this project? If so, please provide your email address below:

Email Address _____

Appendix A4: Costs of Food Cleaning and Processing Equipment

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
			Cleaning and Processing			
Baking Rack and Proofer	179.99	Regency End Load Bun Pan Rack	Webstaurantstore	6/23/2014	http://www.webstaurantstore.com/45131/sheet-pan-racks.html	$184.99
	164.99	Metro RE-3 End-Load Wire Bun Pan Rack 21-3/4" x 27"	Webstaurantstore	6/23/2014		
	209.99	"Z" Type Nesting End Load Bun Pan Rack (20 Pan Capacity)	Webstaurantstore	6/23/2014		
Blender	119.00	Waring Pro 12 Volt Tailgate Blender	Northernwood	6/23/2014	http://www.northerntool.com/shop/tools/NTESearch?storeId=6970&ipp=24&Ntt=blender	$164.03
	150.08	Hamilton Beach (HBB250SR) - 32 oz Commercial Two-Speed Blender - Rio Series	FSW	6/23/2014	http://www.foodservicewarehouse.com/equipment/food-blenders/c13021.aspx	
	223.00	Waring (BB190S) - 32 oz Commercial Blender – NuBlend Elite Series	FSW	6/23/2014		
Cheese Equipment	$2,849.95	Omcan (FMA) Heavy Duty	Meat Processing Products	07/11/2014	http://www.meatprocessingproducts.com/fma-	$2,849.95

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
		Cheese Grater, electric, 2 HP			11407.html?gclid=CKbazYvZvr8CFabm7AodMUcA4w	
Dehydrator	199.00	Weston VegiKiln 10-Tray Dehydrator, Model# 75-0201-W	Northernwood	6/23/2014	http://www.northerntool.com/shop/tools/category_food-processing+food-dehydrators	$174.00
	149.00	Weston Brand VegiKILN Food Dehydrator — 6-Tray, Model# 75-0301-W	Northernwood	6/23/2014		
Food Processor	3231.04	Hobart (FP150-1) - 840 lb/hour Continuous Feed Full Hopper Planetary Food Processor	FSW	6/23/2014	http://www.foodservicewarehouse.com/food-processors-under-3800/c5518_13847-z3800.aspx	$3,213.68
	1610.99	Berkel (CC34) - 3.2 qt Combination Food Processor	FSW	6/23/2014		
	4799.00	Robot Coupe (CL55 Pusher Series D) - All Metal Commercial Food Processor	FSW	6/23/2014	http://www.foodservicewarehouse.com/robot-coupe/cl55-pusher-series-d/p4730.aspx	
Freezer	699.99	Sundanzer Solar-Powered Refrigerator — 1.8	Northernwood	6/23/2014	http://www.northerntool.com/shop/tools/NTESearch?storeId=6970&ipp=24&Ntt=freezer	$1,066.66

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
		Cubic Ft., 24.5in.L x 27.5in.W x 36.5in.H				
	1299.99	Sundanzer Solar-Powered Chest Freezer — 8 Cubic Ft., 30in.L x 50in.W x 37in.H	Northernwood	6/23/2014		
	1299.99	Sundanzer Solar-Powered Refrigerator — 8 Cubic Ft., 30in.L x 50in.W x 37in.H	Northernwood	6/23/2014		
	1199.99	Sundanzer Solar-Powered Refrigerator — 5.8 Cubic Ft., 30in.L x 40in.W x 37in.H	Northernwood	6/23/2014		
	699.99	Sundanzer Solar-Powered Chest Freezer — 1.8 Cubic Ft., 24.5in.L x 27.5in.W x 36.5in.H	Northernwood	6/23/2014		
	1199.99	Sundanzer Solar-Powered Chest Freezer — 5.8 Cubic Ft., 30in.L x 40in.W x 37in.H,	Northernwood	6/23/2014		

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
		Model# DCF165				
Freezer - Flash	21566.00	Delfield T14D ConvoChill Blast Chiller / Blast Freezer - 154 lb. / 120 lb.	Webstaurantstore	6/23/2014	http://www.webstaurantstore.com/delfield-t14d-convochill-blast-chiller-blast-freezer-154-lb-120-lb/305T14D.html?utm_source=Google&utm_medium=cpc&utm_campaign=GoogleShopping&gclid=CPvwxrPzk78CFQIT7Aod8Q8A5A	$18,717.50
	15869.00	Master Bilt MBCF115 Reach In Blast Chiller - 122 lb.	Webstaurantstore	6/23/2014	http://www.webstaurantstore.com/master-bilt-mbcf115-reach-in-blast-chiller-122-lb/560MBCF115.html?utm_source=Google&utm_medium=cpc&utm_campaign=GoogleShopping&gclid=CLGd-rLzk78CFabm7AodxzkA7Q	
Grinder	686.99	Vollrath (40743) - 1HP Meat Grinder	FSW	6/23/2014	http://www.foodservicewarehouse.com/equipment/meat-grinders/c12307.aspx	$639.29
	513.00	Eurodib (HM-12N) - Meat Mincer	FSW	6/23/2014		
	665.01	Globe (CC12) - Meat Chopper/Grinder	FSW	6/23/2014		
	692.14	Eurodib (HM-22A) - Meat Mincer	FSW	6/23/2014		
Large	393.99	All American 941	Hayneedle	07/11/2014	http://www.hayneedle.com/prod	$393.99

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
Pressure Canner		41.5 Quart Pressure Cooker Canner			uct/allamerican941415quartpressurecookercanner.cfm?redirect=false&source=pla&kwid=Specialty%20Cookware_WAFCO006&tid=WAFCO006&adtype=pla&kw=&ci_src=17588969&ci_sku=WAFCO006&gclid=CPqr0fravr8CFUwV7AodDlAAQw	
Mixer (Commercial)	556.00	Waring (WSM7Q) - 7 qt Commercial Stand Mixer	FSW	6/23/2014	http://www.foodservicewarehouse.com/search?term=commercial+mixer&sort=Default	$597.50
	639.00	Avantco MX10 Gear Driven 10 qt. Commercial Planetary Stand Mixer with Guard - 110V	Webstaurantstore	6/23/2014	http://www.webstaurantstore.com/avantco-mx10-gear-driven-10-qt-commercial-planetary-stand-mixer-with-guard-110v/177MX10.html	
Oven	5178.99	Merry Chef (e3-1330) - 1000 Watt eikon™ e3 Microwave Accelerated Oven	FSW	6/23/2014	http://www.foodservicewarehouse.com/equipment/accelerated-cooking-ovens/c3635.aspx	$7,465.24
	6633.99	Merry Chef (e2-1230) - 1000 Watt eikon™ e2 Microwave Accelerated Oven	FSW	6/23/2014		
	8581.99	Merry Chef (e4-1430) - 1500 Watt	FSW	6/23/2014		

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
	9465.99	eikon™ e4 Microwave Accelerated Oven Merry Chef (e5-1530) - 1400 Watt eikon™ e5 Microwave Accelerated Oven	FSW	6/23/2014		
Pressure Cooker	268.99	14 Qt. (13 Liter) Stainless Steel Pressure Cooker	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/45791/commercial-pressure-cookers.html	$208.49
	147.99	8 Liter (8 1/2 Qt.) Stainless Steel Pressure Cooker with Steamer Basket	Webstaurantstore	6/24/2014		
Produce Wash Sink	448.99	Advance Tabco FE-2-1812-18RL-X Two Compartment Stainless Steel Commercial Sink with Two Drainboards – 72"	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/14919/2-compartment-sinks.html	$462.66
	499.00	Regency 16 Gauge Two Compartment Stainless Steel Commercial Sink without	Webstaurantstore	6/24/2014		

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
		Drainboard - 53" Long, 23" x 23" x 12" Compartments				
	439.99	Regency 16 Gauge Two Compartment Stainless Steel Commercial Sink with 2 Drainboards - 72" Long, 17" x 17" x 12" Compartments	Webstaurantstore	6/24/2014		
Range (Commercial)	4571.00	Garland M42-6R Master Series 2 Burner 34" Gas Range with Even Heat Hot Top and Standard Oven	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/15039/heavy-duty-master-series-commercial-ranges.html	$4,665.83
	4571.01	U.S. Range (C836-1) - 36" Heavy-Duty Griddle Top Range - Cuisine Series	FSW	6/24/2014	http://www.foodservicewarehouse.com/us-range/c836-1/p276.aspx	
	4788.30	Bakers Pride Restaurant Series 60-BP-8B-G36-S26 8 Burner Gas Range with Two Standard 26" Ovens and 12"	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/bakers-pride-restaurant-series-60-bp-8b-g36-s26-8-burner-gas-range-with-two-standard-26-ovens-and-12-griddle/15560BP8BG12.html	

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
	4733.00	Griddle Southbend (4481DC) - 48 5/8" Restaurant Open Burner Range - Ultimate 400 Series	FSW	6/24/2014	http://www.foodservicewarehouse.com/equipment/gas-ranges/c37305/3.aspx	
Scale	108.99	Globe (GPS10) - 11 lb Electronic Portion Control Scale	FSW	6/24/2014	http://www.foodservicewarehouse.com/kitchen/digital-kitchen-scales/c256.aspx	$106.31
	99.95	Escali Scales (115B) - 11 Lb Pronto Surface Mountable Scale	FSW	6/24/2014		
	109.99	Taylor TE10T 10 lb. Digital Portion Control Scale with Tower Readout	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/taylor-te10t-10-lb-digital-portion-control-scale-with-tower-readout/608TE10T.html	
Shredder	57.99	Vollrath 434 Replacement 3/4" Blades for 401N Redco Lettuce King I Vegetable Shredder and Slicer	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/vollrath-434-replacement-3-4-blades-for-401n-redco-lettuce-king-i-vegetable-shredder-and-slicer/922434.html	$142.99
	130.99	ollrath (6005) - Suction Cup Base King Kutter™	FSW	6/24/2014	http://www.foodservicewarehouse.com/vollrath/6006/p361467.aspx	

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
		Food Processor w/Cones #1-5				
	239.99	Nemco 55200AN-2 Easy Slicer with 5/16" Fruit / Vegetable Shredder	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/nemco-55200an-2-easy-slicer-with-5-16-fruit-vegetable-shredder/59155200AN2.html	
Slicer	149.99	Weston Brands Heavy-Duty 9in. Food Slicer, Model# 61-0901-W	Northernwood	6/24/2014	http://www.northerntool.com/shop/tools/category_food-processing+slicers	$136.66
	119.99	Nesco Professional Food Slicer — 7 1/2in. Blade, Model# FS-150PR	Northernwood	6/24/2014		
	139.99	eston Brand Jerky Slicer, Model# 07-3801-W-A	Northernwood	6/24/2014		
Steam Kettle	32902.01	Cleveland Range (KDL-125-F) - 125 gal Stationary Direct Steam Tri-Leg Kettle	FSW	6/24/2014	http://www.foodservicewarehouse.com/equipment/steam-kettles/c3791.aspx	$25,341.34
	24194.00	Vulcan-Hart (ET125) - 125 gal Electric Stationary Kettle	FSW	6/24/2014		
	18928.01	Blodgett (KLS-	FSW	6/24/2014	http://www.foodservicewarehou	

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
		80E) - 80 gal Electric Stationary Kettle			se.com/steam-kettles-13000-20400/c3791_13705-13000z20400.aspx	
Tenderizer	169.00	Weston Meat Cuber/Tenderizer, Model# 07-3101-W-A	Northernwood	6/24/2014	http://www.northerntool.com/shop/tools/category_food-processing+mixers-tenderizers	$159.00
	139.00	Weston Brand Meat Cuber/Tenderizer, Model# 074101WA	Northernwood	6/24/2014		
	169.00	Kitchener Deluxe Meat Tenderizer	Northernwood	6/24/2014		
Vegetable Cutter	292.99	Nemco 56750-2 1/4" Cut Easy Onion / Fruit / Vegetable Slicer II	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/nemco-56750-2-1-4-cut-easy-onion-fruit-vegetable-slicer-ii/591N567502.html	$261.49
	229.99	Vollrath Redco 15016 InstaCut 3.5 1/4" Fruit and Vegetable Dicer - Wall Mount	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/vollrath-redco-15016-instacut-3-5-1-4-fruit-and-vegetable-dicer-wall-mount/92215016.html	
Diswasher	13999.00	Wareforce 66H Conveyor High Temperature Dishwasher - Right to Left	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/wareforce-66h-conveyor-high-temperature-dishwasher-right-to-left/495WF66HRL.html	$13,439.00
	12879.00	Wareforce 44C	Webstaurantstore	6/24/2014	http://www.webstaurantstore.co	

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
		Conveyor High Temperature Dishwasher - Right to Left			m/wareforce-44c-conveyor-low-temperature-dishwasher-left-to-right/495WF44CLLR.html	
Pulper	14239.00	Insinkerator WX-300-18A-WX-101 Waste Xpress 700 lb. Food Waste Reduction System with Champion (P5-24) - 24" Pulper Waste	Webstaurantstore	6/24/2014	http://www.webstaurantstore.com/13939/waste-pulpers-extractors.html	$26,385.00
	38530.99	Handling System	FSW	6/24/2014	http://www.foodservicewarehouse.com/champion/p5-24/p347323.aspx	

Appendix A5: Costs of Food Packaging Equipment and Storage Facilities

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
			Packaging			
Cheese Packaging Equipment	16,935.00	C500	MULTIVAC Inc.	07/14/2014	Price information requested through quote. http://us.multivac.com/our-products/chamber-machines/large-chamber-machines/double-chamber-swing-lid-machines/c-500.html	$16,935.00
Cooker, Canner	1349.00	Master Electric Can Sealer - Model EL12253 (115V)	Canny Pantry	6/24/2014	http://www.canningpantry.com/master-can-sealer-el12253.html	$1,464.00
	1579.00	Master Electric Can Sealer - Model EL12253-6 (230V/60hz)	Canny Pantry	6/24/2014	http://www.canningpantry.com/master-can-sealer-el12253-6.html	
Form-Fill-Seal (FFS) machine	30,000.00	Premier Tech Model TFS-411 Tubular Bag Machine (Form, Fill & Seal)	Labx	6/25/2014	http://www.labx.com/v2/adsearch/detail3.cfm?adnumb=511032#.U7EKxPldWSo	$30,000.00
Heat Sealer	164.99	Gold Medal (2089) - 8" Impulse Heat Sealer	FSW	6/24/2014	http://www.foodservicewarehouse.com/search?term=heat+sealer&sort=Default	$159.49
	153.99	Gold Medal (2097) - Cello Bag Heat Sealer	FSW	6/24/2014	http://www.foodservicewarehouse.com/search?term=heat+sealer&sort=Default	

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
Labeling Equipment	1199.99	Globe (GSP30A) - 30 lb Label Printing Scale	FSW	6/24/2014	http://www.foodservicewarehouse.com/search?term=labeler&sort=Default&w=bW9kZWxUeXBlRGVzYz1MYWJlbCBQcmludGluZyBTY2FsZXNfUHJvZHVjdCBUeXBlOiBMYWJlbCBQcmludGluZyBTY2FsZXM=	$1,167.50
	1135	Globe GSP30A 30 lb. Price Computing Label Printing Scale, Legal for Trade	Webstaurantstore	6/24/2014		
				6/24/2014		
Labeling Equipment – Nutrition	1045.69	Food Label Printing Starter Kit with Zebra Printer and Nutrition Software	FoodSoftware.com	6/27/2014	http://www.foodsoftware.com/Product_0017.asp?Keyword=&ViewMode=&NavURLs=Catalog%2Easp%3FNav%3D2%26SortMode%3D%26Keyword%3D%26ViewMode%3DPublic%26ViewOwnerID%3D%26ViewField%3DTitle%26ShowFilters%3DN%26ShowLevelID%3D0%26ProductClassID%3D0%7CProduct_0017%2Easp%3FKeyword%3D%26ViewMode%3D&NavNames=Food+Label+Printers%7CFood+Label+Printi	$1,045.69

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
					ng+Starter+Kit+with+Zebra+Printer+and+Nutrition+Software	
Liquid Bottle Filler	4327.00	SGP Series piston fillers	CE CLEVERLAND MACHINARY	6/24/2014	http://www.clevelandequipment.com/index.php?id=90&gclid=CJnb5pWRlL8CFUcV7AodOT0Acw	$4,327.00
Manual Sauce Filler	3627.00	TG series piston fillers	CE CLEVERLAND MACHINARY	6/24/2014	http://www.clevelandequipment.com/index.php?id=90&gclid=CJnb5pWRlL8CFUcV7AodOT0Acw	$3,627.00
Retort	3375.00	Minipack MVS45x commercial chamber vacuum sealer packer retort packaging machine	EBAY	6/24/2014	http://www.ebay.com/itm/like/190698339933?lpid=82	$3,375.00
Scale		Semi-Automatic Stretch Wrap Machine with Scale	ULINE	6/24/2014	http://www.uline.com/Product/Detail/H-1619/Stretch-Wrap-Machines/Semi-Automatic-Stretch-Wrap-Machine-with-Scale?pricode=WY826&gadtype=pla&id=72163043602&gclid=CMfdkquXlL8CFZRj7AodMTEAYg	$9,995.00
Water Bath	1722.00	Eagle (AWTP4-NG) - 4-Well Gas Water Bath Steam	FSW	6/24/2014	http://www.foodservicewarehouse.com/eagle/awtp4-ng-1/p333764.aspx	$1,698.00

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
	1674.00	Table Eagle (AWT5-NG) - 5-Well Gas Water Bath Steam Table	FSW	6/24/2014	http://www.foodservicewarehouse.com/eagle/awt5-ng/p333943.aspx	
Vacuum Machine	869.00	ARY VacMaster VP215 Chamber Vacuum Packaging Machine with 10" Seal Bar	Webstaurantstore	6/24/2014		$719.04
	599.00	Vollrath 40858 External Strip Vacuum Packaging Machine (Anvil VMA7200)	Webstaurantstore	6/24/2014		
	689.11	Vollrath (40858) - Out-of-Chamber Vacuum Pack Machine Push-button operation	FSW	6/24/2014	http://www.foodservicewarehouse.com/vollrath/40858/p1355789.aspx	
			Storing			
Cheese Storage	10,500.00	Cooler_RT - 7'9" x 7'9" Indoor Walk-in Cooler	Central Restaurant Products	07/11/2014	http://www.centralrestaurant.com/Special-Order-CoolerRT---79-in-x-79-in-Indoor-Walk-in-Cooler-c121p40633.html	$8,834.5

Equipment	Price ($)	Brand	Company	Date Accessed	Website	Average Prices
	7,169.00	Walk In Cooler - Indoor, Quick Ship Capsule Pak 8 ft. x 10 ft. Floorless	Central Restaurant Products	07/11/2014	http://www.centralrestaurant.com/Walk-In-Cooler---Indoor-Quick-Ship-Capsule-Pak-8-ft-x-10-ft-Floorless-c121p15860.html	
Refrigerated Storage-Shelf	10,500.00	Cooler_RT - 7'9" x 7'9" Indoor Walk-in Cooler	Central Restaurant Products	07/11/2014	http://www.centralrestaurant.com/Special-Order-CoolerRT---79-in-x-79-in-Indoor-Walk-in-Cooler-c121p40633.html	$8,834.5
	7,169.00	Walk In Cooler - Indoor, Quick Ship Capsule Pak 8 ft. x 10 ft. Floorless	Central Restaurant Products	07/11/2014	http://www.centralrestaurant.com/Walk-In-Cooler---Indoor-Quick-Ship-Capsule-Pak-8-ft-x-10-ft-Floorless-c121p15860.html	
Freezer Storage-Shelf	9,539.00	Nor-Lake KODF77810C Walk In Freezer - Outdoor Quick Ship Capsule Pak 8 ft. x 10 ft. With Floor	Central Restaurant Products	07/11/2014	http://www.centralrestaurant.com/Nor-Lake-KODF-77810-C-Walk-In-Freezer---Outdoor-Quick-Ship-Capsule-Pak-8-ft-x-10-ft-With-Floor-c121p15880.html	$9,539.00
Freezer Storage-Pallet	11,364.00	10x20'x7'6New Foster Walk In Freezer with pallet door	EBay	07/11/2014	http://www.ebay.com/itm/10x20-039-x7-039-6New-Foster-Walk-In-Freezer-with-pallet-door-/120783484148	$11364.00

CHAPTER III: Shenandoah Valley Produce Market: Case Study of a Mennonite Produce Auction

ABSTRACT

A wholesale produce auction is defined as a marketing outlet for the sale of produce to wholesale (business) buyers. As the largest wholesale produce auction in Virginia, the Shenandoah Valley Produce Auction (SVPA) started operating in 2005 to provide around 175 types of products including fresh vegetables, fruits, eggs, flowers, herbs, and compost. The total market sales of the SVPA increased to $2,088,197 in 2013, with more number of visits of both buyers and sellers. The SVPA also brought more job and business opportunities to the Mennonite community. In addition, it helps buyers access locally grown food, and let them have a better understanding of produce auction and Mennonite community.

The purpose of this study is to identify the potential and future market challenges of a produce auction operated within a Mennonite community in Shenandoah Valley and its potential impacts. Based on interviews with the auction manager and a SVPA buyer survey, the results indicate that most of sellers and buyers are satisfied with the SVPA, however, the SVPA still faces challenges due fluctuating prices, demand exceeds current production capacity and supply,, lack of sufficient delivery services for buyers, and inability to contract with larger companies and grocery chains. To attract more buyers on a consistent basis, particularly larger wholesale buyers, it will be essential and necessary for the SVPA to increase production capacity and supply to provide a more consistent amount of produce, improve the facilities, operation, management, auction security, food safety traceability and add more possible payment methods.

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3.1 Introduction

In Mennonite communities, farmers still follow many traditional farm production practices and marketing strategies. As with other small and mid-sized farms, Mennonite farms face many challenges. Increased prices of agricultural inputs and other costs, and increased competition have led to challenges with respect to short-term profitability and long-term economic sustainability (Tourte and Gaskell 2004). Mennonite farmers, however, have recently adopted market-oriented practices of diversifying their crop enterprises and product varieties including extending production seasons, and selling "locally-grown" and value-added products.

3.1.1 Wholesale Produce Auction

A wholesale produce auction is a marketing outlet for the sale of produce to wholesale (business) buyers. Fresh produce, and often a variety of other agricultural products, are sold to the highest bidder. The auction charges the seller a commission, usually a percent of sales, to cover the auction's operating expenses (CDBREC 2013). Produce auctions offer the opportunity for producers to sell specific seasonal products, and products with different grades and sizes that are preferred in a specific region. In addition, produce auctions offer the potential to test market interest for new products. Although individual consumers may participate, the produce auction is usually designed to serve larger volume buyers and can serve as an alternative to corporate wholesale food distributors or brokers (CAN 2010).

In recent years, produce auctions have made resurgence with many filling demand for niche markets including organic foods and fresh, local food production. Currently in the U.S., wholesale produce auctions are mainly located in Delaware, Indiana, Kentucky, Ohio, Pennsylvania and Virginia (University of Missouri, 2014). Buyers at these auctions are frequently roadside stands, grocery stores and restaurants (University of Missouri, 2014). The auction houses typically provide not only facilities for exchange, but also grading services, packaging services, payment collections and disbursements overall management (Gray, 2005), may group lots for sale, and may arrange for product delivery.

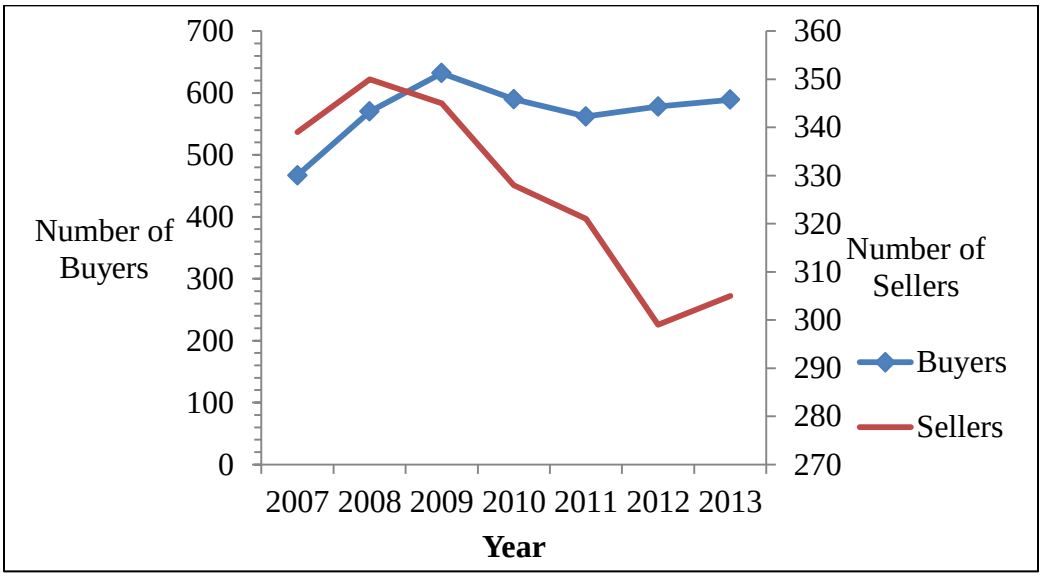
3.1.2 Shenandoah Valley Produce Auction Profile

The Shenandoah Valley Produce Auction (SVPA) is located in Dayton, VA. The SVPS and is the largest wholesale auction in Virginia and has been in operation since 2005. While not restricted to the Mennonite community, due to its location a significant majority of the sellers is Mennonite and this site provides a central location for these growers to sell their harvest (SVPA, 2014). The SVPA operates from April through November. Approximately 175 types of products are sold during a typical seasons, including fresh vegetables and fruits, eggs, flowers, herbs, and compost. Several growers at the SVPA are certified to Good Agricultural Practices (GAPs; SVPA, 2014).

3.1.2.1 Shenandoah Valley Produce Auction Sales

The Shenandoah Valley Produce Auction distinguishes between three types of auction buyers: wholesale buyers, individual buyers, and daily buyers. Individual buyers are consumers who are buying on behalf of their household and who visit the auction multiple times; daily buyers are consumers who make single or occasional purchases at

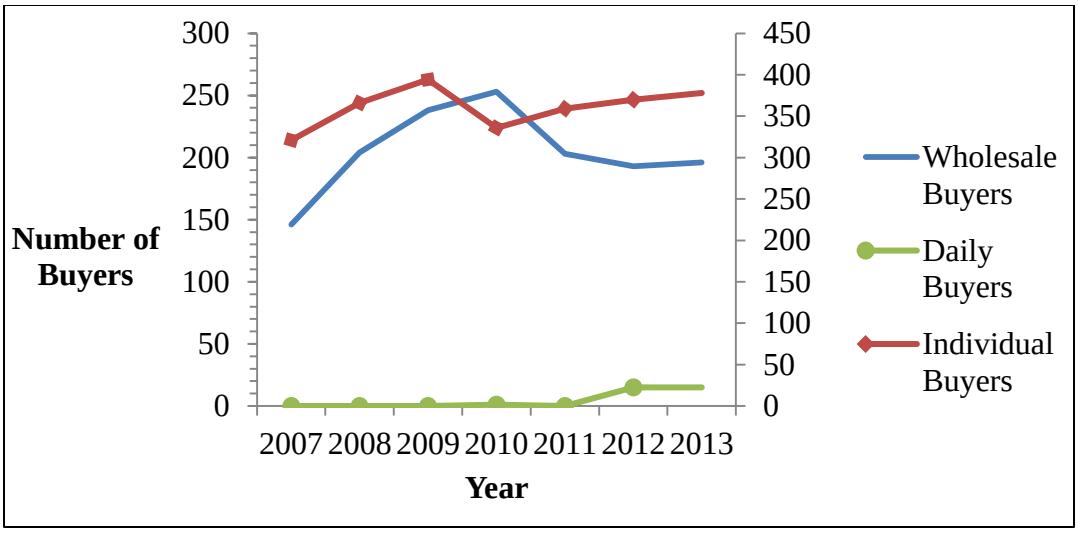
the auction. Figure 3.1 shows the trends of number of auction buyers and sellers across time: in early years the number of all buyers increased from 2007 to 632 in 2009, dropped rapidly to 562 in 2011, and then it rose to 589 in 2013. The number of sellers increased to 350 in 2008, decreased to 2012, and slightly rebounded to 305 in 2013.



Source: SVPA market data

Figure 3.1 Average number of SVPA buyers and sellers per year, 2007-2013

The number of buyers by buyer type has also varied across time. Figure 3.2 shows that the number of wholesale buyers has increased from 2007 through 2010, and then it decreased to 193 in 2012, and has remained relatively consistent since. The number of individual buyers has increased in early years, declined from 2009-10, and has since been slowly increasing. Only in 2010, 2012 and 2013, daily buyers came to the SVPA.



Source: SVPA market data

Figure 3.2 Average number SVPA buyers by type per year, 2007-2013

While overall the number of buyers is lower than its 2009 peak, the number of buyer visits and value of purchases have increased annually. As presented in Table 3.1, buyer visits grew from 3047 to 4,654 per year, and average purchase per visit has ranged from $325 in 2008 to $449 in 2013.

For auction sellers, number of visits has generally increased over time to 4701 in 2013 (Table 3.1). Over the course of the auction's history, the value of products sold has also generally increased and was $2,088,197 in 2013. By 2013, the average sales per visit by a farmer increased to $444. At the produce auction, products commonly purchased include a wide assortment of fresh vegetables, fruits, eggs, flowers, and compost.

Beyond providing a marketing channel for farmers and a procurement site for buyers, the SVPA has also had other impacts on its local community. About 10 people are seasonally employed at the auction. Indirectly, a valley produce related business has started because of the auction. Also there has been an increase in number of produce growers, and increasing demand for production inputs. Mennonite family members were

more fully employed at their own farms, and strawberry growers have hired temporary workers during strawberry picking seasons (Heatwole, 2014).

Table 3.1 Number of all buyer and seller visits, total purchases, and average purchases at the SVPA, 2007-2013.

	2007	2008	2009	2010	2011	2012	2013
				Total Market Sales ($)			
Total Market Sales ($)	$1,096,815	$1,162,832	$1,396,398	$1,812,141	$1,855,779	$1,775,561	$2,088,197
				Buyer			
# of visits	3,047	3,583	4,151	4,223	4,367	4,487	4,654
Average Purchase ($)/Visit	$360	$325	$336	$429	$425	$396	$449
				Seller			
# of visits	4,409	4,161	4,483	4,426	4,688	4,681	4,701
Average Sold ($)	$249	$279	$311	$409	$396	$379	$444
Source: Author calculations based on data from the SVPA							

3.1.2.2 Shenandoah Valley Produce Auction History

Before the SVPA started, there was no major wholesale market available to the Shenandoah Valley's Mennonite farmers. Most of the farmers grew and sold produce at their own roadside stands or in small quantities which were sold straight to restaurants. Staff of Virginia Cooperative Extension noticed the success and efficiency of produce auctions in the plain Amish and Mennonite communities in Pennsylvania, and facilitated discussion and development of the produce auction in Shenandoah Valley in 2003. Most the residents of the community were happy about the formation of the produce market (Heatwole, 2014).

3.1.2.3 Shenandoah Valley Produce Auction Board of Directors

The SVPA has a Market Manager who reports to a Board of Directors. The SVPA's board meets once per month, and discusses everything including recent auction operations, box prices, and major projects such as facility improvements. Special meetings will be held if there is something that needs to be discussed urgently (Heatwole, 2014).

The board of directors of the SVPA is made up of 5 Directors that are selected from the SVPA's 62 shareholders. Through paper ballot, either one or two of the directors will be voted onto the Board at the shareholder meeting each year. Each board member can serve a maximum of two 3-year terms for 6 years in total at a time. Once finished two terms, to maintain some rotation and keep fresh perspective on the board, Directors rotate off for at least a year. After this time though they still have opportunity to run for an additional terms.

Most of the SVPA's shareholders come from the five nearby counties nearby. Shareholders are made up of mostly sellers but also include a few buyers. One board member, who is a former seller, has become one of the largest buyers at the SVPA. Shareholders can buy shares of the SVPA; these shares, however, can only be sold back to the auction. The SVPA are trying to keep the majority of the shares in the hands of people who are engaged and bring in produce to the auction.

3.1.2.4 Interface with Local Food System

The SVPA is unique in the manner of its interface with its local food system. Harrisonburg City Public schools systems try to have 10% of their food dollars go to the purchase of local foods. This school system purchases some of their fresh vegetables and fruits at the SVPA for. Unlike other auction buyers, instead of coming to the SVPA, the SVPA staff will bid the produce for them at their willing prices, and a driver will deliver produce different schools in Harrisonburg (Heatwole, 2014).

3.1.2.5 Services Provided by other Community and Organizations and Partners

To help the growers, the SVPA has worked closely with Virginia Cooperative Extension to schedule and arrange information meetings for them. Once a year, a guest speaker is invited to the auction to give a lecture to growers including production activities. Like other notices, lecture notice is posted on the bulletin board at the SVPA office, or put into check envelopes when growers and buyers come to pick up their payments (Heatwole, 2014). Except for Virginia Cooperative Extension, there are no other communities, organizations, or partners that directly contribute to the auction.

3.1.2.6 Communication with Other Produce Auctions

According to the interview with the SVPA manager, each produce auction is different, but they are also very similar. The SVPA manager has been to number of auctions: some of the auctions were willing to share experiences and ideas, but some of them were not. Since 2012, instead of Microsoft Access, the SVPA started to use software named "AuctionLIVE", which makes information tracking much easier than before. There is one auctions in Pennsylvania and two in Ohio are using similar software but without tracing function (Heatwole, 2014).

3.1.3 Objectives

This study examines the potential of a produce auction to influence the Mennonite community in Shenandoah Valley. Specifically this study seeks to:

1. Identify and assess benefits and the challenges currently faced by the SVPA;
2. Identify likely constraints to the future success of the SVPA; and
3. Propose actions to help the SVPA overcome current and likely future constraints.

This study will help the SVPA have a better understanding of perceptions of their organization. Through a survey of SVPA buyers, their reasons for purchasing products at the SVPA, their satisfaction with characteristics of the SVPA, and their recommendations for the auction are identified and explored. In addition, the study identifies and assesses the future challenges and limitations faced by the SVPA.

3.2 Literature Review

Many theories and studies have explored various aspects of wholesale auctions. Major themes explored in this literature review including: the variety of marketing alternatives through which produce can be marketed, studies of international and US wholesale produce auctions, and specific consideration of Mennonite Produce Auctions.

3.2.1 Produce Marketing

Small-scale farms usually sell fresh produce through one of several direct farm-to-consumer marketing channels: U-pick operations, roadside stands, farmers' markets, internet or mail-order, and/or CSA (Community Supported Agriculture) subscriptions. Alternatively, farms can participate in Agri-tourism or sell directly to restaurants, institutional food services, food retailers, wholesalers and/or distributors, or food manufacturers. The forms of marketing channels most commonly used by Mennonite farms are introduced below.

Roadside Stands

Typically located on the farm, roadside stands usually sell products seasonally according to the harvesting schedule. There are some advantages in roadside stand: low marketing costs, no transportation costs, no middleman, more efficient time management, and they can allow producers to more easily to meet consumers' demand then allowing production to be expanded or modified. To operate a roadside stands successfully, retailing background, some minor capital for facilities will be needed (Burt, et al., 2008).

Farmers' Markets

As they frequently offer selling facilities and parking lots, farmers' markets are a gathering point for producers to sell produce and other specialty products to local

consumers (Burt et al., 2008). Farmers' markets have advantages in that they provide a place with variety of products that attracts more customers, and create an opportunity for seasonal community activity. In selling through farmers' market, farmers often face increased costs of transportation and experience higher sales. However, downward competitive pressure may lower prices at a market, and limited market days require that many farmers travel to other farmers' market sites or use other marketing channels.

Other Market Alternatives

Community Supported Agriculture (CSA), is subscription farming, in which members can purchase a share of a farm's harvest. Members pay for their share at the beginning of the season and then pick up produce at the farm (or other distribution point) weekly. This model benefits farmers in providing them a cash inflow when they must make investments in production inputs. Members share some of the production risk in that they get a share of the farm's output – regardless of weather or other production challenges. .

Alternatively, farms can sell to other businesses. Farms, for example, can sell directly to restaurants and foodservice operations at institutions. Independently owned and operated restaurants, in particular, often seek out these supplier relationships. Restaurants can get fresh and local foods with high quality from local farms which meet their quantity, quality, packaging, delivery requirements. At the same time these purchases support the local farmers and economy as well (Burt et al., 2008).

3.2.2 Studies of International and U.S. Wholesale Produce Auctions

Wholesale markets provide growers with a new marketing outlet: they consolidate products from multiple producers to offer product volume needed by wholesaler buyers.

This can generate increased demand for produce from smaller growers and can allow these growers to expand their production.

Internationally these markets have a long history. Dutch growers of fresh produce used co-operative auctions as their dominant type of sales organization for more than one hundred years. Since 1970s, however, facing conditions of stronger competition, buyers became more concentrated and consumers became more demanding with respect to quality, variety and convenience. This caused the market structure in the Dutch fruit and vegetable industry to change significantly; the number of Dutch produce auctions dropped from 88 in the 1970s to only 6 in 2000 (Bijman and Hendrikse, 2003).

In addition to the Netherlands, Canada, Turkey, France and Japan have all had a least one agricultural auction market at some point in time (Tourte and Gaskell, 2004). The literature is not always clear about when the markets began operation or whether these markets still exist. What is known though is that produce auctions supply a wholesale market demand can fluctuate throughout the season, based primarily on volume of product and buyers present on any given day (Ernst and Woods, 2004). James and James (1992) identified the effects of a wholesale fruit and vegetable auction on produce marketing and distribution in Northeast Ohio. The auction was found to be an efficient and acceptable part of local food marketing system due to the satisfaction of both sellers and buyers, and ultimately assist those involved to reach their economic and social goals.

Tubene and Hanson (2002) found that a Pennsylvania wholesale produce auction could be successful alternative marketing strategy for small farmers. They found the reasons for this auction's success included: private ownership, excellent quality and

freshness of produce, good location, local produce recognition, clientele availability, and the fact that they were a customer-oriented business. These authors also identified some weaknesses in the auction of inconsistent and poor grading, limited space in the auction facility, produce unavailability and limited volume, lack of a cooling facility, price fluctuation and slow service.

Increases interest in locally grown food has fostered the growth of local produce auctions, expansion of farmers' markets, and other produce marketing channels (Wisconson; Groves et al., 2004). In their study of the Fairview Kentucky produce auction, Ernst and Woods (2004), found that the produce auction offers greater wholesale market opportunities for producers willing to incur the price uncertainty and rewards associated with selling produce at the blueberries auction. They authors, however, noted concern about a lack of diverse buyers and geographically limited market in KY.

3.2.3 Mennonite Produce Auctions

Produce auctions are quite popular in communities where a core group of producers is committed to marketing their highest quality produce through the auction. Given their high quality products, and limited access to many other wholesale marketing channels, auctions have flourished in Amish and Mennonite communities (CDBREC 2013). Produce auctions have a history in Midwestern Amish communities as an efficient, low-infrastructure means of aggregating and distributing farm products. The auctions are organized and are primarily supplied by local Amish growers. The auctions buyers include roadside stands, wholesale grocers, food service buyers, and individual households. In addition, the auctions often provide marketing services such as delivery and cold storage (Day-Farnsworth et al., 2009).

In the United States and Canada, there are 61 existing produce auctions[6]: 60 of these auctions are located in the East and Mid-West of the U.S., and one of them is located in Elmira, ON in Canada (Organic Agriculture Centre of Canada, undated). Among these, there are 8 Mennonites produce auctions, 26 Amish produce auctions, 22 produce auctions in areas with both Mennonites and Amish, and five located in areas with neither Mennonites nor Amish communities.

Source: Map made by author based on the produce auction lists.
Figure 3.3 Distribution of Produce Auction in the United States and Canada[7]

In an analysis of a produce auction in Ohio, most consignors admitted the importance and convenience of the auction; this auction was also found to be efficient and satisfied to the local food marketing system. Blaine et al., (1996) declared that

[6] Online search by the author.
[7] Map was developed by the study author and is available at: http://batchgeo.com/map/9cb77c46352d6775884438bd47163744

wholesale fruit and vegetable auctions appear to have potential as an economic development tool for communities with large Amish populations.

To get their products to market, a small group of Mennonites farmers in Ontario, Canada, developed a cooperatively owned produce auction. As the first wholesale produce auction in the area, the Elmira Produce Auction Co-operative (EPAC) has played an important role in the Mennonite community located nearby. By learning from the experiences of U.S. produce auctions, the EPAC increased sales by 600 percent between 2004 and 2009, and expanded its building and parking facilities (Egbers and Epp, 2009). The 65 producers who sell through this auction use horses or trucks to bring their goods to the auction and pay ten percent of all sales revenue to the marketing co-operative. Buyers are required to purchase three or more boxes of produce per visit. The largest group of buyers tends to be farmers' market vendors or farmers with farm gate businesses. Universities and grocery stores also participate in this auction to purchase locally grown produce (Elmira Produce Auction CO-operative, undated).

Bergefurd (2011) assessed the extension needs of Amish and Mennonite produce farmers that sell through Ohio produce auctions. Extension services provided produce auction farmers a connection with agriculture researchers who help them using scientific knowledge to address their specific issues and needs. A high percentage of Amish and Mennonite farmers reported that they are aware of, or have benefited from, Extension services. Importantly, Extension is considered a trusted source of information for these farmers. These farmers rated information related to production, as their greatest extension need.

3.3 Research Methodology

This section describes the research approach used to examine the benefits, challenges, and constraints to the SVPA. Both qualitative and quantitative research approaches are used in this analysis.

3.3.1 Interviews with Auction Management

Depth interviews seek to identify and describe the meanings of central themes of a subject. The main task in interviewing is to understand the meaning of what the interviewees say (Kvale, 1996). Interviews are particularly useful for getting the story behind a participant's experiences in that the interviewer can pursue in-depth information around the topic.

The SVPA manager was interviewed for this study. Questions covered basic information about the auction, customer types, history of the auction, issues related to food safety, liability, how the auction works, current challenges facing the auction, and the SVPA's future plans.

Two interviews of the SVPA manager were conducted. The first interview lasted about one hour and half at the SVPA office and was recorded by hand written notes. The second interview was also held at the SVPA office for about one and half hours, and was recorded by both audio recorder and hand written notes. Interview questions and a summary of these responses are included in Appendix B1.

3.3.2 Survey of SVPA Buyers

At present, the growth and success of the SVPA is limited by availability of produce (supply) rather than produce demand. Based on the interview with auction manager,

auction sellers do not have many opinions on the current circumstances of the SVPA. Better understanding of what buyers specifically need and want from the SVPA's growers and from the SVPA services may help the auction better recruit growers and better focus their growth strategy to address these issues.

It would be difficult to interview SVPA buyers because time, cost, and their dispersed locations. As such, the most appropriate way to reach the auctions buyers was through a a "pen and paper" survey. It was decided that this survey would be distribute to buyers at the SVPA office when they come to the produce auction. Completed surveys were also collected by the SVPA main office.

3.3.2.1 Instrument Development

According to Dillman (2009), issues of survey mode, sample, contacts, incentives, and additional materials should be considered before developing a questionnaire. A detailed survey was developed for current buyers at the Shenandoah Valley Produce Auction. To encourage participation, the number of items on the survey needed to be limited (Dillman et al., 2008). A screening of initially proposed questions was performed using the following criteria to determine if specific questions should be included:

1. Is the question necessary/useful to answer one of the research questions?
2. Are several questions needed to cover all possibilities?
3. Does the question need to be more specific?
4. Is the question sufficiently general?
5. Is the question biased or loaded?
6. Will respondent answer truthfully?

The survey sought to collect information about buyers purchasing experiences at the SVPA, thoughts and suggestions about the auction, and background information about the respondents and the business they buy for. Specific questions concerning food product liability insurance, auction products and services of the SVPA, and reasons for purchasing at the auction were asked. Open-ended and multiple choice questions were the primary question formats used in this survey. In the last question, participants were asked to note any additional comments, suggestions, or feedback for the auction or about the survey. Respondents were also offered the option to receive an electronic copy of this study's final report if they would like to provide their email address. A total of twenty-two questions were included in the questionnaire; a copy of the survey is presented in Appendix B2.

3.3.2.2 Survey Pretesting

This survey was pretested by the SVPA executive director and market manager. No substantive changes to the survey were required or recommended following these reviews.

3.3.2.3 Institutional Review Board Approval

Approval for this study was sought and obtained the Virginia Polytechnic Institute Institutional Review Board (IRB), using exempt review procedure. The data collection protocol was approved through protocol #14-268.

3.3.2.4 Survey Distribution

Surveys were distributed and collected from SVPA buyers through the SVPA office. Surveys were made available at the buyer registration and payment counter at the auction. Surveys were also returned to this office. Additional background information about this study and contract information about the study's Principal Investigator, and the university's IRB office were provided at this location. For buyers who preferred, an electronic version of the survey was also available; no buyers, however, requested this option. The survey was available at the auction between late April and the end of June 2014.

3.3.3 Data Analysis

This analysis makes use of transactions, other data provided by the SVPA, and information collected through buyer surveys. Details of the analysis of both date types are included below.

3.3.3.1 Analysis of SVPA Manager Interview Data

With permission of the auction manager, interviews was recorded by both recorder and handwritten notes. Handwritten notes were types and transcripts were made of the recorded interviews. Information gathered during these interviews was then organized by theme; this information is presented in Appendix B1. This information was a key input into the development of the SVPA buyer survey.

3.3.3.2 Analysis of SVPA Auction Transaction Data

Buyer, seller, and transaction data from the SVPA from 2007 through 2013 were provided for use in this study. Data from 2007 through 2011 were recorded using

Microsoft Access, and data of 2012 and 2013 were recorded using the AuctionLIVE software program,

To gain a better understanding of SVPA buyers and sellers, summaries of transaction data were developed through the following steps in Excel:

1. Transfer data from Microsoft Access to Excel.
2. Set up a table for comprising the numbers of buyers, sellers, and products for each year.
3. Based on the transaction sheet, set up a new worksheet for auction buyers, including number of visits, total quantity purchased, and total purchasing amount and average purchasing amount per visit for each year.
4. Based on the transaction sheet, set up a new worksheet for auction sellers, including number of visits, total quantity sold, total transaction amount, and average amount sold per visit for each year.
5. Set up total products comparison worksheet for products, including sold quantity, amount of products sold, average price of buyers purchased on each products across seven years.

3.3.3.3 Entry and Analysis of Buyer Survey Data

The results of the survey were documented using Excel and analyzed using STATA, which was used to determine summary descriptive statistics.

For the SVPA buyer survey, summaries of data were developed by using Excel by steps as follows:

1. Develop and set up a data entry template and variable coding description table in Excel.

2. Enter survey results from completed paper version survey in the same Excel worksheet above.
3. Use STATA to analyze data from survey results
4. Based on descriptive statistics generated in STATA, create needed tables and figures.

3.4 Results and Discussion

This section presents the results from the SVPA buyer survey. A discussion and the implications of these findings are also presented.

3.4.1 Results of Buyer Survey

A survey was distributed via the SVPA office to the auction buyers. A total of eight surveys were completed and returned. Given the average number of buyers visiting the auction during the time, this reflects a response rate of 14.12%[8].

The low response rate may due to the lack of time of buyers when they are at the auction. While surveys were available for buyers to take and return completed at a later visit, most did not opt to do so. Timing of this study may have been a limiting factor to overall participation. Copies of survey were distributed between late April and the end of June 2014. These are the early months of the auction when only a limited variety of products are available. The number of buyers who come to the auction during this time period is less than those in attendance during main harvesting months for fruits and vegetables.

[8] The number of unique buyers at the SVPA in June 2013 was assumed to be the population size.

Table 3.2 Characteristics of Buyers and Their Organizations

Characteristics	**Percentage**
Gender[1]	
Male	4 (57.14%)
Female	3 (42.86%)
Organization	
Farmers' Market Vendor	5 (62.50%)
Farm Stand	2 (25.00%)
Farm and Home Retail Store	1 (12.50%)

Note: Respondents n=8.
[1] One respondent did not indicate gender.

A majority of responding SVPA buyers indicated that they are farmers' market vendors; 25% of respondents purchased products for farm stands, and 12.5% purchased auction a farm and home retail store (Table 3.2). One buyer purchases products for restaurants, hospitals, long-term care facilities.

The SVPA started operating in 2005. One buyer indicated that they started purchasing products at the auction at the same year. Three of the respondents started purchasing at the SVPA in 2007 or 2008. Two surveyed buyers started purchasing products since 2010 and 2011. The remaining two buyers were relatively new to the auction and started purchasing there during or after 2013.

In 2013, four buyers spent less than $10,000 on products purchased at the SVPA, two buyers spent $40,000 to $50,000 on SVPA products, and one buyer spent $70,000 on purchased products at the SVPA. Overall buyers are planning to spend more money at the SVPA in 2014 compared with the previous year. In 2014, only two buyers expect to spend less than $10,000 on purchases at the SVPA. One buyer plans purchase more than $15,000 on SVPA products, two buyers expect to spend $50,000 to $60,000 on SVPA products, and one buyer is planning to purchase $70,000 SVPA products.

In general, buyers do not travel a great distance to attend this auction. Two surveyed respondents drive less than 10 minutes each direction to visit the SVPA. Three buyers have to drive less than one hour to arrive at the SVPA, and three buyers travel more than 90 minutes each direction to get to the auction.

Respondents were asked "which, if any, state or regional marketing program they valued in making their purchasing decisions". The Shenandoah Valley Buy Fresh, Buy Local, and Virginia Grown programs were rated as most valued. One respondent rated locally grown product (for them defined as those grown within a 100-mile radius) as most valued. In rating preferences for production attributes, six respondents chose "none of these are important to my organization" or "I do not know". Two respondents rated Certified Organic as most valued, Transitioning to Organic as second most valued, followed by No- or Reduced-Tillage, Water Stewardship Continuous Improvement Plan, Nutrient Management Plan, Grass or Tree Buffers, and Green Certifications. Cover Crops were rated as least valued among production practices.

Respondents were also asked to rate how satisfied they were with various characteristics of the SVPA. Responses indicate that buyers are satisfied with all of the provided characteristics of the SVPA. In particular, respondents reported being satisfied with product quality. Respondents are also very satisfied with product freshness, access to farmers, product delivery alternatives. They are less satisfied with product availability compared with other characteristics of the SVPA. In addition, one respondent noted being very satisfied with "honesty" of the SVPA.

Table 3.3 Purchase from the SVPA Report Average Rating for Each Attribute

Characteristics of the SVPA	Average Rating Points
Product Quality	5.00
Product Freshness	4.88

Characteristics of the SVPA	Average Rating Points
Product Availability	4.14
Product Packaging	4.57
Dates of Auctions	4.63
Timing of Auctions (Time of Day)	4.63
Access to Farmers	4.67
Product Delivery Alternatives	4.67
Parking	4.63
Note: Total Question Respondents=8. Where 5= very satisfied and 1= very dissatisfied.	

3.4.1.1 Food Safety Considerations

Among respondents, 87.50% of their organizations do not require that products are purchased from farms with certified to have Good Agricultural Practices (GAP) certification; only 12.50% of respondent organizations (n=1) requires GAP certification. A large number (50%) of buyers do not expect to require GAP certification to be a requirement in the future, 12.5% of them continue to expect to require products be purchased from farms that are GAP certified. A notable number of respondents (37.5%) indicated that they did not know about their organization's likely future GAP requirements.

Respondents did not specify the rationale for requiring (or not) GAPs certifications. The auction manager, however, indicated that the quality of produce was thought to be the same from farms with and without GAP certification. It seems that buyers are largely satisfied with the safety of food production practices whether the farm was GAP certified or not.

Similarly, 75% of surveyed buyers do not require food product liability insurance, other 25% of respondents require $1 million to $3 million food product liability insurance. Most of them believed that lack of food product liability insurance will not

impact their organization's ability or willingness to purchase products through the SVPA in the future.

3.4.1.2 Buyer Recommendations for the SVPA

Good food quality, access to locally grown food, and local farmers supporting are the most common reasons that they purchase at the SVPA. Buyers, however, did not that there is a need to improve the facilities, operations, and management at the produce auction. More payment methods are required, such as credit cards. Also, buyers recommended implementing "no smoking" and no young children rules. It was also suggested that a better way to display products being auctioned is needed. Due to a previous unfortunate experience at the SVPA, one buyer indicated that theft is a concern and recommended that the SVPA improve the security during the auction.

The biggest of the SVPA's challenges, as foreseen by the responding buyers, however, is a need to expand of the number of growers and volume of available produce. Based on the previous purchasing experiences, demand is far exceeds supply. As such selling prices at the auction are relatively high compared with prices through other wholesale outlets; this, in turn, limits the amount purchased buy buyers. With more buyers coming the auction and, reportedly, no concrete plan to recruit new growers or expand production among existing growers, this problem may increase with time.

3.4.1.3 Survey Summary

According to the survey results, the majority of the SVPA buyers were farmers' market, farm stand, and farm and home retail store who have been purchasing at the produce auction for multiple years. Most of the SVPA buyers show no interest in purchasing products from farms that participate in a state or regional marketing program. Buyers

reported that they were also very satisfied with product freshness, access to farmers, product delivery alternatives, but less satisfied with product availability compared with other characteristics of the SVPA.

For food safety considerations, most of the buyers did not purchase from farms with GAP certification and show no interested in require GAP certification in the future. As with food product liability insurance, only 25% of the SVPA buyers requested GAP certification.

A large percent of the SVPA buyers were satisfied with good food quality, and less satisfied with produce availability. It could be convenient to access to locally grown food, and support local farmers for them to purchase at the SVPA. They also suggested that the SVPA improve the facilities, operation, and management, lower the products prices, add more payment methods, and improve the auction security at the SVPA. To address the problem of demand outstrips supply, more amount of quantity provided will be essential for the SVPA in the future.

3.5 Conclusions and Implications

This study identified the potential of produce auction to serve as a marketing channel for produce grown by the Mennonites community in Shenandoah Valley. Over time, sales through the SVPA have increased to $2,088,197 in 2013. As a result of the SVPA, more jobs were created and indirectly, produce supplier businesses was started to provide supplies and services to produce growers in the area. The SVPA also provides a good opportunity for buyers to access locally grown food, so the buyers can have fresh products with better quality and support local economy at the same time. In addition to

these benefits, buyers who came to the SVPA had a better understanding of Mennonite Community.

Due to the fluctuation in availability and volume of products, it is difficult for the SVPA to serve as a supplier for many big companies. At the same time, even for some smaller and more flexible companies, they sometimes constrained in their purchases because of the price fluctuations due to the auction format. For buyers who do not understand or feel comfortable with the auction, the SVPA will have a hard time to attract those consumers. Another downside is that the SVPA do not have any trucks to deliver produce. To make a better future of the SVPA, attract more buyers, and improve community economy, it will be essential and necessary for the SVPA improve the facilities, operation, management, auction security, and add more payment methods. Perhaps most importantly, in order for the SVPA to continue its growth trajectory and to attract more buyers, it will need to improve produce availability. It is recognized, however, that in an auction setting, this will have important implications for selling prices, and per-unit return to the farmers.

The produce auction can be implemented in other Mennonites or Amish community to help them make economic development.

3.5.1 Limitations

There were limitations to the study; primary among these was the study response rate. The sample size was relatively small because of the low response rate. During their time at the auction, many buyers were busy with their purchasing activities and did not complete the survey. Also, buyers may not have returned to the auction during the data

collection period to return the completed survey. There are some surveyed producers that did not complete the whole survey, further limited the number of respondents.

3.5.3 Recommendations for Future Research

This study offers a preliminary assessment of the benefits and challenges facing the SVPA. There exists much opportunity for additional research related to this auction. The extent (or not) of price transmission between SVPA prices and regular wholesale market prices for same commodities could be examined. To do so, an empirical model of price transmission can be conducted, which may provide significant insights into how changes in one market are transmitted to the other, the extent of market integration and market efficiency. Specifically, how big the response is, how long and significant the lags in price adjustment are, and if the adjustment follows positive or negative shocks at a given marketing level could be explored. With this information, both buyers and suppliers at the SVPA will be clear about causes of changes in prices. Such an analysis may also help to forecast the SVPA prices based on trends in regular market prices and diagnose imperfections in the auction market linkages. In addition, future studies could also explore the reasons that Mennonites use this auction to sell their products and identify if the produce auction is the best way marketing approach for produce farmers from this community.

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APPENDICES

Appendix B1: Interview with Shenandoah Valley Produce Auction Manager

Appendix B2: Shenandoah Valley Produce Auction (SVPA) Buyers Survey

Appendix B1: Interview with Shenandoah Valley Produce Auction Manager

1. History

a. Before Auction started, what was the major channel(s) did the farmers sell through?

-There were no major channels, there were some people grew their own produce and have their own stands, or like sold straight to restaurants. But it is tricky because restaurants would not know who to go to find producing working for. Small minor channels, and sold by themselves with small quantities. With the auction starting up, gave people a chance, so they did not need to worry about to contact restaurants, stores, to try to figure out where to sell what they are growing. They just know they grow it, and bring it here, there will be buyers who come, so they do not need to worry about track down buyers for it. Some days, the prices maybe a little lower than normal, but that was natural, some days, the buyers would like, so that was just go along with it.

b. What reasons did they start to think about sell their products at the auction?

- How that came about was Eric, with the VA Cooperative Extension, he and some others noticed produce auction worked well in the Amish communities in PA, and thought it might work well in Mennonite community here.

- Some of the sellers who have families in PA have heard about the auction, and some of them had the idea of produce auction. As I first mentioned to them, some of them knew about it.

c. Initially, what response did was there in the community for starting this auction?

- They are happy about that.
- I do not know many are against it. If there are some people against it, they might be people who live near the community and grew produce beforehand.

d. How well received is the auction in the community now?

- It was very well received.
- It was difficult to find people who do not like it. Both buyers and sellers are happy about it. It is a convenient place to come, and get a wide range of produce, instead of have to track down different growers, make half dozen stuffs of these different places, to get the whole lots of what they

want, and they can just come here, get the produce, and turn around with big bags to their business, which helped them a lot.

2. Board of directors
   a. How does the board of directors at this auction work?
   - There is a board of directors. The auction was made up of about 62 shareholders, and from within that, there are 5 boards of directors that are elected from shareholders.
   - We meet once per month, unless there is something that needed to be discussed. That is for a special meeting.
   - Most of the shareholders are coming from areas around here. (5 county area)
   - They are looking for somebody who can invest, and anybody can invest. And now, there are a set number of shares, if they want to sell their shares, they can only sell back to the auction. And the auction will buy it and look at the list of sellers, and see who is selling a fair bid and does not have any shares, or does not have many shares, and go talk to them. And we try to have the most part of it, to where we sell those shares to people, who are engaged, bring in produce and part of the auction, so they have the ownership and something doing anyway.
   - Most of the shareholders are sellers here.
   - There are some shareholders are buyers, one of the board members are one of the largest buyers, but he started out as a sellers. When he first brought in, he was a seller, he grew some produce, and sold it out as pick-up as a spot along the road, and he grew any produce that he brought I here because he could sell them all. And then he switched from growing to buying some so he could have more offer to sell, and that grew so big, he did not have more time to grow anymore.

   b. How have the board members been selected? (Are they elected?)
   - Just shareholder meeting every year. Each year, either of one or two of the board of directors come up to be voted again. They have a paper ballot.

   c. How long is the term of office for a board member?
      a. Can they be reappointed after this term?
   - They can serve two terms; they can be reelected for that, each term is 3 years.

- Yes. Once they finished the first term, they can be reelected for the next term. They can serve for 6 years, then they need to come off for at least a year, and they can come back. Gave some rotation, and keep fresh blood in it.

d. What kinds of decisions are made during board meetings?

- Everything overall
- Like now, we are talking about potentially building the parking lot. We are discussing what would be the best area to pave, and not to pave, just how much we should spend on; also looking at some major projects around here. We just had a board meeting last week, one of the things talked about drives through buildings down there, the wood deck and rails on it, and power wash resealed.
- Larger things around here and smaller things like box prices like I take care of that as a manager. The bigger thing that are happening and just gave feel overall make sure everything goes well in the auction, and see if there is anything that need to be concerned about.

3. Interface with Local food system

a. What will be the unique entrepreneurial strategy this auction took in response to the local food systems' changing market conditions?

b. Any examples?

- Some, not necessary on really in attentional ways, because we are self-contained system. We are not like to go out and finding local food systems and signing contracts with them to supply extra amount. We are not a typical middle-man facilitator of transaction, but transaction between buyer and the grower. Because we are not signing contracts, we are really unique, we are not trying to sell ourselves, and we are not trying to twist arms to make a deal happen, we are just trying to present people. Our working relationship with local food system is a little bit different, like Harrisonburg City Public schools, they like to buy stuff from here. The Harrisonburg City Public school systems try to have 10% of their food dollars go locally. They really like the varieties that they can get it here.

  They have some maintaineous guys to make regular circle around different school so they can have small quantities of produce to different schools.
- They do not have to come to the auction for buying, we can buy for them. There is a guy who can deliver produce from here to Harrisonburg, then deliver around different schools.
- We are not necessarily interacting with local food system; we are a part of local food system.

4. Positive Outcomes and Benefits to Community

a. How many new farms started because of the auction?

- I do not know that I can say that right off how many farms started because of the auction. At least back to the auction started, we could have seen the most part is that farms that operated were dairy farms, or dairy and poultry that added some produce to help them diversify. Now, we are just starting to see some younger people instead of buying 50-68 acres for a dairy farm, they buy 8, 10, 12 acres for auction to grow produce. So, directly, we say a couple in that way that have done things like that now. But for the most part, it is been away for the farms in the area, and they are already in the area, to diversify a bit.
- Dairy has been really big in Rockingham County for hundred years, they are all connected with milk co-ops. It is a totally different thing from there.

b. How many existing farmers do you think started growing produce because of auction

- That will be about all of them, and will be about hundred farmers. There are folks like large gardens, sell here too.
- They are all sorts of ages, most of them are mid-ages, not many old ages. Not set in one age group.
- Younger farmers become interested into growing and produce auction. A young couple bought a small farm here.

c. What benefits has the community experienced due to the auction? (compare the situation before Auction started)

- Sale for 10 years was 12.14 million dollars.
- In a typical year, about 2/3 of produce sold here was grown 7 miles. That pumped to about 6-8 million dollars in the west side of Rockingham County. It will be quite a bit of help that help to been spread out to number of small farms on the west side of the county.

d. How many jobs were created that are directly as a result of the auction? More products sold?

- Directly, we have about 10 people employed here, and indirectly, there is also a business valley produce supply, that has started because of the auction, because produce grower big in the area, they need produce supplies, so that has started couple. It would have on the farms since most are family farms; it is no matter of necessarily going out to hiring more employees, instead of giving jobs for their children to do. In a way,

providing more employment on their farms, because it is giving more tasks, that people on the farm can do.

- In a lot of cases, their kids work along with their parents because they are a part of the farms, farming out operation that was what they do.
- Strawberry grower, hiring 10 strawberry pickers (temporary workers) to bring to the auction. He likes to pick in the morning before the auction and get them ready and fresh. Temporary workers usually from close by this area.

e. More profits earned?

- Definitely.
- I do not know how much, but 10-12 million dollars overall. Have to dig back to record to individual farms.
- Farmers are making more profits than before, if they are not making enough money, they would not participate in the auction.
- It is a matter of balancing of amount of work put into produce. Produce is hard work; there is good money in produce if you are willing to work hard. Do you think that amount of money is proper for amount of hard work. Some people say yes, and some people say no. Comes down to personal preference and also their management ability. If they are better manager, it is easier to make better margin to make more money of it; if you are a poor manager, you are going to end up losing dollars and prices because your quality is not so good.

f. More consumers willing to buy food at the auction?

- For the most part, consumers are looking to buy food here. The auction's timing works very well for Buy Fresh Buy Local movement, and so a lot more people not wanting produce that was been back of the tractor trailer for four days before here. They wants stop at a road side stand, and try "Wow, this is really flavorful and different than what I have been getting." They want to come back and get more that way. A lot more farmer's market and road side stands here in the valley, gives them a place to get stuff from, otherwise how are they going to get enough to have much road side stands. This make it easier for them to have diversity and for regular people to realized produce can be good, for the flavor different from the supermarket.
- There would be bit advertising, Daily News Records, and other newspaper here, in the Rockingham County, and some magazines, for produces. But with our website, we have not done any specific advertising for produce auctions since I came along three years ago. It disappointed with the

amount of work, and if somebody happened to stumble by our website and also getting out to some various different like farm-to-table conference that extension department put on stuff like that, people hear you about there, that build up our name getting out there, community and more people knowing where the place to buy.

- Now, consumers do not even need to see the advertisement to come here, they have their own channel to know about produce auction.

g. More people know about Mennonites community through auction?

- Yes.
- Because of the interaction around here, most of the producers and growers are Mennonites, and then the majority of buyers are not. It is a unique place for them. Most buyers come in do not know much of anything about the Mennonites, as they get to know about them, get to talk with them, ask them about their produce, that gives them a chance to learn and find out more about Mennonites Community. Particularly in the drive through, they will talk with sellers been down there with their wagon. When the buyers coming through, they have watermelon or samples for them to try it, so they know they will get good watermelons. Gave them a good chance to learn and know who the sellers are.
- There are some buyers did not know anything about Mennonites, and even did not know what Mennonites is at the first time came here. They were surprised and sat back to watch everything and see what happened, do quite know what to do, or to make. They know it from mouth from somebody who knows, somebody else in same kind of business. There is chance to come and grab their shoulders and find out what that is.

h. Have there been any community or individual drawbacks due to the auction? If so, can you describe these?

- Overall, I think most people in the community will view it as positive. And it is a good thing to have it in the community, and was better off for having it.
- For people who live near here, overall most of folks I have talked to will see it as positive. About the biggest thing they see is wagon loads of produce rolling down the road in this direction in the morning, and truckloads of it out in the afternoon. So they see it positive because it gave folks things to do, and overall it is giving things because a lot of families they get to work together, and so it is giving families something they can do together. I have not got any negative feedback from the community at all.

5. **Services provided by other Community and Organizations and Partners**
    a. **Are there any other community or organizations and partners that contribute to the auction? If so, how did they contribute**?
        - The only closed organization is the extension department. We work with them; try to help get schedule, and information meetings for the growers. It helps growers to do their best job they can do.
        - It is not a set thing at all about how often we have a meeting; it is just a matter of when we could manage that for a guess speaker. Like last summer, we have Dr. Allen Straw from VT.
        - It is about once per year when we are trying to do something like that. We probably should do it more.
        - Other than that, getting updates and posting notices on the bulletin board, just help growers to keep an eye on the problems.
        - Realistically, we are about self-contained company.
        - Participants in the lecture are growers, and seller to get good information. We posted the lecture notice on bulletin board or put it into check envelope when sellers come to pick up. Do not need to register for the lecture. And the lecture is holding in here, just pull back the chairs and tables.
        - For the actual structure of auction itself, there are no any other community, orgs, and partners.

    b. Did they provide any innovation ideas about the auction?
        - Not any partners having innovation ideas, but really from members of boards, or shareholder. They went to another auction somewhere else: their ideas are unique, you should try that. Overall, it is a pretty straightforward, making it efficient and fluent.
        - If the members of boards or shareholders happened to be at an auction, a couple of times in a year by different people. Some of them have families in PA, OH, saw auction there. It not very often.

    c. Do SVPA communicate or partner with any other produce auctions? If so, can you describe this relationship?
        - Yes, as far as other produce auctions.
        - It a little bit of tricky, because depends on the produce auction; some of them view it as a competition, even though it is long way from them. A lot of them are not necessarily open, most of them are nice, but they are not necessarily to be open, sharing ideas. Depending on the auction, people who running the auction, and the manager, if they are an open auction, or closed auction.

- I have been to number of auctions. Some of them don't want to do anything with me, but some of them spent couple of hours with me. As far as I actually working with, a number of them are Amish, they do not have database, just do it by hand. There is one over MD, it is by hand, when they go to check a person out, they punched out a solar power calculator. So they have to go over all the transactions, and add them up the get a total. There is no way for them to track, like how much did seller 72 sell for this year, so they have to go back through and add up bunch of different papers. They do not have much time and ability to get information, we do. So a lot of thing they can share with us, like total sales last year, but any more detail information, it can be tricky for them to come up with because they do not have database to track as the way we do.
- Each auction is different even though we are very similar. Compared with others, I would say the quality will set us apart from others. Our growers are very key to the quality, for example, tomatoes; a lot of people will call #1 tomatoes #2, just because if you want to buy a box with #1 tomatoes, they want it to be the best. Whey the growers in the auction, they do not need to wait for a long time, because buyers are getting used to it, realized that: "hey, his #2 tomatoes are still really good, I can pay a price like #1." People are really key to top quality.
- I do not know if there is other auction using same software "Auction live", but I do know three other produce auctions are using this kind of software, one in PA, and two in OH. They work well but cannot track everything. I think we get more completed package in this software compared with other auctions I have looked at.
- The first one has the idea of using the software in the auction: two people who worked in the office before, and then they got married, then I realized that if we got computer here, we do not need to hire two new people to replace them, and staple what we had. So we could go towards computer system and save money, it has worked well.
- Before introducing the software, the first manager initially has the Microsoft Access database set up and usually take the records home and worksheets, then entered the Access database. That is a second hand thing after the auction. He realized he want to find out more information from these, that's why he set up there to give him more information. When I came along, we started to enter information into Access during the auction, after the first year, we got a computer here the switch over to the software. We have two clerk sheets: one for buyers and one for sellers which could keep track the records. Then come to the cash register, go through the buyers or sellers sheet. Before introducing the software, we have about 15-

20 minutes window to wait, but now we only have 5 minutes window to wait. Keep it flow more efficiently.

- An employee will put sticker on the produce after buyers bid their products, it is buyer's responsibilities to load products to their trucks or cars, but there will be temporary workers work for tips to load products for buyers.

6. **Are there any limitations of SVPA?**
    - The biggest limitation is we do not have set prices, a lot of bigger companies would like work on contracts, so they can get extra amount on specific price. And since the price fluctuate on market conditions from day to day, they do not like to do that. So that is how auction works really well for farmer markets, and road side stands, but not so well for bigger companies because they want price stability. So they are the customer that we won't attract. It does not work for business model. There are smaller and flexible companies come to buy. This business model really work well for some, it does not work well for large companies. We tried to figure out ways around that, but we have not come up with any ideas with different companies. It just unexpected limitation. If they are willing to accept it, we are happy to provide it.
    - Overall, it is good and makes sense to a lot of people. But for other people, it is only about preferences, some people do not understand auction, and they are not comfortable with the auction, it is probably the second limitation.
    - We do not have any trucks to deliver produce, that is another downside.
7. **Do you have any plans or ideas to improve SVPA?**
    - Driveway to get puddled in, and being very dusty in the summer. So we are looking to pave section of parking lot. As far as the auction runs itself, it seems goes really smooth. Overall, we do not have any plans.
    - Buyers will park around the building; we have plenty of parking spots.
    -
8. **Other than the surveys currently underway, do you collect formal feedback from the buyers and/or producers concerning their satisfaction and experience with the auction?**
    a. **If so, do you have these results? Could they be shared?**
    - I tried to do some surveys when I came for the first year, and I found that people around here are hard to get them to fill out the survey and bring it back. We only got 4 to 5 feedback. What I found useful is just one on one conversation, even though it is time consuming, but that is the best way to get a sense. Like the one survey I did for asking about how many they are

planning to grow that year, and a person can project at the beginning of the year, but there are so many variables, there is no way for them to know it. They know how much from last year, but if it is a hotter summer, or a cooler summer, or rainy summer, maybe there is a storm coming through, they are not able to tell. It is really hard to do a survey, because the margin of error will be so huge.

- Usually, I talk with growers when they are at the auction. Try to chat with them and see how things going for them, how this year working so far. Let people know I care about what they are doing, the way their operation is coming along, and then be able to pass the information they needed.

Appendix B2: Shenandoah Valley Produce Auction (SVPA) Buyers Survey

SHENANDOAH VALLEY PRODUCE AUCTION（SVPA）

BUYERS SURVEY

1. What types of products do you purchase at Shenandoah Valley Produce Auction (SVPA)? (*Please check all that apply*.)

- ❑ Fruit
- ❑ Vegetables
- ❑ Other (Please specify): _____
- ❑ Other (Please specify): _____
- ❑ Flowers
- ❑ Eggs
- ❑ Other (Please specify): _____

2. Are there any products you would like to purchase but which are not currently available through the SVPA? If so, please describe these items:

_____

_____

_____

3. Does your organization prefer to purchase products from farms that participate in a state or regional marketing program? If yes, please rank the marketing program(s) that are valued by your organization;
1 = most valued; 2 = second most valued etc.

- ___ Virginia Grown
- ___ Page County Grown
- ___ Other (Please specify): _____
- ❑ I don't know
- ___ Shenandoah Valley Buy Fresh, Buy Local
- ___ Other (Please specify): _____
- ___ Other (Please specify): _____
- ❑ None. This does not matter to my organization.

4. *Skip this question if you answered "I don't know" or "None" in Question 3.*
Assume that an apple is for sale from a local farmer for $1.00. What price would you be willing to pay for the same apple marketed through the program you rated #1 above?

Price for apple certified to be locally grown: _____

5a. Does your organization require that products be purchased from farms that are GAP certified?

□ Yes □ No □ I don't know

5b. If not, in the future do you expect that your organization will require your suppliers to be GAP certified?

□ Yes □ No □ I don't know

6. Why do you purchase products at the SVPA?

_____

_____

_____

_____

7. Would your organization be more willing to purchase products from a farm using or certified to special production practices? If yes, for those that matter, please rank practices in order of their value to your firm: *1 = most valued; 2 = second most valued etc.*

___ Certified Organic	___ Grass or Tree (Riparian) Buffers
___ Transitioning to Organic	___ Nutrient Management Plan
___ Water Stewardship Continuous Improvement Plan	___ Green Certifications
	___ Cover Crops
___ No or Reduced (Conservation) Tillage	___ Other (Specify):
❑ None of these are important to my organization	_____
	___ Other (Specify):
❑ I don't know	_____

8. What, if any, benefits has your organization gained from purchasing products through the SVPA?

_____

_____

_____

_____

_____

9. Does your organization usually require suppliers carry food product liability insurance (for food safety assurance)? If so, how much insurance coverage is required?

- ❑ Less than $1 million
- ❑ $ 1 million to $3 million
- ❑ Greater than $3 million to $5 million
- ❑ Greater than $5 million to $10 million
- ❑ More than $10 million
- ❑ We do not require food product liability insurance
- ❑ I don't know.

10. At present, producers selling through the SVPA do not carry food product liability insurance.
10a. Does the lack of this insurance currently impact your organization's ability or willingness to purchase products through the SVPA? If so, please describe how.

_____

_____

_____

10b. In the future would the lack of this insurance impact your organization's ability or willingness to purchase through the SVPA? If so, please describe how.

_____

_____

11. Please rate how satisfied you are with the following characteristics of the SVPA?

	Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied	No Opinion
Product Quality	❑	❑	❑	❑	❑	❑
Product Freshness	❑	❑	❑	❑	❑	❑
Product Availability	❑	❑	❑	❑	❑	❑
Product Packaging	❑	❑	❑	❑	❑	❑
Dates of Auctions	❑	❑	❑	❑	❑	❑
Timing of	❑	❑	❑	❑	❑	❑

Auctions (time of Day)						
Access to farmers	❑	❑	❑	❑	❑	❑
Product Delivery Alternatives	❑	❑	❑	❑	❑	❑
Parking	❑	❑	❑	❑	❑	❑
Other: _____	❑	❑	❑	❑	❑	❑

12. What recommendations would you have for changes to the SVPA? (Consider facilities, operations, management, etc.

_____

_____

_____

_____

13. What do you foresee as future challenges for the SVPA?

_____

_____

_____

_____

About You and Your Firm's Purchases at the SVPA

14. What best describes the organization for which your are purchasing products?

- ❑ Restaurant
- ❑ Grocery Store
- ❑ Farmer's Market Vendor
- ❑ Food Wholesaler, Distributor, or Broker
- ❑ Other (*describe*): _____
- ❑ Hospital
- ❑ Long-term Care Facility
- ❑ Public Primary or Secondary school
- ❑ Private Primary or Secondary school

15. Where is your organization located?
City/Town, County _____

State _____

16. When did you start purchasing products at the SVPA?

_____

17a. How much did you spend on products purchased at the SVPA in 2013?

_____

17b. How much do you expect to spend on purchases at the SVPA in 2014?

_____

17c. What is your organization's average food budget?

_____

18. How far did you drive to purchase products at Shenandoah Valley Produce Auction?
Time: _____ (each direction)

19. Your Gender (*please check*): □ Male □ Female

20a.What is your job title?

_____

20b. How long have you been in your current position?

_____

21. This marks the end of our formal survey. Is there any other information or comments that you would like to share with us?

_____

_____

_____

22. If your organization would be interested in receiving an electronic copy of this

study's final report, please provide an address where you would like it to be sent:

Email Address _____