Ohio Farm Numbers, Land in Farms, and Agricultural Land Lost to Development

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Highlights

- According to the Census of Agriculture, the number of farms in Ohio decreased from 77,797 farms in 2002 to 76,009 farms in 2022, a decrease of 2.3% over the 20-year period. Land in farms in Ohio decreased from 14,583,435 acres in 2002 to 13,652,346 acres in 2022, leading to a loss of 931,089 acres between 2002 and 2022, representing a 6.4% decrease.

- According to the National Land Cover Database (NLCD) of the Multi-Resolution Land Characteristics Consortium using satellite imagery data (https://www.mrlc.gov/eva/), 355,085 acres in agricultural land (cultivated crops and pasture/hay) were lost in Ohio from 2001 to 2021. Specifically, 180,691 acres of agricultural land in Ohio was lost to development, which represents 51% of the agricultural land loss being attributed to development from 2001 to 2021.

- Counties located in Metropolitan Statistical Areas (MSAs) had among the largest percentage declines in farm numbers (by about 35%) and land in farms (by about 35% to 65%) and among the highest percentages of agricultural land lost to development (above 65%) across the state of Ohio.

Introduction

The US Department of Agriculture (USDA) Census of Agriculture has provided a complete count of US farms and the land in farms since 1974. USDA defines a farm as "any place from which $1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year." USDA defines "land in farms" to consist primarily of agricultural land used for crops, pasture, or grazing. Land in farms also includes woodland and wasteland not actually under cultivation or used for pasture or grazing if it was part of the farm. Land in farms also includes acres in the Conservation Reserve Program, the Wetland Reserve Program, and other government conservation programs. Data from the USDA Census of Agriculture from 2002 to 2022 was used to analyze the number of farms and land in farms for the State of Ohio and each county in Ohio, noting whether the counties are in a metropolitan statistical area (MSA) that have "a population of at least 50,000."

The Multi-Resolution Land Characteristics Consortium (MRLC) produces the National Land Cover Database (NLCD) for the United States, using multiple satellite imagery between two dates to track land cover changes. Agricultural land is defined to include cultivated crops and pasture/hay, which is

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a narrower definition than the definition of land in farms used in the Census of Agriculture. The MRLC NLCD Enhanced Visualization and Analysis (EVA) tool was used to examine agricultural land losses from 2001 to 2021.

Changes in the Number of Farms in Ohio Over Time

Ohio had 77,797 farms in 2002, which decreased to 76,009 by 2022 (Table 1). This represents a decline of 1,788 farms, or a 2.3% decline in farm numbers between 2002 and 2022. The number of farms declined from 2002 to 2012, followed by a notable increase in 2017, and a subsequent decline in 2022 (Figure 1).

2002	2022	Change 2002-2022	% Change
77,797	76,009	-1,788	-2.3%

Table 1 Number of Farms in Ohio, 2002-2022
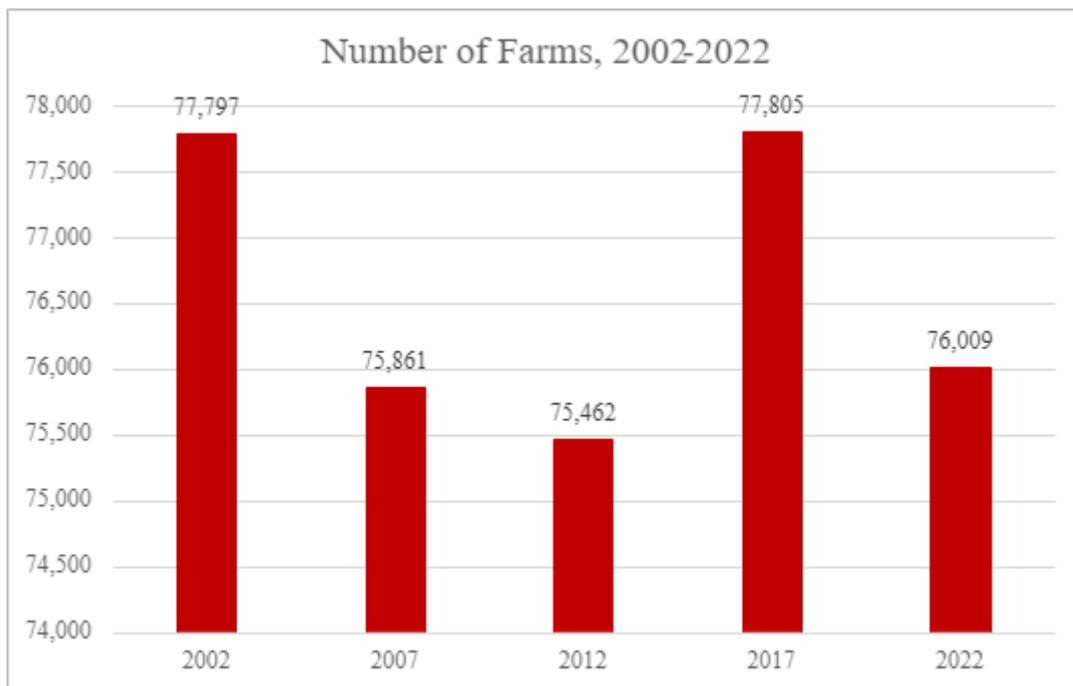
Figure 1 Number of Farms in Ohio, 2002-2022

Comparisons of the Number of Farms by Ohio Counties

Figures 2 and 3 illustrate the spatial distribution of the number of farms throughout Ohio's counties and their percentage change over two decades, from 2002 to 2022. In 2022, a larger number of farms was observed in the central regions of Ohio, in contrast to the lower number of farms found in the northeastern and southeastern parts of the state. Over this 20-year span, a general decrease in the number of farms was noted across many counties, with the southeast regions facing the most significant reductions. Nonetheless, some counties did have a growth in farm numbers.
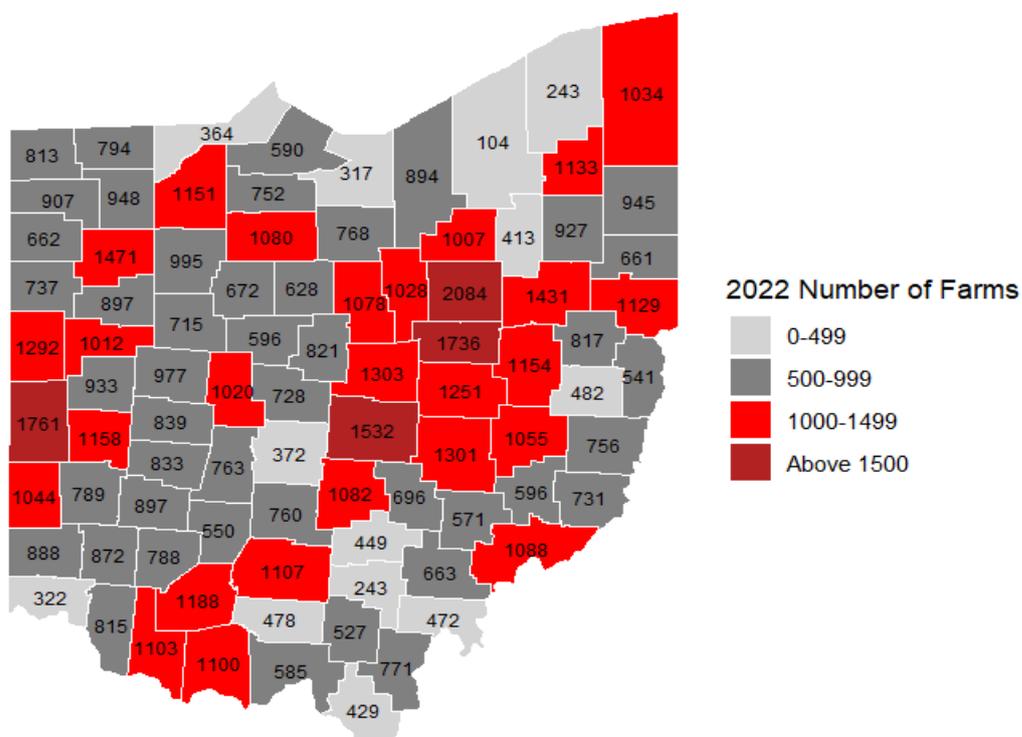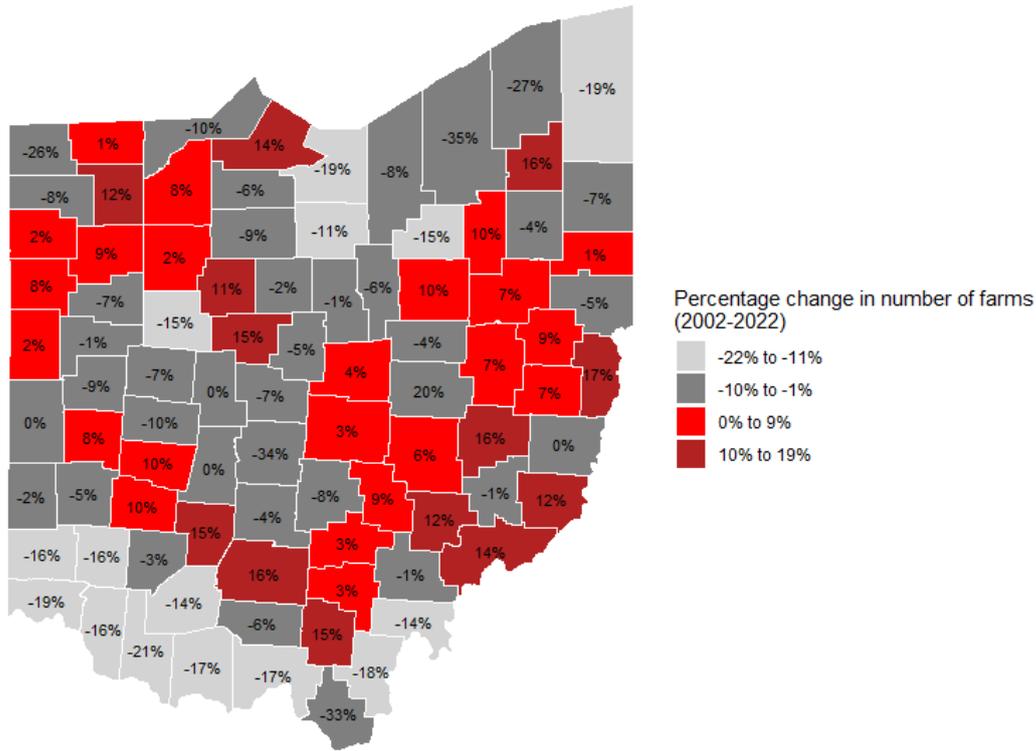

Figure 2 Number of Farms in Ohio, by County, 2022

Figure 3 Percentage Change in Number of Farms in Ohio, by County, 2002-2022

The counties with the highest farm numbers in 2022 were Wayne, Darke, Holmes, Licking, and Putman (Table 2). While a state-wide decline in farm numbers was 2.3% between 2002 and 2022, some counties experienced significantly larger decreases (Table 3). Cuyahoga County (Cleveland MSA) experienced the largest decrease, with the number of farms dropping by 35%. Franklin (Columbus MSA), Lawrence, Lake, and Williams counties were also among the top five in terms of the largest decrease in farm numbers since 2002. Conversely, counties such as Coshocton, Jefferson, Ross, Geauga and Guernsey experienced increases in the number of farms during the same period. Among Ohio's 88 counties, 37 experienced a positive percentage change in the number of farms, 4 counties had almost no change, and the remaining 47 counties experienced a negative percentage change.

Top 10 Counties	
Wayne	2084
Darke	1761
Holmes	1736
Licking	1532
Putnam	1471
Stark	1431
Knox	1303
Muskingum	1301
Mercer	1292
Coshocton	1251

Table 2 Top 10 Counties by Farm Numbers in Ohio, 2022

| Farm Numbers by Percent Change	
Top 5 counties with decreases	
Cuyahoga	-35%
Franklin	-34%
Lawrence	-33%
Lake	-27%
Williams	-26%
Top 5 counties with increases	
Coshocton	20%
Jefferson	17%
Ross	16%
Geauga	16%
Guernsey	16%

Table 3 Ohio Counties with Largest Percent Changes in Farm Numbers, 2002-2022

Land in Farms in Ohio Over Time

Ohio had 14,583,435 acres in land in farms in 2002, which decreased to 13,652,346 acres in 2022 (Table 4). Ohio lost 931,089 acres of land in farms between 2002 and 2022, indicating a 6.4% decrease. The trend in the number of acres in farms between 2002 and 2022 fluctuated, showing a decrease in 2007, followed by relatively the same acres in 2012 and 2017, and a subsequent decline in 2022 (Figure 4).

	2002	2022	Change 2002-2022	% Change
	14,583,435	13,652,346	-931,089	-6.4%

Table 4 Land in Farms in Ohio (Acres), 2002-2022
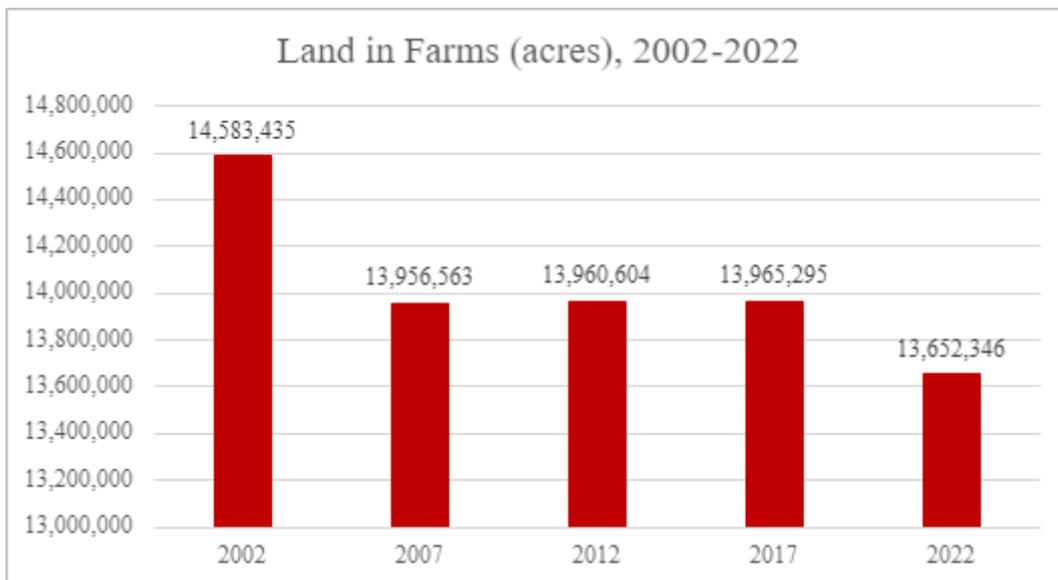

Figure 4 Land Acres in Ohio, 2002-2022

Comparison of Land in Farms by Ohio Counties

The geographic distribution of land in farms acres across Ohio counties, along with the change in land in farms acres from 2002 to 2022, are shown in Figures 5 and 6. In 2022, Darke County had the largest number of acres as land in farms in Ohio, followed by Putman, Mercer, Pickaway, and Hancock counties (Table 5). The counties located in the Columbus, Cincinnati, and Cleveland Metropolitan Statistical Areas (MSAs) had relatively lower acreage of land in farms, with below 100,000 acres.

In terms of acreage change in land in farms, Wood County (Toledo MSA) and Lorain County (Cleveland MSA) had the largest decline in the number of acres between 2002 and 2022 of more than 50,000 acres. While the average decline in land in farms acres for Ohio was 6.4% between 2002 and 2022, some counties had greater percentage losses. Most Ohio counties had declines in the land in farms over the past two decades, though some counties had a positive change.

Cuyahoga County (Cleveland MSA) experienced the largest percentage decrease in land in farms acres of 62%, followed by Franklin (Columbus MSA) with 40%, Hamilton (Cincinnati MSA) of 36%, Lorain, and Butler completing the top 5 counties with the largest percentage decrease in land in farms acres. Conversely, a few counties experienced notable increases in land in farms acres, with

Montgomery County (Dayton MSA) leading with a 16% increase. Columbiana, Williams, Ross, and Jefferson counties also had gains in land in farms acres between 2002 and 2022 (Table 6). Out of Ohio's 88 counties, 61 had a decrease in land in farms acres, while the remaining 27 experienced an increase. Overall, Cuyahoga County (Cleveland MSA) and Franklin County (Columbus MSA) had among the largest percent decreases in farm numbers and land in farms acres between 2002 and 2022.
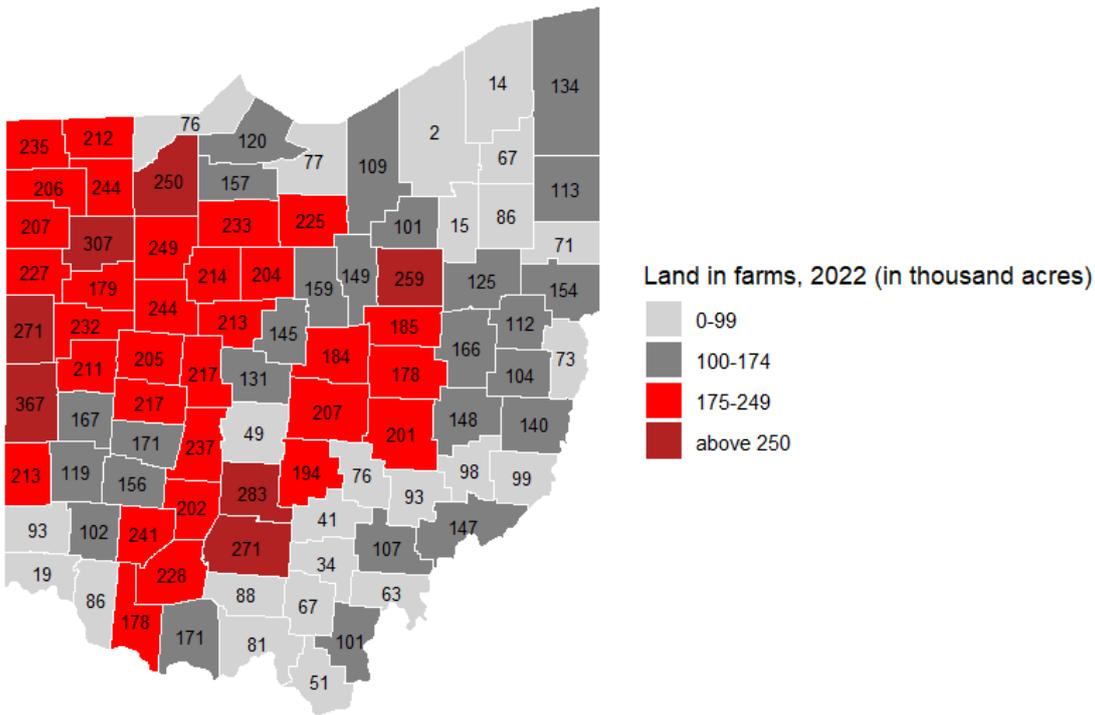
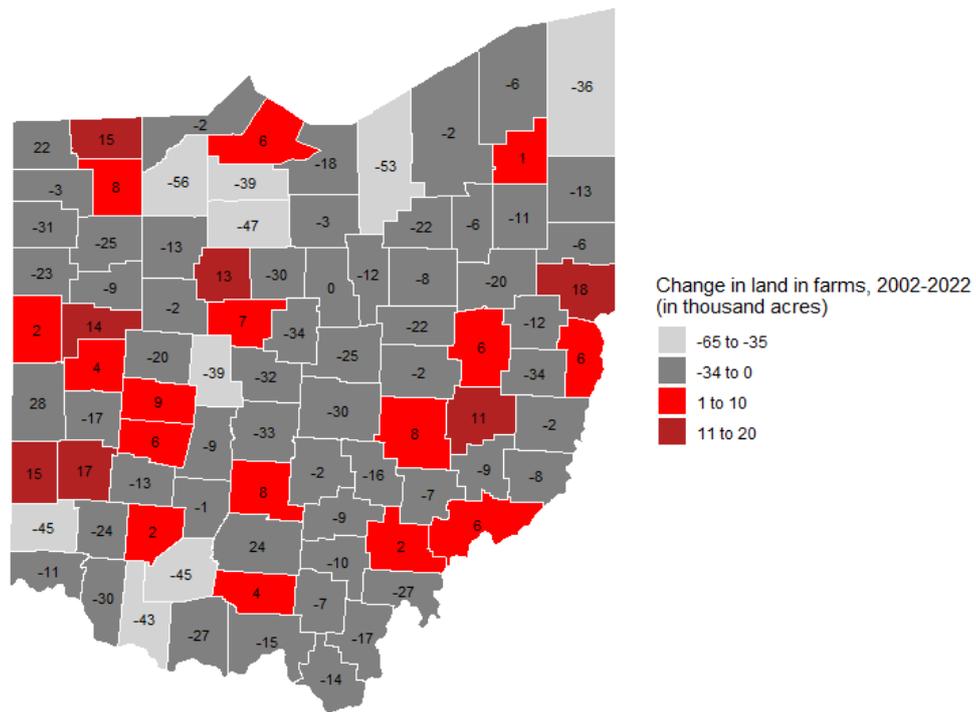**Figure 5 Land in Farms in Ohio, by County, 2022**

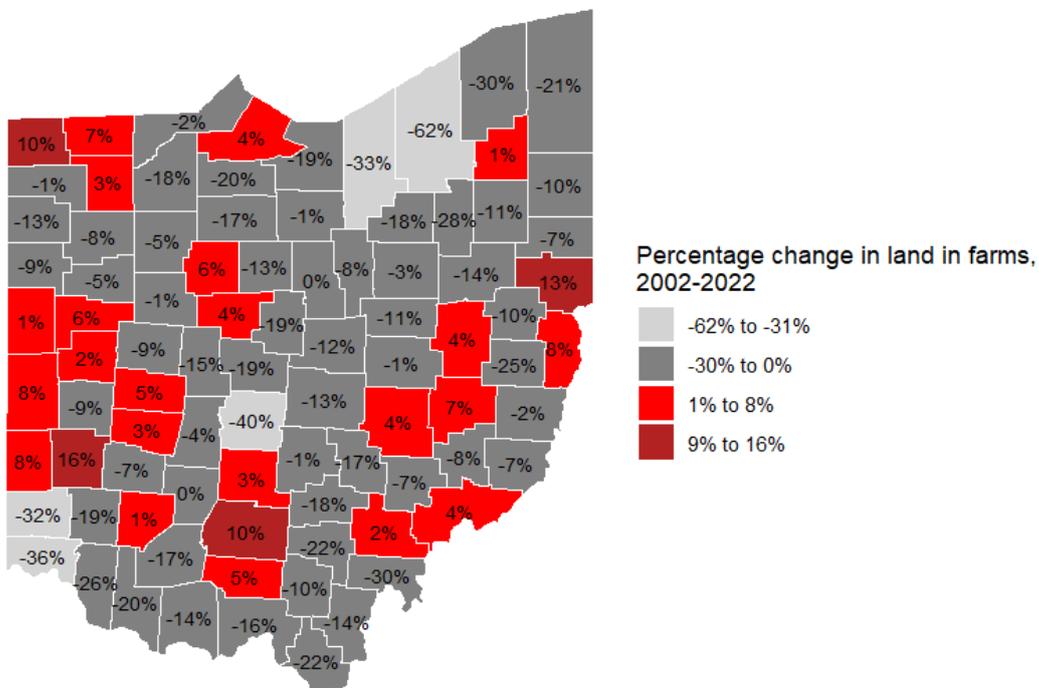**Figure 6a. Change in Land in Farms in Ohio, by County, 2002-2022**

Figure 6b. Percent Change in Land in Farms in Ohio, by County, 2002-2022

Top 10 Counties	
Darke	337,189
Putnam	291,513
Pickaway	254,709
Mercer	251,791
Hancock	234,870
Wood	234,540
Henry	233,278
Hardin	229,202
Clinton	219,318
Madison	218,754

Table 5 Top 10 Counties by Land Acres in Ohio, 2022

Land Acres by Percent Change	
Top 5 counties with largest decreases	
Cuyahoga	-62%
Franklin	-40%
Hamilton	-36%
Lorain	-33%
Butler	-32%
Top 5 counties with largest increases	
Montgomery	16%
Columbiana	13%
Williams	10%
Ross	10%
Jefferson	8%

Table 6 Ohio Counties with Largest Percent Change in Land Acres, 2002-2022

Agricultural Land Lost to Development

The National Land Cover Database (NLCD) defines agricultural land gains and losses based on the changes in land use and land cover categories. The EVA tool within NLCD identifies areas transitioning from natural vegetation to managed classes, including conversions from grassland, rangeland, and forest to pasture, or cultivated crops. It also considers instances where agricultural land is no longer actively managed and has reverted to natural landscapes.

Cultivated crops are defined as areas used for annual crop production, such as corn, soybeans, vegetables, tobacco, and cotton, and perennial woody crops like orchards and vineyards. Crop vegetation accounts for greater than 20% of total vegetation. This class also includes all land being actively tilled. Pasture/hay encompasses areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20% of total vegetation. This class is managed or improved from natural landscape.

Agricultural land can be lost to development as well as barren land, forest, shrubland, herbaceous, and wetland (Multi-Resolution Land Characteristics Consortium, 2021). Here, the focus is on the loss of agricultural land to development, further categorized as developed open space, developed low intensity, developed medium intensity, developed high intensity. Developed open space is characterized by a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses, where impervious surfaces account for less than 20% of total cover. These areas include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes. Developed, low intensity are areas with a mixture of constructed materials and vegetation, where impervious surfaces account for 20% to 49% of total cover. These areas include single-family housing units. Developed, medium-intensity where impervious surfaces account for 50% to 79% of the total cover, often include single-family housing units. Developed high-intensity zones have impervious surfaces covering 80% to 100% of the total area, characterized by dense human habitation or commercial/industrial activities such as apartment complexes, row houses, and commercial/industrial zones.

According to the NLCD, agricultural land in Ohio was 13,261,568 acres in 2001, which declined to 12,988,755 in 2021, an overall decline of 272,813 acres in agricultural land. This included a loss in agricultural land of 355,085 acres and a gain in agricultural land of 82,272 acres between 2001 and 2021. Since the focus is on agricultural land lost to development, the rest of the analysis uses only the agricultural land loss and the gain in agricultural land is not considered. The agricultural land loss to development in Ohio was 180,691 acres from 2001 to 2021, which denotes agricultural land lost primarily due to urbanization, infrastructure expansion, and other developmental activities. Notably, 51% of the agricultural land loss between 2001 and 2002 in Ohio is attributed to development (Table 7).

Agricultural Land Loss (Acres)	Loss to Development (Acres)	% Change
355,085	180,691	51

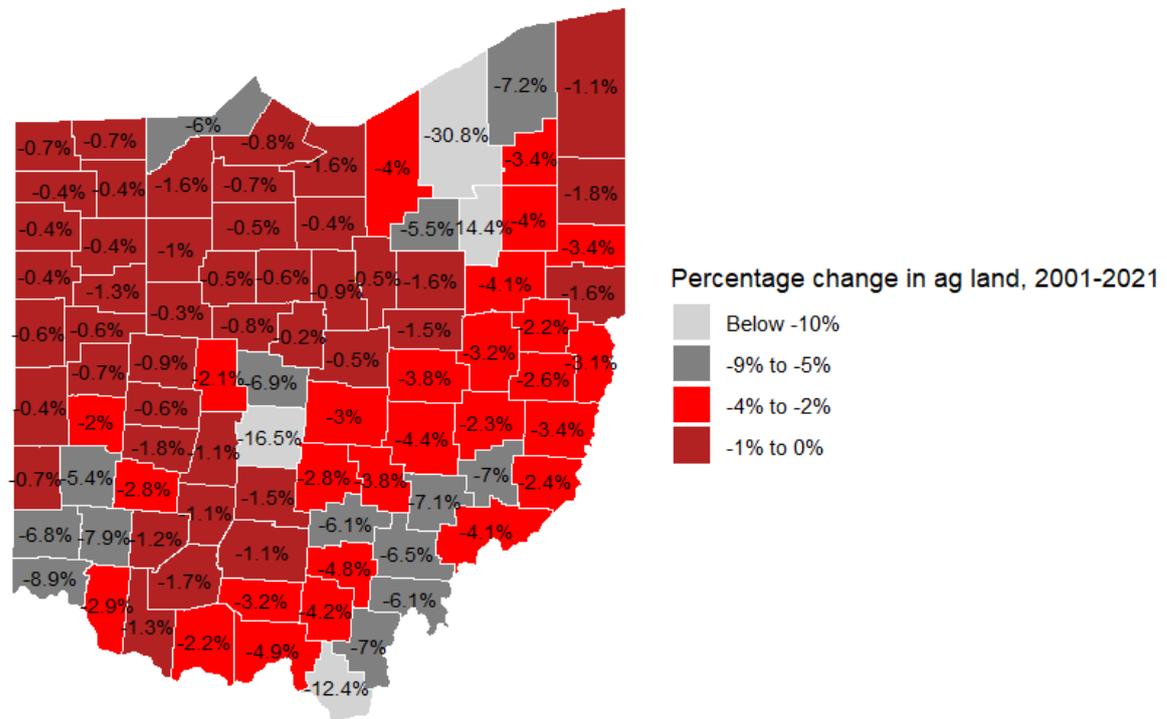**Table 7 Agricultural Land Loss to Development in Ohio, 2001-2021**

It is important to note that the land in farms definition in the Census of Agriculture is broader than the agricultural land definition in the NLCD which only includes cultivated crops and pasture/hay. According to the Census of Agriculture, Ohio lost 931,089 acres of land in farms between 2002 and 2022. Using satellite imagery data from the NLCD, Ohio lost 355,085 acres of agricultural land in cultivated crops and pasture/hay.

Comparison of Agricultural Land Lost by Ohio Counties

The geographic distribution of agricultural land (which includes cultivated crops and pasture/hay) across Ohio counties, along with the change in acres in agricultural land from 2001 to 2021, are shown in figures 7 and 8. According to the NLCD satellite imagery data, counties in Northwest Ohio had the highest number of acres in agricultural land (lead by Darke County), while counties in the Southeast Ohio had the lowest number of acres in 2021. As expected, counties included in the Columbus, Cleveland, and Cincinnati MSAs had fewer agricultural land acres, with Cuyahoga County (Cleveland MSA) having the lowest acres in agricultural land of about 4,000 acres in 2021. The number of acres of agricultural land according to the NLCD imagery database is lower than the number of acres in land in farms according to the Census of Agriculture due to the narrower definition of agricultural land as cultivated crops and pasture/hay.

In terms of change in agricultural land acreage between 2001 and 2021, Franklin and Delaware counties (Columbus MSA) had the largest losses of agricultural land, with agricultural land loss exceeding 10,000 acres each. All Ohio counties experienced a decline in agricultural land acres over the past two decades. Cuyahoga County (Cleveland MSA) and Franklin County (Columbus MSA) had the largest percentage loss in agricultural land (31% and 17%, respectively). These findings are again consistent with the land in farms findings from the Census of Agriculture, though the percentage loss is lower.

Figure 7. Agricultural Land in Ohio, by County, 2021

Figure 8a. Agricultural Land Change in Ohio, by County, 2001-2021

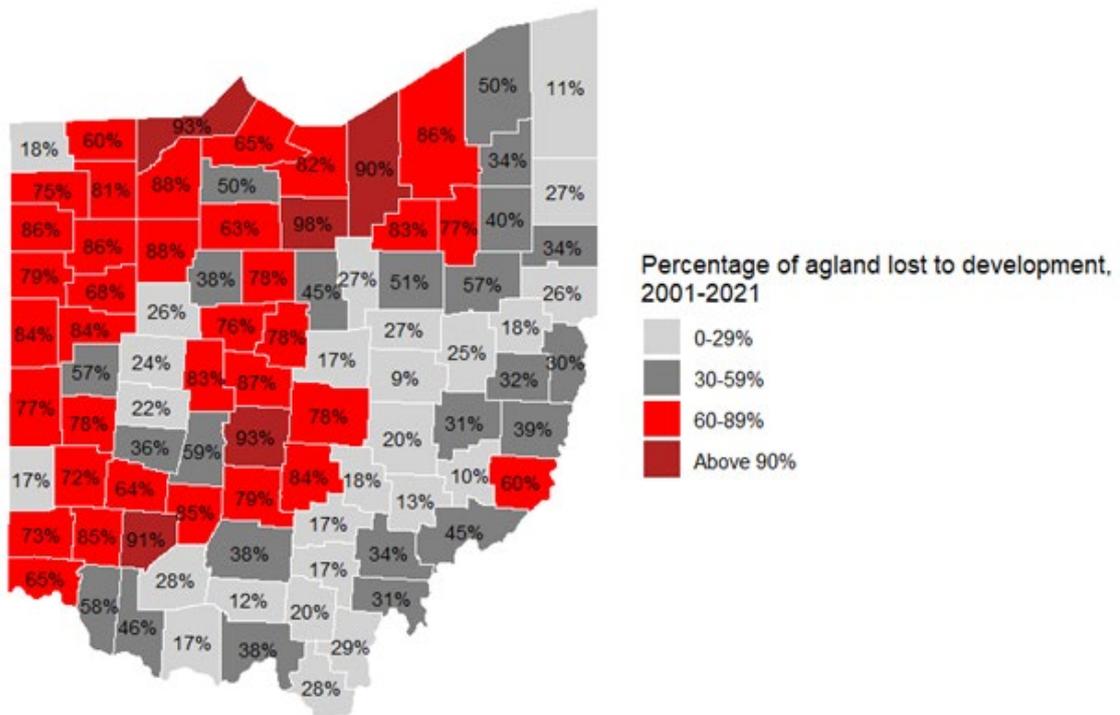**Figure 8b. Agricultural Land Percentage Change in Ohio, by County, 2001-2021**

Comparison of Agricultural Land Lost to Development by Ohio Counties

NLCD reports the extent to which agricultural land (cultivated crops and pasture/hay) was lost to development, by aggregating the classes for developed open space, developed low intensity, developed medium intensity, developed high intensity. As expected, since the Columbus, Cincinnati, and Cleveland MSAs experienced the most agricultural land lost in terms of number of acres, the agricultural land acres were primarily used for development. Franklin and Delaware counties (Columbus MSA) had the largest losses of agricultural land to development, exceeding 10,000 acres between 2001 and 2021. Following closely, Warren and Butler counties (Cincinnati MSA) had more than 7,500 acres of agricultural land lost to development, while Medina and Lorain counties (Cleveland MSA) experienced over 5,000 acres of agricultural land lost to development.

Regarding the percentage of agricultural land lost to development, Huron County (Cleveland-Akron-Canton Combined Statistical Area), had the highest percentage at 98%. Following this, Franklin County (Columbus MSA) had the second-largest percentage of agricultural land lost to development at 93%. The most surprising result is that counties in the northwest of Ohio, had a moderate number of acres of agricultural land lost, but a high percentage of agricultural land was still lost to development.
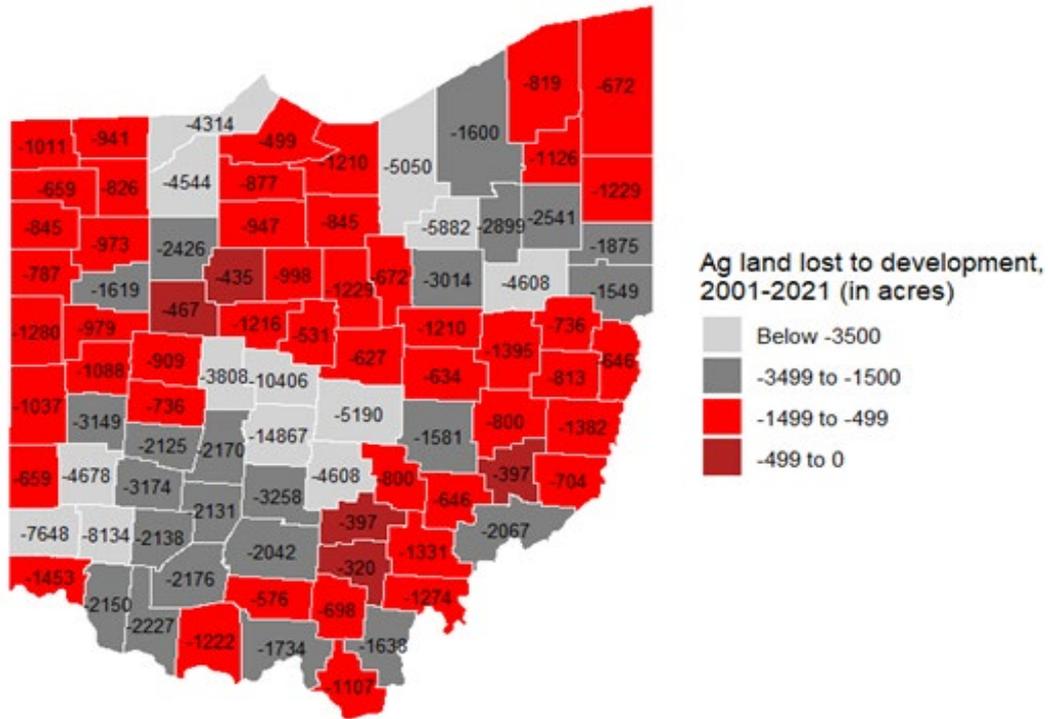
Figure 9a: Agricultural Land Loss to Development, 2001-2021

Figure 9b: Percentage of Agricultural Land Loss to Development, 2001-2021

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Between 2001 and 2021, Franklin, Delaware, Warren, Butler, and Medina counties had the largest agricultural land loss to development (Table 8). While the average agricultural land loss to development across the state of Ohio was 51% between 2001 and 2021, some counties experienced significantly larger percentages (Table 9). Huron County (Cleveland-Akron-Canton Combined Statistical Area) experienced the largest percentage of agricultural land loss to development at 98%, among all Ohio counties. Additionally, Lucas, Franklin, Clinton, and Lorain counties are also included in the top five counties that have experienced the largest agricultural land loss to development, exceeding 90% between 2001 and 2021. On the other hand, Coshocton, Noble, Ashtabula, Pike, and Morgan counties had the smallest percentage agricultural land loss to development during the same period.

Franklin County (Columbus MSA) had a 34% decrease in farm numbers and a 40% decrease in land in farms acres from 2002 to 2022, according to the Census of Agriculture (Tables 3 and 6). Franklin County also ranked in the top 5 counties with largest agricultural land loss to development with 14,867 acres lost to development and the largest percentage agricultural land loss to development at 93% from 2001 to 2021, as indicated by satellite imagery data (Tables 8 and 9). These trends suggest that the declines in land in farms acres may be attributed to development in Franklin County.

Cuyahoga County (Cleveland MSA), also had substantial decreases in farm numbers and land in farms acres, declining by 35% and 62%, respectively, between 2002 and 2022, according to Census of Agriculture (Tables 3 and 6). Similarly, Hamilton County (Cincinnati MSA) had a 19% decrease in farm numbers and 36% decrease in land in farms acres (Table 6). However, the percentage of agricultural land loss to development is somewhat lower at 86% for Cuyahoga County and 65% for Hamilton County.

Top 10 Counties	
Franklin	14,867
Delaware	10,406
Warren	8,134
Butler	7,648
Medina	5,882
Licking	5,190
Lorain	5,050
Montgomery	4,678
Fairfield	4,608
Stark	4,608

Table 8 Top 10 Counties by Agricultural Land Loss to Development in Acres in Ohio, 2001-2021

Agricultural Land Loss to Development by Percent Change	
Top 5 counties with largest percentage loss	
Huron	98%
Lucas	93%
Franklin	93%
Clinton	91%
Lorain	90%
Top 5 counties with smallest percentage loss	
Coshocton	9%
Noble	10%
Ashtabula	11%
Pike	12%
Morgan	13%

Table 9 Ohio Counties with Largest Percent Changes in Agricultural Land Loss to Development, 2001-2021

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