6. Horticultural Goods

Horticultural goods are varied. Those recognized by USDA are listed in Exhibit 6.1. Of these goods, honey, turfgrass, hops and maple syrup have been produced in Missouri; they're denoted in bold text within the table. No known tea leaf production occurs in the state. The following sections describe the horticultural industries with data available for Missouri.

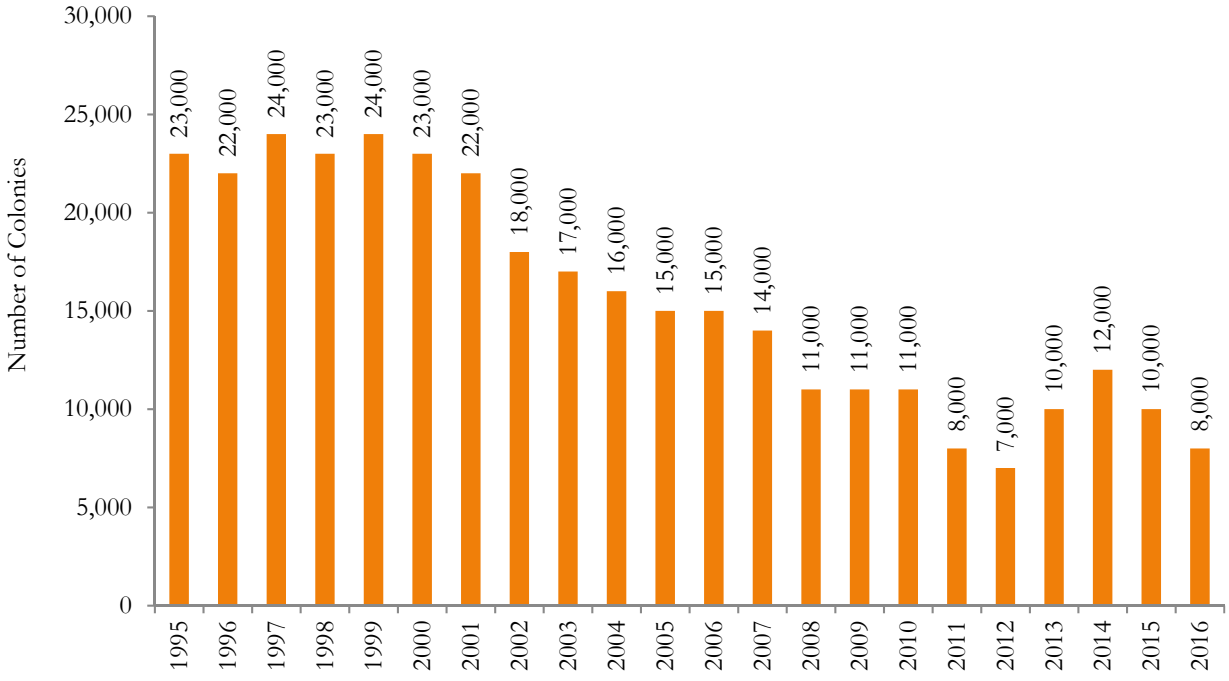
Exhibit 6.1 – Horticultural Goods Included in Specialty Crop Definition

Honey	**Hops**	**Maple syrup**	Tea leaves
Turfgrass			

6.1 Honey

Honey production varies based on the number of colonies maintained in the state. During the past 20 years, colony inventory declined dramatically. Exhibit 6.1.1 illustrates the trend in honey bee colony inventory from 1995 to 2016. During 2016, the state's honey producers had just one-third the colonies that they had in 1995. In total, 8,000 colonies were reported in 2016 relative to the 23,000 colonies existing in 1995 (USDA National Agricultural Statistics Service 2017b).

Exhibit 6.1.1 – Missouri Honey Bee Colony Inventory, 1995 to 2016

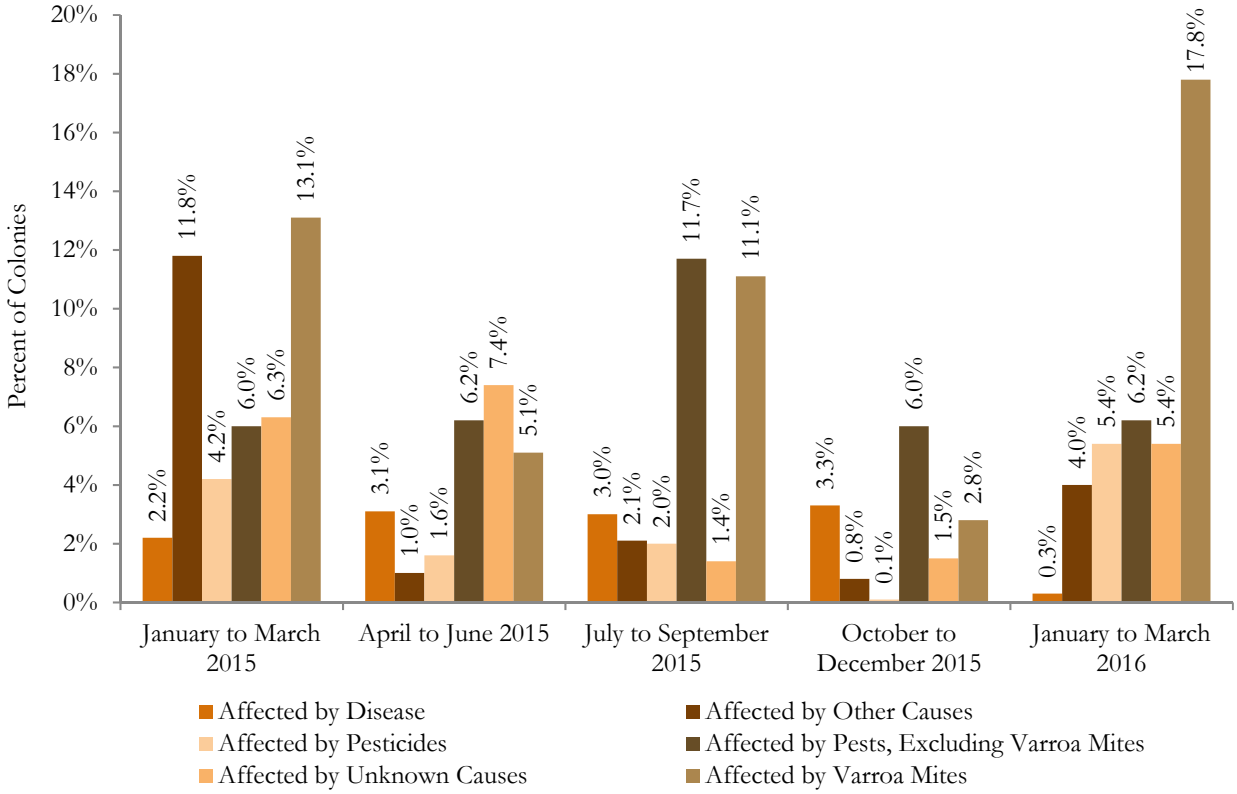


Source: USDA, National Agricultural Statistics Service (2017b)

The reduction in Missouri bee colonies can at least partially be attributed to several challenges: diseases, pesticides, pests and other causes. Exhibit 6.1.2 presents the share of colonies that were affected by such challenges during five recent calendar quarters. As the chart illustrates, Varroa mites

commonly were a problem affecting Missouri bee colonies. Other pests were also often cited as affecting colonies. In the most recent quarter with data reported — January to March 2016 — 17.8 percent of colonies were affected by Varroa mites. Other problems affecting colonies were other pests, 6.2 percent of colonies; pesticides, 5.4 percent of colonies; unknown causes, 5.4 percent of colonies; other causes, 4 percent of colonies; and diseases, 0.3 percent of colonies (USDA National Agricultural Statistics Service 2017b).

Exhibit 6.1.2 – Missouri Bee Colonies Affected by Certain Challenges by Calendar Quarter, 2015 and 2016

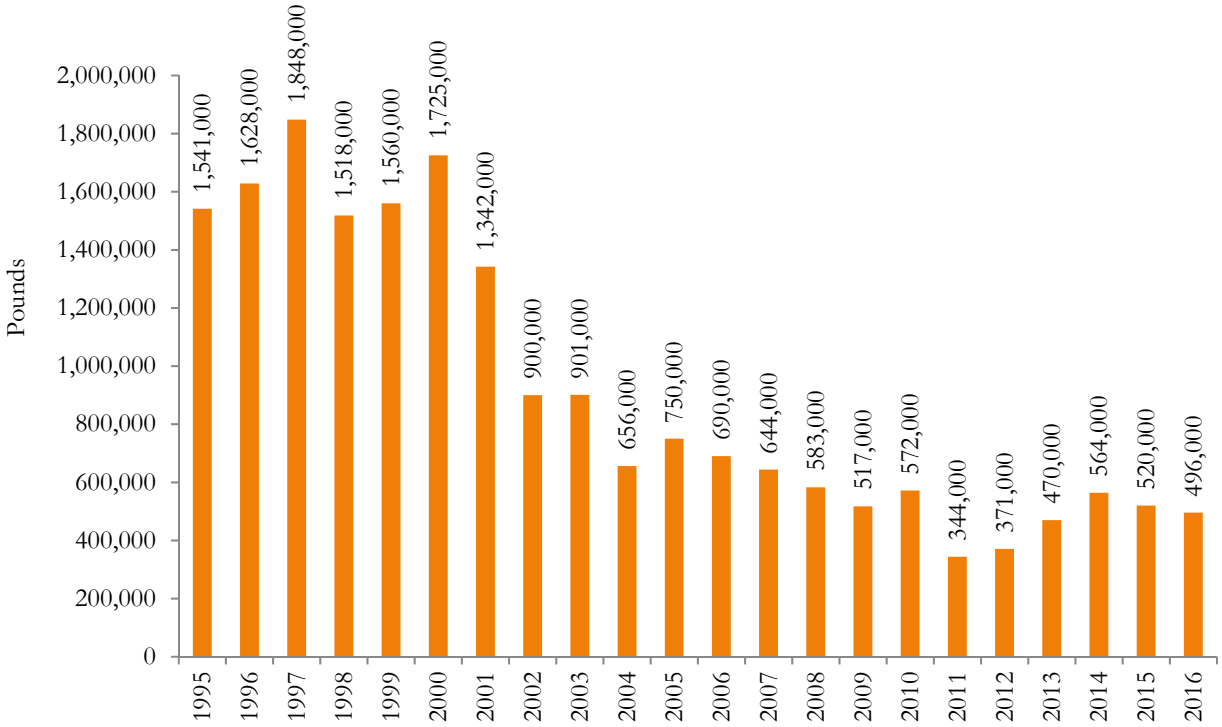


Source: USDA, National Agricultural Statistics Service (2017b)

Note that some producers have renovated their bee colonies. In 2015, USDA reported that 3,380 colony renovations occurred. During the first quarter of 2016 — January to March — Missouri operations renovated 290 colonies, which was fewer than the 910 colonies renovated in the first quarter of 2015 (USDA National Agricultural Statistics Service 2017b).

The overall trend in Missouri honey production somewhat mirrors the honey bee colony inventory trend. Exhibit 6.1.3 charts production from 1995 to 2016. Based on data from that time period, total honey production in the state reached its highest point — nearly 1.85 million pounds — in 1997. 2011 had the lowest production recorded — just 344,000 pounds. Later, the state experienced a slight uptick in honey production. It reached nearly 500,000 pounds in 2016 (USDA National Agricultural Statistics Service 2017b).

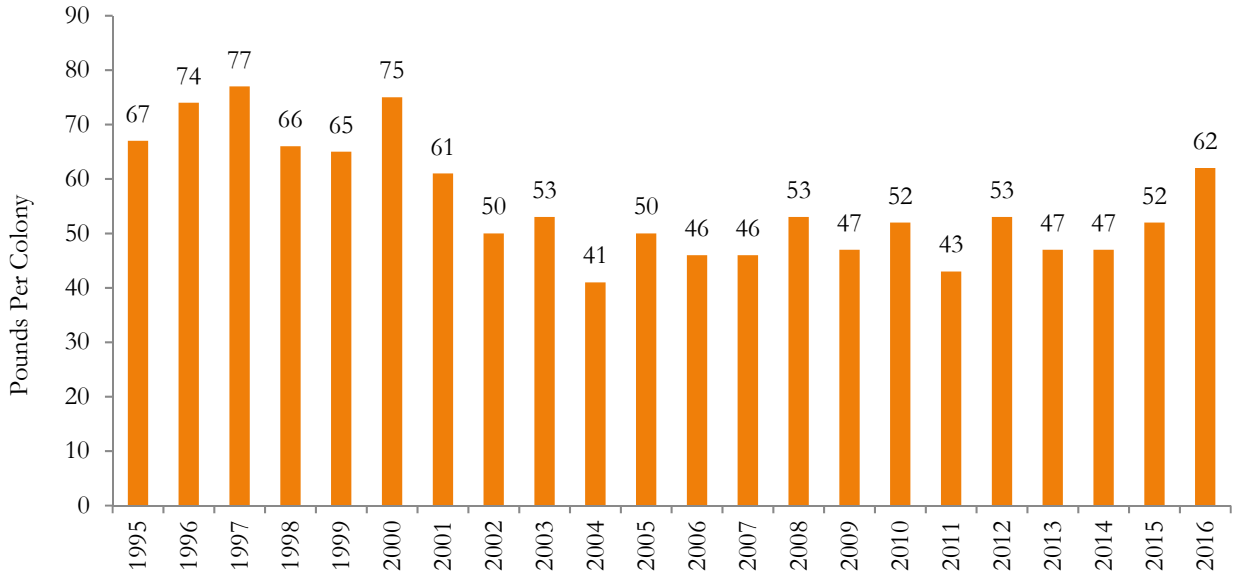
Exhibit 6.1.3 – Missouri Honey Production, 1995 to 2016



Source: USDA, National Agricultural Statistics Service (2017b)

For another view of Missouri honey production, Exhibit 6.1.4 presents average annual production in pounds per colony from 1995 to 2016. During the observed period, colonies were most productive in the mid- and late 1990s. By the mid-2000s, production tended to range from 40 pounds per colony to 55 pounds per colony. More recently, colony productivity increased. In 2016, colonies produced 62 pounds of honey on average (USDA National Agricultural Statistics Service 2017b).

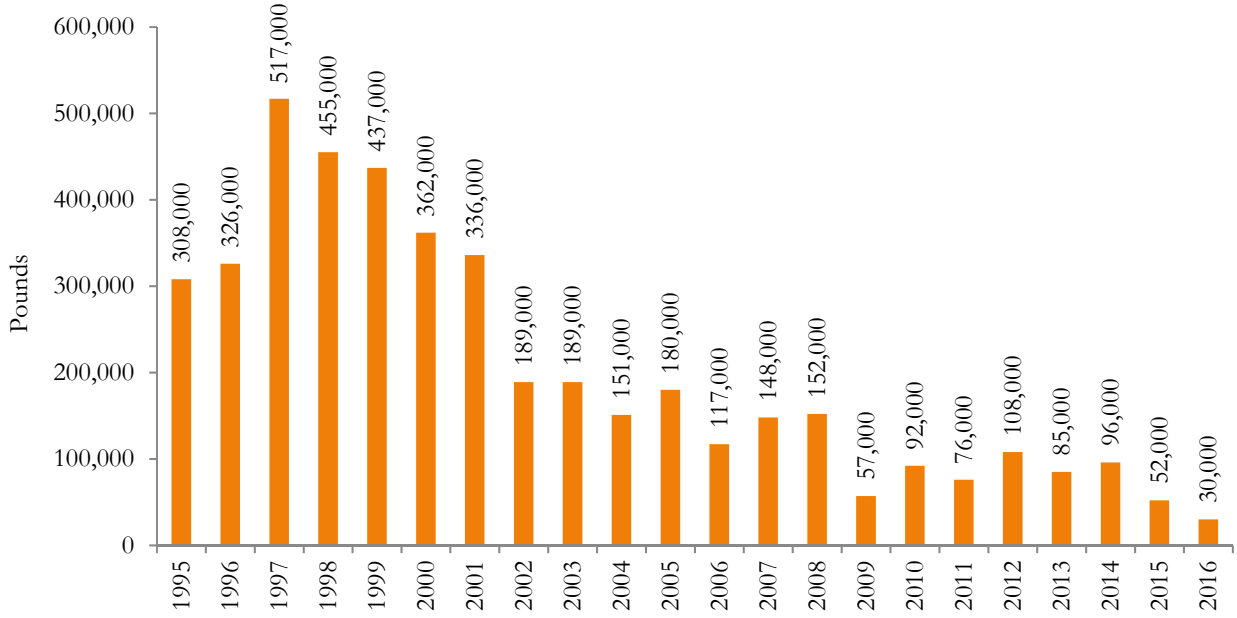
Exhibit 6.1.4 – Missouri Honey Production Per Colony, 1995 to 2016



Source: USDA, National Agricultural Statistics Service (2017b)

From 1995 to 2016, Missouri honey stocks decreased significantly. Exhibit 6.1.5 tracks the trend, according to stock measurements taken in mid-December of each year. Note that USDA considers honey stocks to be stocks held by producers, according to its March 2017 honey report. The decline was most drastic between 1997 and the early and mid-2000s. During the observed period, stocks reached their highest level — 517,000 pounds — in 1997, and they were lowest — 30,000 pounds — in 2016 (USDA National Agricultural Statistics Service 2017b).

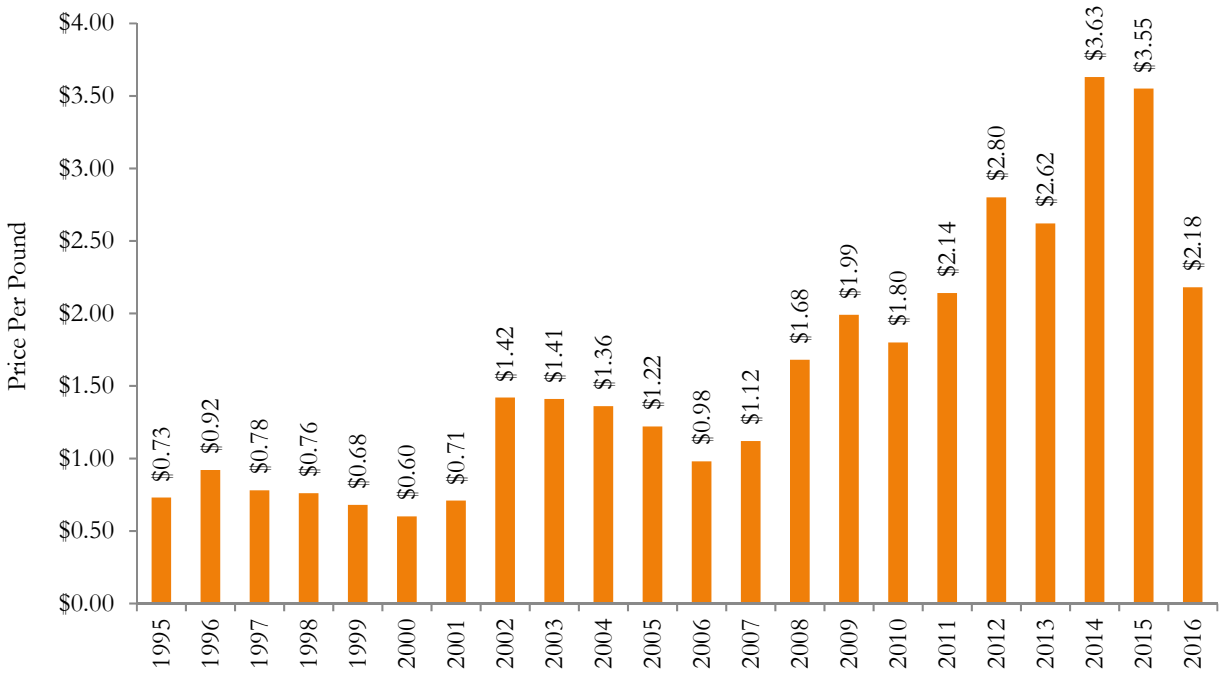
Exhibit 6.1.5 – Missouri Honey Stocks, 1995 to 2016, Mid-December



Source: USDA, National Agricultural Statistics Service (2017b)

As honey production in the state has constricted, prices have strengthened. Exhibit 6.1.6 presents the trend in prices received per pound for Missouri honey. Until the early 2000s, honey prices averaged less than $1 per pound. During the mid-2000s, prices tended to range from $1 per pound to $1.50 per pound. Since then, honey prices have jumped significantly. Prices reached their highest levels — more than $3.50 per pound — in 2014 and 2015. They receded to $2.18 per pound in 2016 (USDA National Agricultural Statistics Service 2017b).

Exhibit 6.1.6 – Prices Received for Missouri Honey, 1995 to 2016

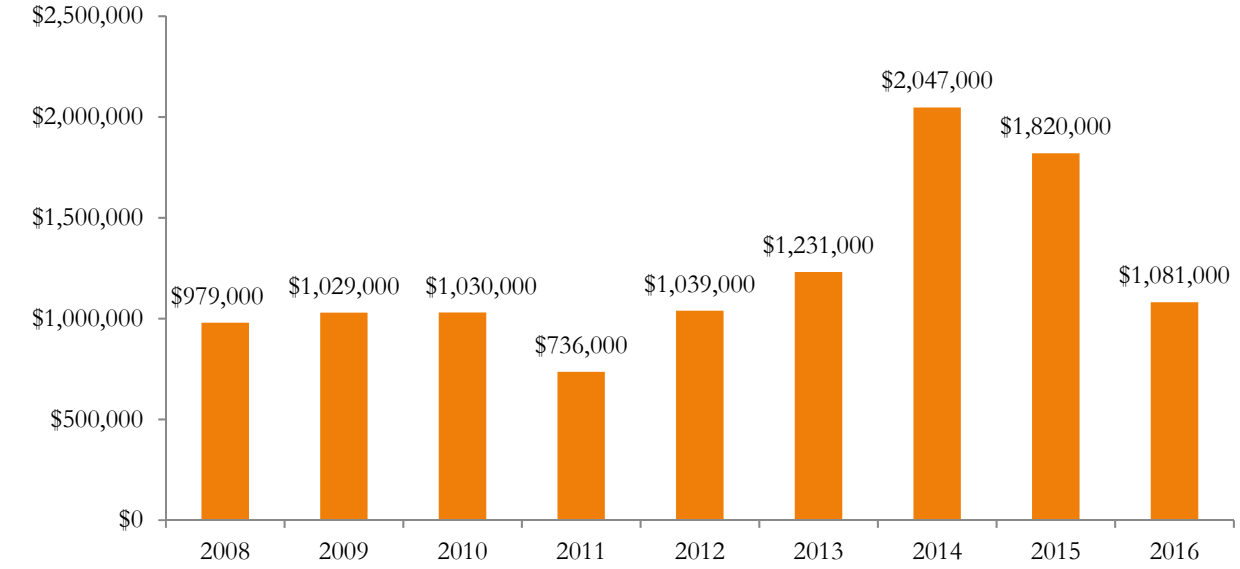


Source: USDA, National Agricultural Statistics Service (2017b)

Exhibit 6.1.7 presents Missouri honey cash receipts from 2008 to 2016. During that time period, cash receipts experienced some volatility. They totaled $979,000 in 2008. Significant growth in cash receipts was recorded from 2013 to 2014. Since then, the value has declined. Cash receipts totaled $1.081 million in 2016 (USDA Economic Research Service 2017).

Compared with total Missouri commodity cash receipts, cash receipts for honey were a small share of that total in 2016. U.S. honey cash receipts in 2016 totaled more than $332 million, and Missouri's share of the U.S. total was 0.3 percent (USDA Economic Research Service 2017).

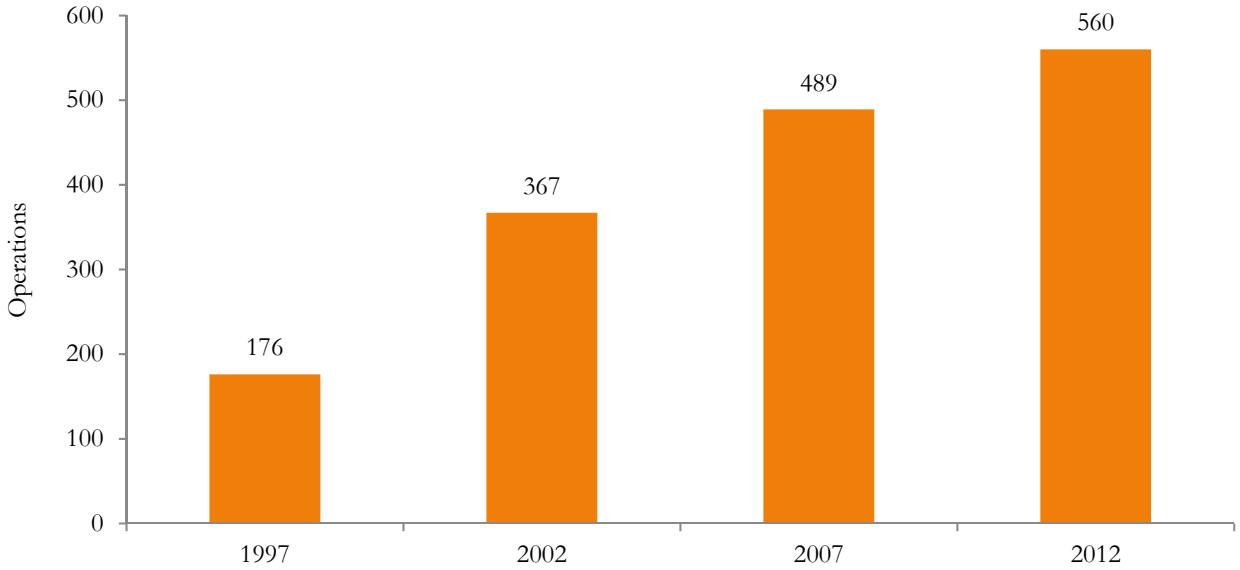
Exhibit 6.1.7 – Missouri Honey Cash Receipts, 2008 to 2016



Source: USDA, Economic Research Service (2017)

In recent years, more Missouri operations have added honey production to their businesses. The increase in operation count has been quite significant, too. Exhibit 6.1.8 illustrates that just 176 operations in Missouri reported that they produced honey during 1997. Steady growth ultimately led to 560 operations producing honey in 2012. Of that total, 372 operations indicated that they made honey sales in 2012 (USDA National Agricultural Statistics Service 2017b).

Exhibit 6.1.8 – Missouri Operations with Honey Production, 1997 to 2012

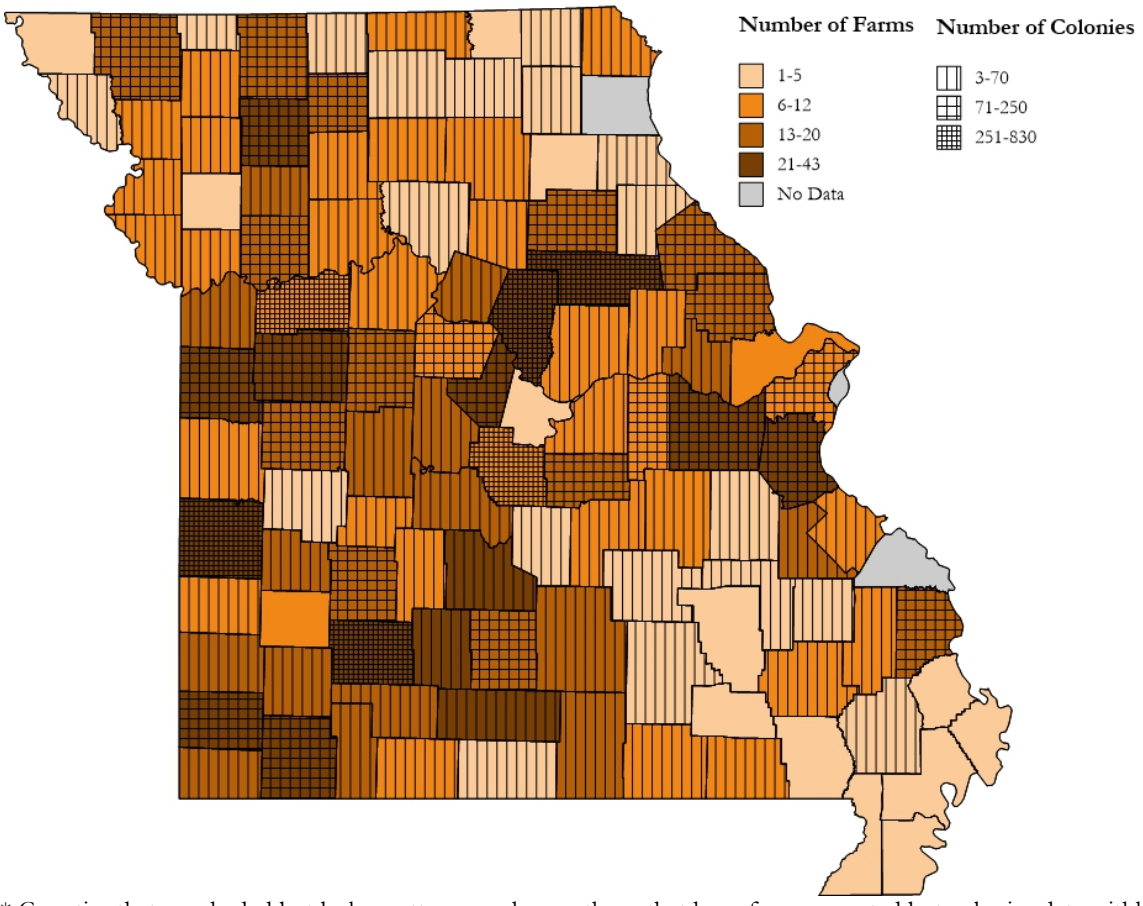


Source: USDA, National Agricultural Statistics Service (2017b)

Honey bee data by county are reported as colony inventory and honey collected. Exhibit 6.1.9 summarizes colony inventory data by county for farms with colonies and number of colonies in

2012. Counties reporting the most farms with honey bee colonies were Vernon County, 43 farms; Franklin County, 33 farms; Cass County, 31 farms; and Newton County, 30 farms. Number of colonies was greatest in Greene County, 830 colonies; Lafayette County, 641 colonies; Boone County, 500 colonies; Vernon County, 489 colonies; and Miller County, 415 colonies (USDA National Agricultural Statistics Service 2014b).

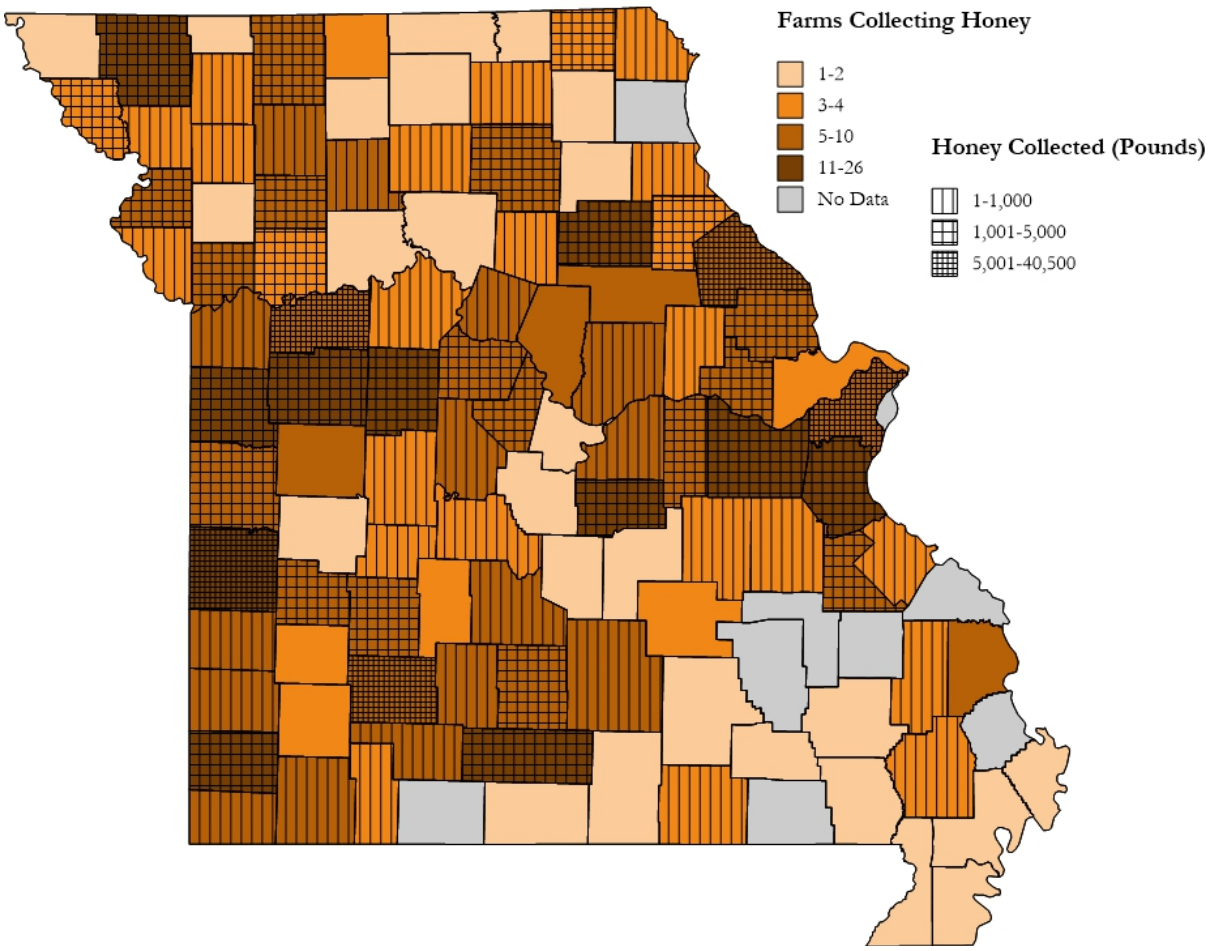
*Exhibit 6.1.9 – Missouri Honey Bee Farms with Colonies and Number of Colonies by County, 2012**



* Counties that are shaded but lack a pattern overlay are those that have farms reported but colonies data withheld.
Source: USDA, National Agricultural Statistics Service (2014)

By county, Exhibit 6.1.10 summarizes the number of Missouri farms collecting honey and the honey that was collected in 2012. Vernon County had the most farms — 26 operations — collecting honey at the time. Several counties tied for ranking second on this metric and had 14 farms collecting honey: Cass County, Douglas County, Johnson County and Newton County. Honey collection itself was highest in Lafayette County, 40,500 pounds; Vernon County, 20,744 pounds; and St. Louis County, 19,190 pounds (USDA National Agricultural Statistics Service 2014b).

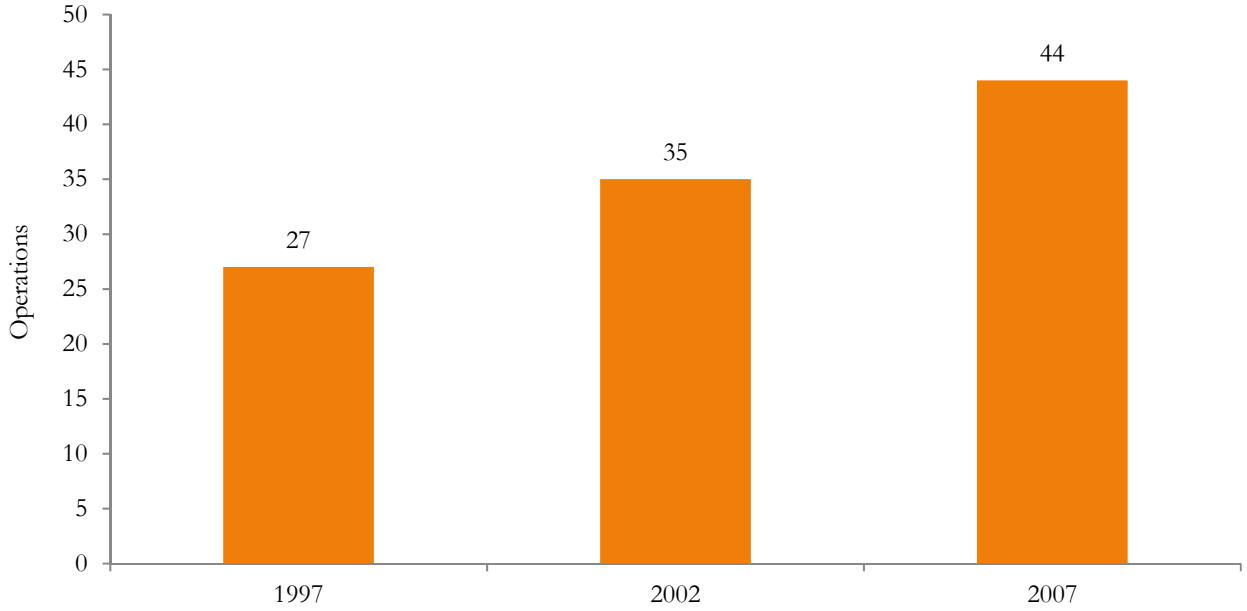
*Exhibit 6.1.10 – Missouri Farms Collecting Honey and Honey Collected by County, 2012**



* Counties that are shaded but lack a pattern overlay are those that have farm count reported but honey collection data withheld.
Source: USDA, National Agricultural Statistics Service (2014)

In addition to producing honey, some honey bee operations also tailor their businesses to include honey bee colony sales. During recent years, the number of operations selling honey bee colonies increased. See Exhibit 6.1.11. Missouri operations selling honey bee colonies totaled 27 operations in 1997. The operation count increased to 44 operations in 2007, which was the most recent year with data available (USDA National Agricultural Statistics Service 2017b).

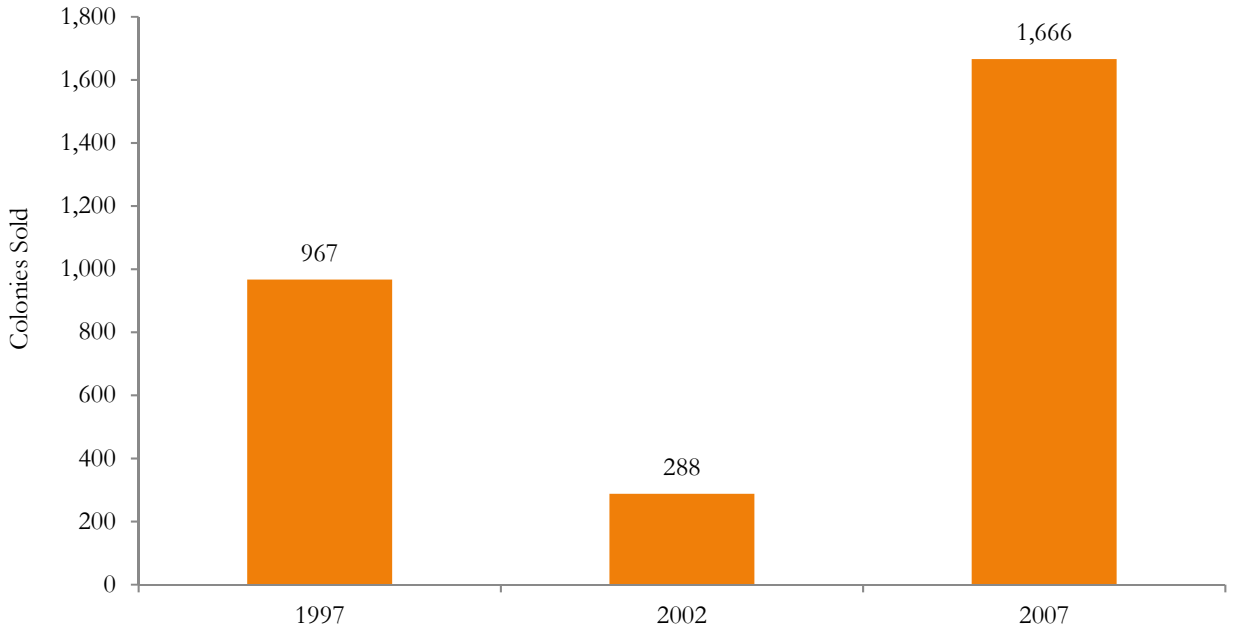
Exhibit 6.1.11 – Missouri Operations Selling Honey Bee Colonies, 1997 to 2007



Source: USDA, National Agricultural Statistics Service (2017b)

For 1997, 2002 and 2007, Exhibit 6.1.12 reports the number of honey bee colonies sold within Missouri. Colony sales were greatest in 1997 and 2007. They totaled 967 colonies and 1,666 colonies, respectively. Sales in 2002 were significantly lower and totaled just 288 colonies (USDA National Agricultural Statistics Service).

Exhibit 6.1.12 – Missouri Honey Bee Colony Sales, 1997 to 2007



Source: USDA, National Agricultural Statistics Service (2017b)

6.2 Hops

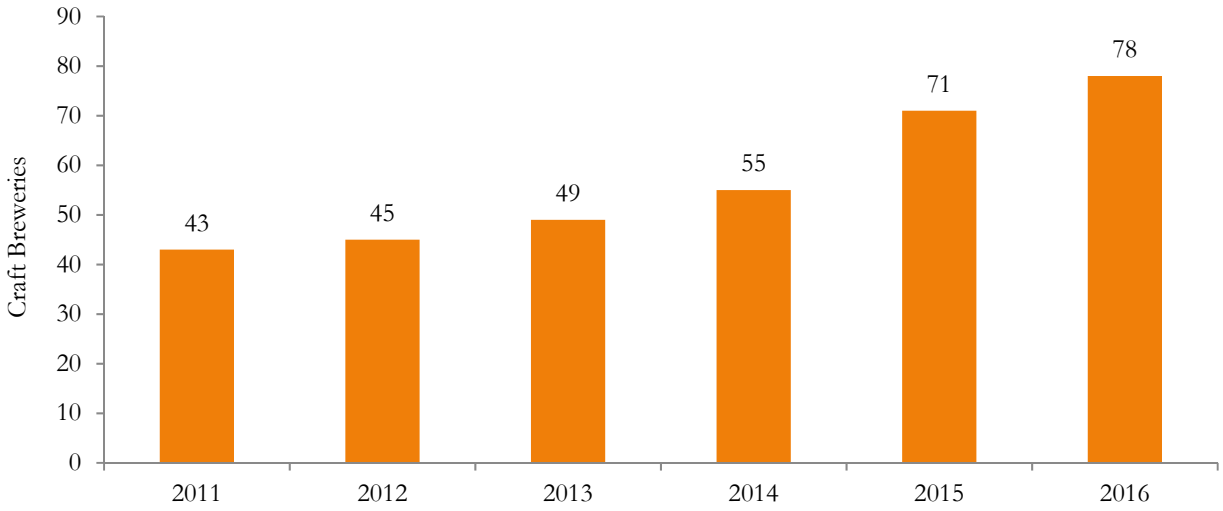
For Missouri, the USDA National Agricultural Statistics Service hasn't reported hops data in previous years (USDA National Agricultural Statistics Service 2017b). The Hop Growers of America releases an annual statistical report that offers estimates in addition to those shared in the USDA National Agricultural Statistics Service reporting. Past statistical reports from the grower group did not include data points for Missouri, however (Hop Growers of America 2017).

Despite the lack of data, some hops industry activity appears to have occurred in previous years. Based near Edgerton, Mo., Royal Hops Company has operated as a "hops yard." On its website, the company shares that it formed to supply regional craft brewers with a local hops supply. The operation is reported to grow 10 hops varieties. In previous years, the company opened its operation to U-pick (Royal Hops Company). During 2016, Royal Hops Co. completed its third harvest. The company harvested three acres that yielded 1,000 pounds. By 2017, the company anticipated that its total production would reach 4,000 pounds (Davis 2016).

In Ste. Genevieve, the Charleville Vineyard and Microbrewery has grown hops. The St. Louis Post-Dispatch reported in 2012 that the Charleville Vineyard and Microbrewery had maintained roughly 75 hop plants at the time. Another grower had established some hops plants near De Soto (Gustin 2012). Other hops growers in Missouri include Hoppiness Farms near Hermann, Mo. On its website, the company describes its business as "growing quality hops for craft beer enthusiasts" (Hoppiness Farms).

Missouri-grown hops would support that state's evolving craft brewery industry. Between 2011 and 2016, Missouri gained 35 craft breweries in the overall brewery count. Exhibit 6.2.1 illustrates the number of Missouri craft breweries by year, according to data reported by the Brewers Association For Small and Independent Craft Brewers. In 2016, the state had 78 craft breweries. It ranked 20th in the country for count of craft breweries. Craft beer production in the state was more than 368,800 barrels (Brewers Association For Small and Independent Craft Brewers 2017).

Exhibit 6.2.1 – Missouri Craft Breweries, 2011 to 2016

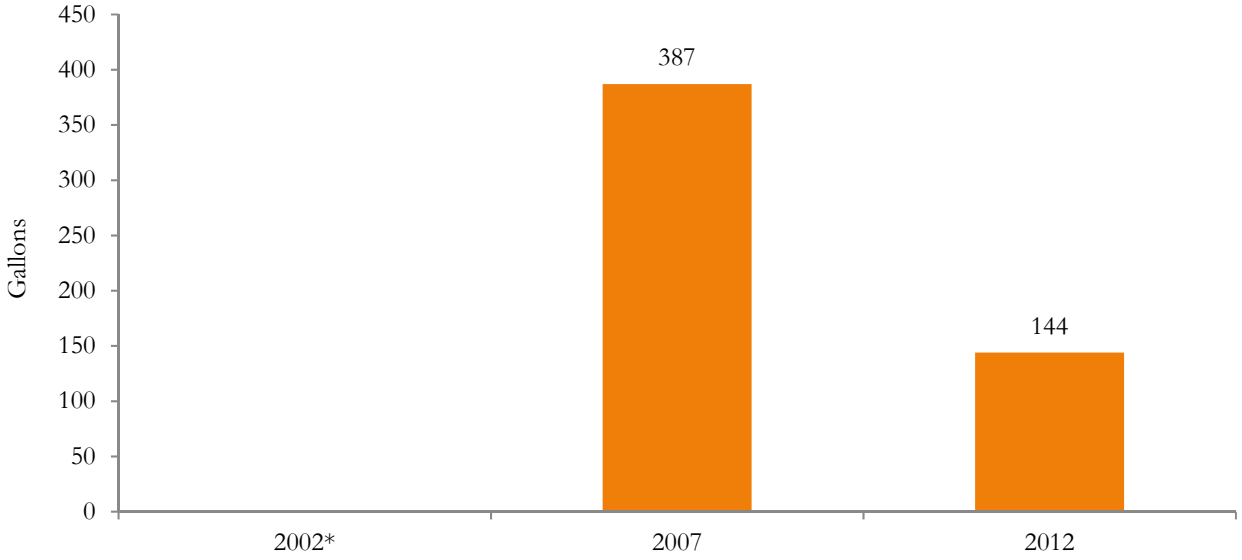


Source: Brewers Association For Small and Independent Craft Brewers (2017)

6.3 Maple Syrup

Missouri maple syrup production data are somewhat limited. USDA released data sets for 2002, 2007 and 2012. Exhibit 6.3.1 summarizes the Missouri production data available. In 2002, USDA withheld releasing a specific value for Missouri maple syrup production. However, 2007 maple syrup production totaled 387 gallons. The production level dropped in 2012 to 144 gallons (USDA National Agricultural Statistics Service 2017b).

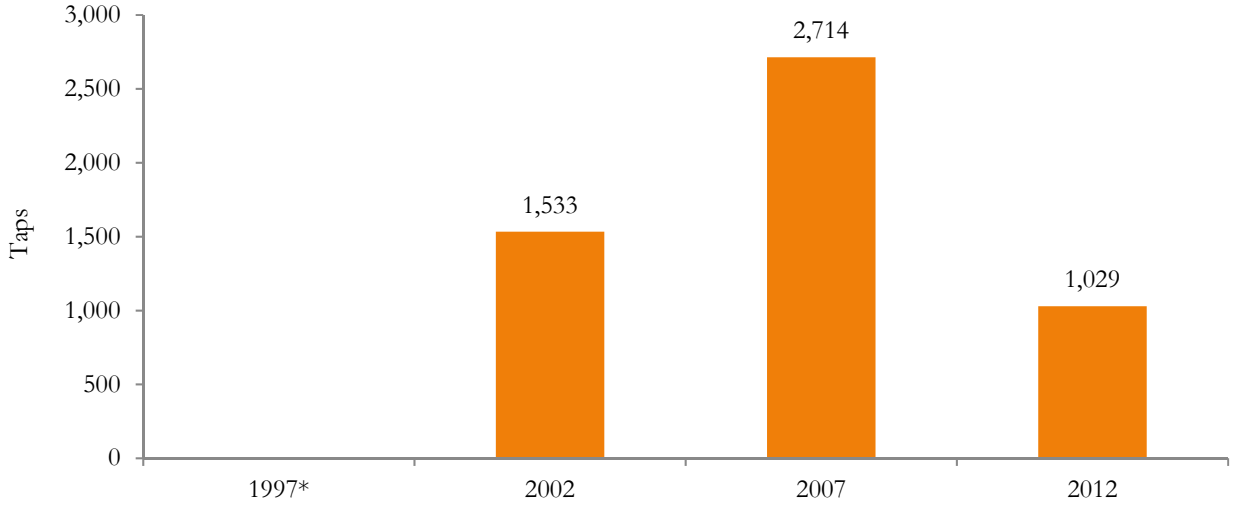
Exhibit 6.3.1 – Missouri Maple Syrup Production, 2002 to 2012



* Production data for 2002 were withheld.
Source: USDA, National Agricultural Statistics Service (2017b)

For number of maple syrup taps, Exhibit 6.3.2 shares information from 1997 to 2012. USDA withheld the count of Missouri maple syrup taps for 1997. However, data points were available for 2002, 2007 and 2012. Missouri increased its number of maple syrup taps between 2002 and 2007, but the number receded to its lowest level of the observed period in 2012. Missouri operations reported having 1,029 maple syrup taps in 2012. The state's highest count was 2,714 taps during 2007 (USDA National Agricultural Statistics Service 2017b).

Exhibit 6.3.2 – Missouri Maple Syrup Taps, 1997 to 2012

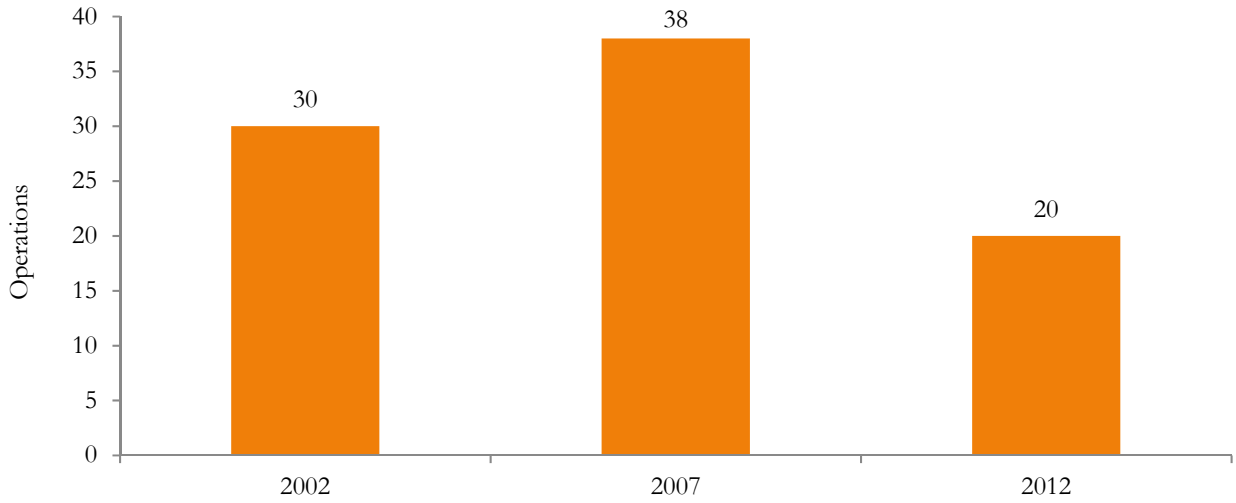


* Data for number of taps were withheld for 1997.
Source: USDA, National Agricultural Statistics Service (2017b)

With respect to maple syrup operations, data were reported for operations with maple syrup production and operations with maple syrup taps. Exhibit 6.3.3 presents data for the former. Of the observed years, number of Missouri operations producing maple syrup peaked at 38 operations in 2007. During 2012 — the most recent year with data reported — Missouri operations producing maple syrup totaled 20 operations (USDA National Agricultural Statistics Service 2017b).

The count of operations with taps nearly mirrors the count of operations with production. The exception was that number of operations with taps was reported in 1997. In that year, one Missouri operation reported having maple syrup taps. Operations with maple syrup production weren't reported in 1997 (USDA National Agricultural Statistics Service 2017b).

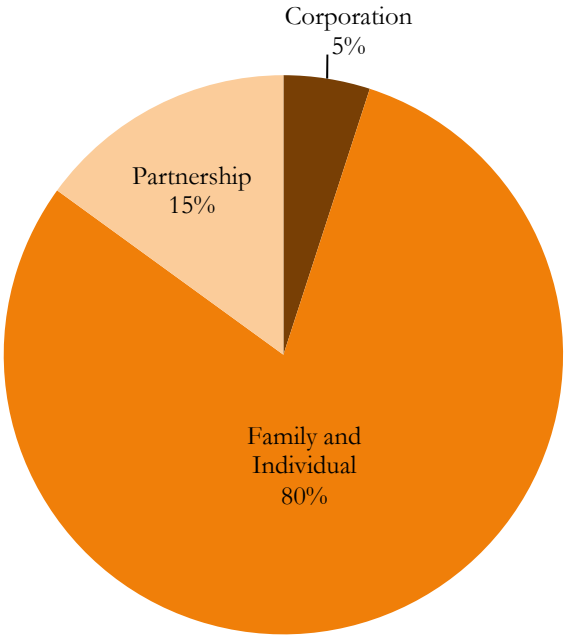
Exhibit 6.3.3 – Missouri Operations with Maple Syrup Production, 2002 to 2012



Source: USDA, National Agricultural Statistics Service (2017b)

During 2012, all 20 Missouri operations with maple syrup production also recorded maple syrup sales. Operations reporting sales were most frequently organized as family or individual operations for tax purposes. Exhibit 6.3.4 highlights the share of operations with sales according to their selected organizational structure for tax purposes. Eighty percent were structured as family or individual farms. Fifteen percent were organized as partnerships, and 5 percent were organized as corporations (USDA National Agricultural Statistics Service 2017b).

Exhibit 6.3.4 – Share of Missouri Maple Syrup Operations by Organizational Structure, 2012

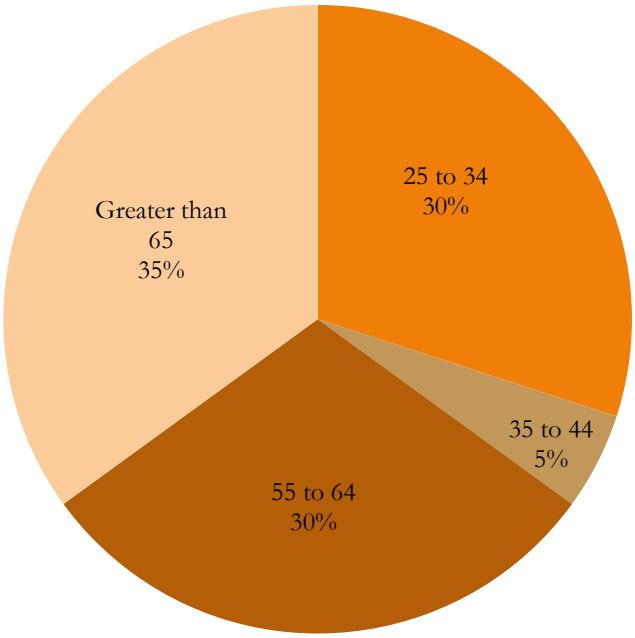


Source: USDA, National Agricultural Statistics Service (2017b)

A strong majority of Missouri maple syrup farm principal operators in 2012 named something other than farming as their primary occupation. Eighty percent of the principal operators indicated that farming wasn't their primary occupation. Just 20 percent reported that farming was their primary occupation. A majority of the principal operators in 2012 also noted that they had significant experience on their current operations. Fifty-five percent shared that they had been on their present operation for 11 years or more. Just 10 percent had spent less than six years on their present operation (USDA National Agricultural Statistics Service 2017b).

In terms of age, principal operators of Missouri maple syrup operations in 2012 tended to skew older. Exhibit 6.3.5 indicates that nearly two-thirds of the principal operators in 2012 were at least 55 years old. Five percent reported being 35- to 44-year-olds, and 30 percent were between 25 years old and 34 years old (USDA National Agricultural Statistics Service 2017b).

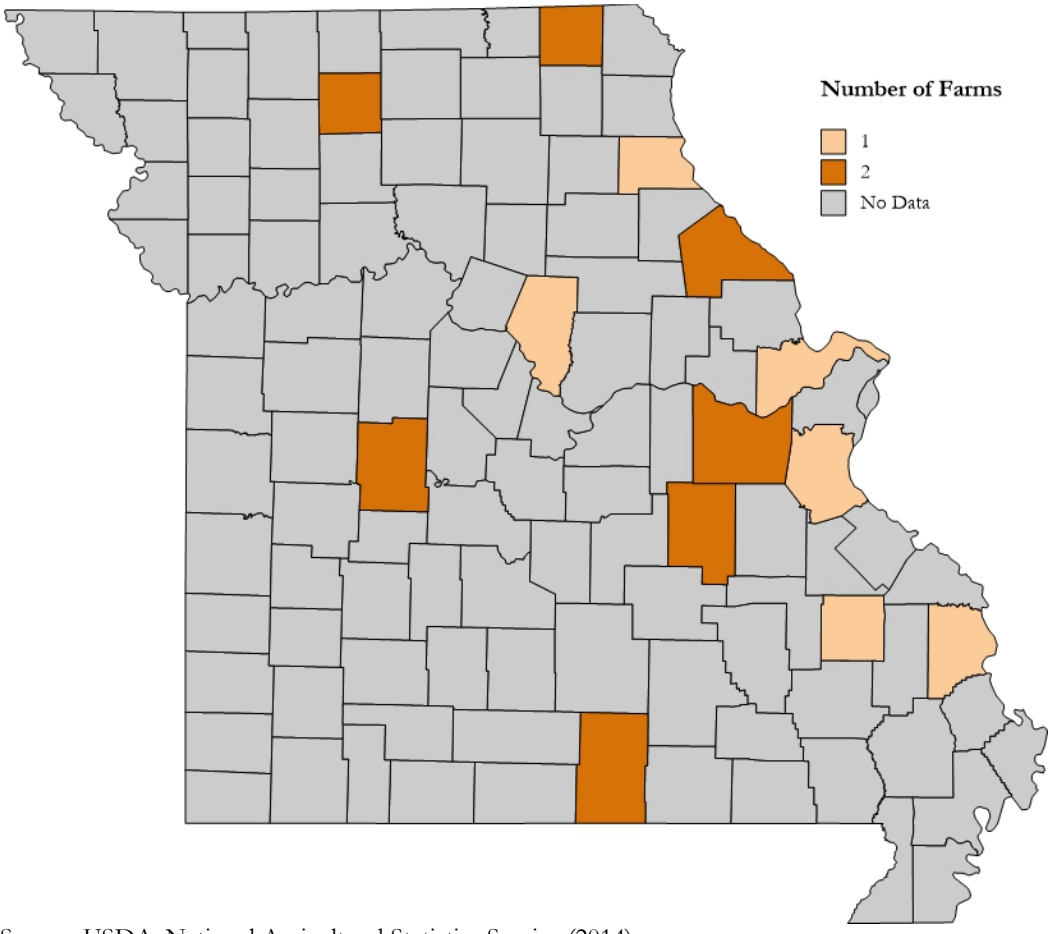
Exhibit 6.3.5 – Age Distribution of Missouri Maple Syrup Operation Principal Operators, 2012



Source: USDA, National Agricultural Statistics Service (2017b)

For a view of Missouri maple syrup activity by county, Exhibit 6.3.6 highlights Missouri counties according to their count of maple syrup operations with taps. Counties reporting the greatest number of maple syrup operations with taps in 2012 were Benton, Crawford, Franklin, Grundy, Howell, Pike and Scotland counties. Two operations in each of these counties were reported to have maple syrup taps. Note that data were withheld for number of taps and syrup production by county (USDA National Agricultural Statistics Service 2014b).

Exhibit 6.3.6 – Missouri Maple Syrup Operations with Taps by County, 2012



Source: USDA, National Agricultural Statistics Service (2014)

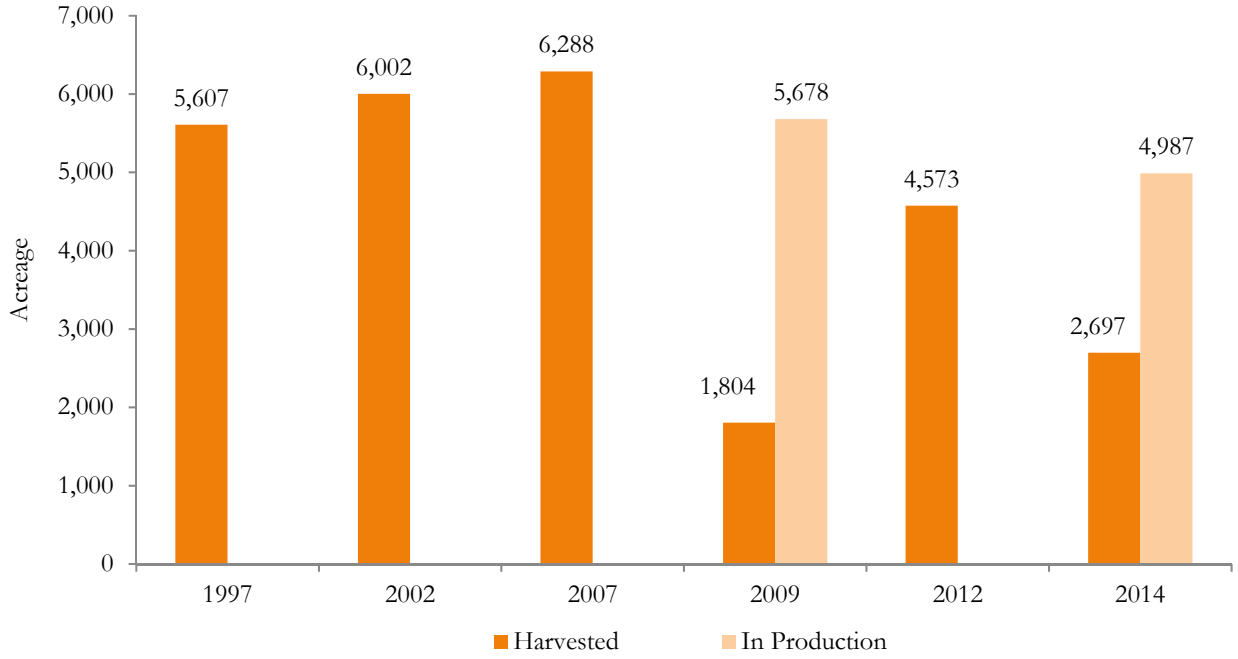
Data for organic maple syrup production in Missouri was limited to 2008. At the time, two operations were reported to have taps for organic maple syrup production. One of those operations was certified organic, and one was exempt organic. Due to the low operation count and not wanting to disclose data for individual operations, no data for organic maple syrup production, sales or number of taps were released (USDA National Agricultural Statistics Service 2017b). For a definition of exempt and certified organic, see the Methodology section.

6.4 Turfgrass

For turfgrass, the USDA National Agricultural Statistics Service reports data for sod that's raised in Missouri. Acreage data have been measured as acreage harvested and acreage in production. Exhibit 6.4.1 illustrates data points for years when data were available. Note that acreage in production was only released in 2009 and 2014. The graph shows that sod acreage harvested increased early in the observation period and then decreased. Of years with data reported, harvested acreage reached its greatest level — 6,288 acres — in 2007. It dropped to its lowest level of 1,804 acres in 2009. Harvested acreage was fairly low at just less than 2,700 acres in 2014 (USDA National Agricultural Statistics Service 2017b).

Note that just a portion of sod in production was harvested during 2009 and 2014. Harvested acreage was just 31.8 percent of acreage in production during 2009. Sod acreage harvested as a share of sod acreage in production was slightly higher in 2014. At the time, harvested sod acreage was 54.1 percent of sod acreage in production (USDA National Agricultural Statistics Service 2017b).

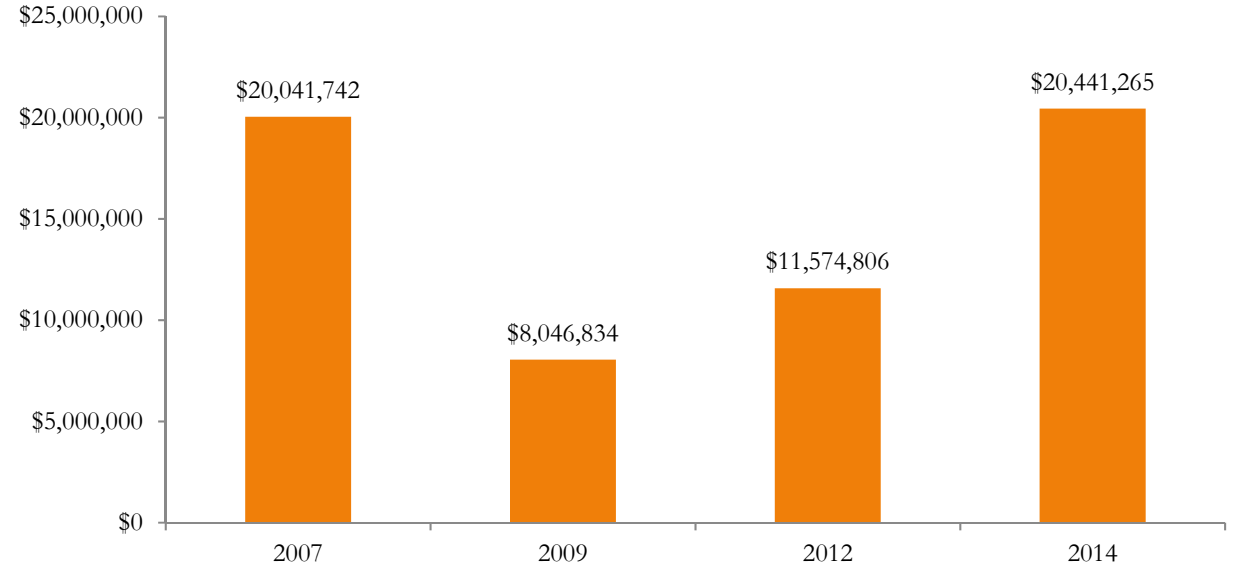
Exhibit 6.4.1 – Missouri Sod Acreage Harvested and Acreage in Production, 1997 to 2014



Source: USDA, National Agricultural Statistics Service (2017b)

Sod sales in dollars have been reported in U.S. Census of Agriculture years. Exhibit 6.4.2 summarizes sod sales in 2007, 2009, 2012 and 2014. As illustrated, sod sales declined dramatically from 2007 to 2009, but they then increased quite sharply between 2009 and 2014. Sod sales exceeded $20 million in 2014; the 2014 sales value was the highest of those from the observed period (USDA National Agricultural Statistics Service 2017b).

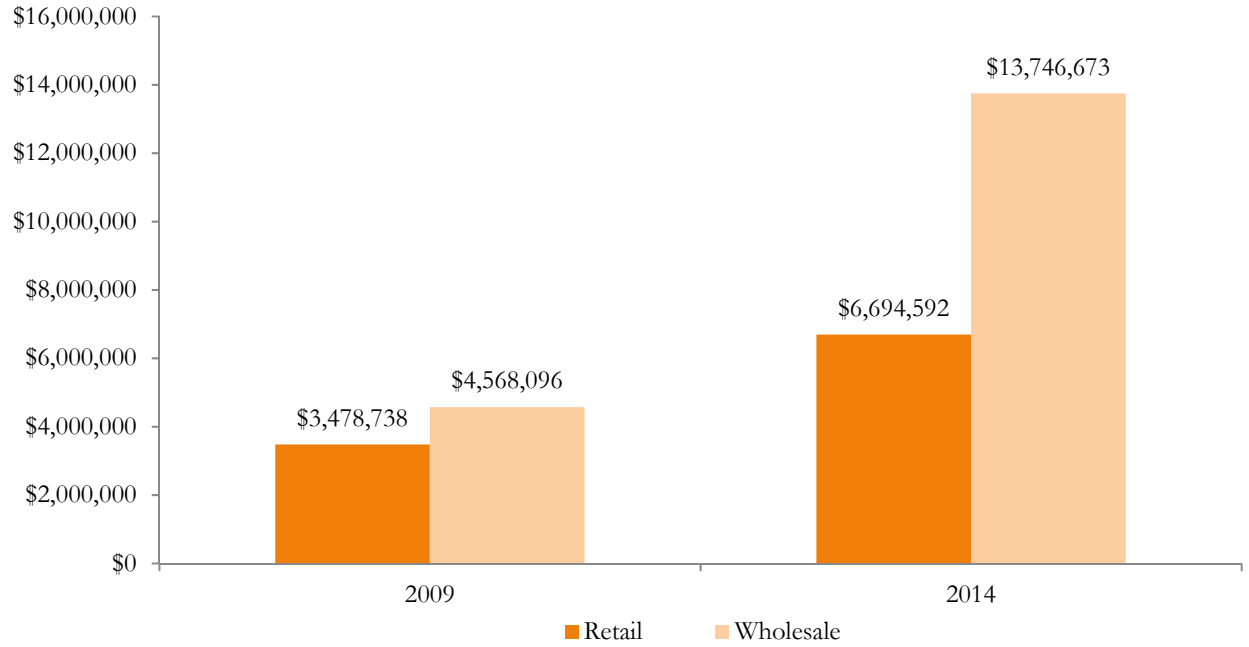
Exhibit 6.4.2 – Missouri Sod Sales, 2007 to 2014



Source: USDA, National Agricultural Statistics Service (2017b)

In years past, Missouri sod sales have accumulated to a greater extent in the wholesale channel than the retail channel. Exhibit 6.4.3 charts wholesale and retail sod sales in 2009 and 2014. Note the particular jump in wholesale sod sales from 2009 to 2014. Of all sod sales, 56.8 percent were wholesale transactions in 2009. In 2014, wholesale's share had increased to 67.2 percent (USDA National Agricultural Statistics Service 2017b).

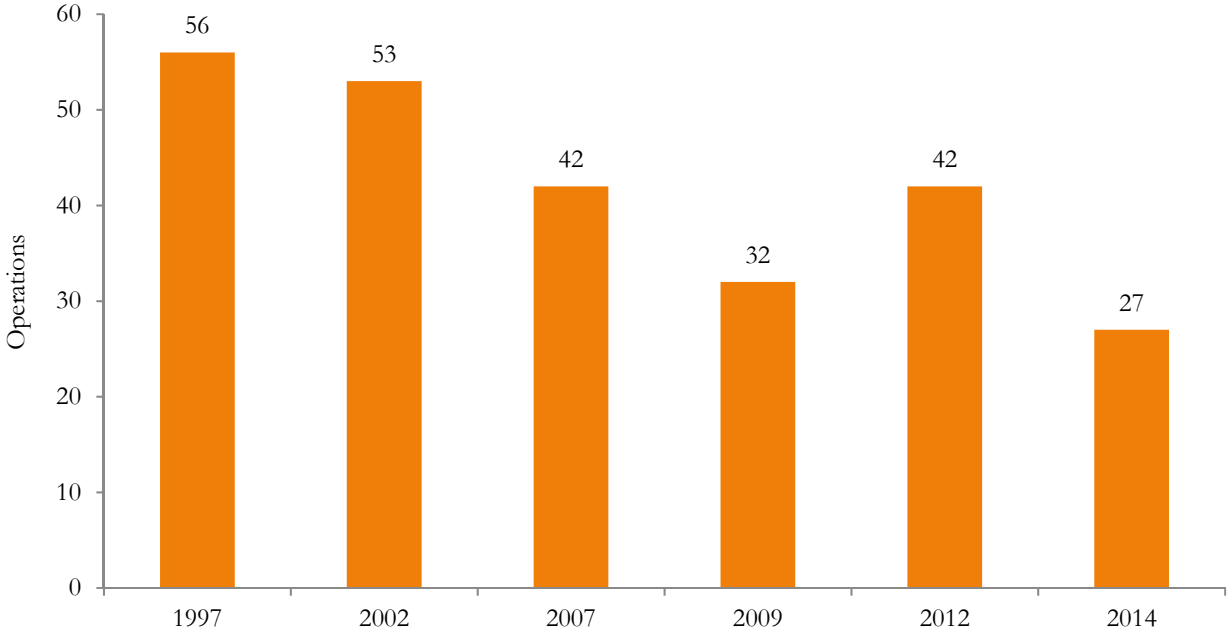
Exhibit 6.4.3 – Missouri Sod Wholesale and Retail Sales, 2009 and 2014



Source: USDA, National Agricultural Statistics Service (2017b)

Missouri operations have gradually exited the sod business. In 1997, 56 operations reported that they harvested sod acreage. USDA published that just 27 operations harvested sod in 2014. Exhibit 6.4.4 illustrates the trend in number of Missouri operations harvesting sod during selected years from 1997 to 2014 (USDA National Agricultural Statistics Service 2017b).

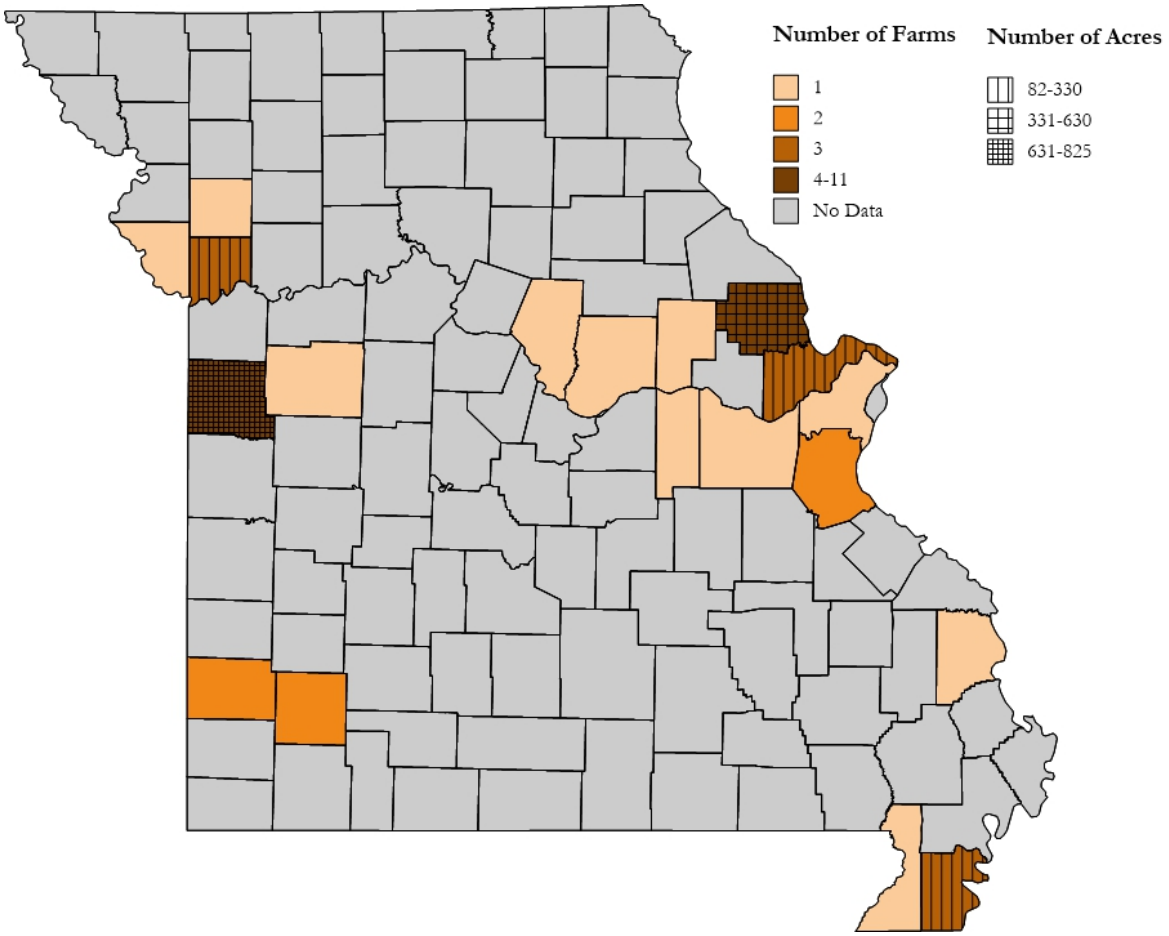
Exhibit 6.4.4 – Missouri Operations with Harvested Sod Area, 1997 to 2014



Source: USDA, National Agricultural Statistics Service (2017b)

Sod production in Missouri has occurred in several different counties. In 2012, harvested sod acreage was highest in Cass County, 825 acres, and Lincoln County, 628 acres. Exhibit 6.4.5 maps Missouri counties according to their sod acreage harvested and operations with area harvested. The count of operations with sod area harvested was highest in Cass County, 11 operations, and Lincoln County, five operations. For the county-by-county harvested acreage data, note that data for some counties weren't disclosed (USDA National Agricultural Statistics Service 2017b).

*Exhibit 6.4.5 – Missouri Harvested Sod Acreage and Operations by County, 2012**



* Counties that are shaded but lack a pattern overlay are those that have farms reported but acreage data withheld.
Source: USDA, National Agricultural Statistics Service (2017b)