

**The Economic Viability of Expanding Fresh and Processed Fruit and  
Vegetable Production in Missouri  
Executive Summary**

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# **The Economic Viability of Expanding Fresh and Processed Fruit and Vegetable Production in Missouri**

## **Executive Summary**

At the inception of this project, the primary goal was to evaluate the economic feasibility of expanding fruit and vegetable production within Missouri. Across much of 2014 through mid-2020, falling commodity prices had made Missouri's traditional crops (corn and soybeans) less profitable, increasing financial stress on Missouri farms. Although there has been a brief respite with higher commodity prices from September 2020 into early 2021, it is unlikely these higher prices will persist for an extended period of time. This study looks closely at the economics of Missouri fruit and vegetable production in the context of profitability, competitiveness with other states, barriers to expanding fruit and vegetable production, the needed knowledge and infrastructure to progress from low to high volume markets, and opportunities for processing and/or value-added products. Specialty crops are generally high margin, labor intensive crops that can be produced both in low and high capital investment environments. Subsequently, fruit and vegetable production also offer an attractive economic opportunity for beginning farmers.

This project also involved a significant number of interviews with participants all along the fruit and vegetable supply chain. The bulk of these interviews focused on growers in order to establish possible roadblocks to expanding production. We also interviewed auction markets, grocery stores, and participants in the processing industry from equipment makers to Missouri processors to large multi-national processors. COVID-19 delayed the timeline for accomplishing some of our interviews and most of the processor interviews had to be conducted via phone. Two areas that we had hoped to do face-to-face interviews in was with e-commerce and large wholesalers. We had many informal conversations with other players in the supply chain such as large-scale greenhouse operators, input suppliers, and food company buyers. In addition, we reviewed the trade magazines for industry insights into how the industry is changing and what trends are changing in the future.

An important part of this project was to establish a benchmark set of specialty crop enterprise budgets for different types of production systems relevant for Missouri. Although this information was intended to be gathered through the grower interviews, only a few producers could associate costs by specific specialty crop. After consulting with the Extension horticulturalists, specialty crop budgets from surrounding states were updated with current input prices and output prices experienced by Missouri growers. Albeit not an ideal solution, these budgets provide a benchmark that can be improved upon in the future.

This study concludes by outlining a set of next steps that will need to be tackled by various market players in order to assist Missouri's fruit and vegetable growers in expanding production. In studying the history of Missouri's fruit and vegetable, Tom Dicke described the momentum gained when "an infrastructure of equipment makers, suppliers, and brokers,..." as well as "local bankers and businessmen" comfortable with financing the business were available (Dicke, 2005). Missouri fruit and vegetable production is starting a resurgence and much of its potential success hinges on developing the infrastructure to support it.

### **Study Reports**

This report is an executive summary of three more detailed reports. The first two reports are generated for all audiences while the third report is directed specifically at Missouri's commercial fruit and vegetable growers. Note that the third report includes additional topics not specifically included in the objectives but needed to make the study results as actionable for growers as possible.

Part 1: The Economic Viability of Expanding Fresh and Processed Fruit and Vegetable Production in Missouri – Grower Interview Summaries, Marketing, Industry Trends, and Next Steps

Part 2: The Economic Viability of Expanding Fresh and Processed Fruit and Vegetable Production in Missouri – Fruit and Vegetable Processing

Part 3: Missouri Specialty Crop Marketing and Enterprise Budgets: A Commercial Grower's Guide

## **Overview of the Missouri fruit and vegetable industry**

The US fruit and vegetable supply chain is quite different from commodity row crops and merits some explanation. Figure 1 provides an overview of the basic activities and participants in the market. Fruit and vegetable growers should have arrangements to market their production before they begin the production process. Based on their arrangements, growers should know which crops to produce, when to produce them, and when to deliver their production. Unlike commodity row crops, harvesting the crop may be done over several weeks depending on the type of crop. Specialty crops are also more fragile than row crops and require more attention to control pests. In Missouri, specialty crops follow two predominant pathways to market. In the first pathway, the fruits or vegetables are not cooled and move directly to a Farmers' market, roadside stand, produce auction market, and/or possibly a Community Supported Agriculture (CSA) market (direct markets). Some especially fragile specialty crops may still be cooled or sold packed in ice. Many Missouri growers harvest their produce the morning of the day in which they sell it to ensure freshness. Some growers also deliver produce directly to restaurants several times per week.

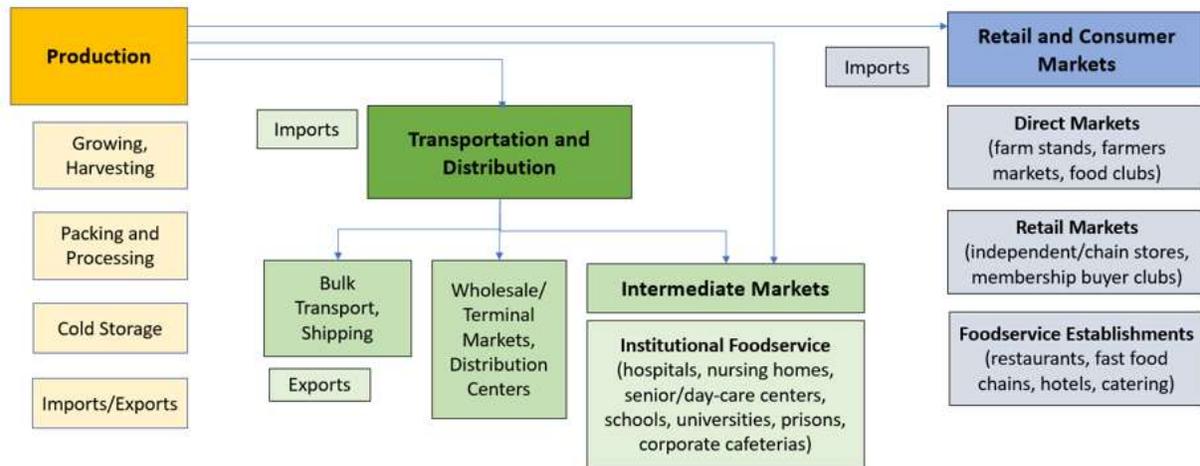
The second pathway is to immediately cool the fruits or vegetables initializing the cold chain. Each fruit or vegetable has a recommended temperature to be cooled to in order to slow deterioration. Many grocery stores that purchase directly from auction markets send refrigerated trucks to immediately begin the cooling process upon purchase.

For retail markets and some foodservice establishments, the cold chain usually begins upon packing for shipping. Some growers are large enough to have their own packing or aggregation system, shipping directly to distribution centers, wholesale markets, and/or retail grocery stores. Some growers take their produce to an aggregator/packing house to be combined with produce from other farms so they can participate with buyers who demand larger quantities than they can produce.

Many fruits and vegetables headed for the institutional market first go through a fresh cut processor. This processor performs the tasks of washing, chopping, packing, and labeling the fruit or vegetable for the institutional market. Products leaving the fresh cut processor are transported in refrigerated trucks.

## The US Fruit and Vegetable Supply Chain

Figure 1. US fruit and vegetable value chain and marketing channels



Source: "COVID-19: Supply Chain Disruptions in the U.S. Fruit and Vegetable Industry: In Brief", Congressional Research Service, May 8, 2020

## Historical Missouri fruit and vegetable production

Figure 2 provides a listing of the top vegetable, berry, and fruit crops grown in Missouri based on area harvested. This data is drawn from the various Censuses of Agriculture since 1997 that is reported by NASS in their Quick Stats database.

## Profitability of fruits and vegetables

The 2017 Census of Agriculture reports farm receipts and net cash income by the North American Industry Classification System (NAICS) business code (see Figure 3). Farms are classified based on their predominant business. In 2017, vegetable and melon farming had the second highest rate of return with a net cash income to total receipts ratio of 38 percent. Greenhouse, nursery, and floriculture had the highest return at 40 percent. Both of these rates of return exceeded the rate of return from oilseed, grain, and rice farming of 31 percent. Fruit and tree nut farming had a lower rate of return at 19 percent, which was an improvement from 6 percent in 2012.

Despite higher reported profitability in 2017, overall sales of fresh vegetables in Missouri were down 11 percent from 2012 levels.

Figure 2. Primary fruit and vegetable crops in Missouri

Crop	1997	2002	2007	2012	2017
<i>Acres</i>					
<b>Top Vegetable Crops by Acres</b>					
Potatoes	5,982	5,256	6,127	9,056	8,553
Watermelons	4,778	4,993	3,479	2,744	2,919
Sweet Corn	1,870	1,633	3,065	2,325	1,138
Green Beans	2753	3962	7636	1479	692
Tomatoes	646	401	551	492	504
Squash	137	205	168	269	441
Cantaloupes	549	367	431	467	389
Cucumbers	5,195	11,325	6,814	612	215
<b>Top Berry Crops by Acres</b>					
Elderberries	NR	NR	NR	NR	369
Blackberries	NR	NR	275	259	307
Blueberries	NR	NR	217	194	247
Strawberries	NR	NR	172	196	171
<b>Top Other Fruit Crops by Acres</b>					
Grapes	970	1453	1,773	1,828	1,854
Peaches	1910	2196	2314	NR	1305
Apples	NR	2920	1,819	1,161	1123

Source: USDA Census of Agriculture, Quickstats

Figure 3. Missouri Farm Receipts and Net Cash Income by NAICS Farm Type

	Receipts*			Net Cash Income			Net Cash Income as a % of Receipts	
	2012	2017	% Chg**	2012	2017	% Chg**	2012	2017
<i>million dollars</i>								
Oilseed, Grain, & Rice Farming	4,185	5,136	23%	1,333	1,570	18%	32%	31%
Vegetable and Melon Farming	57	61	7%	14	23	72%	24%	38%
Fruit and Tree Nut Farming	25	28	11%	2	5	260%	6%	19%
Greenhouse Nursery and Floriculture	87	121	39%	22	48	123%	25%	40%
Other Crop Farming	505	461	-9%	144	171	18%	29%	37%
Cattle Ranching and Farming	2,159	1,971	-9%	96	206	114%	4%	10%
Hog and Pig Farming	913	1,317	44%	166	365	120%	18%	28%
Poultry and Egg Production	1,469	1,657	13%	280	474	69%	19%	29%
Sheep and Goat Farming	12	16	31%	-9	-13	-38%	-76%	-80%
Aquaculture & Other Animals	76	80	6%	-59	-39	34%	-78%	-49%
<b>Total</b>	<b>9,489</b>	<b>10,850</b>	<b>14%</b>	<b>1,989</b>	<b>2,810</b>	<b>41%</b>	<b>21%</b>	<b>26%</b>

Source: USDA-NASS, Census of Agriculture, Quickstats Database, NAICS Classifications.

\* Market value of agricultural products sold including government payments

\*\* Percentage change from 2012 levels.

Figure 4. Total sales of fresh vegetables in Missouri for selected counties and the state (1000 dollars)

Counties	2007			2012			2017			% increase in sales over 2012	% increase in sales over 2007
	Field	Covered	Total	Field	Covered	Total	Field	Covered	Total		
Audrain	138	109	247	222	179	401	572	546	1,118	179%	352%
Barton	301	56	357	606	173	779	304	605	909	-17%	155%
Dallas	314	48	362	398	287	685	447	236	683	0%	89%
Daviess	204	124	328	499	405	904	219	494	713	-21%	117%
<b>4 County Auction (Benton &amp; Johnson only)</b>	427	248	675	689	247	936	626	247	873	-7%	29%
<b>Central Auction</b>	884	1,053	1,937	1,030	1,088	2,118	1,638	3,013	4,651	120%	140%
<b>Rich Hill Produce Businesses</b>	552	229	781	3,864	537	4,401	2,256	323	2,579	-41%	230%
Above	2,820	1,867	4,687	7,308	2,916	10,224	6,062	5,463	11,525	13%	146%
Statewide	32,832	3,706	36,538	43,215	5,719	48,934	32,083	11,517	43,600	-11%	19%

Several values are estimates, including field statewide value(s). A statewide average sales per acre had to be calculated for fresh vegetables (as the average with the census includes processing vegetables, which tend to be lower value). It was calculated by averaging all the counties for a given year where sales for a given county was available, and processing acreage was 0 to 10. For 2007 this was 26 counties, 29 in 2012, and 39 in 2017. This estimated that average sales per acre was \$2985 in 2007, \$4374 in 2012, and \$3811 in 2017.

## Summary of Missouri fruit and vegetable grower interviews

In order to determine the economic viability of expanding Missouri fruit and vegetable production, it was important to develop a representative understanding of the current Missouri grower including their desire to expand production, current difficulties in production, yields and costs of production, and any barriers to expansion. Each interview was approximately 1.5 to 2.5 hours long and often included a farm tour providing further insight into the inputs and production processes used. Fifty interviews of fruit and vegetable growers were conducted across Missouri in 2019 including growers in the following counties: Adair, Audrain, Barton, Boone, Cape Girardeau, Cooper, Daviess, Greene, Howell, Jasper, Jefferson, Johnson, Lafayette, Lawrence, McDonald, Mississippi, Moniteau, Morgan, Newton, Ozark, Polk, Ralls, Saint Genevieve, Saline, Scott, and Shelby.

### Summary of Interview Results

Results of the grower interviews are discussed in detail in the first report entitled, “The Economic Viability of Expanding Fresh and Processed Fruit and Vegetable Production in Missouri – Grower Interview Summaries, Marketing, Industry Trends, and Next Steps”.

#### *Principal Barriers to Expanding Fruit and Vegetable Production*

- Herbicide drift
- Access to labor
- Poor crop insurance coverage
- Access to larger markets
- Increasing food safety regulations with unclear guidelines for compliance
- Access to production inputs

- Access to capital
- Access to transportation and cooling

#### ***Barriers in Other States not Affecting Missouri Growers***

- Access to irrigation water
- Climate change

#### ***Expansion in Missouri Fruit and Vegetable Production Already Underway***

Of the 50 growers interviewed, 48 growers indicated a willingness to expand production if markets were available. Many were already in the process of expanding.

#### ***An Excellent Opportunity for Beginning Farmers***

Nearly every grower, regardless of size, felt that fruit and vegetable production was an excellent way for beginning farmers to get started. Several producers indicated that they were using fruit and vegetable production to keep their families on the farm because it provided the income stream needed to support a family. With larger profit margins than row crop production and lower capital intensity, fruit and vegetable production can allow beginning farms to get started leveraging the surplus time they may have available while being flexible enough to allow off farm employment. Starting small and mastering the production practices for specialty crops allow beginning growers to build on their experience while obtaining enough profits to expand their future production.

#### **Missouri specialty crop enterprise budgets**

Growers in the southeast region of the state were best able to comment on their specific costs of production in part due to the larger scale of their operations. In other regions, the small-scale producers could talk about total costs for their entire operation, but not crop specific costs because they don't break their costs down by crop.

On the recommendation of Missouri's Extension horticulturalists for specialty crops where no previous enterprise budget specific to Missouri existed, a nearby state's budget was utilized as a starting point. These budgets from other states were updated with the latest input costs and 2020 Missouri output prices. By reviewing these budgets over time with Extension horticulturalists the goal is to further customize these budgets to Missouri conditions. Missouri enterprise budgets are available for the following crops:

Fruit

Apples, blackberries, blueberries, elderberries, peaches, and strawberries

## Vegetables

Asparagus, bell peppers, broccoli, cantaloupe, carrots, cucumbers, eggplant, garlic, green beans (a.k.a. snap beans), leafy greens, onions, potatoes, pumpkins, squash (summer), squash (winter), sweet corn, sweet potatoes, tomatoes, watermelons, and watermelons (seedless).

## High Tunnel Crops

Bell peppers, cucumbers, head lettuce, leafy greens, radishes, beets, & carrots, spinach, strawberries, and tomatoes.

The budgets are posted on the FAPRI website under Farmer's Corner, Specialty Crops at the URL:

<https://www.fapri.missouri.edu/farmers-corner/specialty-crops/>

The budgets are also included in the third report entitled, "Missouri Specialty Crop Marketing and Enterprise Budgets: A Commercial Grower's Guide".

## Competitiveness of Missouri fruit and vegetable production

When compared with other states, Missouri costs of production appear competitive, with large margins suggesting the profit margins of Missouri growers would be able to stand up relatively well against large declines in prices. When we compare Missouri returns across all crops, the opportunity of specialty crops emerges. Appreciating the nuances of prices, yields, and costs, the comparison of specialty crops with row crops clearly suggests significantly higher profitability in specialty crops.

Figure 5. Specialty crop cost of production comparison in 2020, Missouri versus other states

	Missouri	California	Washington	Oregon	Idaho	Florida	North Carolina	South Carolina	Arkansas	Kentucky	New York	Georgia
<i>\$ Per Pound</i>												
<b>Vegetables</b>												
Cucumbers	0.27		0.16			0.22	0.15	0.18	0.31	0.17		0.26
Peppers, Bell	0.33											0.34
Potatoes	0.11	0.07	0.09		0.07	0.16						
Tomatoes	0.59	0.27				0.56						0.30
Tomatoes - High Tunnel	1.02		1.96								0.83	
Watermelons	0.20	0.15		0.19		0.16		0.24	0.08	0.16		0.15
<i>\$ Per Dozen</i>												
Sweet Corn	1.50		0.33	0.42		3.62		1.91		1.29		1.99
<i>\$ Per Pound</i>												
<b>Fruits and Berries</b>												
Apples	0.15	0.13	0.72									
Blackberries	1.05	3.75		1.09			2.21					2.64
Blueberries	1.68		1.10	1.32								2.51
Peaches	0.38	0.25	0.34									0.35
Strawberries	1.03	1.05		0.87		1.39						1.37

Source: Based on extension budgets gathered from each state and author calculations.

Figure 6. Missouri crop returns over total costs in 2020

<b>Missouri Crop Returns Over Total Costs in 2020</b>		
<b>Row Crops</b>	<b>\$ per acre</b>	
Corn	\$11.62	
Soybeans	58.64	
Wheat	-53.44	
Sorghum	-40.55	
<b>Specialty Crops (Open field)</b>	<b>\$ per acre</b>	
Asparagus	815	
Apples	1,603	
Bell Peppers	9,342	
Blackberries	2,294	
Blueberries	4,946	
Broccoli	6,194	
Cantaloupe	5,754	
Carrots	1,993	
Cucumbers	9,047	
Eggplants	1,301	
Elderberries	3,228	
Garlic	98	
Green Beans	703	
Leafy Greens	4,788	
Okra	1,280	
Onions	1,519	
Peaches	1,060	
Potatoes	268	
Pumpkins	1,402	
Squash, Summer	6,932	
Squash, Winter	2,177	
Strawberries	5,036	
Sweet Corn	1,594	
Sweet Potato	2,862	
Tomatoes	11,679	
Watermelons, Seeded	3,614	
Watermelons, Seedless	3,469	
		<b>\$ per 2000 square feet</b>
<b>High Tunnel Crops</b>	<b>\$ per acre</b>	
Bell Peppers	10,994	1,010
Cucumbers	23,266	2,136
Head Lettuce	8,511	782
Leafy Greens	8,679	797
Spinach	2,997	275
Strawberries	18,109	1,663
Tomatoes	45,023	4,134

## **Marketing aspects of expanding Missouri's fruit and vegetable production**

One of the most important and critical activities in getting into fruit and vegetable production is determining which markets the grower intends to sell to, what types of produce is wanted in that market, and when the market wants the produce delivered. This activity applies regardless of the market the grower intends to sell in. For example, a beginning grower may want to sell in the local Farmers' Market, but before buying the first seed, that grower should contact the Farmers' Market manager and determine availability for a stall at the market and what produce they can sell at the market. The market manager may also provide insights into the types and varieties of produce that is selling well. They may also be able to guide the producer on the quantity of product to bring as well as provide pricing guidelines. With this information, the grower is equipped to determine the type and variety of specialty crops they will produce and have an idea of how much they want to produce.

Each potential fruit and vegetable market will have specific produce needs, regulations, labeling, packaging, grading, etc., information growers need to know before they start producing. Growers many need to adjust which markets they intend to sell in based on the market requirements. Figure 7 shows how some of the market characteristics vary by sales volume potential. Low volume markets tend to have fewer rules, less insurance, lower capital requirements, less shelf life needed, and typically pay retail prices. However, they also require that the grower interact directly with the end consumer which takes more marketing time and the grower is unlikely to sell everything they produce. At the other extreme, high volume markets tend to have more regulations, food safety inspection requirements, more insurance, high capital demands, require longer shelf life, require full traceability, and typically pay only wholesale prices. The figure also includes black, red, and gray dividing lines between the sales volume levels. Most Missouri producers fall below the red line producing low or moderate production levels.

Figure 8 is more direct than Figure 7, illustrating the marketing steps in expanding fruit and vegetable production. The grower may not choose to market to all steps but the diagram attempts to convey potential markets for each volume level. Level 1 markets have the lowest volume levels and are typically the simplest to operate in while level 4 markets tend to be able to handle the largest volumes but are also the most complex to manage. The green arrow shows the types of things that increase as one moves from level 1 production to level 4 production. The purple arrow pointing down shows that prices received and produce flavor tend to fall as production volumes increase.

Figure 7. Fruit and vegetable market characteristics by sales volume

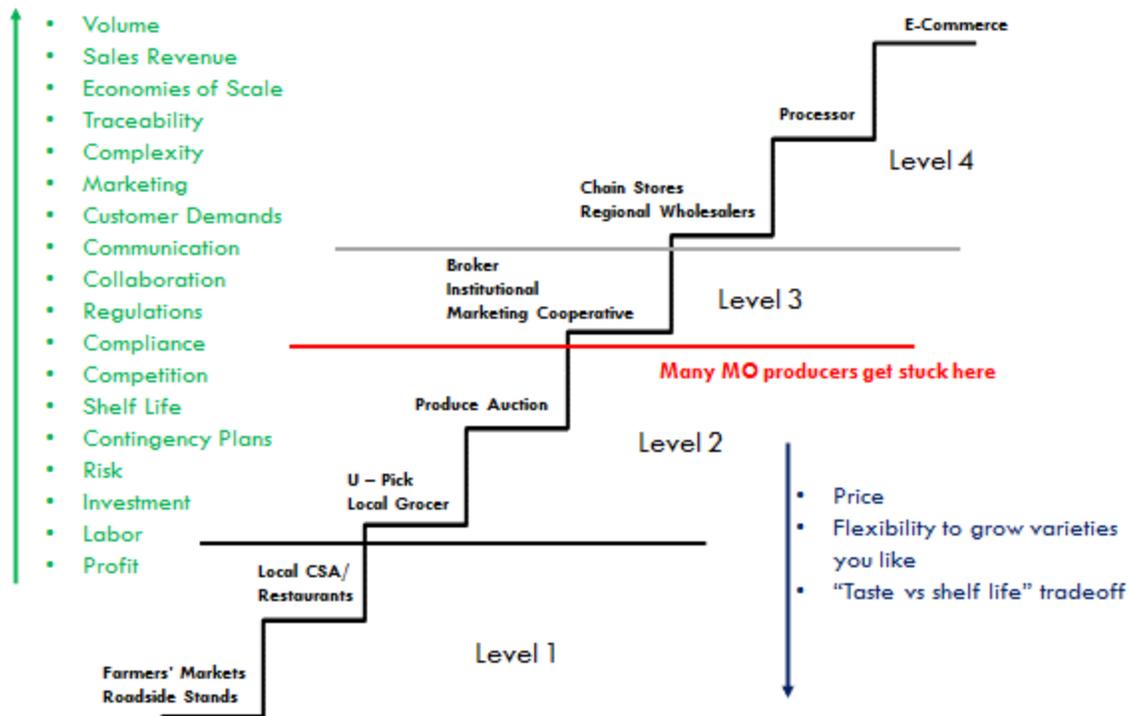
Market Characteristic	Sales Volume Potential														
	low				moderate			high			very high				
	Farmers Markets	Roadside Stand	Local CSA	Restaurants	U-Pick	Local Grocer	Produce Auction	Broker	Institutional	Marketing Cooperative	Processing	Chain Store Distribution	Regional Wholesalers	Terminal Markets	E-commerce
Difficulty getting into the market	L	L	M	L	L	M	L	H	M	M	H	H	H	H	M
Direct consumer contact & service	H	H	H	L	H	L	L	L	L	L	L	L	L	L	M
Compatibility with off farm employment	H	H	M	H	H	M	H	L	L	M	H	L	L	L	M
Marketing time	H	H	H	M	H	M	L	L	L	L	L	M	L	M	H
Electronic, computer, internet complexity required	N	N	M	L	M	M	L	M	M	M	L	M	M	M	H
Transport/Shipping cost	L	L	H	M	N	M	L	M	M	M	M	M	M	M	H
Initial capital required	L	L	L	L	L	H	L	H	H	H	V	H	H	H	V
Investment in post harvest equipment and facilities	L	L	L	M	L	M	L	H	H	H	V	H	H	H	V
Likelihood of production contract	N	N	N	M	N	M	N	H	H	M	H	H	H	H	N
Likelihood of product tracability	N	N	L	M	N	H	L	H	H	H	H	H	H	H	H
Likelihood of requiring GAP certification	N	N	L	M	N	H	M	H	H	H	H	H	H	H	H
Likelihood of requiring liability insurance	L	L	L	L	H	M	L	H	H	H	H	H	H	H	H
Ability to set prices	H	H	H	H	H	M	L	L	L	L	L	L	L	L	H
Price level to expect	R	R	R	W	W	W	W	W	W	W	F	W	W	W	R
Price variance week-to-week	M	M	L	M	M	M	H	L	L	L	L	L	L	L	H
Importance of shelf life versus taste	L	L	L	L	L	M	L	H	H	M	L	H	H	H	V

\* H - high, M - medium, L - low, N - nil, R - retail, V - variable, W - wholesale, F- farmgate

Note that processing is included as one of the level 4 steps in Figure 8. Processors require very high volumes of throughput in order to attain the economies of scale needed to be competitive. Literally, California scale processing is not necessarily the “lowest hanging fruit” for Missouri produce growers. There is still much that can be done to increase fresh fruit and vegetable markets. In addition, it’s important for growers to remember that processing markets almost always have lower prices and smaller margins than fresh markets. However, an aspect of processing markets that bears monitoring is that many processed vegetables can be harvested mechanically. With increasing difficulties accessing labor, processing could become more important.

What does merit some attention is small scale value-added processing. In the European market model, there are many small localities that have established a worldwide reputation for specific value-added products, some of which are not-so-small scale anymore. Missouri has the potential to do the same making small scale value-added products from base fruits such as elderberries, strawberries, wines, etc. and vegetables such as summer squash, butternut squash, beets, potatoes, and turnips.

Figure 8. Supply chain steps in expanding fruit and vegetable production



In order to significantly expand fruit and vegetable production, grower's must be able to push through into levels 3 and 4. In order to understand how to push through these obstacles, the next section discusses each of the levels. Levels 1 and 2 set the context for the where the market stands today and how these markets might grow in the future. The most critical step for the next five years is helping producers get to level 3.

### Key Insights from the Processing Sector

Results of the processor interviews are discussed in detail in the second report entitled, "The Economic Viability of Expanding Fresh and Processed Fruit and Vegetable Production in Missouri – Fruit and Vegetable Processing". The key insights from that report include:

- Innovate production practices to shrink biological lags in production.
- Processors need clusters of intense production to support a facility.
- Growers should seek contracts with processors that provide market access and specify prices.
- Optimize processing facilities to utilize crops that can support year-round processing.
- Fresh-cut processing is popular with restaurants, institutional, and grocery store markets.
- Small processing firms can succeed by offering niche products

- Processors need supporting industries such as aggregators and distributors to be successful

## **Next Steps**

With the input of many players in the fruit and vegetable food supply chain, there are several actions that need to be taken to help Missouri fruit and vegetable producers grow their business. Some of these actions have been organized into stages on a timeline reflecting how quickly the complexity of the activity can be accomplished. Some of these activities are already occurring. These suggestions are directed at establishing the critical mass of infrastructure in to support Missouri's fruit and vegetable growers with knowledge and connections to be successful.

### ***Reducing grower risks***

- Reduce herbicide drift particularly from Dicamba
  - Help growers learn methods to minimize risks
- Work with horticulturalists to develop seasonal regulations to minimize risks
- Improve specialty crop insurance
  - Directly provide subsidies for small growers (< \$1 million in sales) in first 5 years of production
  - Eliminate exclusions for pest and disease for small growers (< \$1 million in sales) in first 5 years of production
  - Cover herbicide drift – no exceptions or delays

### ***Improve market transparency via data collection***

NASS has stopped collecting Missouri specialty crop data which means that only the 5-year census data will be available to monitor progress of Missouri specialty crops.

- Growers need regularly updated data for market transparency and to make informed production decisions.
- Potential marketing cooperatives, packing houses, and or fresh cut processors need to understand where Missouri producer are located and how much production they might have available for sale
- Missouri Department of Agriculture and MU Extension need to be able to monitor the progress of its programs
- Data collection by crop is needed for the following:
  - Area harvested; area planted by county/CRD
  - Yields
  - Production by county/CRD
  - Market prices and volume sold

- Auction markets
- Farmers' markets

### ***Educating and training producers***

- Provide Missouri growers with annual updated specialty crop budgets customized to Missouri practices
- Provide situation and outlook information via the website and meeting around the state to keep growers informed of market conditions, developing trends, and consumer preferences.
- Promote fruit and vegetable farming with beginning farmers and target new growers with specific training programs and assistance
- MU Extension continues to train growers in production techniques, labor saving technologies, and has field days dedicated to specialty crop production
- Connecting producers to new markets
  - Directly help growers through the process of moving from level 2 to level 3 markets
  - Identify various market channels and connect growers
  - Institutional markets via food processing kitchens/fresh cut processors
- Establish and/or assist in expanding a statewide fruit, vegetable, and tree nut growers' association capable of lobbying the state legislature on issues specific to Missouri fruit and vegetable production.

### ***Special programs to facilitate cooling and refrigerated storage***

- Educate growers on cooling equipment and techniques
- Helping producers connect with input suppliers and select appropriately sized equipment for their operation

### ***Ensuring access to inputs***

- Educate and connect growers with input suppliers
- Educate agricultural lenders about fruit and vegetable production
- Help producers develop or work with existing cooperatives to ensure timely access to the inputs for fruit and vegetable production

### ***Regulatory Compliance***

- Establish a compliance strategist position within Missouri Department of Agriculture or MU to directly help specialty crop producers with regulations and provide boiler plate templates of the various paperwork, manuals, and forms.

### ***Food Processing***

- Establish a processing authority in Missouri
- Establish a fruit and vegetable food processing/manufacturing concept facility

- Develop a simple food processing and packing concept facility (fresh cut processor)

This list of next steps will involve multiple players. As this report came together, it became apparent that there is a strong role for Extension, the College of Agriculture, Food, and Natural Resources, and the Missouri Department of Agriculture. A two- page proposal is in the process of being reviewed by Agriculture Extension Associate Dean Rob Kallenbach that would target organizing clusters of Missouri's growers to formulate enough volume to support a "fresh-cut" processing facility that would service institutional markets. This overlays well with Dean Daubert's Food, Beverage, and Forestry Product Manufacturing Initiative that seeks to build food processing/manufacturing concept facilities. A wealth of institution knowledge and supply chain contacts exists at the Missouri Department of Agriculture which would facilitate the identification of the clusters of producers where aggregation facilities might be placed, avoid duplication with existing efforts, and provide contacts across the supply chain. The Missouri Department of Agriculture would also continue to be instrumental in guiding producers through state and federal food safety regulations.

One of the key features of this work is that it must be sustained on an ongoing basis and real progress in providing and connecting growers with expanded market options will take several years. In addition, the work will involve multiple disciplines to be successful. Funding this work will be challenging but developing this opportunity is critical for providing profitable business options to Missouri's farmers and providing economically viable opportunities for beginning farmers.

## References

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