



Beyond Farmers Markets
Local Foods Opportunities in Southeastern Kentucky's
Retail and Institutional Industry

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Beyond Farmers Markets – Local Foods Opportunities in Southeastern Kentucky’s Retail and Institutional Industry¹

Jairus Rossi, A. Lee Meyer and Jann Knappage ²

Executive Summary

The food world’s embrace of local foods is affecting the retail food system in Appalachia. Grocery store managers recognize an increasing interest in “local foods” and “eating healthy,” but are having trouble meeting that interest within the existing food supply chain. They are constrained by the rigid system of related suppliers, competition from other store chains, a corporate culture focused on standardized procurement systems, and a general dearth of production in the region. Similarly, buyers for schools and hospitals want to provide healthy foods to their clients (students, patients and employees) and support local economies, but have trouble procuring the quality of product in the quantities they need at prices which fit their budgets. Most stores have policies prohibiting direct store delivery in order to maintain quality and food safety control.

Despite these challenges, southeastern Kentucky has the physical capacity to grow much more produce and meat for markets within and outside the region. In our research, we examined horticulture production history as well as existing pasture acreage and cattle production to make this determination. By any measure, the region has the physical capacity to produce all of the vegetables and meat the region consumes. The constraining deficits are human capital, support capital (aggregation, cooling, processing), and risk management capacity.

¹ This study was performed for the Kentucky Center for Agriculture and Rural Develop (KCARD) “Power of Food” project funded by a U.S. Economic Development Authority Power Grant.

² Rossi is a Research Professor in the University of Kentucky’s Community and Economic Development Initiative of Kentucky, Meyer is an Extension Professor in the UK College of Agriculture, Food and Environment, and Knappage was a local foods coordinator with the Community Farm Alliance (Berea, KY) at the time of the study.

The firms which supply the groceries, both independent and part of individual chains (the “distributors”), are looking for suppliers of local foods which match their normal suppliers’ characteristics in volume, quality, seasonal consistency, and price. This scenario is currently not feasible given the current state of production and distribution. Some buyers are compromising to make connections with producers and are benefiting from this practice. One way the corporate buyers procure “local” foods is by expanding the definition of local. One chain considers “local” anything produced in the vicinity of any of its stores – in this case, Virginia, Tennessee or Kentucky. Another produce supplier buys from groups of Amish farmers in Ohio and Pennsylvania – and also considers those products “local.” Producers in Kentucky, if they achieve a wholesale level of production, might also harness markets outside the region based on this expanded regional definition of local.

Solutions for the “routinized procurement practice” dilemma require the cooperation of all segments of the food supply chain – farmers, distributors and supporting institutions. Here are some of our key findings and recommendations. Farmers must face the fact that they must produce a large volume of consistent quality product. Specializing and increasing volume brings added risk. Support systems must find ways to help novice farmers survive a few years of development. There is surprisingly little relationship between a farmers market focus (small quantities of a large variety) and the commercial system (large quantities of a few products).

Food safety is being imposed by the buyers at a pace quicker than required by the Food Safety Modernization Act [1]. Increasingly, farmers must be third party, GAP (Good Agricultural Practices) audited and certified in order to have access to the retail food system [2-3].

We did find examples of pilot level successes, typically when the “rules” were relaxed. One chain allows farmers to access its logistics system by meeting its truck at a local store. Product is loaded and then is backhauled to the main distribution center, where it is inspected and made available to other stores. Another distributor will accept farmer delivery to its distribution center in units as small as one pallet – but the farmer would need to produce truckloads (8 to 22 pallets) to access the stores’ distribution network.

Communication is one of the keys to build the relationships in which experimentation takes place. One firm negotiates with farmers during the winter discussing products, specific varieties, expected harvest windows, season length, and price. They try to educate their partner farmers about store needs and agree on prices that “work” in the store and are high enough to more than cover production costs (i.e. be at profitable levels).

Perhaps one of the most promising strategies is local aggregation – where a firm, or even a larger farmer, collects product from partnering farmers, grades and sorts, and then delivers product either to a distribution center warehouse or directly to several stores. Again, while this strategy

may be in conflict with standard operating procedures, it has the potential to create win-win outcomes if buyers are willing to explore new systems.

Integrating meats into the local food system has challenges above and beyond those facing the produce industry. Small scale meat processing, the model used throughout Kentucky, is inherently and dramatically more expensive than at the major traditional processors, which slaughter as many cattle in five minutes as most Kentucky processors do in a week. Some consumers are willing to pay a premium for local and carefully produced meat items. This is a small segment of the market. Direct-to-household sales can be expanded to target this market niche. Doing so will create production expertise and the capacity to move into other markets.

Introduction

Researchers at the University of Kentucky conducted an assessment of the retail food system of the 21 county study area in Southeast Kentucky 's as part of the **Power of Food** project³. Our goals for this project include documentation of the retail foods environment, determination of the opportunities to increase the volume of local foods in that retail system and suggested strategies to capture those opportunities. The following report describes the results of our work.

We analyzed primary and secondary data to help us understand the region's retail market environment - primarily for produce but also for meats. We conducted key informant interviews to use as the source of primary data. In this report, we describe the characteristics, practices and relationships of retailers and distributors, providing an understanding of the retail food environment in eastern Kentucky. Based on this information, we describe existing barriers facing farmers who want to sell into the retail market, explore volume needs and compare those with production potential. We conclude with strategies for overcoming those barriers and obstacles. Our goal was to provide "actionable" recommendations to guide intervention activities.

Data Sources and Methodology

Data and information for this report came from a variety of sources. The three authors all are engaged in research and/or outreach work in the study region. They integrated findings from parallel projects in this report and used their background to develop a research methodology specific to this project.

³ Funded by the U.S. Economic Development Authority. The UK College of Ag, Food and Environment is a subcontractor to the Kentucky Center for Agriculture and Rural Development (KCARD).

We collected data for the research project from the many sources we expected to provide insights into the region's retail food system. We started with extensive in-person meetings with extension agents from Breathitt, Jackson, Pike, Knott, Letcher, and Whitley Counties. We also held discussions with personnel from Robinson Center for Appalachian Resource Sustainability (RCARS) and the Natural Resources Conservation Service (NRCS). These discussions provided an overview of what trends, patterns, and resources were available in each county for food-based economic development. We also conducted focus groups with 9 producers in Pike County and residents in Breathitt and Owsley Counties (7 to 11 residents in each county). These discussions provided insights into residents' food environment, their experience with local food, and their demand for local food. Producers identified which market channels they currently frequent, assessed barriers and opportunities to sell within the region, and provided their perspective on consumer demand for Kentucky raised foods.

Following these focus groups and meetings, we conducted numerous telephone interviews with grocery store managers, corporate level procurement decision-makers, distribution/warehouse managers, and others engaged in the region's retail food system. From these interviews, we identified and mapped critical points related to the region's various supply chains. We took this approach with an eye toward identifying distribution and sales points where local producers could sell their products provided they meet buyer-specified conditions.

All of the interviews were initiated with "cold calls." For the grocery stores, if the store manager was available, and willing to talk, we explained our background and the project, then explored the topics of demand, experience, market opportunities using these interview guide questions:

1. Demand:

- What is your interest, if any, in buying foods locally?
- What is your definition of local? Does that include Eastern Kentucky?
- What is your perception of the demand for local?
- How does an interest in "local" serve your business interests (if at all)?
- What might you buy from those producers?
- Under what conditions could you pay higher prices?

2. Experience and Procurement Arrangements:

- What are your processes and details; can some expectations be relaxed? Which are essential?
- Are you buying from Kentucky farmers?
- What have you been buying?
- Who are your other suppliers?
- How do you determine pricing for produce and meats?
- What logistic, quality, and volume considerations do you take when choosing to buy from producers or distributors?

3. Opportunities

- What changes would be required to make sourcing locally grown products more viable / workable for your business?
- What prevents you from buying from them?
- How far would you go to source product from Eastern Kentucky?

Individual store managers were quite difficult to reach and often were reluctant to speak with us about specifics of product supply chains, pricing, and relationship building with farmers. Of 20 store managers we called, 11 were willing to talk to us. During the process, we learned not only about attitudes toward local foods, but also about different organizational cultures and management structures. The legal agreements, management structure, and sourcing arrangements differed between store brands, with Save-A-Lot stores operating under tight franchise agreements, Food City centralized in decision-making but with a bit more store-level autonomy, and IGAs having greater independence (as the history of their name suggests: Independent Grocers Association).

When calling individual store managers, especially those at Food City and Save-a-Lot, we were often told to “talk to corporate”. When it was possible to speak with a higher-level decision-maker, we found some clarity in requirements and willingness to work with local producers. All managers and buyers, regardless of decision-making level, were quite busy. As IGA stores are more independent than the aforementioned chains, their managers were able to offer some specifics regarding procurement arrangements. At the same time, a few of these managers were uncomfortable speaking to us about supply chain specifics, sales, or anything at all. We completed interviews with store managers from three Food City stores, six IGA stores, and two Save-A-Lots.

In addition, we talked higher-level decision-makers from Piazza Produce, Creation Gardens, Appalachian Harvest, Appalachian Meats, Laurel Grocery, Brown Foods, Crosset Produce, Houchens (operates both Food City and IGA stores), the Cox Food Group (operates 10 IGA stores in the region), as well as corporate level personnel at Save-A-Lot and Food City. We asked questions similar to those given to individual store managers. In short, most corporate interviewees were willing to speak in generalities about their supply chain, but only 4 out of the 11 corporate contacts could articulate how farmers in eastern Kentucky could or do fit in their business models. We attribute this trend to the fact that most grocery retailers have limited relationships with area farmers, a condition related to buyers requiring products at a scale, quality, and consistency that few farmers in Kentucky currently meet. These discussions, then, were often more speculative as only two of the 11 companies were purchasing from eastern Kentucky farmers. Buyers/managers instead would discuss what potential they see for the integration of food products from eastern Kentucky into their supply chains, which we discuss in later sections. Refer to Appendix B for more details.

We also spoke with service providers in the region who have an interest in agriculture. The list includes: Grow Appalachia, USDA's NRCS, the University of Kentucky Robinson Center for Appalachian Resource Sustainability (RCARS), Kentucky Grocers Association and seven of the region's agriculture and natural resource extension agents. As mentioned, these interviews involved discussions about the barriers and resources to production, harvest, distribution, and sales of Kentucky-grown produce.

Finally, we collected data for the maps included in this report from a variety of primary and secondary sources. For food retailers, we used the USDA Supplemental Nutrition Assistance Program (SNAP) database of stores which accept SNAP [4]. For infrastructure, we used data provided by KCARD and data pulled from the Kentucky Agricultural Data Information Systems (KADIS) map [5]. For distribution, we relied on discussions with corporate retailers, distributors, and other interviewees. Producer data were drawn from KCARD and the Kentucky Department of Agriculture's Kentucky Proud Program [6]. We produced maps with open-source QGIS software [7] and Leaflet mapping code [8].

Context

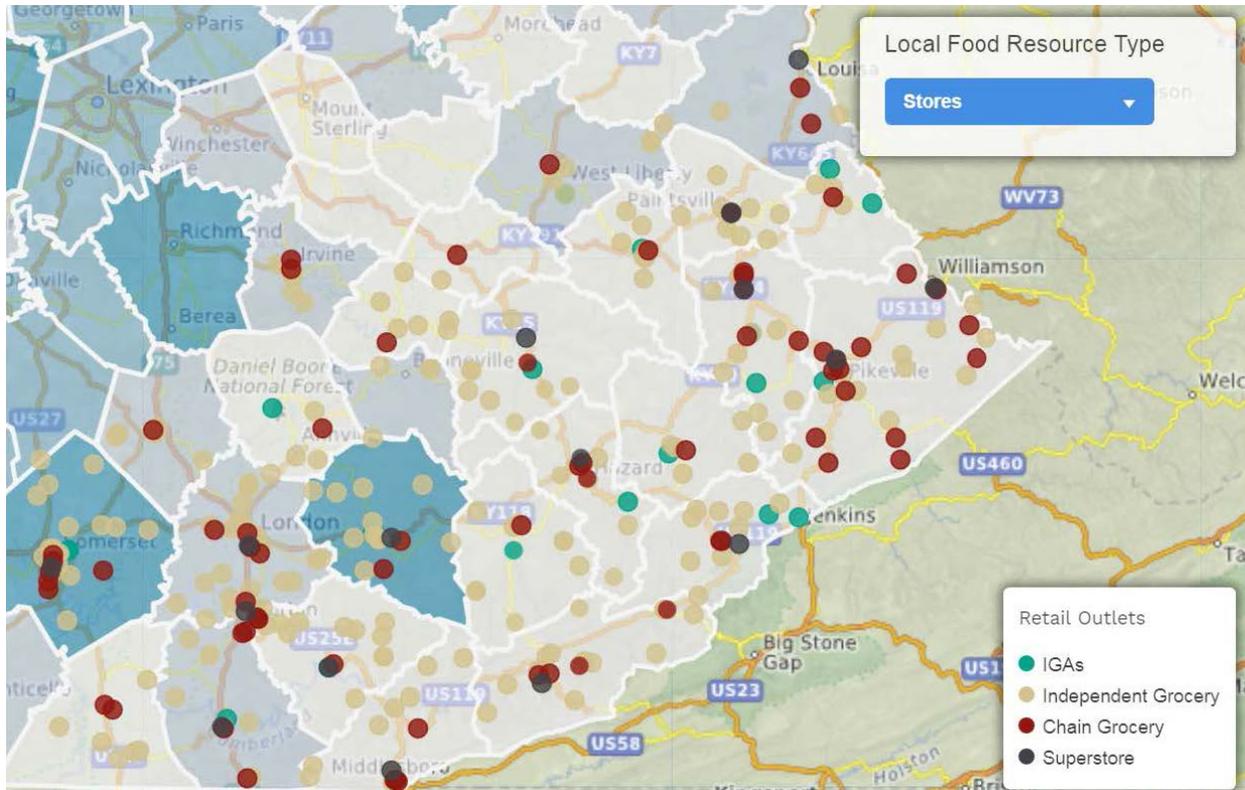
Southeast Kentucky's Food Environment

Consumers in the region acquire food from a diverse mix of places. In the retail sphere, no one firm or brand dominates, but the array of choices is clear. First, Walmart is cited by residents as a major source of meat and vegetable purchases in food consumer focus groups. There are only eight Walmart stores in the 21 county study area, so for many residents, travel distance can limit access, especially to those with few transportation options. For general everyday purchases, many residents frequent a mix of Food City (11 stores), IGAs (21 stores), Velocity Markets (4 stores), Kroger (9 stores) and Save-A-Lot (36 stores). Yet even with about 90 stores, these retail outlets are relatively clustered in some areas and sparse in other parts of the project area. While all counties except for Owsley have at least one of these outlets, large areas within each county are served only by an independent grocer, convenience store, or country store.

Dollar stores and the ubiquitous convenience stores carry a surprisingly large number of processed items and increasingly sell fresh produce. These stores are important sources of food purchases and often promote their goods to low-income consumers as evidenced by "EBT Welcome Here" signs on doors and in stores. There are also approximately 182 independently owned grocers and country stores which have a limited selection of fresh food items [4]. The opportunities to market local products through these smaller outlets, while having some potential, was not addressed in this study.

As **Figure 1** indicates, retail food outlets such as IGAs, chain grocery stores, and superstores are unsurprisingly concentrated along larger roads within the counties. The chain grocery category is predominantly composed of Save-A-Lot stores – especially in the areas between the I-75 corridor and Pikeville. As we discuss later, Save-A-Lot stores do not generally carry local products. Along I-75, there are a few Kroger locations. In areas near Kentucky’s southeast border, Food City stores are more prevalent. Both of these latter chains have carried local

Figure 1. Retail Landscape of Eastern Kentucky



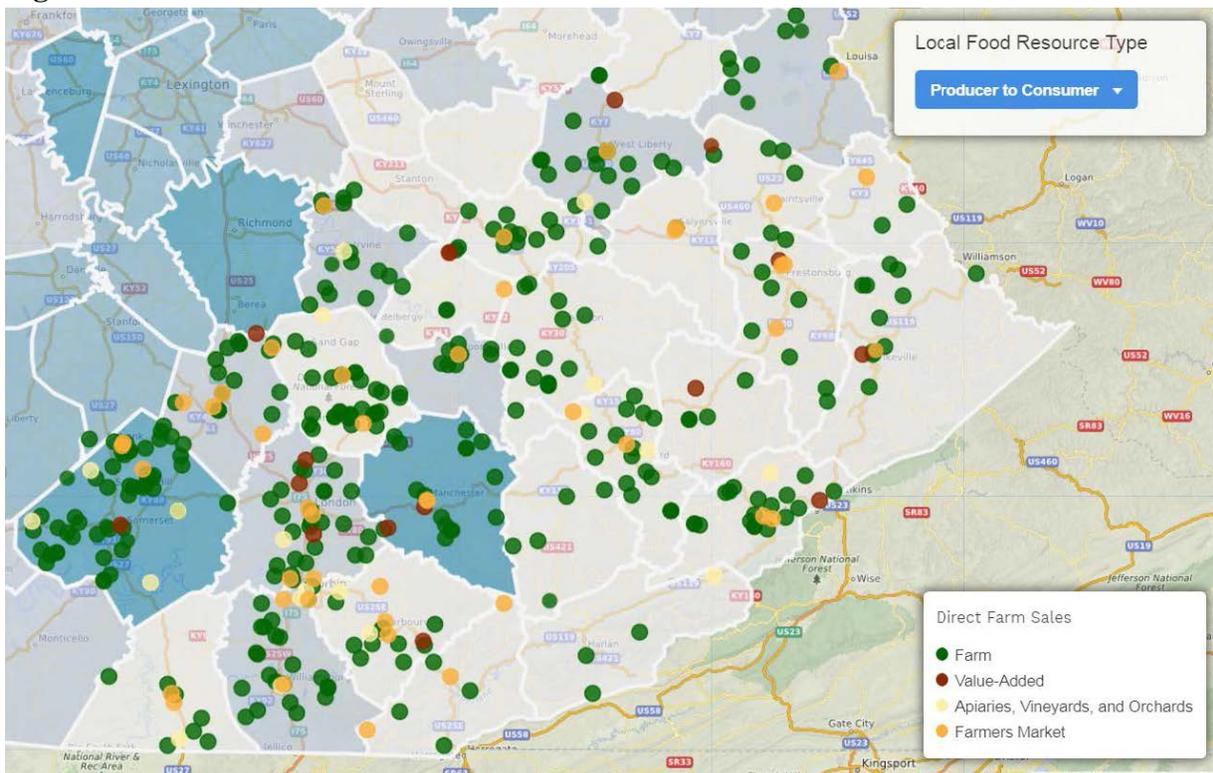
products in the past. As such, distribution routes that connect to London, Hazard, and Pikeville may play important roles in connecting producers to retail opportunities. Independent groceries, a category that includes country stores, are not as clustered, and are found in less-traveled locations. They provide critical food resources to residents who live in more remote areas.

A growing outlet for food purchases, however, are farmers markets, produce stands, and direct producer-to-consumer sales. Despite the perception that farmers’ market produce is more expensive than retail markets, these outlets represent a growing demand for fresh food in the region. Market managers in two project counties mentioned that the market vendors sell out before noon and that they would like to add more producers to these outlets. Both managers expected that adding EBT machines in 2017 would increase attendance to the market and create further demand for produce. As such, they expressed interest in attracting more local producers

to take part in these events in order to meet consumer demand. According to the USDA Agriculture Marketing Service, at least 10 out of the 21 counties in the project area offer EBT machines at their markets [9]. More study is required to determine how the introduction of SNAP redemption at farmers markets impacts farmer sales. In discussions at our farmer focus group, producers said that these EBT/SNAP-enabled markets are an important venue for their sales. Producers commonly visit these markets, as well as local festivals in surrounding counties, to sell their products. Part of the motivation for this marketing approach for farmers is that they have found it rather difficult to make connections with local grocery stores and there are only a few restaurants (our estimate is about six) in the project region that source local products.

In **Figure 2**, we show the distribution of producers in Kentucky who have registered with Kentucky Proud program [6]. These producers sell at farmers markets, but some also sell products directly to consumers on their farm, through delivery, at roadside stands, to auctions, through Community Supported Agriculture (CSA), and to restaurants, grocery stores, and institutions. Our map makes no distinction between the market channels each farm uses.

Figure 2. Producers with Direct to Consumer Sales



This maps shows clustering of producers near larger population centers, especially along the I-75 corridor. Additionally, these producer locations closely match areas with historical tobacco production (see **Figure 3** on page 12). At the same time, there are a few clusters of producers in

the furthest southeastern counties, including Pike, Perry, and Letcher. In our discussion with Extension agents, we were told that 95% of the producers in Pike County have been selling to farmers markets (and other markets) for 5 years or less. This observation suggests that there is an emerging group of market-oriented producers in the areas of the project region that had less historical experience with agriculture.

However, two more established producers in the region, when interviewed, noted that farmers markets in general, but especially within this region, do not provide a high enough volume of sales to keep a farm economically viable if producers only focus on this market channel. At the same time, one of the farmers found contacts for institutional buyers through relationships made at a local farmers market. As such, these venues can serve an important marketing and branding role.

Finally, residents supplement their food purchases with garden grown produce, game meat, and informal exchanges according to resident focus groups. Many resource limited residents also receive produce and staples from food banks, faith organizations, and other charitable organizations.

Local Food in Southeastern Kentucky

In discussions with retailer managers, residents, farmers, farmers market managers, Extension agents, and processors, we can confidently say that buyers, retailers, and residents like the idea of locally- or Kentucky-produced items in their food system. Some (five out of eleven) store managers said that offering local foods is important for their store's image with its customers. This position was reiterated by managers at the chain/ownership level (nine out of eleven), though most of these managers (seven of nine) do not have active purchasing relations with farmers in eastern KY.

We need to distinguish, however, between local food as a local social phenomenon and local food as a market phenomenon. To many people, local food is something ingrained in many livelihood strategies. As mentioned above, residents in focus groups note a long history of family gardens to supplement their purchases. Pikeville is the location for an annual spring seed swap that draws producers and gardeners from the region – including the surrounding states [10]. Additionally, hunting and processing of game are activities that provide critical food resources, but which are not generally considered part of a 'local food system'. In many ways, local food is an integral element of Eastern Kentucky, but in a way that has not entered into formal market exchanges as we discuss in our retail findings.

This study attempts to find potential entry points into a more market-oriented, scalable local food economy. As such, it is critical to expand the geographical boundaries of what a local market might be for producers in eastern Kentucky. For most distributors and wholesalers that we spoke with, their definition of local food generally corresponds to their delivery footprint which extends beyond state boundaries (seven out of eleven respondents). In this vein, local food opportunities for producers in Kentucky are regional opportunities. The potential exists to enter distribution networks that reach surrounding states as well as some of the largest metropolitan markets east of the Rocky Mountains if critical production, distribution, and labor issues are addressed. The barriers to expansion are currently imposing as 1) there are no distributors in the region that are currently transporting Eastern Kentucky produce to larger retail distribution hubs or to stores within the region and 2) the large majority of producers in the region are not at wholesale production levels. Our goal is to outline these resources and barriers so that others might consider strategies to develop a more diverse, market-oriented local food economy.

Production Potential

The eastern Kentucky region has challenges in terms of production potential. Mountainous terrain, soils compacted from surface mining, and property boundaries potentially limit lands which are suitable for horticultural production. Meat and produce have different production requirements, so different locations may be more suitable for production of varied items. As such, discussions on potential should differentiate between meats and produce.

Analysis of the potential for meats from ruminants (cattle, sheep, goats) needs to be separated from chickens and hogs because of the type of feed they require. Most of the area's farmland is pasture, and much of that may be underutilized. This underutilized pastureland creates a technical opportunity for cattle/beef production. As shown in Table 1, in 2016, there were 118,000 acres of hay land in the 21 counties, ranging from 27,000 acres in Laurel County to negligible amounts in six of the counties. The region's total cattle population was 77,000 - 39,000 of them being beef cows. Laurel County, again with the most, had 20,000 cattle and 12,000 beef cows. Four of the counties had fewer than 500 head. While these numbers are low for commercial cattle operations, if carried to slaughter weight, there could be a large supply of beef (meat). An estimate, based on normal calving, beef yields etc. is that the region's beef herd could physically produce about 1.6 million pounds of beef per year. At the average per capita consumption of 56 pounds, that would be enough for 28,000 people. Of course, to do that would take a revolution in the whole system, but it illustrates that land acreage and cattle numbers are not the primary constraints.

Production of hogs and chickens, the non-ruminant meat animals, requires either the importation of feedstuffs (like corn, soybean meal or complete rations), or development of feed production/processing capacity. Meat production potential also requires processing capacity. The

project region is served by at least four USDA inspected processors (in or adjacent to the study area). They are Appalachian Meats (Floyd Co.), Foothills Meats (McCreary Co.), the Chop Shop (Wolfe Co.), and Central Kentucky Meats (Casey Co.). The plants have the capacity to expand production, but not to be the region’s primary meat source.

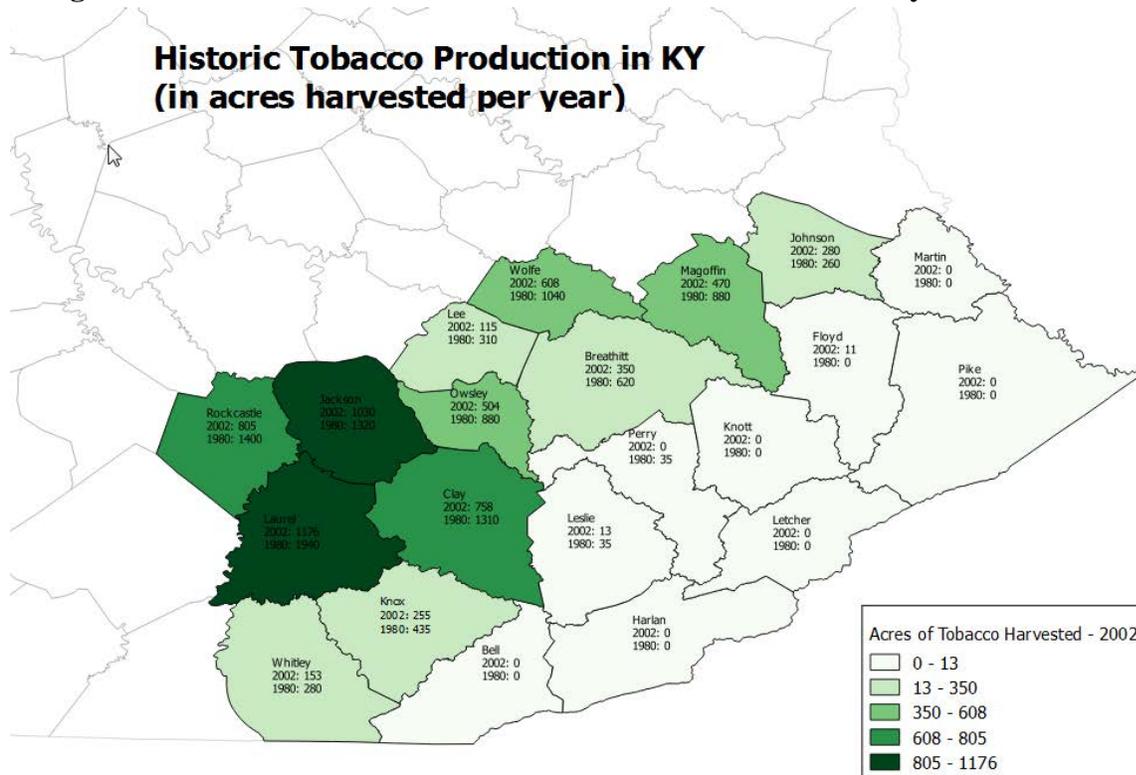
Table 1. Acres of Hay Land and Head of Cattle in Project Counties

	Acres of Hay Land	Number of All Cattle	Number of Beef Cows
Bell	1,200	600	400
Breathitt	3,250	800	500
Clay	4,700	2,500	D
Floyd	600	300	D
Harlan	**	200	D
Jackson	19,500	13,000	6,200
Johnson	2,900	1,700	D
Knott	**	600	400
Knox	8,900	2,700	1,800
Laurel	27,000	20,000	12,000
Lee	4,300	1,600	D
Leslie	**	100	D
Letcher	**	100	D
Magoffin	4,700	2,000	1,200
Martin	**	200	D
Owskey	4,250	1,600	1,000
Perry	**	2,000	D
Pike	900	800	400
Rockcastle	15,800	16,000	9,200
Whitley	13,100	8,100	4,600
Wolfe	6,700	2,200	1,600
Study Area total:	117,800	77,100	39,300
% of Kentucky	5.6%	3.6%	3.8%
Eastern/Mountain Region	299,000		
Kentucky	2.1 million acres	2.16 mill head	1.02 mill hd.

To understand the production potential of the region for produce, we used a few different methods. First, we observed past tobacco production acreage to estimate land which at one point supported a horticulture-type crop. Fruit and vegetable production requires soils of appropriate quality located on a reasonable slope and aspect to allow for production equipment and sunlight to reach the plants. Historical tobacco production, then, is a proxy for produce production potential due to its similar growing requirements. Like many vegetables, it requires seedling production and transplanting, pest management, nutrient management and extensive labor. In 1973, there were 9,220 acres of tobacco grown in the region, production increased to 10,745 in 1980, then fell to 6,528 in 2002 as interest in the tobacco enterprise declined. In the 2012 Census

of Agriculture, project counties had a total of 2,210 acres in production. Much of the land used for tobacco production 20 or more years ago likely has been reclaimed by forestland or transitioned to commodity crops such as corn or soybeans. As **Figure 3** shows, tobacco production was absent or severely limited in the furthest southeast counties of Kentucky. Rough terrain and the predominance of the coal industry undoubtedly contributed to the limited tobacco production. At the same time, there is enough acreage of suitable land for tobacco production in the region than was actually produced. The lack of historic production may indicate contemporary absence of infrastructure, technical know-how, and equipment conducive to wholesale-oriented agriculture. **Figure 2** (see page 8) seems to reflect this conclusion as Kentucky Proud producers are currently concentrated in areas with historic tobacco production. The county-level underlay to the map in **Figure 2** indicates census data on direct producer to consumer sales. Darker blue represents more sales. Most project counties are under \$50,000 in annual direct to consumer sales of farm items [11].

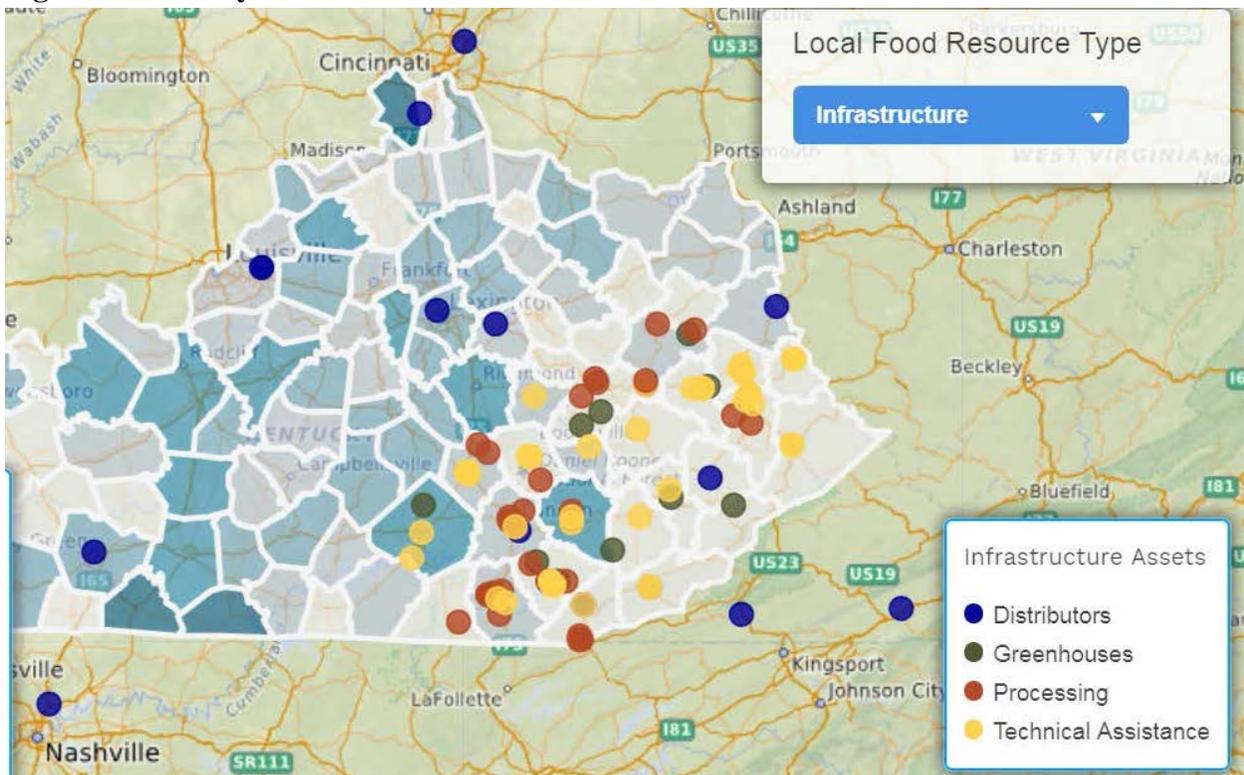
Figure 3. Historic Tobacco Production in Southeastern Kentucky



Additionally, **Figure 4** shows a distinct lack of processing and distribution infrastructure for meat and produce in the southeastern section of the project region. The path-dependent nature of these assets reflect the historic lack of agricultural activity in the region, a condition that remains a barrier to the creation and movement of agricultural products in and around the region.

Counties closer to central Kentucky, however, have more experience with tobacco. While production and distribution systems for produce are quite different than for tobacco, historic tobacco production in these counties may indicate an easier transition to horticulture if other issues such as infrastructure are addressed. For instance, most of the processing infrastructure that rings the outer edge of the project region is dedicated to meat or dairy processing – the exception being the Jackson Regional Food Center. This Center has the equipment and human resources need to do value-added processing, and is available on a subsidized cost. Other produce and value-added processors are much further afield [12]. Distributors, as noted in **Figure 4**, are also mostly located outside the project region. While this lack of infrastructural resources within the region do not directly limit production potential, they play a role in producers’ willingness to engage in production strategies geared toward wholesale markets.

Figure 4. Food System Infrastructure



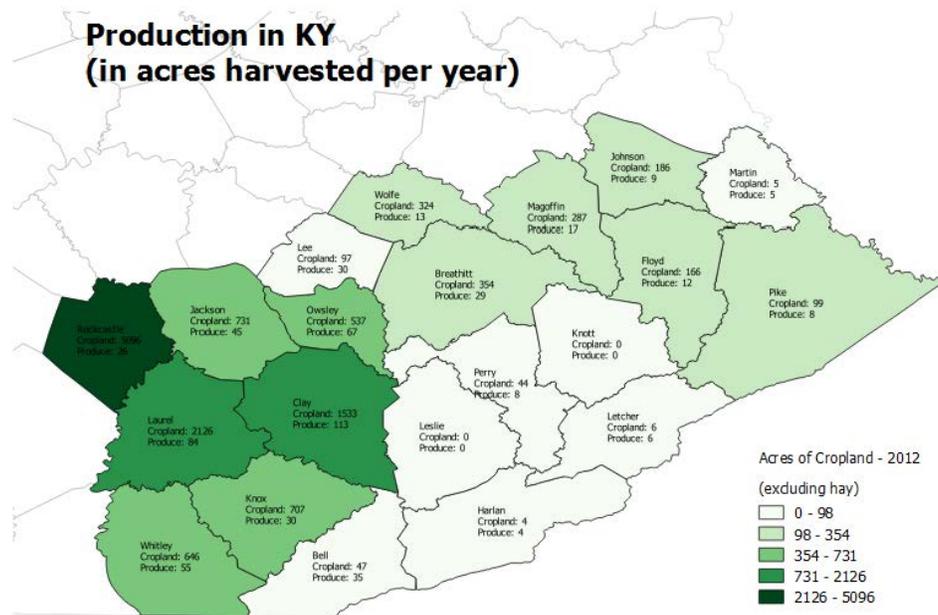
A second method for determining production capacity for produce is by examining current production in the region. Using data from the 2012 Census of Agriculture, we calculated the total area of cropland (excluding hay) harvested for each county (**Figure 5; Table 2**) [14]. These data included commodity crops such as soybeans and corn as well as vegetables and fruit. We also separated out the vegetable production to determine how much active produce production occurs in each county. Due to the census records data protocols, some counties appear to have no vegetable production. This lack of data may be explained by census rules - not disclosing acreage or sales if a county has so few farms that individual operators would be identifiable.

Additionally, many smaller producers may not be included in these calculations. In all, these small or non-disclosed areas indicate that there is little production or few producers currently operating in diversified horticulture for these areas.

Table 2. Acres Harvested by Commodity Type

County	Vegetables			Soy	Corn	Tobacco	Hay	Orchards	Total Cropland excluding hay	Total Crop Acreage
	Sweet Corn	Tomatoes								
BELL	35	5	2	-	12	-	1,160	18	47	1,207
BREATHITT	29	9	3	-	215	110	1,322	4	354	1,676
CLAY	113	55	8	-	849	571	3,773	4	1,533	5,306
FLOYD	12	4	2	-	154	-	484	-	166	650
HARLAN	4	1	-	-	-	-	-	58	4	4
JACKSON	45	13	8	-	444	242	17,001	17	731	17,732
JOHNSON	9	2	1	-	177	-	2,985	6	186	3,171
KNOTT	-	-	-	-	-	-	1,695	-	-	1,695
KNOX	30	14	3	-	677	-	6,690	-	707	7,397
LAUREL	84	41	8	262	1,526	254	22,579	43	2,126	24,705
LEE	30	5	4	-	67	-	3,416	-	97	3,513
LESLIE	-	-	-	-	-	-	-	-	-	-
LETCHER	6	-	-	-	-	-	181	-	6	187
MAGOFFIN	17	9	4	-	142	128	4,026	2	287	4,313
MARTIN	5	1	-	-	-	-	302	-	5	307
OWSLEY	67	31	6	-	156	314	2,694	4	537	3,231
PERRY	8	-	1	-	36	-	520	5	44	564
PIKE	8	-	-	-	91	-	1,250	16	99	1,349
ROCKCASTLE	26	-	3	2,001	2,539	530	19,207	19	5,096	24,303
WHITLEY	55	21	5	-	591	-	11,958	23	646	12,604
WOLFE	13	2	2	5	245	61	5,312	1	324	5,636
Total	596	213	60	2,268	7,921	2,210	106,555	220	12,995	119,550

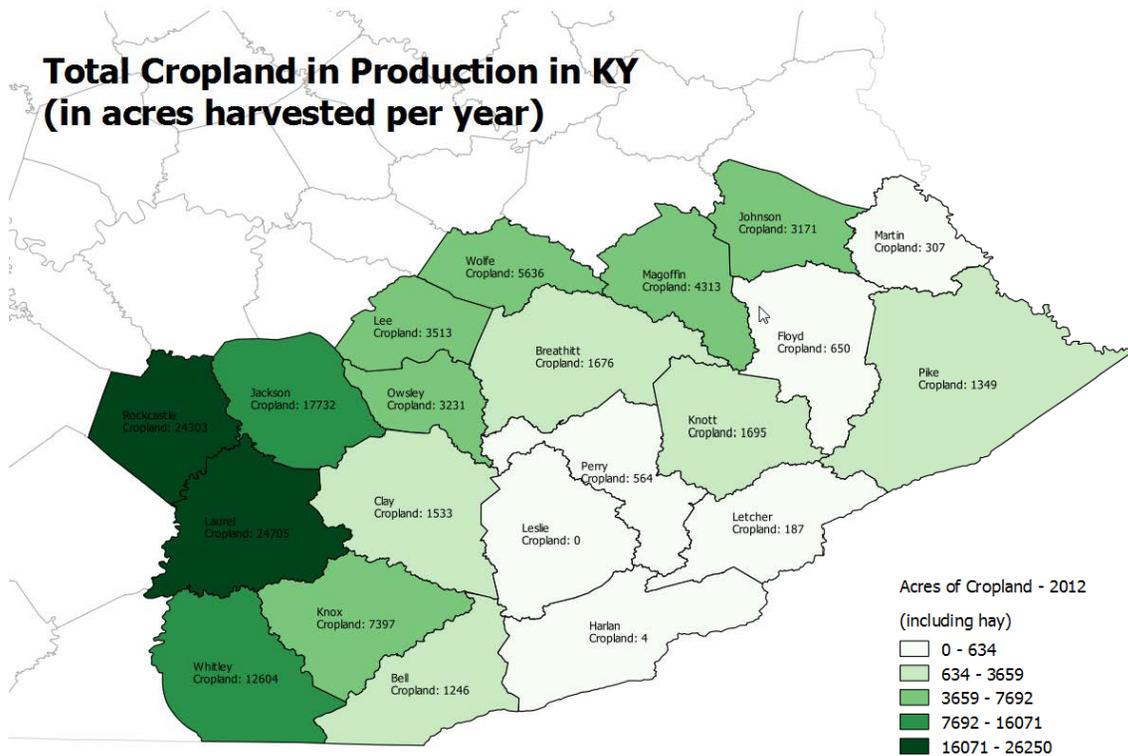
Figure 5. Active Production in Eastern Kentucky (Grain, Corn, Soy, Tobacco, Vegetables)



Nevertheless, we can see a few obvious trends. The most intense current production mirrors historical tobacco production and is concentrated in the southwestern section of the project region near the I-75 corridor. Overall, there is around 13,000 acres in active production of commodity crops and produce in the project region. About 2/3 of these acres are found in Clay, Laurel, and Rockcastle County. If only produce is considered, the census lists only 600 acres harvested in the region. Sweet corn is the most grown produce item in the region accounting for over 1/3 of the total produce acreage.

When hay production is considered, the production potential of produce increases dramatically though the pattern of production is similar to the previous figures (**Figure 6**). In all, there are 120,000 acres in active production in the project area. Of course hay production has fewer nutrient and soil limitations, so much of this area is likely unusable for horticulture. At the same time, the existence of hay is associated with capital investments in farming equipment. These resources could be transitioned to different types of production if there were suitable incentives for producers to get involved in produce market channels.

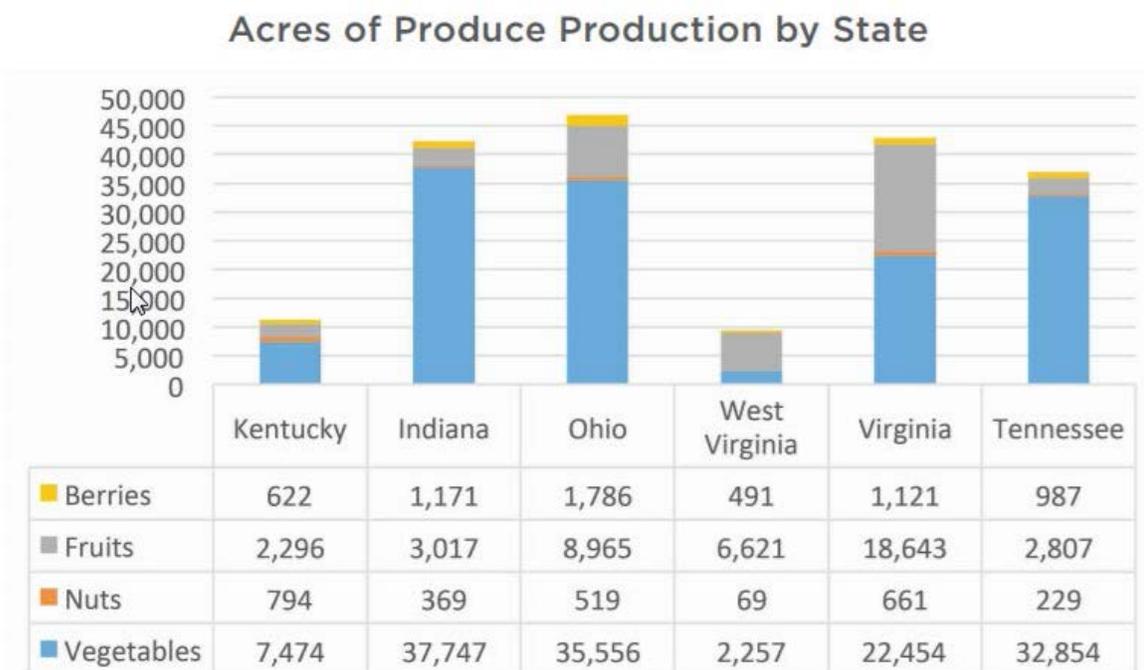
Figure 6. Active Production Including Hay



If only five percent of the land in hay is made accessible and suitable for produce and all of the commodity crop area transitioned to diversified horticulture, the growing potential of the region would increase by forty percent. Under this estimate, eastern Kentucky would have ~18,000

acres of potential horticulture production. Obviously this would require producers to engage in a wholesale transition of their productive land away from hay, commodity crops and other uses – which is unlikely. When this acreage potential is put in perspective, however, it compares favorably to the current production of many states that have thriving wholesale produce production industries. For instance, the Commonwealth of Virginia has around 23,000 acres in vegetable production and Kentucky has 7,500 acres total (**Figure 7**). So if only five percent of the land currently involved in commodity and hay production were to transition to produce, this would represent ~5,000 acres of produce production in eastern Kentucky. This would nearly double the Commonwealth of Kentucky’s current produce acreage.

Figure 7. Produce Production Acreage by State⁴



In theory, eastern Kentucky is not limited by the lack of arable land to develop a thriving wholesale produce industry. For example, one acre of tomato production is expected to yield around 1,500 25-pound boxes. Bell peppers yield a similar amount on one acre. Green beans can be expected to yield 300 30-pound bushels per acre [14]. According to one distributor, in areas where there are existing wholesale distribution routes, a wholesale buyer might require one pallet (roughly 50 boxes) of produce to justify transportation expenditures. This could be accomplished by producers - those who have the required labor, infrastructure, and technical skill, on a few acres of land.

⁴ Figure used with permission from the Food Connection [12].

In areas without existing distribution routes, a wholesale buyer would require enough produce to fill up a whole truck. Depending on the size of the truck, this would require eight to twenty-two pallets. To achieve this scale, a producer would need to produce one type of produce on multiple acres, or find ways to aggregate similar quality products. If stores in the area are willing to buy from producers at the back door of their store, then the producer would require less acreage per crop. Individual stores, depending on scale, require fewer boxes per week than a distribution center. For instance, Food City stores generally sell around 25 30-pound boxes of half runner beans per week when they are in season. However, at peak production, stores will sell up to 100 boxes. Producers would not be expected to meet the entire amount of supply. As each distributor and retail chain has a different set of volume expectations, the numbers presented above are just an example. What these data tell us is that there are potential market channels for a variety of production scales – if distribution (and labor, technical expertise, and capital) issues are addressed.

While the number of acres devoted to produce production in the 21 county study area currently is small, land area and soil quality are not limiting constraints. There have been over 10,000 acres in tobacco production in the region – more production than is currently in produce across the commonwealth. In other words, there has been enough land in the project area suitable for produce to equal all of the land used for produce in the state. While, as we've noted, there are many obstacles to growing vegetables in the region, region-wide land availability is not one of them (though it may be in individual counties). Finding suitable and productive cropland is a complicated issue, but the bottom line is that land itself is not currently the primary limitation.⁵

Some land that has been strip-mined and has had many years of reclamation may be suitable for horticultural production if soil compaction and hydrology issues are addressed properly. These reclaimed mine lands also hold potential for livestock grazing if suitable fodder types are carefully selected to work with underlying soil limitations. To be productive in horticulture crops, these reclaimed lands probably will require major infrastructure investments (e.g. greenhouses, irrigation systems, soil amendments).

The Southeast Kentucky Retail Produce Market

Understanding producer opportunities in agriculture requires an examination of how food flows into the region, and how receptive distributors are to taking Kentucky produce and meat. As mentioned above, the grocery stores in the region are predominantly Walmart, Food City, Save-A-Lot, and IGAs. While some of the IGAs are independent, 10 are owned by Cox Foods, and 2 are owned by Houchens. Houchens also operates many of the Save-A-Lot stores in Eastern

⁵ Our analysis focused on the physical aspects of produce-capable land. It should be noted that access to land is often limited due to complicated ownership and deed structure.

Kentucky. Grocery stores in the region are supplied by both in-house and independent food distributors. Producer opportunities depend on which company is in charge of distribution.

Some companies are more receptive to or have distribution networks that facilitate local sourcing. Others have local food programs in other states, but not Kentucky. In general, Laurel Grocery, AWG (Associated Wholesale Grocers), and Crosset are the main distributors to IGAs. Food City, Save-A-Lot, and Walmart have their own distribution systems. We discuss the specifics of these distribution networks and their implications for taking on Kentucky-raised products.

Barriers to Local Food Sourcing

Store and distribution center managers were asked in telephone interviews about their customers' interest in locally produced foods. Every one of those interviewed described the interest in and demand for locally produced produce as large, important for store sales and image, and getting larger. In an area noted for its unhealthy diets, several grocery managers said the demand for produce in general is growing dramatically. From managers' perspectives, the issue is not their ability to sell locally produced fruit and vegetables. The largest issue is related to supply – an issue complicated by grocer's requirements for cost, volume, logistics, quality, and food safety practices.

Supply

Buyers cited volume as a critical consideration and barrier. A few stores have policies allowing managers to buy directly from farmers. While these stores, mostly IGAs and independent grocers, purchase relatively small volumes, they still expect consistency of supply over the growing season. "Back door" purchases are not a very common purchasing method, even though farmers like to have that option. Retailers prefer that farmers grow enough volume to supply distribution centers. This method preserves and uses their logistics systems.



**Food City, Pikeville, Ky. Store Ad
(week of August 15, 2017)**

However, individual IGA, Save-A-Lot, Food City stores, and specialty stores mentioned that they will carry local produce from time to time. These options really depend on the produce or store manager to create relationships with a local farmer and to clear these arrangements with the corporate office. With direct store purchases, a farmer bypasses grading and inspection protocols that are provided by the distribution centers. An interviewee at Food City mentioned that corporate level decision-makers are hesitant about back door purchases because they would rely on store-level judgments.

If a farmer meets a certain supply and quality threshold over a specific duration of time (generally a few boxes twice a week for at least a month), the manager can then decide whether to substitute warehouse purchases with the local option for products such as tomatoes or string beans. Unfortunately, local producers generally reach peak supply at the same time as other producers across the country. This market saturation may depress the prices for local produce, since buyers generally use terminal wholesale prices as a benchmark for local. Producers should be aware of this retail price benchmarking strategy since stores will generally offer less than they could receive at a farmers market or a produce auction. If a producer is planning for wholesale production and at a larger scale (at least 1 acre per vegetable type), then these prices may be more palatable (see pricing section on page 25).

Three IGA managers, who had been interviewed, and who stocked local products, noted that these items sell rather quickly since customers may know the farmer or his/her family. This personal connection can be an important motivator for getting customers in the door. Nevertheless, for most product categories, there simply are not enough producers in the region that produce a sufficient volume of supply to continuously serve an individual store, let alone a distribution center. Additionally, direct sales to stores may provide a source of sales for individual farmers, but is somewhat limited as a regional economic development strategy.

Food Safety Requirements

For producers to reach potential retail market opportunities, they would need to reach wholesale levels of production for certain crops – at least one acre per produce variety, depending on the existence of willing buyers and distribution systems. At the same time, these crops are usually required to be audited for food safety by a third party GAP (Good Agricultural Practices) certifier to access this market. In a GAP or other third party audit, growers hire a firm to examine their records and conduct audits of in-field and packing house practices to ensure that foods will be safe and free of any contamination. Buyers also expect the farms to carry liability insurance usually in the \$1 to \$5 million range. This combination of standards, however, is not universal. Crosset and Piazza Produce both require GAP audits. Crosset, however, doesn't have a specific insurance requirement. Laurel and AWG do.

Given the relatively small scale at which most Eastern Kentucky farmers produce, GAP audits are rather costly for producers, especially those who do not have much experience producing for wholesalers, brokers, or distributors. The initial cost of the inspection can be at least \$1,000 – not including investments needed to pass the audit [3]. Yet to get into a distribution network in the first place, producers must have the GAP (or other) certification. To get around this catch-22, producers might consider starting small scale on a diverse set of items and eventually scaling up in particularly reliable crops that are in demand by stores/distributors. In the process of scaling up, the producer seeks an audit for a few crops and finds a willing buyer. In the first year or two, the producer would benefit from the existence of a “backup market” - such as an auction or alternative buyer or sales venue (e.g. farmers market, food bank, processing facility, retail, etc.) to quickly offload produce if the wholesaler rejects that delivery. Based on discussions with producers around the state, this situation is not uncommon. Once GAP audits are secured, producers may build relationships with area distributors.

Locus of Decision Making

Retail operations have different degrees of autonomy in making local decisions on produce sourcing. Where decision-making occurs is a key consideration for a produce marketing strategy. While some store managers (especially in IGAs) have the freedom to purchase locally produced items, it is more common for those decisions to be made at the corporate level.

For example, Food City, which has stores in Kentucky, Virginia, and Tennessee, buys “local” for its distribution center. It back hauls fruit and vegetables from producers that are located near its stores. By adding these local products to its inventory in its distribution center, it finds transportation efficiencies and is able to market ‘local’ items. Additionally, this arrangement allows for farmers at a certain scale to quickly link in with existing distribution channels and to reach a regional market. This firm expects purchases in large lots, since the local product will be used to supply a minimum of three stores. To achieve this volume of production that would be several acres. At the same time, Food City will engage in back door purchases, as long as the store-level produce manager clears this with the corporate office. Inspection, grading, and pricing then fall to the store level.

Appalachian Harvest (AH), which distributes to Whole Foods, Harris-Teeter, and other retail chains in the East Coast and Appalachia, has a very small minimum volume required if a producer is willing to bring their produce to the distribution center in Duffield, Virginia for inspection and grading. If a producer meets a regular distribution truck along its route, AH requires one pallet of produce – approximately 50 boxes, bushels, or similar sized unit. If a producer, or producer group wants to create dedicated distribution route for AH, they would need to work with an existing distribution partner or develop a new route – which would require eight to twenty-two pallets per delivery.

With retail chains that prioritize corporate-level decision-making, plans are made during the winter regarding crop, variety, volume, timing, and price. Produce acquired through this system is offered to individual store produce managers on their regular price sheets and can be ordered just like produce from Florida, California or Mexico. There is a lot of potential for producers in this arrangement assuming they reach large scales of production (multiple acres per crop) even though the geographic definition of ‘local’ and the decisions to incorporate local producers into the supply chain are usually made at a central location, rather than at individual stores.

At the other end of the spectrum, IGA managers sometimes are able to work with individual producers to bring items into their stores. While this allows for local producers to create relationships with the store and provide food to their community, the volumes of produce accepted in this arrangement is limited. On the other hand, the non-Houchens IGAs we spoke with source their produce from Crosset or Laurel Grocery⁶. The former doesn’t really work with local farmers in Kentucky because they do not meet their supply and quality specifications. They do however have local food programs in Michigan, Ohio, North Carolina, South Carolina, and Georgia.

Houchens IGAs do buy products from producers in central Kentucky and use these items as substitutes that they would normally order from AWG, their main supplier for IGAs under their management umbrella. These local products are kept in a warehouse near their corporate headquarters and sent to stores that request local items. Houchens, while operating many IGAs around Kentucky, only operates two of the IGAs in the project region. They also operate many Save-A-Lots in the region. The rest of the IGAs have their own distribution networks that primarily source from Laurel and Crosset. In general, IGAs are a potential market channel for eastern Kentucky producers, but mostly in a direct sales arrangement. This could change, obviously, if producers reach a scale that allows Crosset to warehouse and distribute these items to a large variety of stores. In the near term, this scale seems unlikely – the Crosset representative gave an example of a 57 farm Amish collective in Pennsylvania that aggregated produce to a level suitable for wholesaling – but that remains a longer-term possibility.

A final, more complicated, decision-making locus involves Save-A-Lot. Save-A-Lot stores are individually franchised and are rarely permitted to source inventory from outside of their dedicated distribution networks and associated supply agreements. In southeastern Kentucky many of these stores are operated by Houchens (with corporate offices in Bowling Green), but there are still more independent franchisees. Regardless of franchise structure, a few Save-A-Lot stores had been working with local producers and distributors in the region. While this was working fine for a while, one interviewee explained that contractual relationships with

⁶ Laurel will sometimes act as Crosset’s distributor for eastern Kentucky IGAs. Sometimes it will act as a buyer from Crosset. Sometimes Crosset will distribute directly to an IGA.

warehouse and related corporate level decision-makers restricted the ability of individual stores to buy locally. They were encouraged to take more inventory from their warehouse. This diminished the ability for the local producers to access this market. In this situation, there is potential for stores to buy from Kentucky farmers directly – but more work is necessary to create arrangements where local purchases (at store or warehouse level) do not negatively impact the operations of warehouse and distribution managers.

Systems of Rebates and Side Payments

An extensive system of rebates and side payments is common in the commercial food system, but they are not transparent to outsiders. These payments may be described as volume or loyalty discounts. However, they are not transmitted as a net reduction in price. Instead, they are paid separately from the individual transaction. For example, in the food service industry contract partnerships are common between food providers such as Sodexo, Aramark, or Morrison and their suppliers. These contracts specify payments based on quantities or percentages of total purchases. The payments are paid to the corporations, and may be used as financial incentives/rewards to on-site managers. Similar arrangements are common in the retail grocery industry. Stores are rewarded with these volume payments/rebates based on the volume of individual store purchases from their supplier.

These side payments are an issue in local foods economies because they disguise the differences between “local” products and products distributed through the contract supplier. Also, based on anecdotal evidence, these payments may be used as bonuses to store/category managers for loyalty to specific suppliers. If so, they may suffer financially if they make purchases of locally produced products. The bottom line is that there is a hidden system of payments which distorts decision making and adds to the net price differences between local products and their competition.

Logistics

Logistical challenges currently limit the regional food economy in Eastern Kentucky. In general, distribution systems function in the following manner. Stores order a range of products. Products are delivered by different trucks from the distribution system depending on each item’s size and perishability. These trucks may come from their own distribution center or from an independent distributor. Stores may use multiple distributors and the distributors may work in partnership. For example, one distributor may receive the purchase order and then have a distributor fulfill the order, enhancing transportation efficiencies.

Grocers in the region are supplied by three independent wholesalers - Crosset, Laurel Grocery, and AWG. Food City, Save-A-Lot, and Wal-Mart have their own distribution warehouse systems. Additionally, there are a few other (variously scaled) distributors/brokers such as Appalachian Harvest, Houchens, Piazza Produce, and Creation Gardens that work with different food service providers and individual buyers. Brown Food Service (in Louisa) distributes to the food service sector (restaurants and institutions).

The retail/supplier relationships are somewhat flexible. For instance, Crosset and Laurel Grocery have cross-dock relationships and the former will sometimes use the latter as a distributor for deliveries to IGAs. Also, Appalachian Harvest will work to supply Food City with produce collected from farmers in the central Appalachian corridor – though this relationship is currently limited to Food City stores in Georgia. Finally, a smaller independent distributor has in the past worked with individual Save-A-Lot stores to source local produce. This flexibility is an important aspect to consider when attempting to find distribution sources for local produce and meat.

Franchise and company-owned stores (i.e. Save-A-Lot, Food City) are expected to buy from their own distribution system. In some situations, a rebate is returned to the store. The flexibility of this policy varies. Produce managers may find good quality, local produce at a competitive price and want to stock it in their stores. In some situations, this practice conflicts with company policy and can reduce the size of the store's rebate. In our interviews, we noted that both store brands have or are willing to work with local producers. A few Save-A-Lots carried eastern Kentucky produce until the company's warehouse managers encouraged stores to get the same products from their dedicated distribution system. To expand market opportunities for area producers, food system advocates could work with Save-A-Lot warehouse managers to find win-win solutions that incorporate local food in local stores while not affecting the warehouse's bottom-line. Finding ways to have this conversation with management is critical to accessing this market.

Food City will backhaul local produce from producers located near these stores to their distribution center and send it out to all of their stores (with a minimum scale of supplying enough for three stores). Additionally, Food City will engage in back door purchases if store and produce managers work with the corporate office and distribution center to arrange this relationship. These practices demonstrate that opportunities exist for producers that can reach a certain scale and quality, provided they can find favorable terms of exchange. Food City has offered contract prices, though it is unclear how common a practice this is with individual growers. Additionally, as mentioned, Food City has relationships with Appalachian Harvest.

Appalachian Harvest (AH) brokers produce from Central Appalachia to various store brands including Whole Foods, Harris Teeter, and Ingles. Currently, they are looking for ways to

include produce from eastern Kentucky in their distribution network (located in Duffield, VA), especially items like winter squash that have minimal storage requirements. To work with Appalachian Harvest, a producer would need to bring supplies to the distribution center for grading and inspection. There is no minimum volume requirement in this situation. If a producer can hook in with an existing wholesale distribution route, AH would require one pallet of produce to justify transportation expenditures. For something like squash, this would be around 50 50-pound cases or 2500 lbs. of squash per delivery. As producers can expect 450 cases of squash per acre, this type of arrangement would be possible if they can find an existing distributor [15]. For instance, in West Virginia, Crook Brothers specializes in local produce distribution and picks up produce from farmers from across the state and brings them to the Duffield facility. Eastern Kentucky has no comparable distributor for this type of arrangement.

Because of these supply, volume, and distribution limitations, relationships have been slow to manifest. AH notes that eastern Kentucky in general lacks cold storage infrastructure and a designated location for aggregating produce. To justify sending a truck to eastern Kentucky, they would need to have sufficient volume located in one place – eight to twenty-two pallets of produce per delivery. To achieve this scale, a producer would need to produce one type of produce on multiple acres, or find ways to aggregate similar quality products. At the same time, they do work with producers to develop their scalar capacity by first starting with products that have longer storage times with minimal infrastructure needs – such as hard squashes.

Developing a holding area or distribution partner in Kentucky that is within 100 miles from their Duffield, VA distribution center, would facilitate potential exchanges. Currently, they note that finding a good building for temperature and humidity control in Kentucky has been really difficult. At the same time, something as simple as an incubator or demo farm with dedicated storage areas might work with their model. Another option would be for existing distributors with local produce to create a distribution relationship. Other distributors that handle Kentucky produce, such as Piazza Produce/Papania's and Creation Gardens, have distribution systems that do not reach eastern Kentucky apart from some intermittent stops along interstate 75. Neither distributor has relationships with producers in eastern Kentucky, again because of production scale and existing distribution relationships.

IGA's produce aisles are primarily served by the Crosset Company and Laurel grocery. Crosset is located in Northern Kentucky and often works with Laurel, based in London, KY, to distribute produce that is sourced from across the country and international locations. As noted, Crosset has local food programs in other states, but not in Kentucky due to supply limitations. There are a few exceptions to these distribution relationships. The most notable is among Houchens IGAs, which source from their own warehouse and from AWG.

London, KY appears to be the most common distribution node for all distributors that pass through or enter eastern Kentucky. At the same time, in a focus group with producers in Pikeville, many respondents saw their city as having tremendous potential for reaching major US markets with their produce. One producer mentioned that their location is within eight hours of 2/3 of the US population. This idea was echoed by one of the main distributors. So despite eastern Kentucky's perceived isolation and current lack of distribution infrastructure, there is potential to develop relationships with distributors, wholesalers, and food service providers that reach far beyond the local region.

Pricing

For producers to effectively enter the wholesale market, they must work through complex price considerations to make sure that their potential earnings can more than cover their cost of production. Each buyer has different requirements for product quality and volume which influences the potential price producers can receive in each transaction. In general, however, wholesale buyers benchmark their prices using prices paid for produce at terminal markets such as Atlanta or Chicago. Producers are expected to be price competitive compared to global sources. While they are expected to come within one dollar per box of the market terminal price, specific prices per box are subject to negotiation between the producer and the buyer. As such, producers would benefit from paying attention to market price trends as well as their cost of production to make an informed decision on what price to negotiate.

However, many growers do not know their cost of production, nor are they familiar with the wholesale price reports⁷ that their potential customers use. There are two general types of pricing. The most simple is the current market, individual transaction price. This price is based on the overall market. Buyers may offer a premium over the base price for quality, "local," or other attributes. The alternative price system is a season price – a set price that applies through the whole growing season. This is a negotiated price, with the company representative and grower considering volume, season timing, specific crop varieties and even logistics in negotiating the price. In general, buyers want to offer a profitable price or else the farmers would be unable to be long-term suppliers, but they are also knowledgeable about other sources of supply.

Based on discussions with prominent wholesale buyers in the region, a few offer quasi-contract prices, including Appalachian Harvest and Food City. These contracts generally represent a range of possible prices given to the producer. These ranges are based on predictions of the low and high price of a particular crop based on market demand and supply at particular parts of the season. Other buyers have informal agreements - and the fulfillment depends on numerous

⁷ See www.uky.edu/ccd/pricereports for detailed information on price benchmarking for wholesale and farmers market sales [16].

contingent factors. These can be difficult for a producer to navigate. Generally, the prices given for local produce must be quite close to the terminal market price in each region. As such, there is no real “local premium” and producers must consider this price limitation when calculating their costs of production. However, when producers directly interact with local stores, these store managers will sometimes give 10-15% more for these local products than they would to a wholesaler because the local produce is in demand and this helps the image of the store. In a previous study by the UK Food Connection, researchers examined common price benchmarking strategies given to producers in Kentucky [12]. We use a similar approach in this study to understand wholesale benchmarking. As producers are generally offered prices similar to those offered on the global agricultural market, this study examined price reports from 1) terminal markets in Atlanta, Chicago, and St. Louis, 2) Kentucky Produce Auctions, and

Table 3. Average Price Per Pound – Wholesale Produce in Kentucky⁸

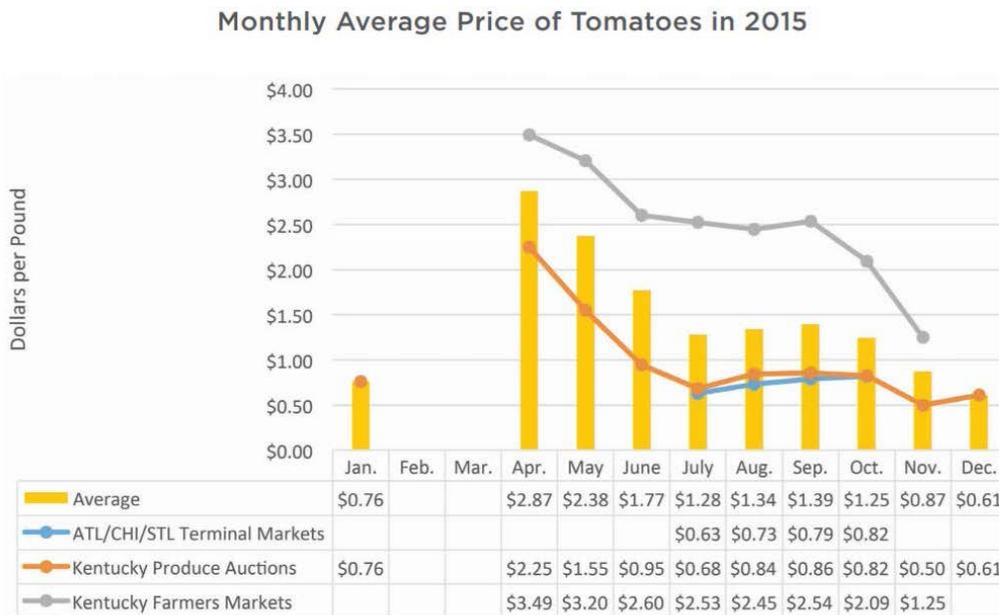
Average Price per Pound, 2015			
Crop	KY Produce Auctions (12 month)	KY Farmers Markets	ATL/CHI/STL Terminal Markets
Bell Peppers	\$0.55	\$1.91	\$0.51
Broccoli	\$0.84	\$2.44	\$0.74
Cantaloupes	\$0.54	\$1.32	\$0.61
Cucumbers	\$0.56	\$1.89	\$0.27
Green Beans	\$1.01	\$2.57	\$0.85
Onions	\$0.74	\$1.78	\$0.40
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

⁸ Figure used with permission from the Food Connection [12].

3) Kentucky farmers markets. The first two sources illustrate approximate prices farmers could expect to receive in a wholesaling arrangement and/or are a reference point for how producers might develop negotiating tactics with buyers. The farmers markets provide higher average prices, but lower sales volumes. The prices presented below in **Table 3** are an average over the year, so producers may receive high prices if their harvests avoid times of peak competition through season extension technologies. For instance, in **Figure 8** early season production of tomatoes garners much higher prices than during September and October. While seasonality and weather must be considered when examining price expectations, producers can reference data assembled by the Center for Crop Diversification to benchmark prices at particular times of the year [16].

As shown in **Table 3** and **Figures 8-10**, wholesale prices for different produce varieties are relatively similar at terminal markets and KY produce auctions. Onions and cucumbers are two notable exceptions where local produce auctions offer significantly higher prices on average. Sweet corn shows the opposite relationship, where the wholesale price from terminal markets is higher. While these prices change over time, the average price offers a benchmark for what a wholesale buyer might offer a Kentucky farmer that produces at a sufficient volume.

Figure 8. Average Tomato Prices at Different Market Channels in 2015⁹



⁹ Figures 8 and 9 used with permission from the Food Connection [12].

Figure 9. Average Bell Pepper Prices at Different Market Channels in 2015

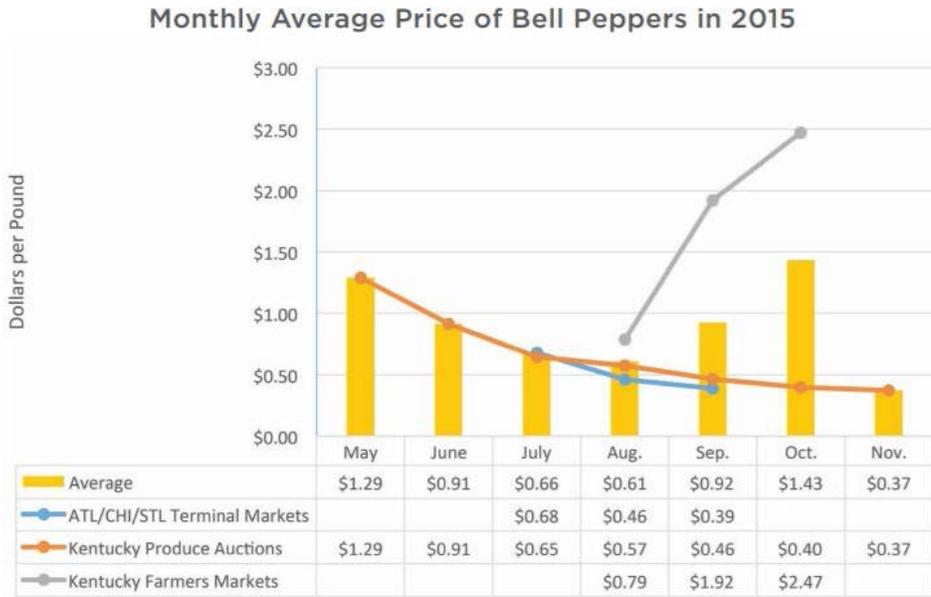
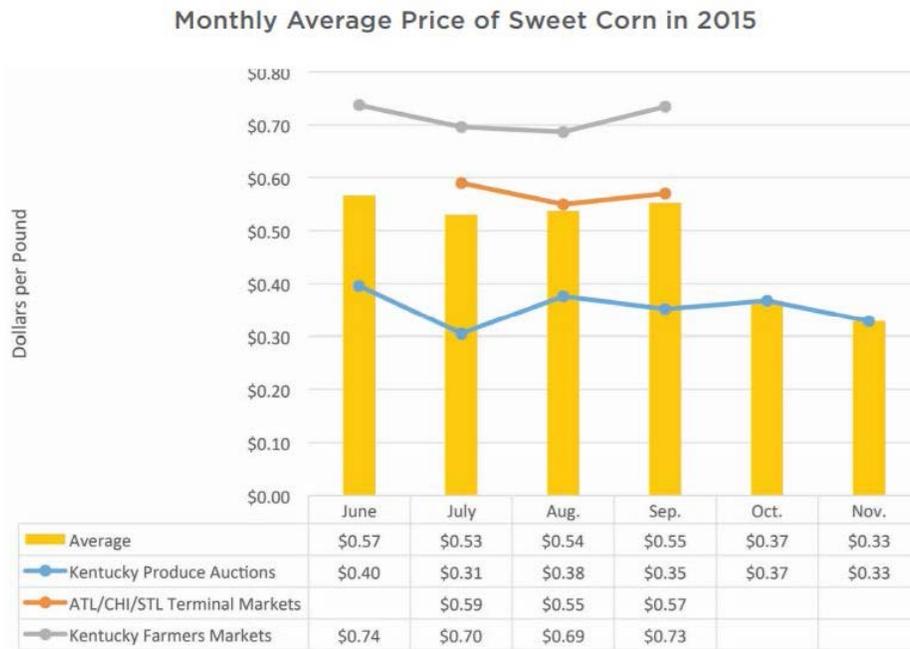


Figure 10. Average Sweet Corn Prices at Different Market Channels in 2015¹⁰



¹⁰ Figure used with permission from the Food Connection [12].

The next question is whether these average prices represent a reasonable return for a producer to produce these items at scale. To determine this, we used vegetable-specific budgets from the University of Kentucky, College of Agriculture, Food and Environment’s Center for Crop Diversification [15] to calculate the short- and long-run breakeven price per pound for tomatoes, sweet corn, and bell peppers. The short-run price was calculated by dividing the total variable costs per acre by the estimated production potential in pounds of produce per acre. The long-run price was calculated in the same way but included the total fixed costs. From these estimates, we generate a price per pound of produce that a producer would require in a wholesale relationship to cover the costs of production (see **Table 4**).

For tomatoes, a farmer could cover production costs if they produce 1,600 25 pound boxes of tomatoes per acre. At this rate of production, they would require a set price of \$0.25 per pound, or \$6.21 per box, to break even in the short run and \$0.26 per pound, or \$6.51 per box in the long run. As the 3-year average wholesale price for a 25 pound box of tomatoes is ~\$0.66 per pound [17], producers could expect that tomato production might be a reasonable wholesale endeavor assuming they have available labor and a willing buyer.

For green bell peppers, the breakeven prices are similar, assuming the production of 1,500 crates (1 and 1/9 bushel) per acre. Here they would require \$.24/lb. or \$5.91/crate and 0.25/lb. or \$6.20/crate to break even in the short- and long-run, respectively. The 3-year average wholesale price for bell peppers is \$0.45 so producers could achieve returns above the breakeven point [17].

Production for sweet corn is expected at 340 50 pound crates per acre. At this level, producers would need a price of \$0.14/lb or \$6.76/crate and \$0.16 and \$8.05/crate to meet short- and long-run costs. The average wholesale price of \$.51 per pound then would provide reasonable returns for producers [17].

One final example is winter squash. Each acre is estimated to produce 340 50-pound boxes. At this level, the price required by a producer to meet short-run costs is \$0.14 per pound or \$6.76 per box. For long-run costs, a producer would require \$8.05 per box or \$0.16 per pound. At an average wholesale price at \$0.49 per pound [17], producers could find a production strategy that would work in eastern Kentucky.

Table 4. Short- and Long-Run Price Requirements for Production of 1 Acre of Produce

	Long-Run				Short-Run				Production Specs	
	Total expenses	\$/lb	\$/unit		total variable cost	\$/lb	\$/unit		units	lbs
Bell Peppers	\$ 9,295.00	\$ 0.25	\$ 6.20		\$ 8,864.00	\$ 0.24	\$ 5.91		1500	25
Tomatoes	\$ 10,419.00	\$ 0.26	\$ 6.51		\$ 9,941.00	\$ 0.25	\$ 6.21		1600	25
Sweet Corn	\$ 2,737.00	\$ 0.16	\$ 8.05		\$ 2,300.00	\$ 0.14	\$ 6.76		340	50

These calculations are examples based on average production and market expectations. These outcomes are not fixed and are contingent on machinery, soil, labor, and weather variations. As such, these calculations illustrate what steps a producer should take to understand the potential return for different items. Additionally, these examples provide a starting point for benchmarking prices. Again, most prices given to producers for wholesale crops must be negotiated with the buyer.

In these negotiations, producers should have an understanding of their costs of production, the prevailing market situation, the availability of capital and labor, and their experience with a particular crop. As noted throughout this section, Extension offers numerous resources to assist in decision-making. We recommend case-by-case investigation of these resources for any organization or producer considering the development of a wholesale strategy. Additionally, they should expect that no matter how close they adhere to buyer-specified quality standards, a buyer may reject part of the purchase due to different perceptions of quality.

If producers want higher prices for their produce, they might consider working with smaller market channels such as farmers markets or restaurants. As indicated in the figures above, the price per pound is relatively higher. These market channels have limited sales potential due to the smaller volume of produce that is likely to sell compared to a wholesale buyer. They also require a significant time investment to transport, arrange, and sell this small volume of items. Producers might also consider a CSA model which bundles a diverse array of produce into a box for a weekly direct-to-consumer delivery. This may allow producers to set the value of their produce prior to the season and to buffer the risk of certain crops either failing or having their wholesale price drop due to global market fluctuations. In general, CSAs cost between \$500 and \$700 in Kentucky and last around 22 weeks. Customers are generally given the produce equivalent of a 25 pound box of tomatoes (by volume, not weight) per week at a weekly price of around \$28 dollars [18]. The major drawbacks of this model are that 1) producers are expected to produce a large variety of produce (20-40 different items) over the course of the season, 2) it can be sometimes difficult to find a consumer base willing to make large payments up front for an unknown amount of produce, and 3) delivery locations can be spread out. These challenges are likely amplified in eastern Kentucky due to lower average incomes compared to the metro areas (primary markets for current KY CSAs), the distance between potential drop-off points, and consumer unfamiliarity with this purchasing model. At the same time, a CSA model with a lower cost might be a potential option for eastern KY consumers if it is paired with some form of incentive that further lowers the cost of the subscription.

In all of these cases, producers should consider having multiple market channels to spread out risk regarding price fluctuations set by the market, especially if they are engaging in wholesale production. Having a back-up market is critical as it can be difficult to predict whether a deliver

meets wholesale buyers' expectations. Finally, the strategy chosen by the producer should take into consideration costs of production.

Labor

Discussions with farmers, Extension agents, and distributors have identified labor as a critical barrier to reaching wholesale levels of production for many Kentucky farmers. H2A workers cost ~\$17 per hour at 30 hours per week and likely only become feasible once producers exceed 20 acres of active production. Producers must also guarantee 3 months of work to make this worthwhile for the workers to accept the assignment. We were told by one producer that local farm workers will not accept work at these rates or do not have the necessary training to maintain proper harvesting procedures. With labor limitations, producers find it difficult to get produce at a certain scale out of the field. Regarding post-harvest, there is also a lack of skilled labor for cleaning, grading, and packing produce. The immediate logistic issues, compounded with the lack of dedicated storage, aggregation, and distribution infrastructures, must be considered if food production is to become a viable enterprise. One distributor suggested that Cooperative Extension could provide needed training and programs to develop these labor capacities.

Locally Produced Meat Products

Context and Opportunities

The opportunities for local produced meats are somewhat limited compared to produce. There are two USDA inspected processors in the region - Appalachian Meats (Floyd Co.) and The Chop Shop (Wolfe Co.) and two more close by (Central Kentucky Meats in Casey Co. and Foothills Meats in McCreary/Wayne Co.) These operations, while small, have a comprehensive set of business operations. Except for Central Kentucky Meats, they have on-site retail shops and sell wholesale to local/regional accounts. They also provide custom processing – provide “fee-for-service” services (slaughter, cutting, packaging, freezing, etc.) for livestock farmers who want to do their own marketing.

There are significant obstacles on the meat side of local foods. There are three general marketing tracks – direct sale to consumers, farmers market sales and sales through the existing retail system. Direct sale to consumers is generally focused on bulk sales, such as a quarter of a beef or a whole pig or lamb. This is a very narrow market niche for at least three reasons. It requires the buyer to be somewhat knowledgeable about meat cuts; the consumer must have enough freezer space to manage a large quantity of meat; and, the initial cash outlay is large.

Farmers market sales is the second niche market. Livestock producers who sell meat items at farmers markets must handle several logistical challenges. Meat is very perishable and must be kept below 40 degrees or frozen. This can be a challenge at traditional open-air markets. In some cases, local public health officials have limited sales because of their interpretation of regulations. A second challenge confronting smaller volume sellers is the fixed cut mix in a carcass. The livestock seller must sell all the cuts, but consumer demand is rarely aligned with the mix of cuts in a carcass. During the winter, braising/stew cuts are often in higher demand, with grilling cuts getting the most interest in warm weather. Sellers often wind up with large inventories of the less popular cuts. Unless they find a way to manage this situation, it is impossible to be profitable. These challenges can be overcome, but most livestock producers do not have the skills or interest needed to dramatically expand this market segment.

The conventional retail meat market works well in efficiently providing large volumes of fresh meat to consumers. The existing pricing system encourages high volume sales of lower value cuts. The low prices of cuts like pork shoulders, chicken thighs, and ground beef keep these cuts from building up in inventory. The preferred cuts, like steaks and chops are rationed in the market with much higher prices – all balancing out supply (volume) and demand. Traditional grocery stores will only be a viable outlet if there are large volumes of similarly produced, local products.

Well-managed grass based beef production systems have been shown to produce beef at competitive prices and have the potential to utilize the large amount of pastureland and post-mined land in the region. Constraints include the production of high quality forages on the reclaimed land, security for animals in remote areas and sources of water. When the cost of processing is added in, costs will be somewhat over commodity products, but can still be sold to customers in select market niches.

The cost of production for hogs and slaughter cattle in the S.E. Kentucky region is high, due to low volumes and high input costs, especially grains and other feed supplements. The traditional, large volume feedlot and confinement type operations are located near high volume grain production areas and close to processing plants. Similar to farm-level animal producers, meat processors' cost of production is high because of low economies of scale, their need to have all of the same food safety equipment and protocols as operations 100 times as large, and the low value of animal processing by-products. Because the meat produced in the region is expensive, most profitable local meat sales have come from sales of higher valued products and targeted to the small segment of higher income consumers.

To capture more of the large volume meat demand segment, one processor reported that he focuses on the “more affordable cuts” like pork sausage and ground beef in recognition that his consumers' incomes are limited. Processed pork items were noted for having consumer

potential, but this is because the products, while processed locally, are often made with commodity trimmings bought on the wholesale market.

Demand for Kentucky-Raised Meat

Despite the current lack of production and distribution capacity for local meats, processors and retail buyers do have interest in local sourcing. One processor/storefront, though small, has seen an increase over the past six years of customers who are shopping there because they offer local meats. More importantly, these customers range in income. They have some higher income customers from Pikeville and Lexington, but they have seen one of the largest increases in sales has been among local EBT customers. The latter group is interested in getting better quality meat with their benefits. In addition to on-site sales, this processor has created some arrangements with diverse retailers – from one large national company to an IGA and smaller grocer.

This processor is interested in expanding into wholesale and retail accounts. One barrier to expansion is the availability of local supply of an appropriate quality livestock. A larger barrier, however, is the lack of necessary time to build the relationships with buyers. So the potential of local meats in the retail market is not settled. In this local processor's case, the supply chain is built in a rather piecemeal, case-by-case basis. Ideally, generating an arrangement with a food wholesale for retailers and others might facilitate further expansion – though most processors are not at this scale. Additionally, from retailers' perspectives, especially independent grocery managers, not many customers are requesting local meats (though some are) and current sources of meat in Eastern Kentucky are too expensive for the customer once processed and retailed. Again, this is due in part to the scale at which current processors in Eastern Kentucky are operating, which is related to the overall supply of meat in the region. These retailers also mention that many customers simply go directly to the storefronts of these local meat processors to get a better price. Obviously, this direct meat sales arrangement is only conducive in areas near the meat processors, but it does speak to the higher relative cost of locally processed meats.

However, if we consider the potential local market of Eastern Kentucky-produced meat to include places such as Lexington, Louisville, and Knoxville, producers (existing and potential) may benefit from the establishment of distribution systems that cater toward locally raised products, or which bring these products to a distributor that has a wider regional footprint. Currently, most of the independent retail operations work with very few distributors – namely Laurel Grocery (London, KY) for meat. As the other main retail outlet in Eastern Kentucky, Food City has a relationship with local producers in their region, though as of yet, not in Eastern Kentucky. In their network, they will backhaul produce from producers near their stores and take it to their main warehouse in Abingdon. Any products brought into their warehouse will be distributed to the surrounding areas. As such, local processors or meat distributors in Kentucky

might consider developing business relationships with the corporate office depending on the price, quality, logistics, and inventory requirements of the latter. In general, retailers are reluctant to give details into the specifics of these requirements other than to say that details are negotiated with the supplier based on the price and standards of their existing suppliers (i.e. the market).

Retail Profiles

In this section, we detail the specific buying and distribution conditions different retail chains have for working with producers. These observations are based on conversations with personnel at each chain at corporate and store levels. It should be noted that these conditions may be open to interpretation and do change over time.

Food City – This chain operates over 50 stores across Kentucky, Tennessee, Virginia, and Georgia. Decision-making regarding food sourcing is at the corporate level. Store managers were unwilling to discuss sourcing decisions in conversations and often deferred to corporate level. Food City requires producers to have GAP certification and at least \$1 million in liability insurance. The company negotiates an annual price with producers for a certain product during January and February of each year.

Local food is an important part of the store image. Food City has a history of working with local producers in areas within their distribution footprint. They have been buying local for 15 years with an average of \$6 million in sales of farm products from Tennessee, Virginia, and Georgia. Currently, Kentucky products make a very small portion of these sales and are limited to producer sales to individual stores.

If producers or aggregators meet their volume and quality specifications and are located near one of their stores, trucks will backhaul products to the main distribution center in Abingdon, VA. Stores are then able to order local products from their distribution center just as they would do with other inventory. Respondents noted a long list of growers wanting to sell to them.

Food City buyers have not found a distribution partner or producers at a required scale in Kentucky. As mentioned above, they note Kentucky's barriers include producer scale and the absence of a satellite distribution hub in eastern Kentucky. They require a volume that can be sent to at least 3 stores. If these barriers are addressed, product sourcing from Kentucky is possible, especially if a satellite hub within 100 miles of the main distribution center is created, or if a partner distributor is located.

IGA Stores - IGAs have more store-level control over decisions on where to source food. IGA stores are managed under “license” agreements. License holders use the IGA store and product brands, unlike the more restrictive franchise agreements for other retail brands. Franchise agreements often include supply agreements, requiring stores to order from specified distributors. Some eastern Kentucky IGA stores are currently sourcing local products, but most of this sourcing comes through direct sales. Local products generally are limited to vegetables such as tomatoes, green beans, potatoes, and onions. Some IGAs are independently owned, others are run by Cox Foods (Hindman, KY) or Houchens (Bowling Green, KY). Houchens purchases some inventory from farmers in central Kentucky and distributes these items to stores alongside inventory coming from AWG.

In some cases, produce managers will buy from smaller produce wholesalers such as Davis Produce (Paintsville), but not Piazza and Creation Gardens. The latter two businesses often buy from producers in Kentucky, but are not actively working with eastern Kentucky producers due to low supply. Additionally, their distribution networks are currently limited to the I-75 corridor. Other smaller wholesale buyers within the region similarly do not have active relationships with eastern Kentucky farmers. In general, IGA produce managers work with Crosset (Independence, KY) and Laurel Grocery (London, KY) to source a majority of their product. Laurel Grocery can act as a customer or distribution partner for Crosset with the former delivering products for the latter when some IGAs request it. Houchens IGAs, though limited in the project regions, work with AWG and their own distribution system.

Save-A Lot - Save-A-Lot has their own distribution network. The nearest center is in Winchester, KY. Stores source a majority of their products from these warehouses. While a few individual stores had developed a relationship with local producers, decision-makers from the distribution centers put pressure on store managers to increase purchasing from the warehouse. Nevertheless, Save-A-Lot has potential to be an outlet for local farmers if appropriate win-win scenarios can be developed and presented to distribution managers.

Farmers Markets – The number of and sales at the region’s farmers markets have been growing. Extension agents and market managers mention that many of these markets sell out quite early on market days, sometimes before 10 am. While counties have a wide range of market sizes and rules regarding how local food and the seller must be, markets tend to be popular social and food acquisition venues. The main issue is that overall supply is low. There are not enough producers selling regularly at the markets to meet the overall demand. Two market managers expressed concern that adding SNAP card readers at markets will further stress their ability to provide adequate supply of produce, fruit, and meat to market visitors. This observation echoes conversations with producers.

Two experienced farmers in the region, however, noted that selling through county farmers markets in the project region is not sufficient to make a farm financially viable. They felt that it wasn't worth the time to set up and sit around since the overall customer demand is limited and most customers are unwilling to pay a premium for better products. At the same time, they did still find value in these markets as areas for developing relationships with restaurants, chefs, and personnel from institutions. These relationships sometimes turn into more lucrative sales relationships.

While production for farmers markets may not match well with wholesale production for retail, many producers in the region are newer to farming for monetary exchange. In other words, many producers previously would have used gardens to supplement their food purchases. Some are now experimenting with production as an economic enterprise and scaling up. Other individuals had previously farmed tobacco – which had a simpler distribution and pricing system than diversified produce or meat. As such, many farmers in the region are operating at a smaller scale and trying to figure out ways to get into the market and to expand production (often in the future) for wholesale markets.

Farmers markets are an important venue for testing production methods, understanding the consumer base and for developing business and marketing strategies. Additionally, farmers markets may also provide a venue for producers to develop relationships that may lead to the formation of aggregation strategies or to advocate for developing infrastructure for aggregation, distribution, or processing. Finally, by actively participating in farmers markets, producers might create relationships with buyers in restaurants or other venues that could lead to other distribution and marketing opportunities.

Roadside Stands and Markets – Currently, sellers at generic roadside stands are not offering many local products. Most of their products come from auctions or other sources grown outside of Kentucky. At the same time, these roadside markets are a popular source of produce for area residents and move a decent volume of produce. Producers in the counties with roadside produce stands may consider marketing their produce to these roadside sellers, or establishing a semi-regular presence along well-trafficked routes.

An exception to this situation is the Kentucky Farm Bureau Certified Roadside Farm Market. This program is designed to help farmers market their produce, meat, plants and value-added products to Kentucky consumers. For an annual fee, farmers get access to insurance and promotion. There are six KFB Certified Roadside Markets in the study area, three of which are orchards [19].

The Institutional Food Market Situation

Institutions are a unique part of the retail food system. While many follow rigid procedures imposed by regulation (e.g. some school cafeterias), many have the flexibility to work with local farmers. They may have an interest in improving food quality while supporting their local communities. Since institutions have the potential to be significant buyers in the region, and may pave the way for organizational change, we felt it was important to investigate this market segment. The goals of this part of the study were 1) to discover the capacity institutions have in procuring local food, 2) identify the barriers they face, and 3) identify their purchase requirements.

Data from interviews of institutional food service managers (representing schools, state parks, hospitals, restaurants) confirmed that product quality, consistency of production, and a simplified procurement process were the most important requirements the locally produced foods had to meet for them to purchase. However, just because these requirements are met does not assure sales. There may be other institutional constraints, the timing might be wrong, or the price may not fit the budget.

Institutional capacity is also an issue. Working out the details and managing the procurement process takes personnel time – and was a limiting factor with some organizations. We also found that the identity of local sources sometimes were not widely promoted. On further investigation, we learned that because there are so few markets, some farmers preferred to keep a low profile rather than encourage other farmers to target their specific markets. Another reason some institutional buyers keep a low profile is that they are stretching organizational policies and want to avoid drawing attention to their practices.

Findings, Implications and Strategies – Produce

Data collected from interviews indicate that there is a widespread demand for local produce in retail, institutional, and direct markets. Each of the retail chains (excluding superstores) has a history of, or potential interest, in offering local products. Managers told us that their customers increasingly ask for local products. As the grocery chains work with regional and national distribution networks, producers have the potential to tap a market that encompasses at least half of the U.S. population. Meeting the needs of retailers serving the eastern Kentucky regional market will prepare them for the larger and more rewarding move into the eastern US regional market.

Currently, many production and distribution barriers make developing a local/regional food economy a **potential** opportunity. To access this potential, yet unrealized market, local producers need to meet critical supply, quality, and relational thresholds. It is critical that producers scale up production levels to provide consistent supply of a specific item, even if they are only working with one independent grocery store.

Additionally, producers need to be cost competitive, not just with retail chains and wholesalers, but also with institutions and the region's farmers markets. With increased efficiencies from increased production scale, some of this cost competitiveness will come with experience. Cooperative Extension, universities, and others are critical players in providing training to producers in production and marketing to different market channels and at varying scales.

If producers are interested in retail markets or institutional markets like education and medical dining services, they generally need to go through third party food safety audits that assure a farm has proper production, harvesting, and storage protocols developed. As these are expensive endeavors, more support from food system advocates, including continuation of the GAP audit cost share program, might develop the regional capacity for producers to navigate the logistical and financial challenges of these audits. Finally, for producers to access the distribution systems of retail markets and other food service providers, they might benefit from the investment in cold chain storage facilities, aggregation points, and other infrastructure for maintaining the efficacy of produce during and after harvest.

We are not necessarily suggesting the development of a food hub. Rather, based on conversations with actors in the food system, we are confident that producers would benefit from the identification of locations and/or buildings that could hold produce in the right conditions for distribution (one of the many food hub services). By having this warehousing resource, regional producers would smooth out the logistic barrier for retail distributors and wholesalers, improving access to local foods.

An added option is for a local entrepreneur, farmer, or organization to develop a distribution structure for local products. While the margins in this very competitive business are very thin, the economies to do this on a small scale may add substantial value and make this a viable business. Alternatively, the existing distributors may be able to adjust their practices to provide these essential marketing services, but will need to be confident that a critical mass of meat and/or produce can be moved.

Because most of the region's operations are currently operating on a small scale, Extension agents and other economic development personnel should direct these producers to farmers markets and other direct markets. These markets will give producers a chance to see which fruits and vegetables they are best at cultivating as well as to develop marketing and business

strategies. They may be able to learn about consumer tastes and from other farmers' strategies. While diversified production may be a good experiment to see what products are most in demand and cultivable in that farmer's location, eventually producers may consider scaling up a particular set of crops to reach wholesale markets. Farmers markets can be a gateway to larger production volumes and access to other markets.

Relationship building, with individual grocery stores, should be a high priority strategy for farmers transitioning to larger scale. Regional food coordinators can be key facilitators, brokering deals and serving as neutral parties. They can build an understanding of the production requirements for wholesale scale, identify other key terms of trade, including how to achieve GAP certification. Producers and advocates can identify retailers doing individual store "back door" purchases, document these relationships and prepare profiles of their produce needs and purchasing requirements. This initial market engagement with IGAs, specialty stores, or even individual chain retail stores may help farmers understand pricing and terms-of-trade negotiation.

Producers already at a larger scale might reach out to Food City or individual distributors to see if they might enter into these larger supply chains. For this approach to work, producers may benefit from having a regional representative ("local foods coordinator") explore different retail chains' logistical, quality, supply, and inventory needs in more detail. This representative may also work with corporate and warehouse managers of distributors and chains such as Save-A-Lot to develop strategies for integrating products into this system in a way that is beneficial to all parties. Again, to facilitate these exchanges, the project region may benefit from investment in cooling equipment such as field coolers and more centralized storage/aggregation locations to meet GAP and quantity requirements.

Cooperative Extension, economic development personnel, and other regional food technical supporters have an important role in creating market opportunities. Producers can benefit from continued production training in technical aspects of production, marketing, and business management. For scale to increase sustainably, producers need to know how to select products with high market potential, understand their costs of production, and how to identify cost reducing strategies. Farmer trainings are critical to help move smaller-scale producers into larger volume markets. Production is not at a critical mass for reaching these markets – so any food-based economic development strategy must start by simultaneously addressing market access and production capacity.

Finally, producers will benefit from expanding their definition of "local". Farmers in other states are selling into our Kentucky markets. Kentucky farmers should think about doing the same to them. Eastern Kentucky is surrounded by many large markets within an eight hour drive. The ability to reach large populations quickly is an untapped opportunity. By taking a regional approach to sales, whether this is an Appalachian or Southeastern regional marketing

designation, producers could conceivably market their products as “local” in Ohio, Virginia, North Carolina, Tennessee, and Georgia. These states also correspond to the distribution networks of many retailers, some of whom may backhaul or distribute Kentucky products throughout these networks.

Investments to support these strategies need to be made in personnel. Expertise in the technical aspects of production exists (Cooperative Extension, Grow Appalachia, etc.), but is weak in marketing. Advocates are good organizers and supporters, but there is a lack of the expertise needed to negotiate opportunities with the retail and institutional business. The cost-share for GAP audits needs to be continued. And, funds must be made available for equipment investments (storage, cooling, market preparation) if farmers are to scale up and capture opportunities.

Findings, Implications and Strategies - Meats

Because of the supply dominance and cost advantage of conventionally produced meats, we recommend a diversified portfolio of meat initiatives.

While beef, and to a lesser extent, pork, have been produced in the region for generations, local meat products are not common in the commercial market. We have found significant production potential, but there are considerable roadblocks hindering the scaling up of meat production and widespread movement through the retail grocery system.

An important element of any strategy is to exploit the region’s advantages. The southeastern Kentucky region has a history of forage-based cattle production. While primarily focused on producing and exporting feeder calves, the region has a good base for forage-based finished cattle beef production. The tremendous improvement in grazing systems (especially rotational grazing and the supporting fencing and water supply technologies) have not been widely adopted. Use of these practices are essential to economical production of high quality beef. There has been some pork production as well. It may be possible to transition the traditional hog system to specialty/ heritage breed production to create a unique pork market niche.

The first set of recommended strategies is focused on expanding sales based on the existing base of production, processing and marketing – niche marketing.

Farmer-to-consumer direct sales (bulk and at farmers markets) can be expanded beyond its current scope. There are already farmers who keep some of their calves, feed them to slaughter weight, process them within the region, and sell bulk beef (sides, quarters, “packages of cuts”). Some of this beef does not meet expected quality standards, so farmers need training and

assistance in producing appropriate quality using the production systems demanded by their customers. Farmers also need training in meat merchandising - many do not know enough about cuts and packaging to be good promoters of their products. Processors – especially the meat cutters on the floor, need training as well.

While meat processors are essential to livestock producers' marketing partners, this role is typically ignored. Processors know much more about cutting and packaging than farmers. Farmers who want to sell meats directly to consumers can use processors' expertise to better satisfy customers.

The direct-to-household market niche can be expanded in spite of three significant obstacles - large initial expenditures, lack of knowledge about meat cuts/preparation, and freezer space. Educational programs targeted toward households can help potential buyers evaluate the economics from their household's situation and deal with related issues. Even though it costs \$350 to \$500 per head to process cattle, net cost to large beef eating households can be competitive with grocery store prices.

The cost of processing cattle at the region's meat processors is about \$300 to \$400 per head greater than in the mainline commercial meat processing plants. Factors include the value of the by-products (local plants pay for removal while commercial plants net about \$90 per steer/heifer) and volume based economies of scale. This is not going to change. The only ways to compete will be with lower on-farm production costs (which must be forage-based, not with large quantities of imported feedstuffs) and by adding value. Local meat products must be of high quality to capture the "local premium."

While they are on the periphery of the region, three of the four USDA inspected processors in the area have retail stores on their premises. These retail shops diversify the processing enterprise, enable the managers to explore a market different from processing and gives the operations direct consumer contact. However, they are only a tiny segment of meat retailing in the region. Managers report that they have learned that their customers are price/value conscious.

The above strategies focus on farmers who are interested in direct marketing and who have the skills and interest in marketing. Many farmers prefer to focus on production and leave the marketing to others. A strategy for this group would focus on the production of beef (or other meats) based on a common production protocol and joint marketing. This could produce enough volume to reduce transportation inefficiencies and help processors operate more efficiently. Common protocols such as "antibiotic, steroid, hormone (ASH) free" and "grass finished" would target current consumer interest and reduce direct competition with the low cost, conventionally produced meats. A brand development strategy, such as "Appalachian Proud" (a trademarked brand in the "Kentucky Proud" family and program of the Kentucky Department of Agriculture -

<http://www.appalachiaproudky.com/>) should be explored. Pork products can also be marketed using this strategy. The development of a higher volume joint meat production organization would provide the capacity to market product to metropolitan areas outside the region (such as Knoxville and Lexington).

Some of the region's grocery store have full service meat and deli facilities. Currently, these sell higher quality and specialty products from outside the region. (One store manager reported selling local beef – the Laura's Lean Beef line of products. He was not aware that Laura's Lean is not a Kentucky-only product.) Because volumes at these meat counters are small and some focus on higher value cuts, these are potential outlets for locally produced meats and meat products. Producers (and producer groups) need to target shops which have the flexibility to sell small volumes of specific cuts. More research is needed to determine the products and pricing structures that will work.

There is no evidence that local meats will be able to compete on even terms with conventionally produced meats.

The increasing number of non-franchise restaurants in the region opens another door for sales of relatively low volume cuts. Fine dining establishments sometimes buy whole animals, but this is a tiny niche. Producers who find outlets for sales “by the cut” may be able to sell middle meats (steaks) and hamburger to restaurants, and other cuts through their other outlets, including some state parks and schools.

Many institutional markets (such as schools and hospitals) require large volumes of standardized products such as ground beef. There is no practical way for cattle producers, even working with their processor partners, to profitably fit this market without aggregating product from many producers.

More strategies deserving exploration include the following. One is collaboration with the regions' meat processors (another role for a “local foods coordinator”). Hiring sales representatives to expand sales to grocers, distributors and restaurants is another. A third is the development of a business plan which combines demand from restaurants outside the region for higher valued cuts with demand for lower valued cuts from institutional markets in the region. This might be a way to deal with the imbalance of cuts problem.

Future Work Needed

This study did not collect data from convenience stores and independents. While these stores do not supply a large proportion of the food consumed in southeastern Kentucky, they may play a role. Most “C-Stores” operate under franchise agreements. Just like the chain grocery stores,

some of these agreements are rigid and do not allow managers to buy locally, while others seem to give managers more flexibility.

Because of its proprietary nature, information about the system of rebates and side payments is difficult to obtain. But because these “side payments” may have strong impacts on managers’ incentives, the system deserves more investigation.

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Appendix A: Farmer Interviews –

As part of her focus on institutional buying, Jann Knappage interviewed two innovative farmers. Transcripts of these interviews are included to give a personal perspective, even though they are not intended to represent all farmers in the region.

Farmer Perspective: Farmer #1

How many years have you been farming: 4

What is the size of your farm: 10 for pasture and about 1 for the garden

What do you grow or raise: Heirloom tomatoes, kale, arugula, lettuce, beans, squash, beets, okra, mint, basil, thyme, oregano, sage, asparagus, peppers

1.) Can you explain your initial breakthrough into the marketplace beyond a farmers market?

What sort of things helped this take place? What strategies did you use?

As we saw interest develop in our Heritage Pork sales at the market, we began marketing to local restaurants and country stores. A KSU small farm grant allowed us to purchase a trailer, equip it with freezers and refrigerators to store and transport meat and produce. We also have increased our production of pigs and using the Livestock Conservancy's definition of heritage pork and pork products in our marketing strategy.

2.) What could make this process easier? (Entering different markets)

Consumer demand for locally grown or raised products. Marketing tools for heritage meat and heirloom vegetables.

3.) What scale do you think deems a farmer ready to enter into restaurants? What scale is needed to enter institutions?

In this area one can hook up with small, local restaurants fairly easily as long as the products are consistent and available. Institutions would require higher production values and a commitment to supply chain.

Farmer #2

How many years have been farming: I have farmed on and off my whole life, but this endeavor has been going on for about 3-4 years.

What is the size of your farm: 55 acres, but only about an acre and a half are used for production, half of which is in cover crop at any one time. We also have one 30/96 high tunnel.

1.) Can you explain your initial breakthrough into the marketplace beyond a farmers market?

What sort of things helped this take place? What strategies did you use?

We never really devoted much effort to Farmers' Market. Basically, the times we did go, which were very few, confirmed our preconceived notions that from a cost/benefit perspective the

market was not very effective. I think this is an unfortunate misconception at every level: the Farmers' Market is not a good starting point. I see it as an approach that has modest results for farmers near urban and suburban population centers, but does not work where the market, retail purchasers, are more dispersed. Even where Farmers' Markets do seem to work economically for farmers, all of my reading has shown that they are in decline nationwide. It is unfortunate that so much of UK's, USDA's, and other monies and efforts are directed towards farmers' markets, which, from our perspective, have not been worth the time and effort. Even if you made \$1,000 to \$1,500 a week over the course of the Farmers' Market season, you still only have earned a gross income that is about \$30,000 to \$35,000. Subtract expenses from gross income, and you have a poverty wage for one person with no health insurance. I have not even mentioned start-up costs.

I don't think of us as having a "breakthrough" to restaurants. Our restaurant customer base was developed over time.

I also think that the focus on the restaurants, though more close to the mark than Farmers' Markets, is also not really valid for the same reasons as stated above for Farmers' Markets. There simply are not enough restaurants and restaurant patrons willing to pay true cost of production within proximity to each other in eastern Kentucky to support a livable income for a farmer. While this income is consistent for us, it is not enough to make the outlay of capital and effort worthwhile. Pikeville is probably one of the larger and higher end restaurant markets in eastern Kentucky, so I imagine this barrier to achieving adequate volume and price of sales is even more pronounced in other parts.

Institutions, however, do show promise for profitability. Eastern Kentucky is inundated with low-quality food that is relatively expensive, especially when you factor in the costs of negative health outcomes. We got into this market through efforts of Jann Knappage at Community Farm Alliance. She connected us to buyers through email and providing contact information and by bringing buyers to the East Kentucky Farmers' Conference. At the conference we met Liberty Campbell of Perry County Schools. After that we were able to sell significant amounts of produce to Perry County Schools on a weekly/semi-weekly basis. At this point, our barrier is that we cannot produce and process enough to meet demands of Perry County Schools, restaurants, and other buyers who have contacted us. I need equipment to handle volume and additional space to grow.

I think that special mention needs to be made of Jann Knappage's approach to helping us, as it is exemplary and should be used as a model. Jann came to us and asked us what we needed, then consistently followed through and followed up. Her methods were "farmer driven", a bottom-up approach, rather than top-down. Other individuals have been helpful, but Jann's efforts really helped us spring loose.

The strategy we used was common sense and basic addition and subtraction. Farmers' Markets did not make any sense, restaurants only slightly better, but institutions had adequate populations and were willing to pay fair market prices.

2.) What could make this process easier? (Entering different markets)

A processing facility in eastern Kentucky would make entering different markets much easier. If farmers had a way to process their produce so that it could be sold over the course of the year, they would not be at the mercy of the market with perishable products on their hands. This is a form of "season extension", extending the marketing season over the course of the year, rather than a small window of time when the crops are ready for harvest. The Jackson County facility does not currently and will likely not be able to meet our needs as eastern Kentucky farmers in the future. This is our greatest need in eastern Kentucky.

3.) What scale do you think deems a farmer ready to enter into restaurants? What scale is needed to enter institutions?

For either of these, at least one full-time farmer with part-time help available as needed is necessary. Other commitments on a farmer's time can compromise their ability to perform all the tasks and observations needed to provide a consistent adequate volume of product over time, while still maintaining a sane life/work balance. A customer base that supports a living wage with health insurance for at least a single farmer is necessary to enter restaurant and institution markets.

Appendix B: Details of Data Collection - Meetings, Interviews, and Focus Groups:

Distributors/Food Service Providers/Processors

Piazza Produce, Creation Gardens, Appalachian Harvest, Appalachian Meats, Laurel Grocery, Brown Foods, Crosset Produce, Houchens Corporate, Save-A-Lot Corporate, Food City, Corporate, Cox Food Group

Service Providers

Grow Appalachia, NRCS, RCARS, Kentucky Grocers' Association, Extension Agents: Breathitt, Jackson, Pike, Knott, Letcher, and Whitley

Retail Food Stores (locations only)

McDowell, Hindman, West Liberty, Happy, Martin, Jackson, Hyden, Manchester Store #1, Manchester Store #2, Salyersville (Total Number of store managers interviewed: 10 IGA, three Food City, two Save-A-Lot stores)

Focus Group

Producer: Pikeville (8 total producers)

Resident Food Consumers – Breathitt (10 residents)

Resident Food Consumers –Owsley (8 residents)