

# Mapping the Agricultural Assets of Clay County, Tennessee

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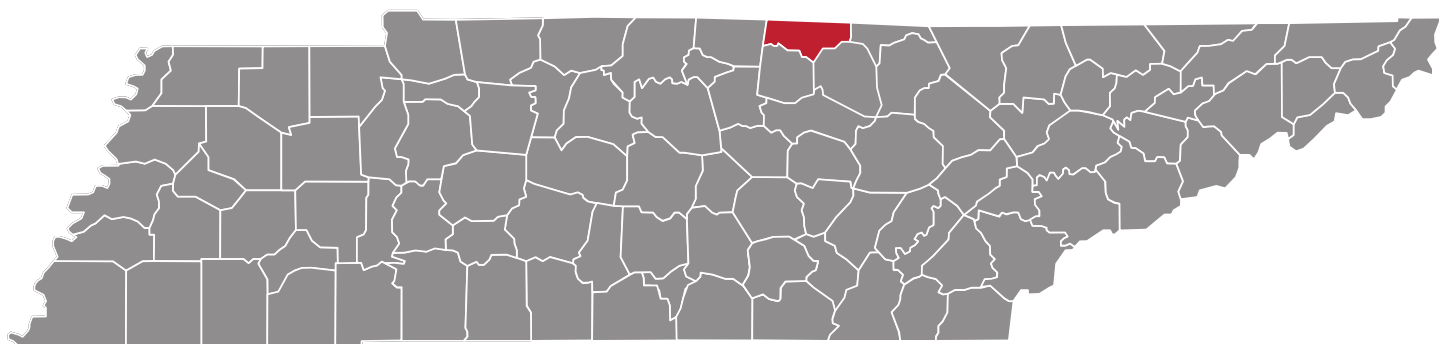
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# Mapping the Agricultural Assets of Clay County, Tennessee



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## Introduction

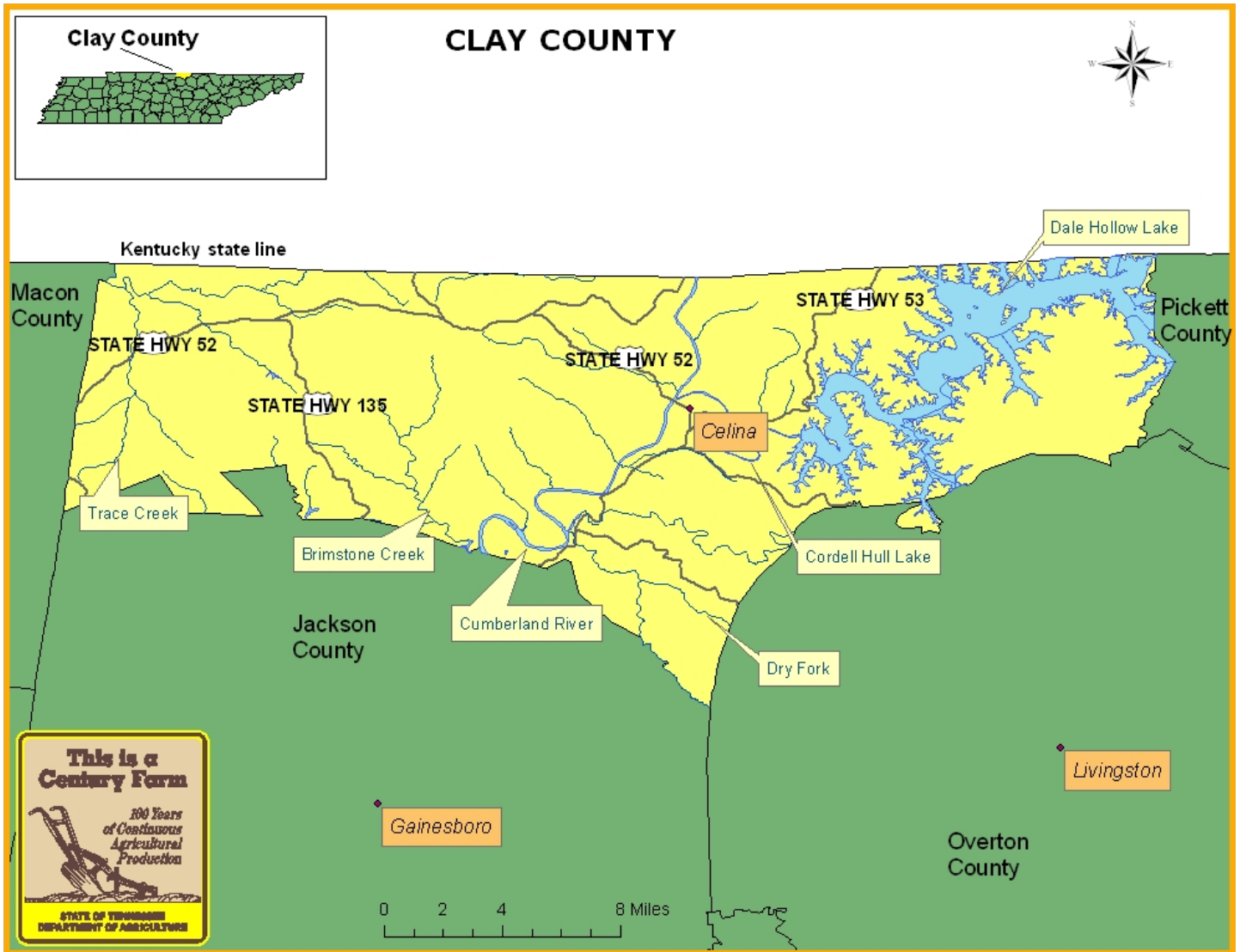
Presented here is an agricultural asset mapping report for Clay County, Tennessee. The report is based on a combination of focus group meetings with local agricultural leaders and secondary data. The primary goal is to help local leaders identify agricultural assets that could be used to support economic growth and development of the county. A secondary goal is to increase the understanding of local agriculture. Several other counties, Grundy (Hughes and Kimbro, 2021), Hancock (Hughes et al., 2018a), Hardeman (Hughes et al., 2018b), Lauderdale (Hughes and Dupree, 2022), Perry (Hughes and Mathenia, 2021), and Wayne (Hughes and Harris, 2022) have undergone the same effort. We believe that replicating this approach could be beneficial for other interested counties.

General facts about Clay County are provided, followed by a discussion of information derived from an asset mapping exercise with local agribusiness leaders. The opportunities indicated by local leaders are analyzed, including recommendations for pursuing these targets. The most promising opportunities as identified by local leaders are presented followed by a summary and conclusions including a call for further action.

## Background on Clay County

Situated on the Kentucky Border in north central Tennessee, Clay County is rich in scenic beauty and local history. The county comprises 259 square miles of which 237 is land and 23 is water (primarily Dale Hollow Lake) (US Census, 2023). State highways 52, 53, 135, 292 and 294 cross the county (Figure 1). The town of Celina is the county seat. There are numerous unincorporated communities including Bakerton, Baptist Ridge, Free Hill, Pea Ridge, Hermitage Springs, Midway and Moss. The county is bordered by Pickett County and Overton County to the east and southeast, Jackson County to the south and Macon County to the west. To the north it is bordered by the three Kentucky Counties of Clinton, Cumberland and Monroe.

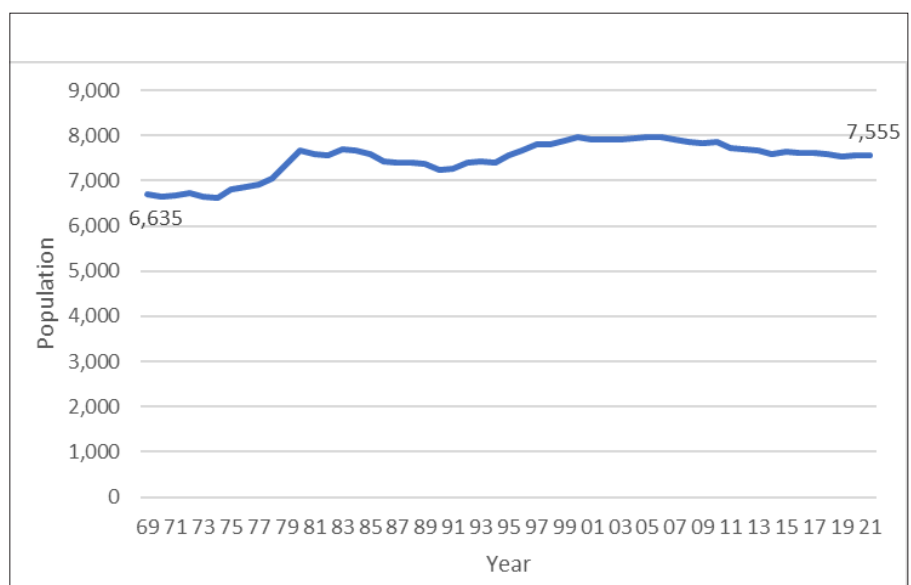
Figure 1. Map of Clay County, Tennessee.



Source: Tennessee Century Farms, 2022.

The 2022 population was estimated to be 7,620, a slight increase from 2020. As of 2021, the US Census Bureau reports there are 2,973 households with an average of 2.51 persons per household. The median household income is \$38,058 with an estimated 18.7 percent of residents in poverty. As shown in Figure 2, the population has increased by around 1,000 individuals since 1969 (US Bureau of Economic Analysis, 2023).

Figure 2. Clay County Tennessee Population, 1969-2020.



Source: Bureau of Economic Analysis, 2023.

Agriculture production in Clay County makes a significant contribution to the local economy. As of 2017, there were 404 farming operations with an average size of 186 acres (Census of Agriculture, 2020). Among the 75,248 acres of farmland, 33 percent was in cropland, 34 percent in woodland, 27 percent was in pasture and 6 percent was devoted to other uses. The top commodities for Clay County include tobacco with \$2.890 million in sales, poultry and eggs with \$47.964 million in sales, and cattle at \$5.251 million in sales.

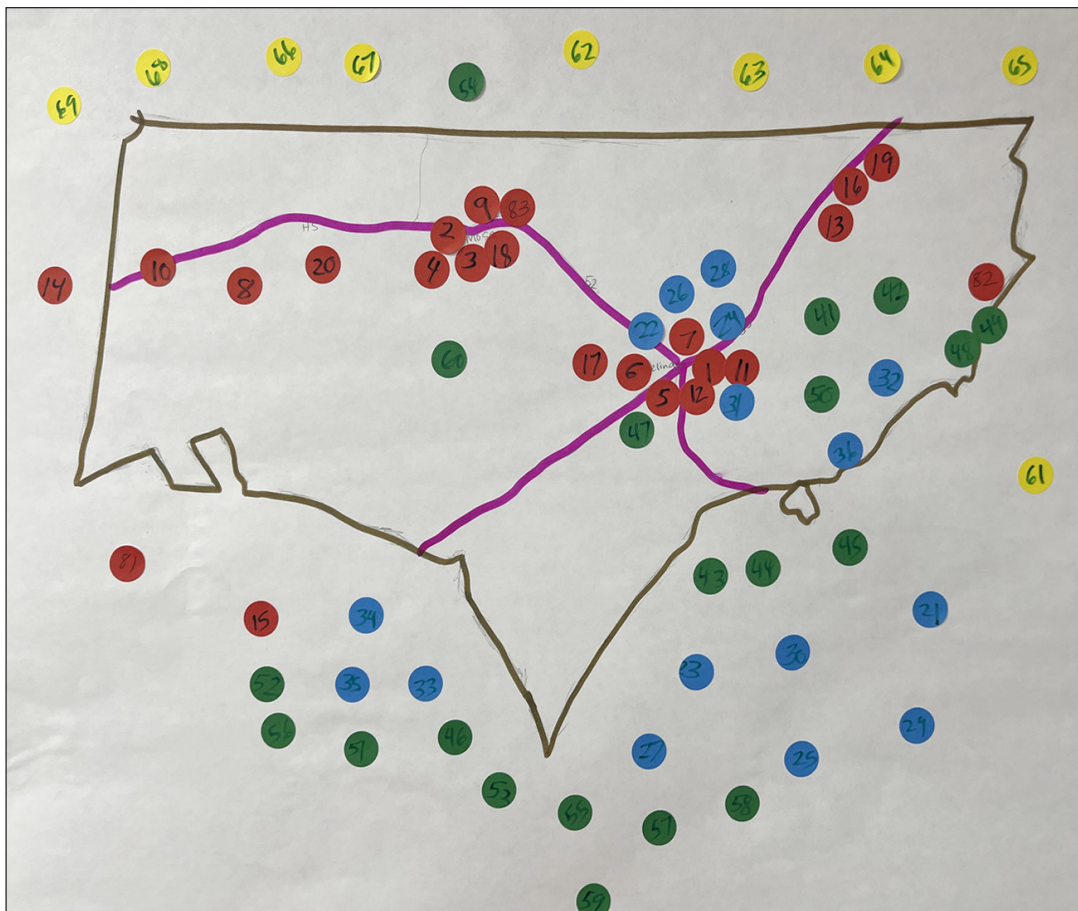
Based on data from an economic model of the county economy for 2021 (Minnesota IMPLAN Group, Inc., 2000), crop farming accounted for 126 part and full-time jobs and animal production accounted for 258 part and full-time jobs. Economic impact analysis conducted for all agribusiness activity in Clay County based on the same model showed a total direct contribution of 413 jobs and \$97.1 million in output, and a total impact of \$125.4 million in output and 625 jobs (or 22.9 percent of all employment in the county) (Hughes 2023).

Clay County is a Tier Four Tennessee Economy Development County and an Appalachian Region Commission distressed county meaning it ranks at or near the bottom (25 percent) of Tennessee counties in terms of poverty rate, unemployment rate, per capita income and other economic indicators (Transparent Tennessee, 2023).

### Asset Mapping Exercise

An agricultural asset mapping exercise was held with county agricultural leaders (farmers, foresters, agricultural-based businesses and local government leaders) on November 3, 2022. Participants were asked to think about opportunities for the county such as local and regional markets and target areas for local agriculture or agribusiness. The participants were recruited by Kristen Rich, University of Tennessee Extension agent, and represented agricultural leadership in Clay County. Participants were given dots to place where local businesses (red), physical assets (blue), challenges (yellow) and possible opportunities (green) are available throughout the county (Figure 3 and Figure 4). We present the challenges, local businesses, local assets and opportunities offered by the participants in the following sections.

Figure 3. Results from Agricultural Asset Mapping Exercise for Clay County.



**Figure 4. Listed Businesses, Agricultural Asset Mapping Exercise for Clay County.**

Agri-Businesses		Opportunities	
1.	D&D Meats Processing, USDA - Retail Sales	41.	Huge Agritourism Opportunity - close to Lake
2.	Moss Sawmills	42.	Higher end restaurant near lake - Local Food Options
3.	Barky Beaver - Soil Mixes, mulches	43.	Feed Mills for chicken houses??? - These are vertically integrated - maybe opportunities for other feeds
4.	Watson Sawmill	44.	Other supplies for Poultry Producers
5.	Clay County Farm Supply	45.	Fishing Operation - Fisheries
6.	Celina Lumber	46.	Cattle - Selling Females - Open/Bred Heifer and Cow Sales
7.	T&L Wholesale (Bait Shop/Fish/Minnows)	47.	Develop/Increase Livestock Facilities @ Fairgrounds for sales, BQA Hands-On Training and other educational opportunities
8.	Agritourism - Acres of Grace Farms - (A Southern Marketplace)	48.	Distillery
9.	Ginny Ridge Farm Exchange - Meats, Fruits, Vegetables	49.	Brewery
10.	Browning Land & Cattle (Order Buyer)	50.	Dale Hollow Lake Hunting
11.	Donaldson Farms (Feedlot)	51.	Hunting in General/Leases
12.	Clay County Animal Hospital - Large & Small	52.	Expand/Increase # of Poultry Houses
13.	Fish Hatchery (TWRA)	53.	Contract Workers for Poultry Related Jobs
14.	Logging Crews	54.	Christmas Tree Farm
15.	Poultry Farms - Cobb (eggs, breeders), Tyson (broilers), Hansome Brook Farms (eggs, organic, free-range)	55.	Jams/Jellies
16.	Fencing - Chase Emberton	56.	Commercial Kitchen
17.	Bull Whip Rodeo - Rodeo Company	57.	Greenhouses/Cut Flowers
18.	Diamond M Farms - Bulls, Heifers, Semen	58.	Pet Food Plant - completely sustainable with no waste - D&D Meats hopes to do this
19.	Hampton Farms - Selling Gelbvieh Bulls	59.	Central Location of County in relation to major cities in Tennessee and region
20.	Austin Smith - Custom Spreading Poultry Litter	60.	Marketing Ag Products to the Getaway Cryptid Café Caters (Tiny House folks)
81.	Trucking - Greg Davis, Happy Trucking	<b>Challenges</b>	
82.	Lucky Red Stables - Horse Farm	61.	Co-op - (Lack of Ag Inputs; no Co-op)
83.	Turkey Creek Cattle Company	62.	Lack of Local Feeds
<b>Physical, Organization Assets</b>		63.	Limited Quality of Agriculture Land
21.	USDA - NRCS, FSA, UT Extension and Department of Forestry	64.	Lack of River usage and barge access
22.	Farm Bureau - YF&R	65.	Lack or rail access & Interstate access
23.	Clay County Cattlemen's Association	66.	Brain Drain of youth
24.	Clay County Fairgrounds	67.	Out-commuting
25.	Forestry Land - 66%	68.	Workforce problem/shortage
26.	School Greenhouse - Ag Shop; Ag Mechanics	69.	Virtual Working - taking people from local jobs
27.	4-H/FFA		
28.	TCAT Welding Program @ Clay County High School		
29.	Bus Access for high schoolers to TCAT in Livingston		
30.	Access to college courses through Vol State Community College		
31.	Clay County Chamber of Commerce		
32.	70,000 Acres - Dale Hollow Lake		
33.	Very Clean Water Supply		
34.	Water Districts		
35.	Natural Gas Availability in parts of county		
36.	Army Corps of Engineers		

## Local Businesses

Local businesses were identified based on their importance and (or) ability to contribute to economic growth in the county. Identified businesses included agricultural input providers, such as Clay County Farm Supply and Happy Trucking (Figure 4). Several processors of agricultural products included D&D Meats Processing, a USDA (US Department of Agriculture) inspected meat processor that also has retail sales. Chicken houses that supply Cobb Vantress with chicks and eggs and Tyson with broilers are an important element of local agriculture as are several farms that provide cattle genetics. Service oriented businesses include Acres of Grace Farms for agritourism and Lucky Red Stables (a horse farm).

Other identified businesses rely on local forests that cover the majority of land in Clay County or on other natural resources. These businesses include Moss Sawmills and Watson Sawmill and Barky Beaver that produces soil mixes and mulches (Figure 4). Other businesses are tied to activities at the Lake, such as T&L Wholesale that serves as a bait shop and the Dale Hollow National Fish Hatchery.

## Physical, Other Assets

Attendees emphasized the scenic assets of the county including Dale Hollow Lake, a 70,000 acre impoundment of the Tennessee River (Figure 4) and forest, which covers 66 percent of Clay County, as well as the very clean water supply. Other assets included the Clay County Fairgrounds and natural gas that is available in parts of the county. Organizational assets include the US Department of Agriculture National Resource Conservation Service, Farmers Service Administration, University of Tennessee Extension Office, and Tennessee Department of Forestry Office. Other key organizations included the Clay County Cattlemen's Association, the Clay County Chamber of Commerce, and the Farm Bureau Office. Education assets include the county 4-H and FFA programs, agriculture shop and agricultural mechanics program at the Greenhouse School, the TCAT (Tennessee College of Applied Technology) welding program at Clay County High School, bus access for high school students to TCAT in Livingston, and access to college courses through Vol State Community College.

## Challenges

In terms of agriculture, attendees emphasized lack of an agricultural cooperative input provider in the county, the lack of locally produced livestock feed, and the limited quality of much of the agricultural land (Figure 4). Transportation is an issue, in that there is a lack of rail and interstate access and that the Obey-Cumberland River System is not well utilized with limited barge access. Two major issues are educated young people leaving the county for greater opportunities elsewhere and the level of out-commuting to jobs in other locations by better educated workers including virtual jobs.

## Opportunities

Meeting attendees mentioned numerous opportunities for using agriculture to grow the county economy (Figure 4). A number of these centered on developing local foods including a higher end restaurant near the lake that features local food, marketing local agricultural products to the Cryptid Café, and producing local jam and jellies. Developing a commercial kitchen was mentioned as a way to support local food production for these markets. Likewise people mentioned further developing agritourism, also close to the lake, and developing cut flowers production including greenhouses. Other opportunities related to animal production such as improving facilities for livestock sales at the fairgrounds, providing beef quality assurance and other animal agriculture educational opportunities, and developing pet food from processed animal waste. Other value-added agriculture opportunities included a distillery, a brewery and a Christmas Tree farm. Several suggestions related to the strong poultry industry in the county and the surrounding region included expanding the number of poultry houses in the county, starting a feed mill for poultry houses, and providing other inputs (besides birds) to poultry processing and production.

Several ideas related to the lake or to forests in the area. These ideas centered on hunting in general, particularly leasing land for hunting, hunting on the lake, and expanding activities tied to fishing. Finally, people mentioned exploiting the central location of Clay County with respect to the state and to the region. Further in a subsequent meeting, attendees mentioned several other opportunities (local food distribution center or wholesaler, forest management business and pallet disposal business) that are also considered for further development.

## Follow-Up Analysis and Discussion

A subsequent meeting was held with Clay County agricultural leaders on September 20, 2023. The discussion centered on assessing the agricultural assets discussed in the prior meeting and on the results of our data analysis.

### Targeted Industry Economic Cluster Approach

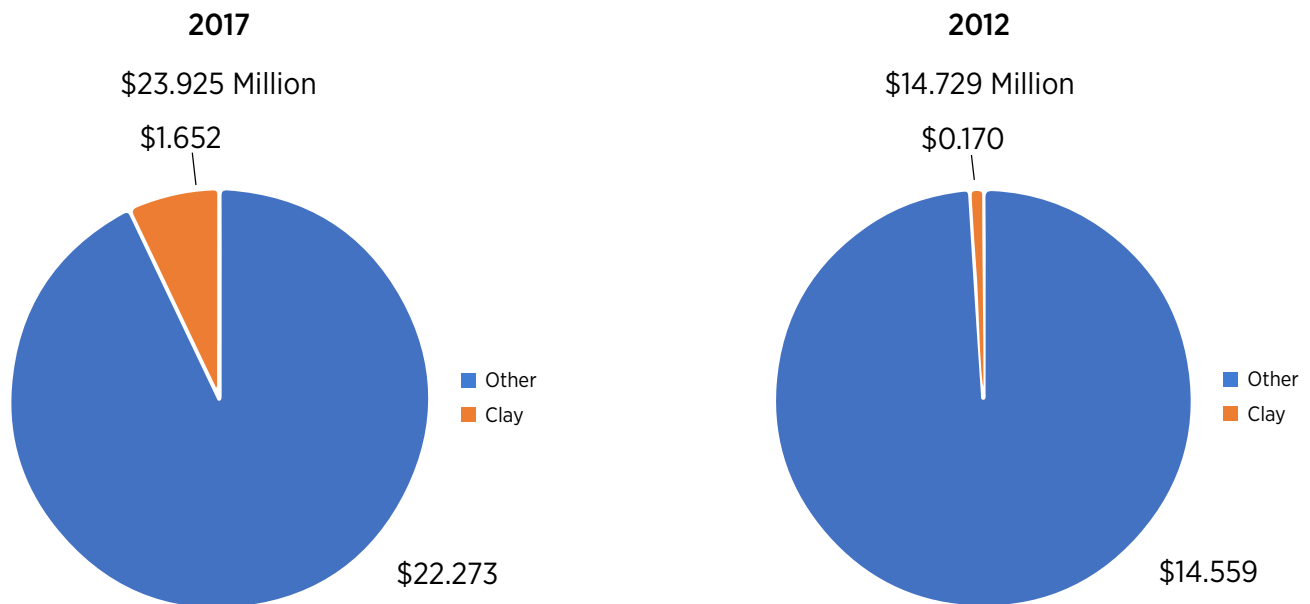
We used a targeted industry approach to identify industries as possible assets. Our data analysis includes seven counties, specifically Clay County and the surrounding counties of Jackson, Macon, Overton and Pickett Counties in Tennessee and Clinton, Cumberland and Monroe Counties in Kentucky. In several cases, our analysis dovetails with the assets identified by local agricultural leaders. Based on secondary data sources (IMPLAN data for 2013 and 2021), we examined industries based on the number of jobs in the region (a minimum of 10), concentration (location quotients greater than 1.5 for output, jobs, and pay), and regional and US growth estimates for 2013 versus 2021 (for output, jobs and pay). We also used financial analysis provided by the website IndustriousCFO Financial Analysis (2023) regarding business failure rates and profitability compared to the national average for all US businesses in their database.

We also employed Census of Agriculture data for 2012 and 2017 to analyze agriculture in the county and the region. The results of the analysis for row crop, hay, livestock-related farming, fruits, vegetables, and ornamental plants are discussed next.

### Local Row Crops and Hay

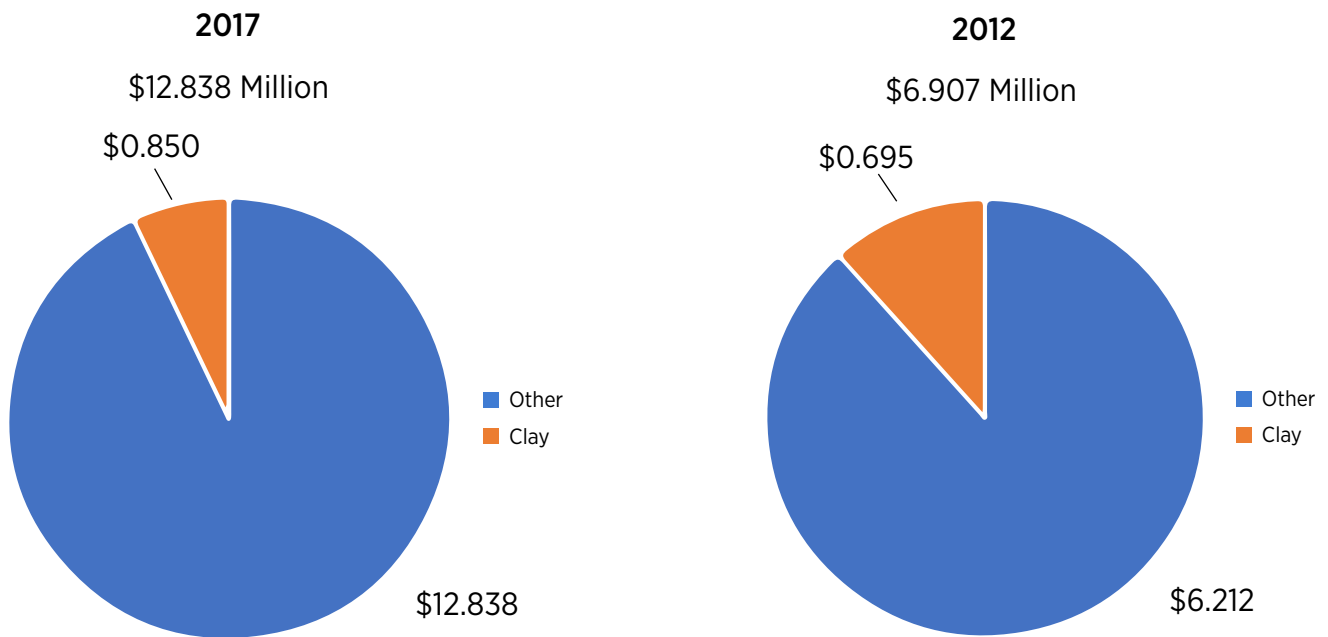
Row crops are important components of agriculture in Clay County and its neighboring counties. The value of grains and soybean production increased from \$14.729 million in 2012 to \$23.925 million in 2017 for the seven-county region, and from \$0.170 million in 2012 to \$1.652 million in 2017 for Clay county (Figure 5). The value of hay and other crop production increased for both the regional (from \$6.907 million to \$12.838 million) and Clay county (from \$0.695 million to \$0.850 million) over the same period (Figure 6).

Figure 5. Value of Regional Grain and Oilseed Sales, 2017, 2012.



Source: Census of Agriculture, 2012, 2017.

Figure 6. Value of Regional Hay and Other Crop Sales, 2017, 2012.

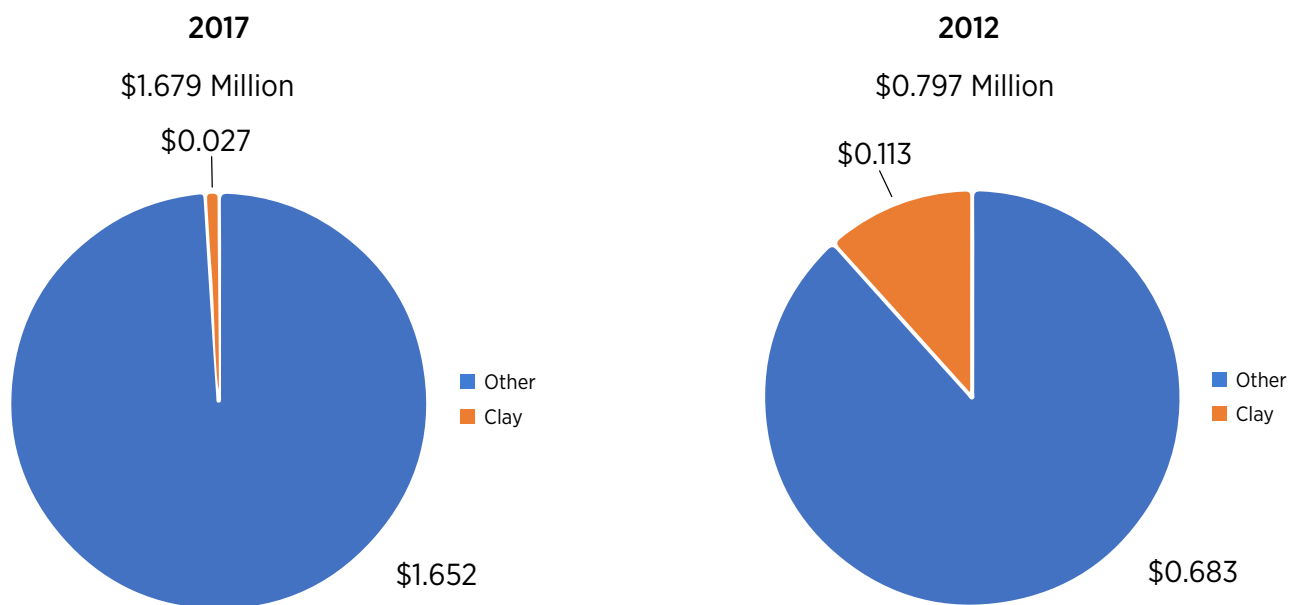


Source: Census of Agriculture, 2012, 2017.

### Local and Regional Fruits, Vegetables, Ornamental Horticulture, and Tobacco

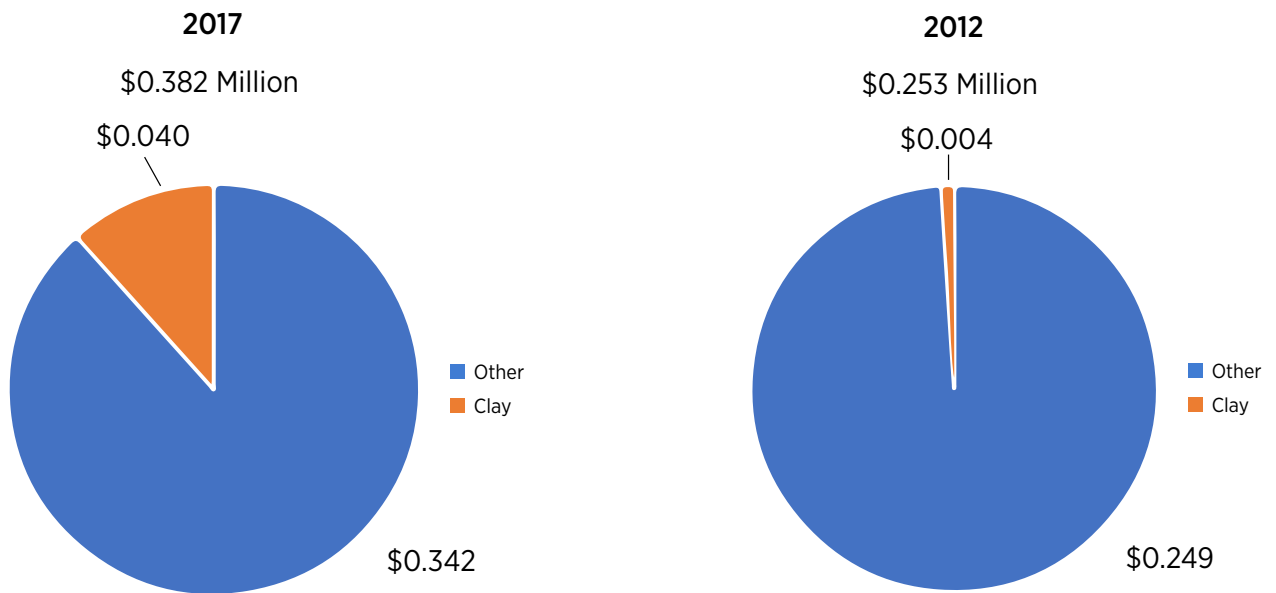
As shown in Figure 7, vegetable sales in the seven-county region increased from \$0.797 million in 2012 to \$1.679 million in 2017 with a slight decrease in Clay County sales. Regional fruit had a slight increase in sales from \$0.253 million in 2012 to \$0.382 million in 2017 (Figure 8). Ornamental horticulture (nursery, greenhouse, floriculture, sod, and short rotation woody crops including Christmas trees) sales in the seven-county region increased from \$2.510 million in 2012 to \$13.282 million in 2017 while county sales remained low in both years (Figure 9). The value of tobacco production declined from \$37.603 million in the region and \$3.317 million in the county in 2012 to \$25.846 million in the region and \$2.890 million in the county in 2017 (Figure 10).

Figure 7. Value of Regional Vegetable, Melons, and Potatoes Sales, 2017, 2012.



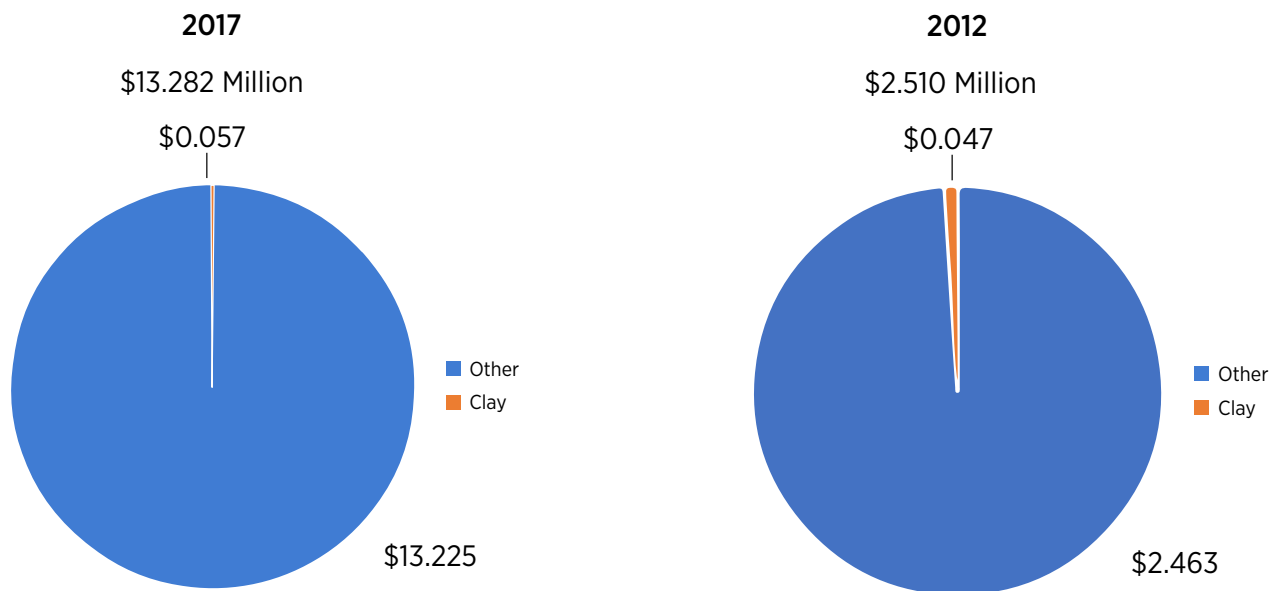
Source: Census of Agriculture, 2012, 2017.

Figure 8. Value of Regional Fruit Sales, 2017, 2012.



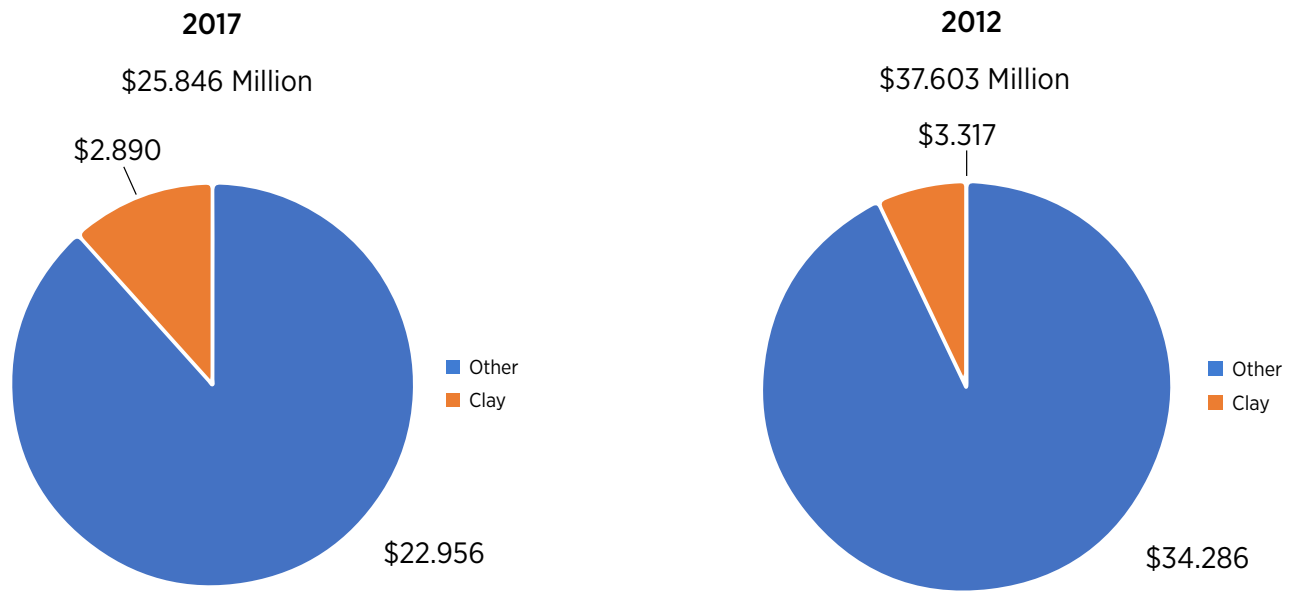
Source: Census of Agriculture, 2012, 2017.

Figure 9. Value of Ornamental Horticulture Sales, 2017, 2012.



Source: Census of Agriculture, 2012, 2017.

Figure 10. Value of Regional Tobacco Sales, 2017, 2012.

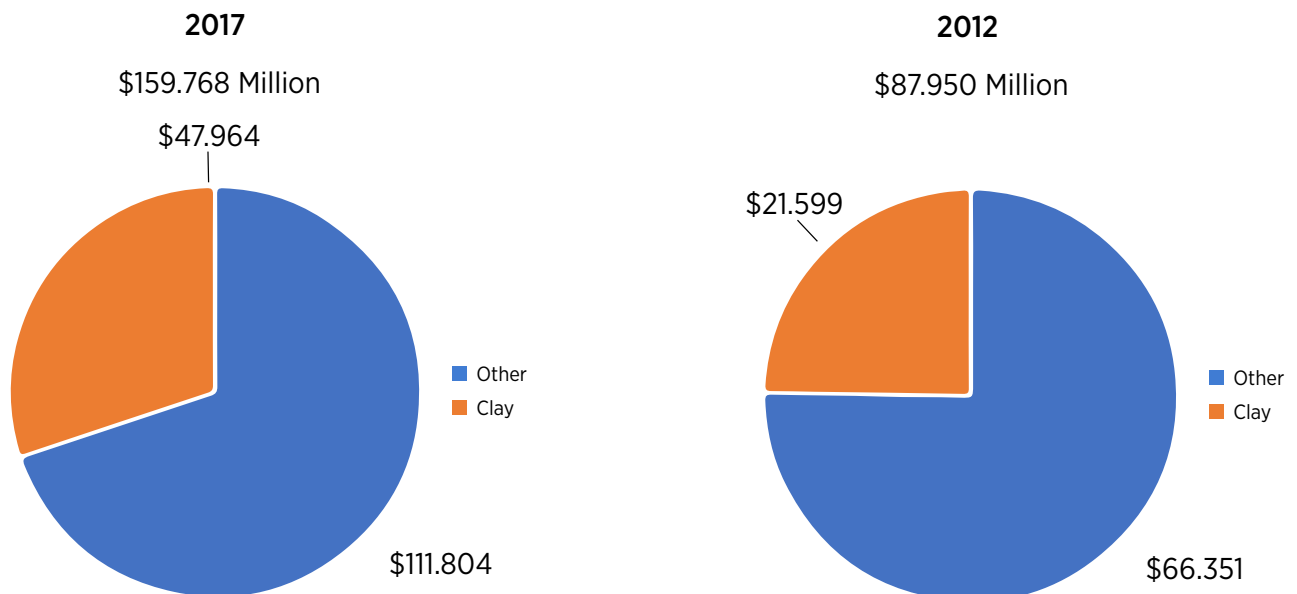


Source: Census of Agriculture, 2012, 2017.

### Local Livestock

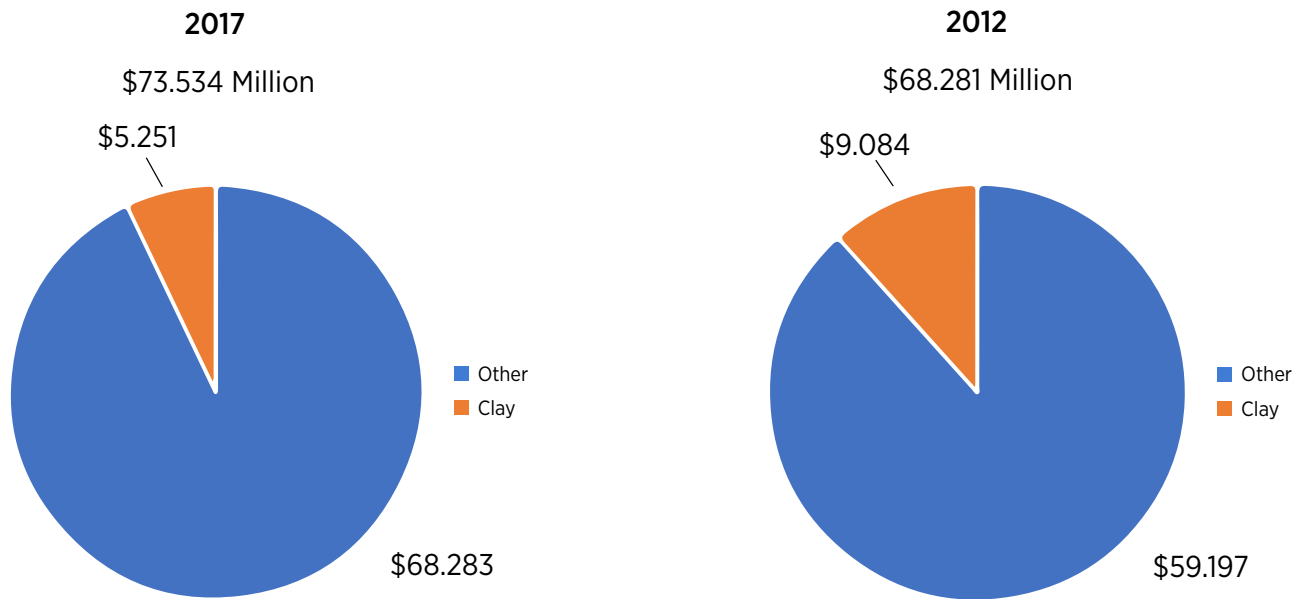
Poultry is the mainstay of agriculture in Clay County and the surrounding region. The value of poultry and egg sales production increased at both the county and the regional levels from \$21.599 million and \$87.950 million in 2012 to \$47.964 million and \$159.768 million in 2017 primarily because of the Cobb Vantress facility nearby in Lafayette (Macon County) and the nearby Tyson facility in Albany Kentucky (Figure 11). From 2012 to 2017, the value of cattle sales increased from \$68.281 million to \$73.534 million for the region but declined from \$9.084 million to \$5.251 million in Clay County (Figure 12). Regional dairy sales decreased from \$11.821 million in 2012 to \$8.926 million in 2017 while in Clay County dairy sales increased slightly from \$0.350 million to \$0.376 million (Figure 13). The value of goat and sheep sales for both the county and the region increased slightly from low levels from 2012 to 2017 (Figure 14).

Figure 11. Value of Regional Poultry and Eggs Sales, 2017, 2012.



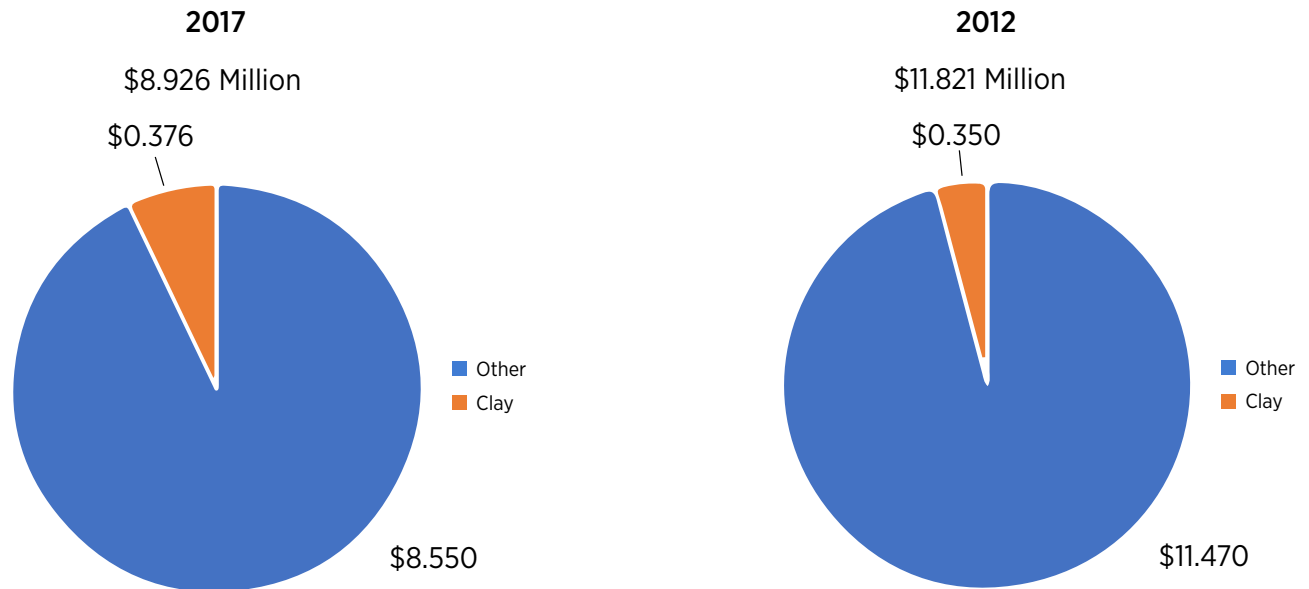
Source: Census of Agriculture, 2012, 2017.

Figure 12. Value of Regional Cattle Sales, 2017, 2012.



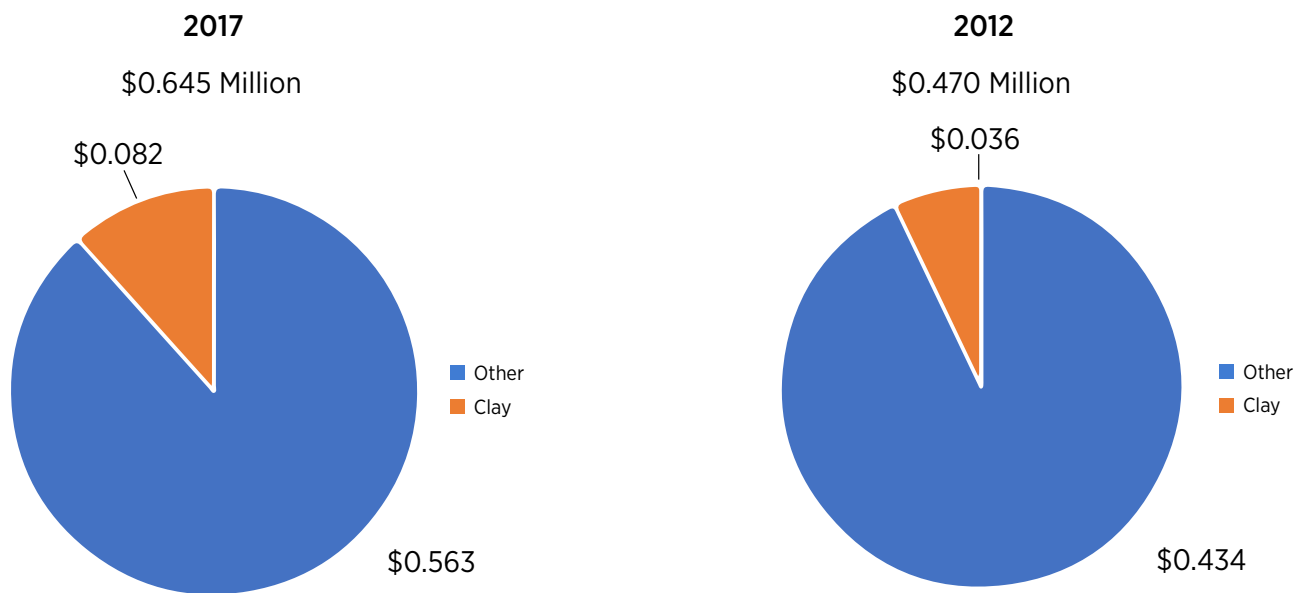
Source: Census of Agriculture, 2012, 2017.

Figure 13. Value of Regional Dairy Sales, 2017, 2012.



Source: Census of Agriculture, 2012, 2017.

Figure 14. Value of Regional Sheep and Goat Sales, 2017, 2012.



Source: Census of Agriculture, 2012, 2017.

## Analysis of Opportunities

We further examined the opportunities that meeting attendees had highlighted. This work is provided as follows.

### Cattle Marketing and Education

Meeting attendees had several interrelated suggestions with respect to the marketing of local cattle including further developing the livestock facilities at the county fairgrounds. In terms of sale barns (a related industry), there were 17 in Tennessee in 2006 and 11 in 2019 with one opening in Pulaski in 2018 (Hughes et al., 2020). Regionally, the cattle industry has grown in value from 2012 to 2017 and nationally we are at the lower end of the cattle cycle meaning that herds are projected to rebuild. Such facilities might also open up opportunities for other animal activities (such as equine-related events). Discussions should be held with other counties with enhanced livestock facilities regarding their experience if this idea is to be further developed. A related idea is selling open or bred heifers and cow sales in general. Local individuals involved in cattle genetics could play a major role in developing these markets.

Meeting attendees also emphasized the need to further educate cattle farmers regarding improved production practices. In particular, a Beef Quality Assurance (BQA) Program provides “systematic information to US beef producers of how good husbandry techniques can be coupled with accepted scientific knowledge to raise cattle under optimum management conditions.” Online (through Tennessee Department of Agriculture, 2023a) and probably in-person BQA training is available. Likewise the Tennessee Master Beef Producer Program (2023) would enhance productivity and also is a means of accessing Tennessee Department of Agriculture cost-share funding. The University of Tennessee Beef and Forage Center (2023) also provides a number of programs such as Bull Development and Evaluation Programs.

A committee could be formed to see if there is sufficient interest in the region for these programs and for the livestock marketing opportunities that we have discussed here. Andrew Griffith, University of Tennessee Extension livestock economist, [agriff14@utk.edu](mailto:agriff14@utk.edu), would be a good person to contact regarding all of these efforts to further develop the local cattle industry and market.

A related topic is to use appropriate waste from a local meat processor (D&D Meats) to produce pet food. Because animal processing waste pickup by renders is a growing concern for small livestock processing facility, it may also be profitable to process appropriate waste (waste meat, fats) from nearby smaller operations. The facility would be able to charge a pickup fee and it would enhance the amount of material that could flow through their operation. Analysis of business data from IndustriousCFO indicates that a small pet food (cat and dog) manufacturing facility would have \$1 million in sales. The same source also indicates that for cat and dog food manufacturing in general returns on investment are low (at 2 percent and ranked 45 percent among all analyzed businesses) but that risk is quite low with a 2 percent loan failure rate (ranked among the best at 98 percent among all analyzed businesses). If this topic is going to be further developed, it could be helpful to have a discussion with Tennessee Grass Fed (a small grass fed cattle and processing operation in Montgomery County, which also produces some pet items). This concept also fits into the idea of the recycled economy, so there is a favorable environment and possibly external funding for supporting the establishment of this business. In particular, the Environmental Protection Agency could be a possible source of support.

Meeting attendees stated a set of possibilities related to poultry and egg farming in Clay County. This attention is not surprising given that poultry is a large part of local farming. The suggestions included a feed mill, providing other inputs to poultry farms or processors, construction of more poultry houses, and contract workers for poultry houses. Players in Clay County poultry include Cobb Vantress (the most important, eggs and breeders), Tyson (broilers, second most), and Hansome Brook Farms (eggs, organic, free-range). Based on input from Tom Talber, UT Extension poultry specialist, the four topics are “non-starters” if Cobb Vantress or Tyson are not interested in pursuing them. The contacts for the former are Matt Butler, ([matthew.butler@cobb-vantress.com](mailto:matthew.butler@cobb-vantress.com) or 731-435-9400) or Dusty Cagle ([dustin.cagle@cobbvantress.com](mailto:dustin.cagle@cobbvantress.com) or 770-231-5104) and for the latter Tim Esslinger, complex general manager at Tyson Foods, 606-387-2300, [tim.esslinger@tyson.com](mailto:tim.esslinger@tyson.com)).

A feed mill would provide a market for local corn and other feed grains to meet livestock needs. In all probability, both Cobb Vantress and Tyson will continue to use current facilities so the demand would have to come from elsewhere. Small (\$873,000 in sales) other animal food manufacturing facility across the US have a 1 percent return on investment (19 percent among all industries) and a 4 percent loan failure rate (better than 81 percent of all industries). The main question would sufficient regional demand for a small Clay County Feed Mill come from regional cattle and other animals.

With regard to more poultry houses per Tabler (2023), the Cobb Vantress facility (i.e., the Great-Grandparent/Grandparent Hatchery in Lafayette, TN) is probably not looking for more houses as sales (production) have recently declined. The Tyson plant in Albany, KY, is running full capacity but will only ask growers to build more houses when they need to replace production from a retiring farm. Discussions can be held with both companies regarding more houses but the interest may not be there.

Likewise contract workers for poultry houses is a discussion that would need to be held with both companies. Given company interest, the regional Workforce Development Area (Upper Cumberland Tennessee, LWDA 3) to which Clay County belongs should serve as a resource for any worker training effort (Tennessee Department of Labor and Workforce Development, 2023). Such regions are a means for funneling federal training funds to appropriate organizations. In the recent past, at-risk and distressed counties in Tennessee have been targeted for such funds (Tennessee Department of Labor and Workforce Development, 2019).

In terms of other inputs for poultry, litter (local pine or hemp) would be a possibility. There are pros and cons for both as chicken litter; a major consideration of any litter is impact on feet (chicken feet are a big market for Asia). The main question would be is there a sufficient market for producing litter in Clay County. Once again discussions with Cobb Vantress and Tyson and also with area growers would be the starting point for this topic as well as getting the input of Tabler.

## Brewery and Distillery

Visitors to the lake are a possible target market for both a craft brewery and a craft distillery. Both types of operations could use local farm inputs. In particular, a craft distillery in Clay County could possibly take advantage of the local supply of hardwood trees, corn, and other local farm inputs. A brewery could use local fruit and possibly local grains or even local hops in its production. In this regard both types of establishments could benefit from The Farm to Tap Program jointly supported by the Tennessee Craft Brewers Guild and the Tennessee Department of Agriculture (2023).

Distilleries have experienced pronounced growth in Tennessee with the number of establishments growing from 11 in 2011 to 59 as of the fall of 2023 (US Bureau of Labor Statistics, 2023a) with a pronounced impact on the state economy (Hughes, 2023). The industry also has sound financial results as discussed in the data analysis section with above average returns (3 percent, 58 percent among all analyzed US businesses) and less than average risk (6 percent loan default rate, better than 60 percent of all analyzed businesses). Contacting the Tennessee Distillers Guild (2023) would be a good first step in developing a craft distillery in Clay County.

Likewise breweries have experienced pronounced growth in Tennessee with the number of establishments growing from four in 2011 to 119 as of the fall of 2023 (US Bureau of Labor Statistics, 2023b). Although breweries in general rank low in profitability (probably because many craft operations are still startups) the industry is slightly above average in terms of loan default rates at 7 percent (better than 58 percent of all analyzed US businesses). Contacting the Tennessee Craft Brewers Guild (2023) would be a good first step in developing a craft brewery in Clay County.

Local Food System (Commercial Kitchen, Jams/Jellies, Higher end restaurant, Sales to Cryptid Cafe, Sales to Getaway visitors) and Agritourism-Tourism

A commercial kitchen for processing local agricultural products was also mentioned as a way to grow local agriculture by meeting attendees. In such facilities individuals could make value added agriculture products for sale to the general public. The kitchen facility could also be used for cottage kitchen (at home) food training. Viability can be an issue for such facilities, in particular lining up a sufficient number of users to insure financial solvency can be a problem. Food safety is also a challenge, especially with respect to the Food Safety Modernization Act but also Good Agricultural Practices (GAP) considerations (GAP is often required by grocery store chains and schools). Apparently COVID hit such facilities hard, although they may still be seven in Tennessee. However, given that a local family has opened a commercial kitchen, sufficient support by county and regional agriculture should lead to a successful operation. In this regard, a possible model could be Crop Stop (Charleston City Paper, 2015), which is a shared kitchen facility in the Charleston, SC, area (Johns Island) that was built for under \$100,000 so there was very little debt service (Figure 15). The facility has 12 users who participate in the area farm to school program.

Figure 15. Crop Stop Johns Island S.C., Possible Model for Commercial Kitchen.



In terms of producing jams and jellies (another possibility suggested by attendees), home production (cottage food laws) is a possible alternative (and for other products as well). The Tennessee Domestic Kitchen Law allows for at home (private residence) processing of certain food items, essentially any food product that is considered non-TCS (not Time/Temperature Controlled for Safety) or “shelf-stable.” Examples of foods that are usually ok include baked goods that do not require refrigeration, jams, jellies, and preserves, candy, and dried baking or spice blends (Adkins et al. 2022).

An additional topic mentioned at the second meeting was the development of a local food distribution center akin to a food hub or locally oriented food wholesaler (Hughes et al., 2014). The developer of such a project would need to secure adequate input supply and access to output markets especially in relatively nearby urban areas such as Nashville and Louisville. In this regard we recommend that the leadership of such a project have a discussion with Limehouse Produce in Charleston, SC. In operation for over 70 years (Limehouse Produce, 2023), they emphasize providing produce from local farms.

The USDA Local Food Promotion Program (Agricultural Marketing Service, 2023) would be a possible source of funding for a facility or for analysis regarding the development of the local food system in Clay County. This program “funds projects that develop, coordinate and expand local and regional food business enterprises that engage as intermediaries in indirect producer to consumer marketing to help increase access to and availability of locally and regionally produced agricultural products. Grants can be used for the planning stages of establishing or expanding a local and regional food business enterprise or to improve or expand a food business that supports locally and regionally produced agricultural products and food system infrastructure by performing feasibility studies, market research, training and technical assistance for the business enterprise and/or for producers working with the business enterprise.

Meeting attendees also mentioned developing a local food based, higher income restaurant near the Dale Hollow Lake and marketing local foods to Getaway Dale Hollow Campground (2023) visitors and to Cryptid Café (2023). Local or University of Tennessee (or other higher education students) could be involved in efforts to assess the effective demand for such business activities. For example, they could conduct visitor surveys to determine the interest of lake visitors in a higher-end restaurant near the lake emphasizing local foods and the interest of Getaway visitors in local foods. They could also conduct focus group meetings with Cryptid Cafe regarding their interest in local foods.

### **Agritourism and Tourism**

Meeting attendees also mentioned agritourism as a way to grow the local economy. In terms of developing agritourism and local food provision especially near Dale Hollow Lake, several organizational assets that could assist at the state level include the Tennessee Agritourism Association (2023) and a variety of resources offered by the Tennessee Department of Agriculture (2023b) including an annual conference and the Pick Tennessee Program where their operation would be listed on the Website and on the Mobile App (Tennessee Department of Agriculture, 2023c). Resources for developing agritourism are also available from University of Tennessee Extension (2023) especially Megan Leffew ([mleffew@utk.edu](mailto:mleffew@utk.edu)) with the Center for Profitable Agriculture.

As mentioned by meeting attendees, local businesses and events that could participate in general tourism and agritourism growth efforts include, among others, Clay County Moonshine Daze, Acres of Grace Farms (who provide farm animal petting, and farm tours), Red Oak Ridge Hiking and Riding Trail (who provide RV Camping, overnight stabling, trail riding and wagon rides), Backyard Farms (also special events venue) and the Clay County Fair (Pick Tennessee Products, 2023). Building on these activities and businesses would be a good way to further develop agritourism. Once again student involved in surveying and focus groups could be used to further promote both agritourism and general tourism in the county.

In terms of general tourism Dale Hollow Lake is of course the asset that meeting attendees focused on. Based on data provided by the Army Corp of Engineers for 2021, there were 1,412,785 visits, 240,972 overnight visits, 67,184 anglers, 425,161 special event attendees. The visitors spent \$65.325 million within 30 miles of the Lake. The Lake has 28 recreational areas, four fishing docks-piers, 36 boat ramps, and 3,255 marina slips.

## **Fishing at the Lake**

Meeting attendees listed fishing at the Lake as a way to develop business activity. In particular it is a prime location for smallmouth bass fishing, with the world record catch at one time. In this regard guided fishing could be a business development opportunity. Although T&L Wholesale provides bait, there may be other opportunities to provide goods and services to fishermen. The lake also provides bird watching and bird hunting, which could also lead to guided service businesses.

Another asset is the Dale Hollow National Fish Hatchery (US Fish and Wildlife Service. 2023) that produces rainbow, brown and lake trout varieties. Work could be conducted with hatchery with respect to stocking that would support further fishing activities.

## **Hunting at the Lake and in General including Leases**

Meeting attendees cited hunting, in general and at the lake and including leases, as a means of developing new local businesses. The heavily forested areas of the county could provide great opportunities for various types of hunting with guided services as a possibility here as well. Another possibility is hunting leases. An education program on how to lease land for hunting could be provided if there is sufficient interest. The content could include various types of leases, terms and regulations, and pros and cons of hunting leases. A first point of contact would be Craig Harper, Professor and Extension wildlife specialist ([charper@utk.edu](mailto:charper@utk.edu)).

Finally and in general for this area, a working group could be formed to further assess the potential for developing economic activity tied to tourism and recreational use of these assets.

## **Christmas Tree Farm**

One suggestion by meeting attendees was starting a Christmas Tree Farm. Clay and neighboring counties at least in Tennessee apparently have no such operation. The farm could also have a more general agritourism operation as it could provide hay rides and other activities outside or even during the Christmas season. It in general takes about seven years for the trees to grow, so starting up could be slow although one could possibly start with wild harvest. Penn State University (2023) has a good video on the topic and the National Christmas Tree Association also has useful information (2023). Further, Alan Galloway, Tennessee farm management specialist for the region that includes Clay County, is the owner of Mark 4 Christmas Tree Farm and could be very helpful. Fortunately a local individual has planted and is maintaining Christmas Trees with the goal of starting such a business.

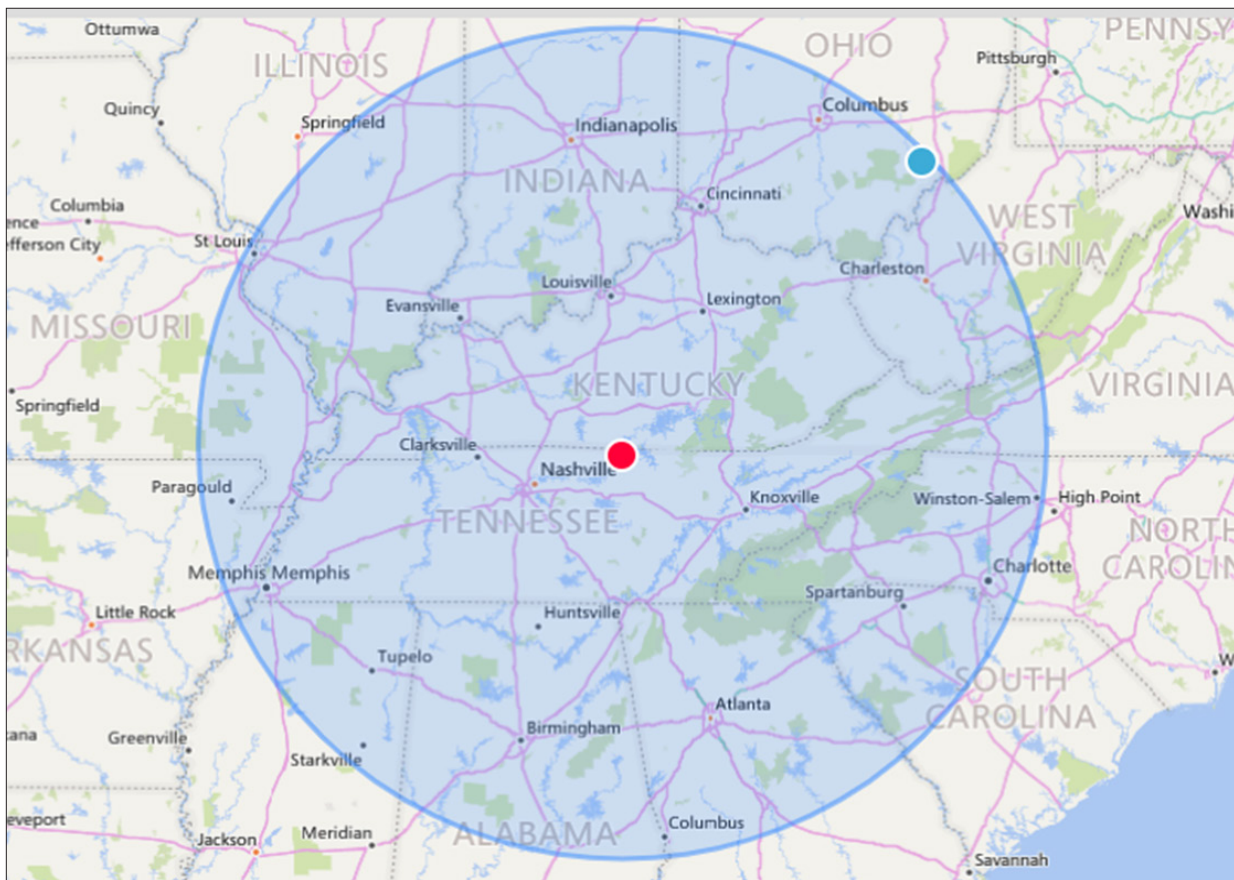
## **Greenhouse and Cut-Flowers**

Other suggestions by meeting attendees was starting a cut flower and/or greenhouse operation. Key questions in both cases include topics of whether these efforts should market directly to consumers or to wholesalers, and whether they should or should not be part of an agritourism enterprise. Fortunately, University of Tennessee has resources for both topics with Alicia Louise Rihn (an agricultural economist, [arihn@tennessee.edu](mailto:arihn@tennessee.edu)) having expertise in greenhouse economics and Rachel Painter ([reather1@tennessee.edu](mailto:reather1@tennessee.edu)) with the UT Extension Center for Profitable Agriculture having expertise in developing a cut flower business including the publication with others “Cut Flower Production in Tennessee.” (Ernst et. al., 2021). Individuals interested in these business development topics could move forward based on working with these experts. Here again a local family has started the development of a local cut-flowers business.

## **Central Location of County**

Meeting attendees also pointed out the central location of Clay County with respect to major cities in Tennessee and the region, a fact demonstrated by the number of large urban markets found within 300 miles of Celina (Figure 16). Manufacturers in general like central locations on the rural-urban fringe, with access to Interstate-other transport corridors, and the “right” local workforce for their type of operation. In terms of agricultural and forestry based manufacturing, not having ready access to an interstate is a big limitation. However, in terms of recreation and tourism type businesses, Clay is well situated for visitors from the Nashville area and perhaps other large population centers (e.g., Atlanta) for specialized activities such as smallmouth bass fishing. Further, a good network of roads on the Tennessee side of Clay County means access to Nashville could facilitate the development of a local foods distribution center (one of the ideas advanced by attendees at the second meeting).

Figure 16. Central Location of County relative to Urban Markets, 300 Mile Radius.



Source: CalcMaps

### Further Data Analysis

The target industry cluster approach was applied to existing industries to also identify possible assets for further development. Based on our criteria, we evaluated relevant food processing, wood product, paper product, and furniture manufacturing sectors for further development. The sectors with the most promise for growth across all agricultural processing and input industries based on our data analysis are shown in Table 1. (Full results from the analysis are provided in Appendix A; the number of criteria met by the industry in question are provided in parentheses such as the two for a winery.)

Valued-added food products processing that has potential for growth included other fertilizer mixing (4.6), animal food manufacture (4.6) (the same category the previously discussed feed mill came under), canned specialties (4.8), a winery (2) and possibly a distillery (2.8). The distillery is especially interesting because it would be part of a rapidly growing state industry with a strong state industry organization that uses a significant amount of Tennessee crops such as corn. Likewise a winery would be part of a growing state industry with a strong industry association and with the possibility of using Tennessee grown grapes. These possible targets were added to the list for consideration for further development by local agricultural leaders.

Table 1. Most Promising Sectors for Growth Based on Data Analysis.

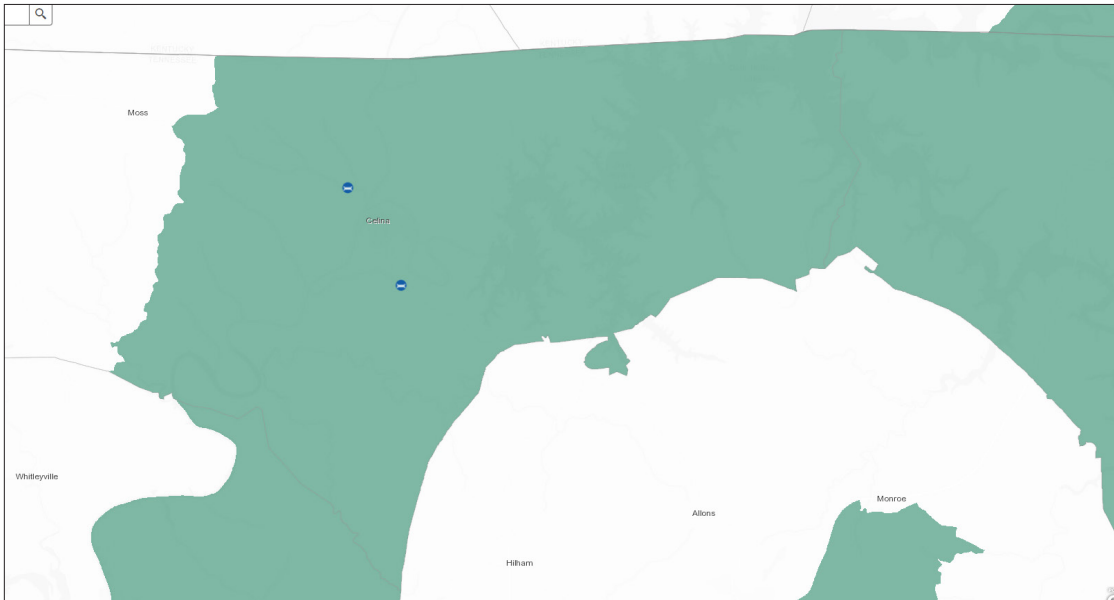
Sector	Number of Check Marks
Fertilizer mixing	4.6
Other animal food manufacture	4.6
Canned Specialties	4.8
Winery	2
Distillery	2.8

Source: Analysis of IMPLAN and IndustriousCFO data by authors.

## Opportunity Zone

The Opportunity Zone Program is a capital gains tax reduction program where realized capital can be invested in real estate and businesses in designated economically distressed communities. Appropriate investments in such areas are taxed at a lower rate including any resulting capital gains. Nationally, there are 8,760 designated Qualified Opportunity Zones including roughly the eastern two-thirds of Clay County (Figure 17) (US Department of Commerce, 2020; US Department of Transportation, 2023.).

Figure 17. Clay County Opportunity Zones.



Source: U.S. Department of Transportation.

An example of how funding from the program can be used to support agribusiness development is in Hampton County, South Carolina, where a 1,000-acre Agriculture Technology Campus is being established with a \$134 million investment. Pesticide-free tomatoes, leafy greens, blueberries and other produce will be grown in greenhouses; and both a 150,000-square-foot distribution center and a packing facility are to be built (South Carolina Department of Commerce, 2020). This effort can serve as a role model for a similar project in the Clay County Opportunity Zone that includes Celina and its surrounding area.

An offshoot of the opportunity zone program is the Bioeconomy Development Opportunity Zone (BDOZ), a program that identifies areas in the best position for what are termed low-risk bioeconomy projects (such as jet fuel made from waste wood). Regions in Oregon and in South Carolina have received BDOZ designation (Solomon, 2021). A forest products-based facility could be supported by BDOZ designation for the Opportunity Zone in Clay County.

### Targets Identified by Local Agricultural Leaders

The group of Clay County Agricultural Leaders reconvened on September 20, 2023. A presentation was made containing the information that had been ascertained regarding their suggestions and our secondary data analysis. Participants were asked to think about opportunities for the county such as local and regional markets and target areas as it pertains to local agriculture or agribusiness. Based on our presentations and discussions, the leadership group was asked to indicate the activities that had the greatest potential for helping to grow the local economy. They were also allowed to insert additional options for consideration. Each individual was provided with three dots and told to distribute the dots as they wished. A ranking of the various potential targets based on the vote of these local leaders is provided in Table 2.

## Moving Forward

Provided here are the results of an agricultural mapping exercise conducted with local agricultural leaders in Clay County, Tennessee, in cooperation with the University of Tennessee County Extension Office. Results were based on a combination of our analysis of secondary data and primary data provided by the local leaders.

Table 2. Rank of Targets Identified by Clay County Agricultural Leaders.

Potential Target	Number of Target Votes
<b>Local Food Distribution Center</b>	<b>6</b>
<b>Forest Management Business</b>	<b>5</b>
<b>Pet Food Plant – D&amp;D Meat Waste</b>	<b>3</b>
<b>Selling Females, Open &amp; Bred Cattle, Cow Sales</b>	<b>3</b>
<b>Distillery</b>	<b>3</b>
Agritourism – especially near Lake	2
Other poultry supplies	2
Christmas Tree Farm	2
Improve Livestock Facilities @ Fairgrounds	1
Commercial Kitchen	1
Pallet Disposal	1
Fishing Operations	1
Brewery	1
Hunting, Dale Hollow	1
Local Food, Higher End Restaurant near Lake	1

Source: Analysis of IMPLAN and IndustriousCFO data by authors.

Based on the distribution of votes as shown in Table 2, five items had the most votes. Among these five, the local food distribution center had the most at six votes followed closely by a forest management business at five votes. The remaining three topics, pet food plant, cow sales with an emphasis on females, and a distillery each had three votes. It is also recommended that local subcommittees be formed to further investigate the possibility of moving forward with on the ground projects in each of these four areas. These efforts could take advantage of state tax credits and a variety of grant programs through the Tennessee Department of Economic and Community Development or the Tennessee Department of Agriculture, Agriculture Enterprise Fund (2023d), or the Tennessee Office of US Department of Agriculture Rural Development (2023). Certain interested parties should also be invited, such as a representative from the distilling industry for example. It is recommended that a meeting be held with representatives of such organizations in the near future to explore developing relevant opportunities.

**Appendix A. Data Analysis of food processing, wood product, paper product, and furniture manufacturing sectors for further development.**

**Agricultural Input Providing Sectors with Development Potential.**

Sector (# Criteria Met)	Financial Analysis	Regional Minimum Size (jobs)	Regional Strength (Iq)	Regional Growth	U.S. Growth
Farm machinery, equipment manufacturer (3)	Avg 22% (17% + 27%) low return, high risk	√	√	√	no
<b>Fertilizer mixing (4.6)</b>	<b>Avg 54 % √- (20% + 88%)</b> <b>low return, high risk</b>	√	√	√	√-(3)

**Food Processing Sectors with Development Potential.**

Sector (# Criteria Met)	Financial Analysis	Regional Minimum Size (jobs)	Regional Strength (Iq)	Regional Growth	U.S. Growth
<b>Other animal food manufacturing (4.6)</b>	<b>Avg 50% √- (19% + 81%)</b> <b>low return, low risk</b>	√	√	√	√-(3)
<b>Canned specialties (4.8)</b>	<b>Avg 52% √- (39% + 65%)</b> <b>below average return, better than average risk</b>	√	√	√	√
Poultry processing (3.8)	Avg 52.5% √- (40% + 65%) Somewhat below average low return, better than average risk	√	√	no	√
Ice cream and frozen dessert manufacture (3.8)	Avg 39% (48% + 30%) average return, quite risky	√	√	√	√-(3)
Wineries (2)	Avg 72.5% √ (79% + 66%) Relative high return and low risk	no	no	no	√
Distillery (2.8)	Avg 59% √ (58% + 60%) Above Average return, somewhat less risky*	no	no	√	√-(3)

\*Beverage manufacturing served as a proxy.

Forest Product Sectors with Development Potential.

Sector (# Criteria Met)	Financial Analysis	Regional Minimum Size (jobs)	Regional Strength (Iq)	Regional Growth	U.S. Growth
Sawmills (3.6)	Avg 11.5% (15% +8%) Low return, very high risk	✓	✓	√-(3)	√-(3)
Other millwork, including flooring (3.8)	Avg 65.5% (85% +38%) high returns, risky	✓	✓	✓	√-(3)
Wood Container and Pallet Manufacture (3)	Avg 38% (75% +1) high returns, very, very risky	✓	✓	<b>no</b>	✓
Manufactured (Mobile) Homes Manufacture (4)	Avg 57.5% (78% +37%) high returns, relatively risky	✓	✓	✓	✓
Prefabricated wood building manufacturing (3)	Avg 23.5% (42% +5%) below average returns, very risky	✓	✓	✓	<b>no</b>
All other miscellaneous wood product manufacturing (4)	Avg 46% (67% +25%) better than average returns, risky	✓	✓	✓	✓

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