

First Processed Produce in Central Kentucky

A Pre-feasibility Study

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**THE
FOOD
CONNECTION**

THIS STUDY WAS COMMISSIONED BY NoLi CDC IN PARTNERSHIP WITH BLUEGRASS FARM TO TABLE, AND WITH ADDITIONAL SUPPORT FROM COMMUNITY VENTURES

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Overview and Justification

Three new initiatives in the Lexington food system have coincided to produce a key opportunity for strategic and coordinated investment in regional food system development. First, The Food Connection has been established at the University of Kentucky with the purpose of supporting sustainable regional food system development through instruction, outreach, and research. Secondly, NoLi CDC, in collaboration with Bluegrass Farm to Table, received a Knight Foundation grant to explore the development of a food-focused community-based enterprise on the north side of Lexington. Finally, Community Ventures has embarked on a fact-finding and feasibility study for a “food hub” type enterprise in Lexington.

Preliminary food system assessments conducted through a partnership between The Food Connection, Bluegrass Farm to Table, and CEDIK have identified a number of specific challenges to growing the market for regional foods in the Bluegrass. Many of those could be addressed through more effective coordination and utilization of existing infrastructure and enterprises, and a value chain coordination initiative is currently being addressed through a separate initiative led by The Food Connection. However, our local food demand assessment has also indicated, though not quantified, an interest in basic processing for produce. Basic processed food products could be used by institutional kitchens (i.e. schools, universities, and hospitals), co-packers, and other food enterprises, and expand both the effective supply and demand for regionally produced products.

The purpose of this study is to assess if there is need for additional services or other efforts to provide “first processed” produce items in the central Kentucky region. By first processed we mean preliminary processing activities such as peeling, chopping, quick freezing (i.e. IQF—individual quick frozen), dehydrating, canning, or other processing of singular produce types (not co-mingling or further preparation into seasoned ingredients or dishes). Our study includes qualitative and quantitative assessment of existing supply for wholesale processed produce, existing demand for basically processed

food products, and a preliminary assessment of benchmark pricing for Kentucky-grown produce.

Produce Supply and Producer Needs

Kentucky produce farmers interviewed for this study had many characteristics in common, though two general categories of produce growers emerged. While most farms reported engaging in multiple market outlets as a form of financial risk management, the nature and scope of those markets differed. The first and predominant category was those farms that are producing primarily for direct market channels (CSAs, farmers markets) and had some small wholesale production as either an expansion or diversification strategy. Wholesale produce was sold to smaller scale customers such as restaurants and specialty grocers. A smaller number of farms are producing primarily for wholesale markets. These growers sold produce at auctions or to regional distributors, and supplemented this wholesale approach with some direct sales as revenue diversification. Many farms also had an on-farm sales component, including farm market stands and agritourism operations. Fresh, in-season sales of first quality produce were the primary offering of all farms interviewed, and there was relatively little additional value-adding or processing reported. Most of this value-adding was done in-house at a small scale or in a reciprocal relationship with farmers that had the necessary infrastructure.

Within this diverse set of strategies, wholesale production was viewed ambivalently. However, several orchards were enthusiastic about wholesale and processing potential. They see a growing market for fruit, in particular purchasing from K-12 school districts, and are able to move large amounts of their supply rather quickly. Other producers see wholesaling as unreliable, yet continue with wholesale production where they see potential opportunities for future market growth. Farm enterprises focused primarily on direct marketing have experimented with growing a few items for sale to grocery stores or institutions as a part of a general enterprise diversification strategy.

The majority of producers report some degree of on-farm cold-chain infrastructure (walk-in coolers), yet they do not have the same capacity for refrigerated transport. Few producers currently work through distributors, who would be able to provide continuous cold-chain management.

The reasons for lack of producer participation with conventional distribution channels is a complex issue. First, producers, with the exception of fruit-growers, report four key disincentives to expanding production to offer through wholesale distributors: 1) there are no consistent price premiums offered for Kentucky farm-sourced produce; 2) the volume and timing of produce orders are unreliable; 3) poor communication from buyers of changes in orders, packing specifications, or other requirements; and 4) the emerging requirement of third-party audits adds too much extra cost, time, and paperwork for small/medium producers.

To date, producers observe that distributors are mainly pushing Kentucky farm-sourced product to major national grocery outlets or large institutional dining service providers, both of which offer little to no premium (despite targeted marketing campaigns touting their “local” produce). Given the inconsistent ordering patterns by distributors, when considered in conjunction with additional requirements for increased insurance and third-party audit costs, producers report they often prefer to sell through produce auctions or terminal markets, which are always there and can always move the product. Producers do also sell directly to restaurants and specialty grocers for a higher price point, but they conversely can move only a limited volume.

Direct contract bids with school districts represent another potential growth market. However, many school districts are highly budget-constrained and thus generally go with subsidized commodity items. These contract bids are requested within a few months of the fulfillment date, which complicates producer planning. Producers mentioned that they are only invited to bid on specific items designated by the school system and that these items are not known in advance. Despite these challenges, fruit-

growers mentioned that JCPS has provided them with a rapidly growing demand for apples.

Additionally, producers note that for the few available distributors that do market Kentucky-grown produce within Kentucky, the expectation is that local producers come close to the prices of produce grown at much larger scales across the country and world. Farmers noted that in the rare cases that they get a “local premium” for their items, this amount is just slightly above normal wholesale prices. However, distributors with a focus on organic produce will offer an “organic premium” as the end-user generally sees the value in this type of product and will pay more.

They also note that changes in distributors’ rules make it more difficult to provide an acceptable product. Some farms report that new food safety requirements—such as third-party GAP audits—have made working with distributors cost- and time-prohibitive. These requirements push many farmers of all scales to pursue those remaining produce markets that don’t require third-party food safety audits or minimal processing, or to double down on direct marketing or other alternative marketing channels. A collaborative multi-agency initiative, Cultivate Kentucky, led by The University of Kentucky Food Connection, is working to address producers’ needs for training and one-on-one consultation related to GAP audits and other needs associated with scaling up wholesale production.

A few farms noted the emergence of smaller distributors that focus on aggregating and/or distributing smaller amounts of local produce in order to reach markets that don’t require large volumes. Interestingly, a few producers are currently acting as ad hoc aggregators and wholesale distributors, bringing neighboring producers’ smaller harvests together to scale up supply. These smaller distributors, however, are generally unable to supply major buyers, especially institutions, because they require most products to go through preferred distributors or food service providers. While the smaller distributors can theoretically supply these preferred distributors with product, the extra transaction raises the price beyond what institutions say they can accept.

In general, Kentucky lacks GAP-audited producers, cultivates much less produce for wholesale than surrounding states, and has few large buyers and distributors willing to pay extra to keep produce in local markets. All of these challenges create difficulties for producers to plan for wholesale. As such, each interviewed farmer has complemented intermediated wholesale production with other more direct distribution strategies.

Current Wholesale Produce Production (Crops, Volume, Market Outlets)

Wholesale produce production in Kentucky is currently limited. We list the fruits and vegetables below that study participants identified as currently in wholesale production. Sweet corn, summer squash/zucchini, and tomatoes are common wholesale crops in Kentucky, partially because they grow well, but also because consumers are most familiar with and expect these items to be grown locally. Apples are also well-represented because they are durable and have a long shelf-life. As such, these more durable and familiar items are easily incorporated into institutional buying. Growers note that less durable items, such as peaches and tomatoes, are more difficult to sell in bulk, and for these some form of processing would allow them to increase production. Also, as growers have limited cold-chain storage and transport capacity, more perishable items are less favored. The durability issues are also a motivator for the production of potatoes and hard squashes. It is easier to extend the season with these crops and so some growers dedicate space for the production of these crops.

Given that our farmer interview participants represent only a portion of Kentucky produce farmers, we also conducted an analysis of data from the USDA Census of Agriculture to create county, regional, and state profiles for produce production. As the USDA census is the most thorough and trusted source of data on U.S. agricultural production, we felt this was the most reliable data regarding current (2012) produce production. The following charts present summary findings from our analysis. For a detailed explanation of methods, refer to Appendix 2.

In Figures 1 and 2, vegetables occupy both the largest number of farms, and the most acreage of Kentucky produce production. Berry farmers, while larger in number than tree fruit producers, have a limited number of acres in production. The in-state produce production analysis, while useful for assessing clusters of produce production, is most useful when placed in comparison to produce production for our neighboring states.

Figures 3 and 4 present the total number of farms cultivating produce, and total acres of produce production per state respectively. We included five states contiguous to Kentucky that shared similar components of terrain, climate, and agriculturally focused economies.

In contrast to total farm numbers, in which Kentucky is second in the region, the total number of acres of these crops in production in Kentucky pales in comparison to that in most nearby states. With 11,186 acres of berries, fruits, nuts, and vegetables in production, Kentucky has roughly one-fifth to one-third of the number of acres of the same crops in production as Ohio, Virginia, Indiana, and Tennessee. Only West Virginia has less total acres of these four categories of produce in production.

That Kentucky has so few acres of produce in production despite a sizable farm population relative to neighboring states may suggest room for significant growth in produce production (assuming these farms are not significantly limited by land or capital availability), but it also may suggest that significant barriers to expansion and scaling up of produce operations in Kentucky have yet to be identified or overcome.

Number of Farms by Produce Category, Kentucky

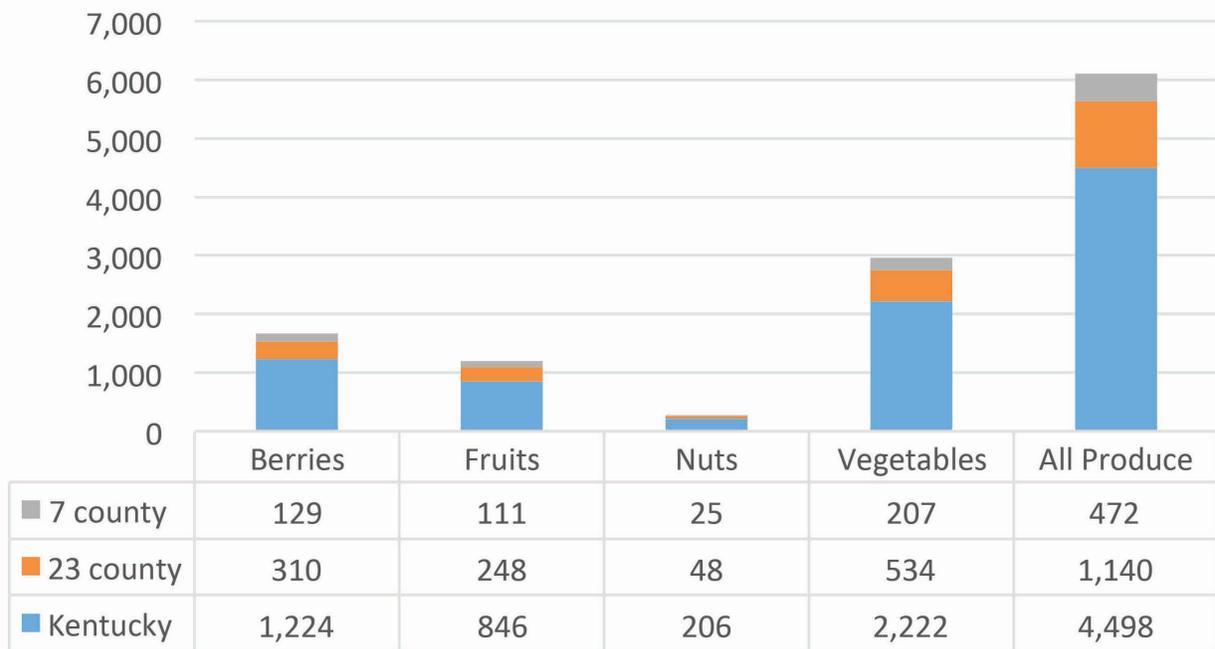


Figure 1. Number of farms on which berries, fruits, nuts, and vegetables are harvested at the 7-county, 23-county, and statewide scales.

Acres in Production by Produce Category, Kentucky

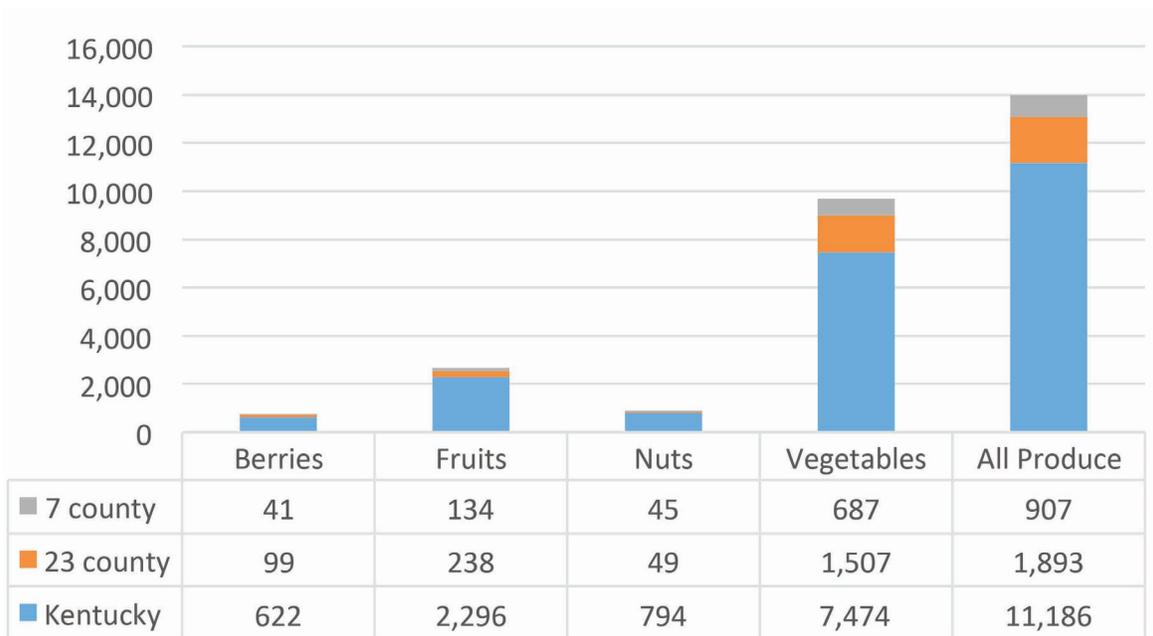


Figure 2. Total acres of berries, fruits, nuts, and vegetables in production at the 7-county, 23-county, and statewide levels.

Number of Farms Cultivating Produce

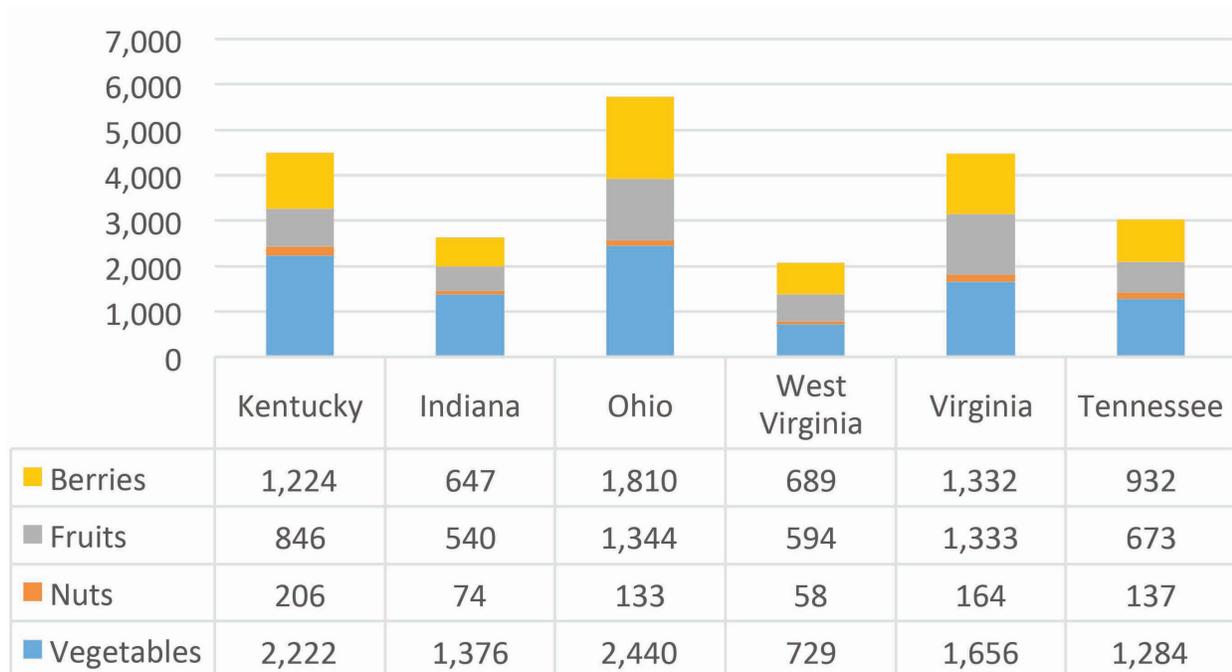


Figure 3. Number of farms on which berries, fruits, nuts, and vegetables are harvested by state.

Acres of Produce Production by State

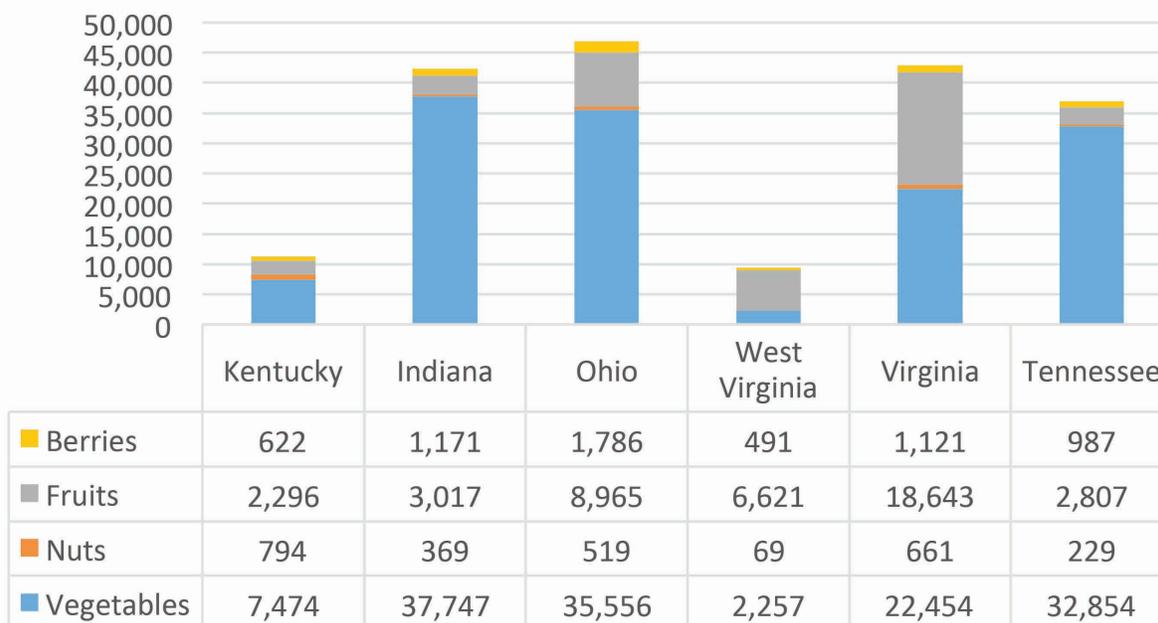


Figure 4. Total acres of berries, fruits, nuts, and vegetables in production by state.

Near Term Supply Projections

Vegetable producers did not have clear plans for expansion of produce production for wholesale in the next two years. While most said they would likely increase their production, they weren't certain how much that increase would be, or if they would add additional wholesale produce crops. The growth of wholesale production is closely linked to producers' perceptions of the reliability of the market for Kentucky farm-sourced "local" product. Absent a relatively known market (in terms of volume and pricing of sale), both producers and distributors are reluctant to commit to investing in a new or significantly expanded business line or sales strategy. As such, expansion seems to be incremental and based on proven demand from previous years' sales. Paraphrasing one farmer, "It's hard to justify expanding wholesale production; there are too many unknowns [in the market]."

Fruit-growers express more interest and optimism regarding expansion. There is currently excess demand for apples, especially in relation to school lunch

programs, and fruit-growers have specific plans for expanding production. As trees take time to mature and bear fruit, expansion follows a longer-term plan which is less sensitive to single-season market trends.

Current Food Safety Certification Status

Very few Kentucky produce farmers are GAP certified, yet many of these individuals have gone through the GAP producer training offered by the Kentucky Department of Agriculture. Smaller growing operations find that the audit is an added cost that doesn't make sense for their diversified operation. Their volume tends to be such that they can interact with distributors that don't require the audit, or through direct sales. One farmer noted that the certification will likely benefit smaller farmers in the long run, as it improves the quality of the product and makes the farmer become more organized in production and in paperwork. A different farmer felt that the GAP requirement by distributors was yet another way to shift responsibility along the supply chain onto the farmer. Nevertheless, these requirements are

quickly becoming the cost of doing business with larger distributors. Fruit-growers were more proactive in pursuing third-party auditing and adapting to changing requirements as their largest demand is from institutional buyers whose distributors require the certification.

Current Value-Adding Activities and Market Outlets for Seconds

Farmers interviewed have some value-added activities, most of which revolve around smaller-scale canning of salsas, sauces, tomatoes, or juices. Some farmers have their own certified commercial kitchens for these processes, but these activities represent a small portion of producers' sales and often are used for on-farm agritourism purposes. Orchards have more dedicated infrastructure for value-adding, such as making ciders and sauces, but even these businesses mention that they could use an outlet for processing items like peaches. As such, these producers are more focused on production and sales in comparison to value-adding.

Wholesale Buyers and Demand for First Processed Products

We conducted a series of interviews with potential buyers of first processed produce to assess potential demand. First processed products were defined to potential buyers as produce that has undergone minimal modification with the intention of further preparation or incorporation into value-added products (e.g. soups, salsas). Examples include peeling and dicing, retort canning of tomatoes, and individually quick frozen (IQF) processing.

Interviews with institutional and dining service providers revealed a preference for use of fresh product over processed. According to interview participants, there is a perceived preference among their target customers for un-processed foods as they are seen as “fresher” and “healthier”. Purchasers and chefs believe that demand is stronger for “fresh” product than “local” or “Kentucky” product, and so purchase fresh produce from the global market year-round from distributors.

For value-added producers (e.g. beer cheese, sauces, preserves), access to and use of Kentucky Proud branding for their product provides sufficient product differentiation for their marketing and branding purposes. For value-added food businesses whose target market development is on a national or international scale, there is no incentive or rationale for including Kentucky farm-sourced ingredients or promoting inclusion of Kentucky farm-sourced ingredients through their marketing or brand identity.

Procurement

Institutional buyers and value-added food businesses report an almost complete reliance on sales staff from their principle produce distributor for identifying and sourcing “local” product. When asked how they go about sourcing locally produced product, institutional purchasers commonly make statements such as “The [distributor sales person] brings me local stuff when they have it.” When buyers do state a preference or desire for “local” product, there is little to no information conveyed other than Kentucky Proud status or occasionally the farm name. This complicates sourcing and crucially makes receiving a local premium extremely difficult. Even when buyers have a vested interest in promoting Kentucky-raised products, this knowledge is usually limited to the specific relationships purchasing personnel have with producers and/or distributors. When there is turnover in institutional purchasers, new personnel must figure out their own sourcing strategies, and articulate their interest in local produce to their food service providers and distributors. If they do not ask, distributors do not consistently advertise their local items.

Many interview participants report that they do not routinely pay price premiums for Kentucky farm-sourced ingredients, but they do “get local produce when it’s in-season”. This indicates that distributors only bring in local products when they are cost competitive with global produce markets, such as the peak harvest time. When Kentucky farm-sourced ingredients are used, they are often limited to catering events where the customer has explicitly requested Kentucky farm-sourced ingredients, or they are intermingled into existing menus and not differentiated as

Kentucky farm-sourced to the end consumer. Retailers, some food service providers, and co-packers noted that their customers are able to get a price premium for local products (up to 20% more), but these instances are currently limited and generally more connected to the sale of animal products and to restaurants that have flexibility in their menu prices.

Anecdotal reporting that buyers would like Kentucky-grown product year-round is confounding. Buyers did respond positively to the possibility of temporal extension of local product availability, but did not express specific interest in processed Kentucky-grown produce. While processed items are one route to this outcome, consumers must be the ones communicating an explicit preference for Kentucky-produced products over “fresh” un-processed product. Additionally, previous studies of local food demand lumped produce, protein, and value-added products into a general “local” category. As the recently published UK Dining Assessment found, in FY 15 there was a heavy reliance on dairy, value-added, and protein products (in that order), and very little produce procurement. Despite this apparent demand for processed local products, some existing processors have had experiences of processing local items and then not finding a buyer. So while demand is articulated by buyers, and distributors/processors will create a local product, these sides of the supply chain must be further integrated through better communication.

A contributing issue (as we discuss in more depth below) is that many institutional buyers and dining services require produce to go through specific distribution channels. Would-be suppliers of processed local products must work with these dedicated distributors to sell to dining services—an extra step that makes local products less competitive. Further complicating sector development, much of wholesale demand (from institutions in particular) seems dependent on individual staff members with a strongly held commitment to sourcing Kentucky produce holding key procurement positions.

It was also noted that dining service recipes currently rely on fresh produce, and so recipes and menus would have to be altered to include any frozen, dried,

or canned ingredients, indicating another potential barrier or disincentive for use of Kentucky farm-sourced processed product. Some dining services, though, will use frozen and canned ingredients, with the former being the most commonly used format.

There are a couple projects of note where an institutional buyer has worked with a co-packer to produce a product with the explicit purpose of featuring and promoting the inclusion of Kentucky farm-sourced ingredients. Such projects reported to us by interview participants were all spurred by the existence of contractual or legislative mandates to purchase and serve Kentucky farm-sourced ingredients. This indicates a perplexing mismatch between existing support for the growth of farm-sourced ingredients by the Kentucky citizenry (as manifested in legislation and public contracts), and a perception by institutional dining service providers of a lack of consumer demand for farm-sourced ingredients.

That said, there were a few buyers who expressed interest in frozen, canned, and otherwise processed items, with K-12 school systems showing particular interest. For frozen products, diced peppers and onions were commonly used, as were broccoli florets, whole blueberries, and diced sweet potatoes. Grocers reported an interest in local packaged options for berries, peas, corn, squash, general vegetable mixes, green beans, kale, and waffle cut potatoes. In general, retailers believed flash-frozen items would sell the quickest and garner the most interest. They advised against canned and dried items as they are not as popular and probably couldn't compete price-wise.

Distributor sales representatives noted that many chefs prefer vegetables to arrive chopped and cleaned (i.e. very minimally processed). This preference, however, does not apply to local produce. When working with local product, distributors note that chefs tend to want to process these items themselves, especially when they are featuring the “local” attribute of these items on the menu. From the distributors' perspective, local farmers don't have the capacity to first process local produce or to provide an adequate quantity that the distributor could process themselves. When produce distributors engage in

some first processing, they generally only use globally sourced produce that can be regularly acquired at a set volume and low price. Processing of local products does not fit in with their logistical model. For those value-added or co-packing businesses that do use processed products in their recipes, the most common form was diced (or otherwise cut/prepared) or frozen general produce, and canned tomato products.

A challenge mentioned by buyers in this study, as well as previous studies, is that Kentucky farm-sourced foods are lost in the existing distribution structure because they aren't clearly and consistently identified or promoted by distributors and food service providers. Buyers, distributors, and even food systems researchers have a difficult time parsing out which items have a Kentucky farm origin. Value-added food businesses report occasionally sourcing product directly from a producer when ingredients are in peak season and price-competitive.

Even buyers with an explicit interest in purchasing local products have difficulty monitoring and reporting on their specific uses of Kentucky-grown products. This issue is in part related to how products are cataloged within internal inventory systems, as they are unable to consistently or reliably aggregate data on products from Kentucky-owned businesses, let alone whether products have Kentucky farm-sourced ingredients or the specific farm origin. In other words, many food distributors and food service providers do not incorporate the category of "local" into their inventory structure. And while they could eventually identify these sources, there is no consistent definition of what constitutes "local" food, or how "local" relates to Kentucky farm-sourced.

Kentucky Proud and Produce Marketing

The goal of developing source-identified or otherwise branded or differentiated Kentucky-grown produce is both helped and hindered by the Kentucky Department of Agriculture's Kentucky Proud program. Items branded as Kentucky Proud are the most readily available source of differentiated Kentucky food products for current and potential wholesale buyers who work

with distributors, and buyers can relatively easily identify and select Kentucky Proud items. While buyers can readily report their purchases of Kentucky Proud items, they are quick to note that it would not be a reliable estimate of their procurement of Kentucky farm-sourced ingredients. This is due to the fact that Kentucky Proud participation criteria includes products processed or packed in the state regardless of the provenance of the product's ingredients.

Kentucky-based value-added food businesses reported that they do not commonly seek out Kentucky-sourced ingredients because their own value-added business is Kentucky Proud, and there is no additional price premium to be achieved for their product by sourcing Kentucky ingredients. As Kentucky Proud certification requires no use of Kentucky-produced ingredients, and the cost of procurement for Kentucky-produced ingredients is perceived as higher than conventional ingredient sources, value-added processors have little to no incentive or interest in intentionally including Kentucky-produced ingredients in their product.

However, the Udderly Kentucky milk program, which sub-brands Kentucky Proud milk that is sourced from all Kentucky dairies, has been a great success with at least one institutional buyer precisely because it can be easily moved through conventional wholesale distribution channels and is readily identified as a farm impact product. The success of Udderly Proud indicates that further brand differentiation based on Kentucky farm-sourced ingredients could be of great use in supporting the growth of wholesale produce production and sales, among other sectors.

Price-Competitive Product

Based on the predominant business, marketing, and branding strategies reported by interview participants, we conclude that in order to be readily incorporated into the mainstream Kentucky food system, Kentucky farm-sourced products must be priced competitively with national products in fresh and processed form. While some institutions may pay up to 20% more for local produce for targeted programs

and events, the majority are unwilling to pay more than they would for produce acquired from global distribution networks in the current market environment as they perceive it.

Some Kentucky farmers have reached a volume of production that allows them to be cost competitive on the open market, and are selling at the produce auctions or in regional supply chains (e.g. large-scale melon growers in western Kentucky working through produce house contracts). As such, larger producers are possible candidates for first-processing product development, and could very likely be price-competitive. Additionally, strategies or institutions that aggregate items from small/medium farmers may potentially be cost-competitive—though this approach would require coordination and trust between producers, and a carefully considered and delimited scope of operation.

Despite this potential, processors currently working with Kentucky farm-sourced product are encountering significant challenges to entering the processed produce market as existing buyers have long standing and/or contractual relationships with other distributors and food service providers.

Institutions and dining service providers generally route the majority of all procurement through preferred distributors. As such, Kentucky farm-sourced fresh and processed foods must go through one or more additional hands to reach these buyers. This lengthening of the supply chain makes both fresh-processed Kentucky farm-sourced products more expensive compared to conventional market products, which acts as a disincentive to many producers and processors to focus on local wholesale markets. Even when this distribution barrier is not present, many institutional and retail buyers may be unfamiliar with smaller, locally-oriented processors. This unfamiliarity is especially visible where buyers are located in offices in different states, or where food service providers and grocers have their own processing facility in a different state. In other words, many larger buyers have entrenched processing and distribution relationships that are hard for local processors and producers to break into, even when they are cost-competitive.

K-12 School Demand

K-12 school cafeterias, both public and private, are one area with a potential demand for fresh and first processed local produce. Public schools are currently sourcing a limited amount of fresh Kentucky farm-sourced produce due to the temporal mismatch between seasonal production and the school year. Public schools are highly price sensitive, as they are working with constrained procurement budgets on top of nutritional requirements and other regulations. Despite these limitations, orchards in central Kentucky have noted that they are unable to fulfill the schools' demands for apples, so other in-season fruits and produce as well as minimally processed local items could find their way into school cafeterias if they were able to be price competitive.

Schools are currently buying fresh items like lettuce, apples, pears, sweet potatoes, carrots, strawberries, peaches, peas, and tomatoes from national sources. Schools also source frozen blueberries, corn, and tomatoes, but generally limit their procurement of canned items (i.e. peas and carrots) because they are not as good quality as fresh items. Schools commonly purchase and stockpile commodity-program frozen items at the beginning of the school year. Once stores are exhausted, they may look for fresh local sources to meet the demand, though Kentucky farm-sourced options are often perceived as too expensive or are simply not available. If local items are available at this time, the procurement of these items is subject to a bidding process, the particulars of which differ by school district. Some farmers mentioned that they were invited to submit a bid on designated items, but we were unable to determine how farms were selected to submit a bid. The specifics of budget allotments or other financial components of K-12 remain unknown at this time, and are very likely highly variable between school districts.

In our discussions, a few items seemed like good candidates for first processing for K-12 schools. Vegetables that meet the “red-orange” requirement, such as sweet potatoes, could find a market, especially if they were processed into waffle fries or wedges. Additionally, local tomatoes might be viable if they were processed

into a sauce or ketchup. In public statements JCPS has also stated that blanched and frozen beans and peas would work well on their salad bar. Finally, many individuals have contacted schools about accepting frozen corn, blueberries, and carrots, but purchasing personnel emphasize their constrained budgets and challenges in regular procurement of such items.

Non-Premium (Seconds) Produce Supply and Potential Markets

Most of the farmers interviewed expressed a general interest in more options for seconds. The market outlets for these items seemed to be minimal, with common responses of food banks and Glean KY. A few restaurants will accept seconds for their meals, but they generally are not looking for or aware that this option exists. In particular, one distributor will buy #1 tomatoes for slightly above seconds price to create sauces. Seconds could be a viable option if buyers and chefs were more informed about the cost savings and viability of this approach.

Producers indicated that a few items that they'd like to see a seconds market for are tomatoes (many are left on the vine or deemed unacceptable by buyers), beans broken during mechanical harvesting, broccoli, peaches, and anything that is quite perishable, often damaged by harvesting, or commonly ugly. Additionally, wholesale purchasers have size requirements for items like tomatoes, but not for things like melons. Anything with a size requirement and large production variability tends to produce a lot of seconds or items that only find a receptive audience at the farmers markets. Vegetable producers had difficulties in estimating their volume of seconds, while the orchards had a better sense of seconds, since they can sell them directly to consumers or quickly process them into ciders and sauce. For apples, seconds represent 10–15% of the initial harvest.

Some buyers indicated that they will buy seconds for their dining operations that they process in-house. One farmer mentioned that he sells some #1 tomatoes at a slightly higher than seconds price to a distributor. This distributor works with a chain restaurant

to smash these into a sauce. The farmer agrees to this price hit because the distributor does not require the same quality of packaging. A few other fruit farmers mentioned that they could see a seconds market emerge for items that are highly perishable, such as peaches. While they have their own facilities for apple processing, the timing of peach processing is rather narrow compared to the more shelf-stable apple. Buyers' interest in product that can be processed hints that a local seconds market may be possible to develop.

These interviews bring up three questions when considering how a seconds market might emerge: 1) how can buyers be convinced to accept a minimally processed local item for their restaurant (instead of fresh items), 2) if they still require fresh, how can seconds (instead of firsts) from Kentucky farms be made more appealing, and 3) how can a processing facility manage the time constraints and irregular financial flows that accompany a peak harvest focused business model? This last question is crucial; even if year-round demand is demonstrated for minimally processed produce, processors still must contend with the uneven seasonality of harvest and short windows for processing certain crops.

Existing Processing Capacity and Infrastructure

There are several processing facilities located within Kentucky, though most are located outside of the Bluegrass Region, all with significant processing capacity: walk-in coolers and freezers, washers, peeling and chopping, cup sealing, dehydration, IQF system, vacuum sealing. A co-packer located in Louisville also has steam jacket kettles, vacuum sealing, a large-scale sous vide line, and continues to add further value-added capacity as new markets come on-line.

All of the processors we spoke with have experience partnering directly with Kentucky producers, and indicate interest in continuing to explore future partnership and market opportunities for differentiated Kentucky farm-sourced processed produce. While they have somewhat limited experience selling their own product directly to end market wholesale

consumers (retailers, institutions), all indicate an interest in exploring opportunities to package and sell differentiated products. While the processors interviewed had all sold through intermediated distributors in the past, they expressed a strong preference to act as their own sales agents and avoid what they perceived to be unnecessary markups incurred when selling through existing distribution businesses. Given the cold storage and cold transport infrastructure available to these enterprises, this seems a viable proposition, though complications selling to buyers with preferred distributors may be a significant barrier to enterprise growth.

Processors report that they are currently engaged in processing and selling Kentucky farm-sourced produce, but have had difficulty moving the product into their traditional markets. Purchases of Kentucky farm-sourced products by institutional and other dining service buyers is sporadic, and to date does not provide sufficient volume to encourage expansion of wholesale production. While processors' interest in expanding the production and sales of Kentucky farm-sourced products is strong, they report that conventional sales and distribution channels are difficult to access.

Processors report being unsure of how to best proceed with selling Kentucky-sourced processed product, as they currently perceive virtually no demand for Kentucky farm-sourced ingredients. The exception are special events (for instance, a grand opening of a major retail grocer, or a special one-off event at an institutional cafeteria). One-off events, while useful in promoting Kentucky produce, are not sufficient to sustain the demand necessary to encourage the significant investment required of both processors and producers to make Kentucky farm-grown product available in the wholesale marketplace.

As an example, a central Kentucky processor worked with a farmer aggregator to set up a sweet corn project with Jefferson County schools. The owner of the processing firm and the lead farmer even went so far as to shuck and de-silk all of the corn by hand before it was cut and frozen. However, despite the success of this program, at the time of this writing

the producer and processor are struggling to sustain interest in the program, and are actively working with a value-chain coordinator to convince JCPS to make the locally grown sweet corn a regular offering.

Unreliable wholesale markets for Kentucky farm-sourced products also impact the potential of non-Kentucky or undifferentiated processed produce sales. Several produce processors work with national brands to provide key ingredients, such as chopped onions or peppers, but are unable to find price-competitive Kentucky-sourced produce to include in that market opportunity.

Price Benchmarking

Understandably, both producers and purchasers of produce were reluctant to share specific pricing data for produce. As buyers are working primarily with distributors to source produce, and are buying fresh product year-round (in and out of local season), we have worked to construct a framework for estimating pricing benchmarks for produce sourcing.

Producers' benchmarking strategies are varied. Some producers mentioned that they negotiate a price with a distributor with a target price that is derived from previous interactions, terminal prices, and auction prices. Others note that they just take what they can get from the distributor as there are few other market outlets and they have little standing to argue for a higher price, even if they feel their product is of a superior quality. California free on board price (FOB) plus the cost of freight appeared to be a commonly referenced price benchmark for wholesale prices offered to Kentucky producers.

Producers also mentioned that their production costs for specific crops rarely play into their setting of a target price for wholesale production, and calculation of specific production costs by crop is not a common practice among growers. Instead, many producers construct their understanding of a fair price based on the entire sales revenue of the diversified farm enterprise. Farmers will, for example, make a sale at a produce auction or to a distributor, and then work

backwards from the price to determine how that revenue fits in to their diversified production strategies and their overall farm costs. As such, benchmark prices seem to be set by the global agriculture market with few wholesale buyers and distributors willing to give premiums for local or Certified Organic products. The attitude among producers is that for produce, it is a buyers' market, and they have little control over what they can receive, regardless of their specific farm practices and produce quality.

In an effort to better comprehend the fluctuation of prices over the course of a year, we analyzed price reports to determine at what prices certain kinds of local produce tended to be sold for, on average, at Kentucky produce auctions in 2015 (Table 1) and compared this to average prices at other markets (Table 2). For a detailed explanation of methods, refer to Appendix 3.

Average Price per Pound, 2015			
Crop	KY Produce Auctions (12 month)	KY Farmers Markets	ATL/CHI/STL Terminal Markets
Bell Peppers	\$0.55	\$1.91	\$0.51
Broccoli	\$0.84	\$2.44	\$0.74
Cantaloupes	\$0.54	\$1.32	\$0.61
Cucumbers	\$0.56	\$1.89	\$0.27
Green Beans	\$1.01	\$2.57	\$0.85
Onions	\$0.74	\$1.78	\$0.40
Potatoes	\$0.44	\$1.76	\$0.42
Sweet Corn	\$0.36	\$0.70	\$0.57
Tomatoes	\$0.82	\$2.60	\$0.74
Zucchini	\$0.50	\$1.84	\$0.52

Table 2. Average price of selected produce sold at various produce markets, 2015.

Monthly Average Price per Pound at Kentucky Produce Auctions, 2015							
	May	Jun	Jul	Aug	Sep	Oct	In Season Avg. (May-Oct)
Bell Peppers	\$1.29	\$0.91	\$0.65	\$0.57	\$0.46	\$0.40	\$0.63
Broccoli	\$0.84	\$0.81	—	\$0.93	\$0.91	\$0.85	\$0.91
Cantaloupes	\$0.41	\$0.58	\$0.53	\$0.59	\$0.56	—	\$0.55
Cucumbers	\$0.91	\$0.35	\$0.44	\$0.91	\$0.74	\$0.55	\$0.64
Green Beans	\$1.40	\$1.20	\$1.09	\$1.07	\$0.94	\$0.52	\$0.99
Onions	\$0.60	\$0.63	\$0.71	\$0.80	\$0.74	\$0.20	\$0.72
Potatoes	\$0.56	\$0.44	\$0.54	\$0.44	\$0.37	\$0.27	\$0.44
Sweet Corn	—	\$0.40	\$0.31	\$0.38	\$0.35	\$0.37	\$0.36
Tomatoes	\$1.55	\$0.95	\$0.68	\$0.84	\$0.86	\$0.82	\$0.93
Zucchini	\$0.70	\$0.30	\$0.47	\$0.59	\$0.52	\$0.44	\$0.49

Table 1. Average price of selected produce sold at Kentucky produce auctions, 2015.

Summary and Recommendations

The primary question of this study was: Is there excess demand for processed produce/produce processing given existing supply of produce and demand by wholesale and institutional buyers? The simple answer, we believe, is no. This answer is derived from a combination of 1) buyer preference for fresh product; 2) underdevelopment of Kentucky-grown differentiated product markets; 3) distribution consolidation and logistic/requirement barriers; 4) underdeveloped wholesale produce production sector; and 5) existing processing enterprises' infrastructure and interest in working with Kentucky-grown product. The question of why the market for fresh or processed Kentucky-grown produce is unsuccessfully developed is complicated, and warrants further study.

A key step is to continue educating buyers (and consumers) on potential first-processed and wholesale options that could be produced in Kentucky. Our findings do indicate a significant need for additional coordination, marketing, and market development for source-identified Kentucky-grown fresh produce, and Kentucky source-identified product generally. We summarize the key issues associated with developing a market for local produce, both fresh and processed, below.

Supply

Based on our analysis of 2012 USDA census data combined with producer interviews, current wholesale produce production in Kentucky is limited, especially in comparison to our neighboring states. Because wholesale buyer interest in Kentucky-sourced product is seen as fickle, and wholesale demand is therefore inconsistent, it doesn't encourage producers to increase wholesale production. Additionally, existing distribution channels have inconsistent marketing and sales efforts for source-identified product, and appear to focus their sourcing from one or two chosen producers. Adding complexity, farmers who were once set on being wholesale producers have realigned their business to focus on CSA and direct sales because

they are more reliable and offer a premium compared to wholesale. The problem of price premium is doubly true for organic produce—direct markets will pay it, wholesale won't.

Crop	# of Farms 23-County	# of Acres
Sweet Corn	246	376
Tomatoes	342	180
Green Beans	273	110
Cantaloupes	114	64

Table 3. Top four crops by acres and number of farms reporting production for 23-county central Kentucky region (USDA Census of Agriculture, 2012).

Crop	# of Farms 23-County	# of Acres 23-County	# of Farms KY	# of Acres KY
Sweet Corn	246	376	1174	1834
Tomatoes	342	180	1387	922
Green Beans	273	110	1057	427
Cantaloupes	114	64	550	618
Potatoes	163	60	760	360
Cucumbers	154	35	707	228
Bell Peppers	56	18	198	162
Onions	33	9	79	26
Zucchini	40	1	173	80
Broccoli	12	—	48	11

Table 4. Number of farms harvesting selected produce items and total acres reported to be in production across 23-county region and Kentucky as a whole.

Source: USDA Census of Agriculture, 2012; ranked from highest to lowest number of acres in production in 23-county region.

While we believe there is potential for growth of a substantial produce sector, challenges to expansion are multi-dimensional and will require a broad array of public and private initiatives to address the following issues:

- The best premiums for growers are in fresh market of premium/firsts, and so any effort to expand production would need to simultaneously expand the market share for fresh product.
- The existing wholesale market for Kentucky-grown fresh produce (the highest value market for produce for producers) is not yet being maximized in central Kentucky. This is, in part, due to GAP audit requirements and preferential distribution contracts, both of which would also apply to a processed produce enterprise.
- The development of a wholesale fresh produce market is further complicated by a current lack of sufficient volume or temporal duration of produce to fulfill institutional needs. Aggregation of Kentucky product by a distribution enterprise could address this gap, in particular through initial development of wholesale production capacity through alternative smaller wholesale markets (restaurants, grocery, buying clubs) and gradual increase to larger institutional provisioning.

Inconsistent and Erratic Demand for Fresh and Frozen Kentucky Produce

From existing processors and wholesale producers we heard that the key challenge to scaling up Kentucky-sourced produce is consistent demand of source-identified product, which is tied to the predominance of one-off special events as opposed to regular sourcing into a Kentucky source-identified menu program. Conversely, from some of the institutional buyers we heard that fresh Kentucky produce available through their distributor can't come close to meeting their weekly needs for fresh product. As such, demand is currently erratic but could be stabi-

lized with concerted efforts to change buyer attitudes regarding the following situations:

- Kentucky-sourced produce has become a one-off or special feature rather than a regular component of institutional menus.
- Buyers report that their kitchens and menus focus on either year-round use of fresh product, or prepared dishes such as soups, sauces, or mixes. So while these individuals cite lack of year-round supply as a barrier to local sourcing, they also seem disinclined to accept minimally local processed items for their kitchens.

Frozen Kentucky Produce for Institutional Kitchens Would Require Retrofitting Menus

For those institutions contractually obligated to use Kentucky product, a frozen product could be integrated into the menu to meet those obligations, but would have to be specifically developed for that purpose as existing menus focus on either fresh produce, or fully prepared dishes (soups, "cheesy chicken" etc.). It seems unlikely that institutional kitchens would be interested in preparation of entrées from scratch with IQF frozen product, though this is speculative. The same appears to be true for restaurant buyers looking to have year-round local product. Wanting Kentucky product year-round does not necessarily equate to an active demand for frozen Kentucky produce, though they could be connected with some great coordination/salesmanship.

Existing and Potential Processing Initiatives

The perception by both producers and processors that there is a lack of demand for wholesale level, source-identified Kentucky farm produce is matched by many buyers' current expressed preference for fresh rather than processed produce items. At the same time, produce processors report interest in building this market. To maximize the potential of existing processing infrastructure, or to develop new, specialized processing, the following issues must be considered carefully:

- Given the relatively limited amounts of fresh wholesale produce currently available and the limited amount of extended season production, a processing facility dedicated only to Kentucky produce would be in heavy use in the peak of the season, and then have little to no use outside of that season.
- Processing as an add-on business line to an existing fresh produce distribution enterprise is a tricky proposition on its own, and there have been several food hubs that have failed due to biting off that challenge.
- Given that we don't currently have a food hub type enterprise working exclusively with Kentucky-sourced product, a critical remaining question is what entity or enterprise would develop the market for the Kentucky farm-sourced processed product.
- Both processors and some farmer leaders have previously partnered to aggregate, process, and distribute processed product directly to institutions or co-packers. They express significant interest in expanding these efforts in the near-term.

Marketing and Brand Development

Labeling and marketing of farm origin appears to be an essential requirement to expanding fresh or processed Kentucky farm-sourced produce. Existing local food marketing programs (i.e. Kentucky Proud) do not differentiate or distinguish products that use Kentucky farm-sourced ingredients. Consequently, even well-intentioned local sourcing commitments may be addressed with products that are not of Kentucky farm origin. Institutions and other potential wholesale customers have reduced incentive to take the extra time, effort, and potential expense that may be necessary to source Kentucky farm products. When Kentucky farm-sourced product is available in the wholesale supply chain, it is inconsistently differentiated, if at all, and there is no reliable price premium offered above the market rate from global

markets. Additionally, these supply chains are consistently dominated by preferential contracts with specific distributors. Processors and distributors that focus on source-identification, then, must find ways to break through these preferential relations.

- Differentiated, Kentucky farm-sourced products or ingredients are inconsistently labeled or marketed, and as such little to no price premium is currently realized for Kentucky farm-sourced products.
- Value-added processors already branded as Kentucky Proud generally have little to no incentive or interest in intentionally including Kentucky-produced ingredients in their product.
- The success of Udderly Kentucky milk program within Kentucky Proud indicates that further brand differentiation based on Kentucky farm-sourced ingredients could be of great use in supporting the growth of wholesale produce production and sales, among other sectors.

Valuing Premium Kentucky Produce

Finally, price is a critical measure for all actors in the supply chain, but appears to be set by global markets and wholesale buyers—which do not differentiate produce by place-specific quality. Even absent a local premium for source or production-technique identification, producers would be more likely to produce at wholesale levels if they had a dedicated wholesale outlet.

- Farmers in Kentucky are generally unable to gain a price premium for local, organic, or otherwise differentiated production. As such, producers have little incentive to scale toward wholesale levels.
- Unlike commodity growers, produce growers must move the product when it is harvested and wait for prices to become more favorable or find new buyers.

- While price is a key factor for producers, having a consistent and reliable (i.e. trustworthy) sales outlet for wholesale produce is equally if not more important.
- For co-packers and some institutional kitchens, diced peppers and onions were commonly used frozen products, as were broccoli florets, whole blueberries, and diced sweet potatoes.
- Grocers reported an interest in local frozen options for berries, peas, corn, squash, general vegetable mixes, green beans, kale, and waffle cut potatoes.
- In general, retailers believed flash-frozen items would sell the quickest and garner the most interest relative to other forms of processing.
- If current wholesalers are not maximizing sales of fresh Kentucky source-identified produce, who will do the work of selling frozen Kentucky-sourced product?
- What price point could a processing enterprise for Kentucky source-identified produce offer, and how would that look relative to existing outlets (e.g. produce auctions)?
- What would the final price point to an institutional buyer be, either as a stand-alone vendor or as mediated through a preferred distributor; what does the predominance of preferential distribution (and its concomitant markups) mean for Kentucky-based food enterprises in the wholesale marketplace?
- Who will do the work of branding, marketing, selling, and distributing a Kentucky source-identified produce product?
- How do we facilitate the expansion of wholesale, GAP auditable produce production in Kentucky?

Key Questions for Future Study and Consideration

- At our current levels of produce production (ignoring, for the moment, the question of third-party food safety audits and lack of on-farm cold-chain infrastructure), what could a processing enterprise expect to have as reliable supply of Kentucky produce?

Appendix 1: Qualitative Methodology

Demand Assessment (Buyer Interviews)

For assessment of current demand for first processed product, we built on data from an ongoing local food demand study and food system mapping initiative. Our analysis worked from three sets of data: a comprehensive list of local and Kentucky Proud product procurement by UK dining in FY 15; geo-coded inventory of food system intermediaries and infrastructure; a series of 18 interviews drawn from a sample of purchasing agents from wholesale food distributors, institutional dining service providers, retailer grocers, and other wholesale purchasers in the Bluegrass Region. We also conducted interviews with a sample of existing processing and value-adding enterprises such as IQF facilities and co-packers.

Supply Assessment (Producer Interviews)

Closely related to the demand assessment, the supply assessment built on findings from the Lexington Area bluegrass local food supply study will provide a baseline for our supply assessment. This study was conducted by CEDIK through support and oversight by The Food Connection and Bluegrass Farm to Table. Vendor and procurement data from purchasing data from UK Dining's FY 15 operations informed the construction of a sample set of current wholesale produce suppliers in the region. Additional producers were identified by our advisory committee and added to the sample set to ensure a sample that is, for all intents and purposes, representative of current wholesale or potential wholesale producers in the central Kentucky region. Follow-up structured interviews were requested with 20 producers, and ultimately 12 producers agreed to participate in the study. The interviews inquired specifically about current and short-term future production plans, primary and secondary market outlets, and barriers or challenges to expansion of wholesale produce production.

Appendix 2: Quantitative Assessment of Current Produce Production

Analysis of Existing Supply in Kentucky

In an attempt to assess the current scope of produce production in Kentucky, we examined 2012 county- and state-level data on “vegetables, potatoes, and melons” (which we aggregated and labeled “vegetables”) and “fruits, nuts, and berries” (whose disaggregation we preserved) from the USDA Census of Agriculture. We calculated (a) the number of farms on which vegetables, fruits, nuts, and berries are harvested and (b) the number of acres of these four categories of produce reported to be in production.

From the vantage point of Fayette County, we are interested in contributing to an understanding of this issue at three levels: the entire state of Kentucky (all 120 counties), a 23-county central Kentucky region, and a smaller 7-county region. The 23 counties comprising what we have described as the central Kentucky region (within which the counties constituting the more specific 7-county region are contained) are: Anderson, Bourbon, Boyle, Casey, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jackson, Jessamine, Lincoln, Madison, Mercer, Montgomery, Nicholas, Owen, Powell, Rockcastle, Scott, Washington, and Woodford. Results can be found in Figures 1 and 2.

Comparison to Surrounding States

We also want to contextualize the landscape of produce production in Kentucky with reference to nearby states. Using the same source of data, we compiled analogous information about (a) the number of farms on which vegetables, fruits, nuts, and berries are harvested and (b) the number of acres of these four categories of produce reported to be in production in the states of Indiana, Ohio, Tennessee, Virginia, and West Virginia. Comparisons of current produce production in these neighboring states to that in Kentucky can be found in Figures 3 and 4.

Evaluation of Selected Produce Items

Finally, in order to provide more concrete examples, we transitioned our focus from the four broad categories of produce to 10 specific items of interest. Using the same source of data, we recorded the number of farms on which 10 selected produce items are harvested and the number of acres of each item is reported to be in production in each county in Kentucky. Justification for the selection of these 10 items can be found below in Appendix 3. Table 3 presents 23-county and statewide results.

Appendix 3: Price Benchmarking

We determined the monthly and yearly average price per pound of 10 produce items, according to 2015 price reports from (a) produce auctions held regularly at five locations and (b) farmers markets held regularly in nine locations across eight counties. The 10 items are: bell peppers, broccoli, cantaloupe, cucumbers, green beans, onions (candy), potatoes, sweet corn, tomatoes, and zucchini.

The selection of these 10 produce items is based on our desire to complement a study of agricultural commodity prices—as reported by the USDA Agricultural Marketing Service (AMS) at the Atlanta, Chicago, and St. Louis terminal markets—recently performed by colleagues in the University of Kentucky’s College of Agriculture, Food, and Environment. We chose to focus on equivalent items as we began our study, with the intention of eventually comparing the data we produced about average prices per pound of crops sold at both produce auctions and farmers markets to similar data derived from the corresponding analysis of terminal market reports.

Provided with a large quantity of variegated infor-

mation contained in 2015 price reports published by the University of Kentucky’s Center for Crop Diversification (CCD), we sought to produce a uniform set of data. Effectively cataloging such a heterogeneous assortment of items and standardizing miscellaneous units necessitated a meticulous process of data input, conversion, and cleaning. Data for produce prices was provided in a variety of types and sizes of produce items. In order to provide comparable and standardized units, we converted volume measures (e.g. bushel and peck) into a standardized weight measure, pounds. Translating units as diverse as pecks, bushels, dozens, and multiple pounds into 1 pound allowed us to compute monthly and annual mean prices per pound of each crop that can be more accurately contrasted and amalgamated.

Conversion sources were derived from various state land grant university agricultural/cooperative extension services. A number of outliers were removed from the data set.

Results of this analysis for all 10 items are provided in Tables 1 and 2 and in the following appendix.

Appendix 4:
Monthly Average Price Charts by Market Outlet for
all 10 Produce Items of Interest

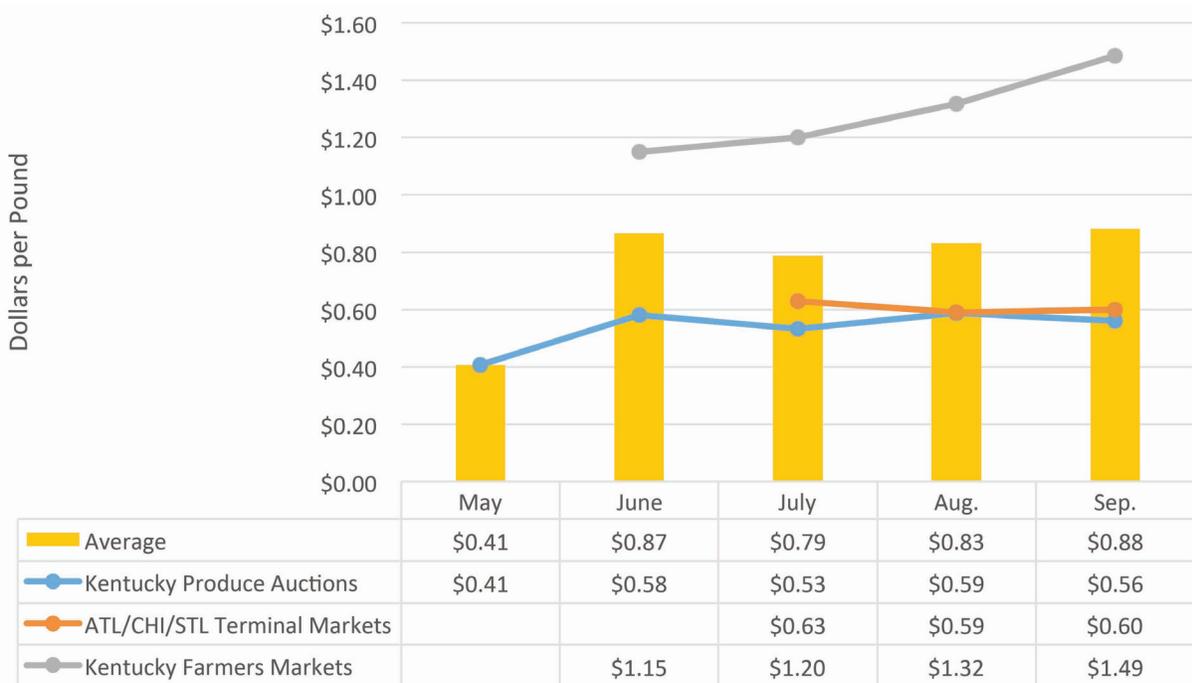
Monthly Average Price of Bell Peppers in 2015



Monthly Average Price of Broccoli in 2015



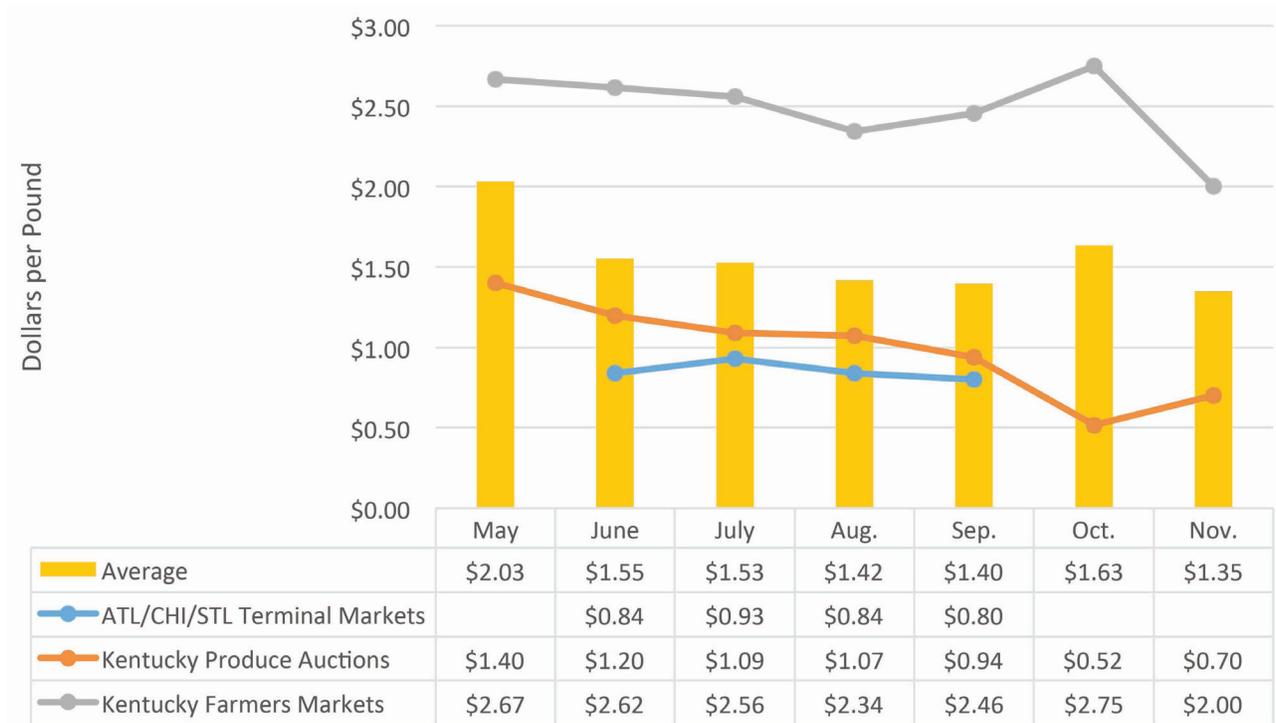
Monthly Average Price of Cantaloupes in 2015



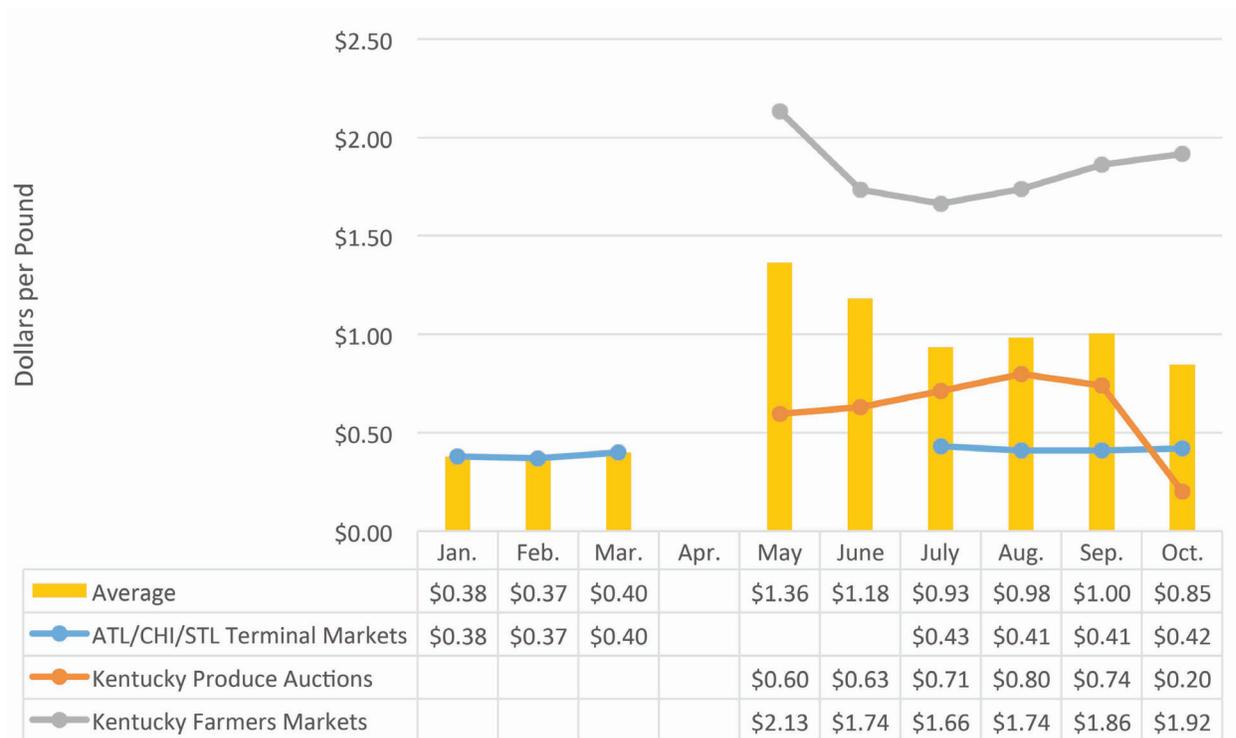
Monthly Average Price of Cucumbers in 2015



Monthly Average Price of Green Beans in 2015



Monthly Average Price of Onions in 2015



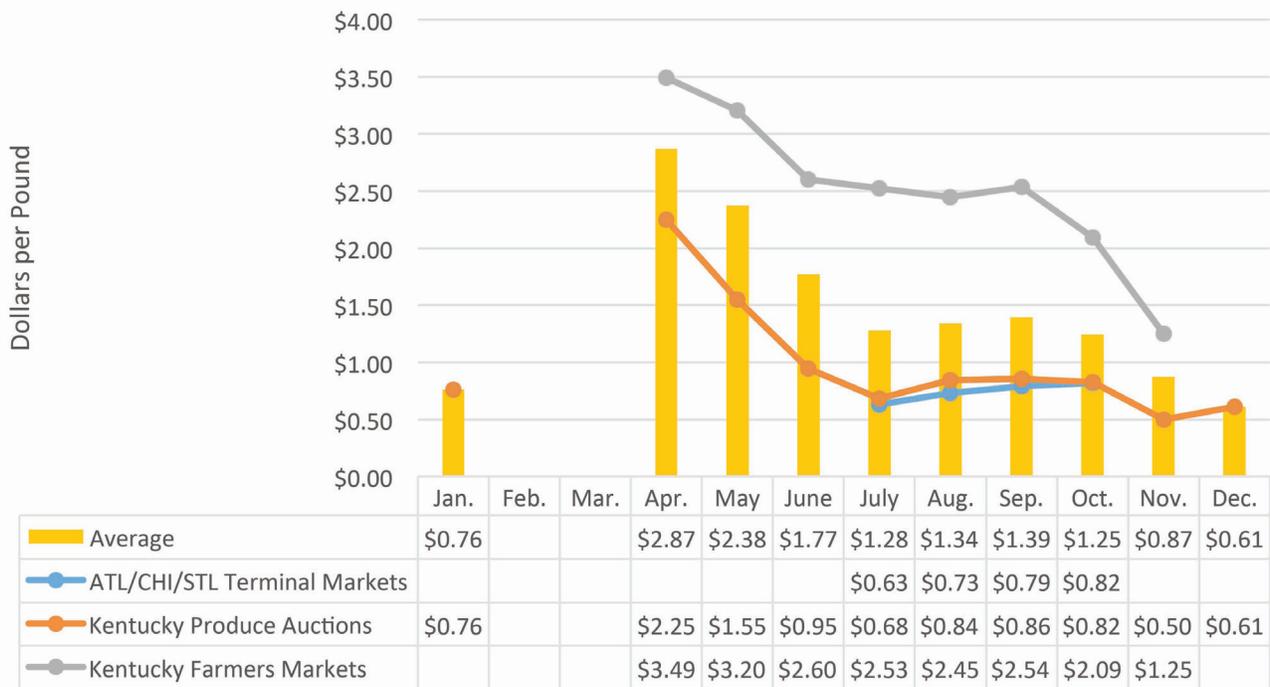
Monthly Average Price of Potatoes in 2015



Monthly Average Price of Sweet Corn in 2015



Monthly Average Price of Tomatoes in 2015



Monthly Average Price of Zucchini in 2015

