UNDERSTANDING THE DEMAND FOR FARMLAND PRESERVATION: IMPLICATIONS FOR MICHIGAN POLICIES

By

Patricia E. Norris and B. James Deaton

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Understanding the Demand for Farmland Preservation: Implications for Michigan Policies

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Abstract

The diversity of opinion on farmland preservation suggests that a close look at the issue is warranted as state and local governments consider how best to preserve the state’s farmland resource. Public support for farmland preservation programs will be required if those programs are to be successful and will only be forthcoming if there is greater agreement about questions that underlie the policy debate. These questions include whether farmland loss is occurring, whether farmland preservation is needed, how farmland preservation programs should be designed, and what farmland should be preserved. This paper discusses each of these issues, in turn, and describes how current Michigan farmland preservation efforts are or are not addressing them.

25 pages
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Introduction

If you ask a group of Michigan residents whether the state is losing farmland to development, chances are that nearly every person in the group will answer yes. If you ask that group whether the loss of farmland is a concern that warrants a public policy response, you are less likely to get agreement. Agreement is even less likely if you ask the group where, if the state works to preserve farmland, that preservation effort ought to be focused. Finally, you will get the least agreement of all if you ask what policies should be used to reduce farmland loss. This diversity of opinion is one reason why a close look at the issue is warranted as state and local governments consider how best to preserve the state’s farmland resource. Public support for farmland preservation programs will be required if those programs are to be successful and will only be forthcoming if there is greater agreement about these questions that underlie the policy debate.

Is Michigan Losing Farmland?

The most recent Census of Agriculture surprised many people by suggesting that farmland acreage actually increased, or decreased by only a very small amount, across much of Michigan between 1992 and 1997 (USDA, NASS). A closer look reveals that changes in the definitions used by USDA were responsible for some of the unexpected results. The definition of a farm used in the 1992 Census of Agriculture was any establishment from which $1,000 or more of agricultural products were sold or would normally be sold during the year. However, for the 1997 Census, that definition was expanded to include Christmas tree farms, maple syrup farms, and short-rotation woody crop farms, and operations having five or more horses or ponies and no other agricultural sales. The expanded definition also includes farms that received $1,000 or more in government payments during the year but had not agricultural products sold (for example, farms wholly enrolled in the Conservation Reserve Program) (USDA, NASS).

The maps in Figures 1 and 2 illustrate how this change in definitions affected the picture of farmland loss in Michigan. The map in Figure 1 shows that, with the expanded definition, 60
counties experienced an increase or a very small decrease in farmland acreage between 1992 and 1997. This map reflects the numbers reported in the 1997 Census of Agriculture. The map in Figure 2, however, reflects a constant definition of farms – that is, only the farmland counted in 1992 was counted in 1997. With this constant definition, only 37 counties experienced an increase or very small decrease. Statewide, the 1997 Census reported a reduction in farmland acreage of 2.25 percent between 1992 and 1997. However, using the constant definition, the reduction was just under 6 percent. These data are reported in Table 1.

The USDA Natural Resources Inventory (NRI) tracks land use change by inventorying physical land uses and, unlike the Census of Agriculture, does not base farmland inventories on an economic definition of a farm. In a broader category of land use, the most recent NRI showed that rural land in Michigan (cropland, Conservation Reserve Program land, pastureland, forestland and other rural land) decreased by 1.2 percent between 1992 and 1997 (Table 2). Removing forestland from that number, to more closely measure changes captured by the Census of Agriculture, the reduction was just under 5 percent between 1992 and 1997 (USDA, NRCS, 2001a).

Why Preserve Farmland?

Four arguments for preserving farmland are most commonly voiced. These are 1) maintaining the supply of food, 2) local economic benefits, 3) growth management, and 4) preservation of environmental amenities. Let’s consider each of these arguments in turn.

Food Supply

A common reason given for concern about the conversion of agricultural land to non-agricultural uses is that, as the agricultural land base declines and population continues to expand, we will begin to face shortages in food and fiber. This is a concern that has been revisited regularly since 1798 when Thomas Malthus first described the dilemma posed by a population growing faster than the food supply. In 1936, Stuart Chase published a book entitled “Rich Land, Poor Land” in which he demonstrated how current trends in resource use could threaten the future productivity of land. In 1967, a book called “Famine: 1975” was published; its authors predicted an inevitable “population-food collision” to occur sometime around 1975. Since 1984,
the Worldwatch Institute has produced an annual report tracking cropland acreage, food production and population, which the Institute uses to support its premise that Malthus’ concerns should not be taken lightly.

Despite varied views on the state of our agricultural capacity, the fact is that we have continually substituted physical, biological and intellectual capital for land and labor in agriculture. Fewer people produce more food on less land than ever before. Little evidence exists to suggest that we are running out of productive innovations and, although land goes out of agriculture, the land remaining in agriculture is farmed more intensively. A 1990 Resource Conservation Act study concluded that, at least through the year 2030, the increasing supply of food will outstrip the increasing demand, resulting in increasing downward pressure on commodity prices and land values (Libby), and initial analyses of 1997 NRI data suggest that land use change does not represent a threat to the nation’s total food production (USDA, NRCS, 2001b). Though it is not a popular conclusion in all quarters, the conclusion that economists generally reach is that loss of agricultural land in any given county or even any given state will not significantly impact our overall agricultural capacity.

That said, farmland conversion does, nevertheless, affect agriculture. The loss of specialty agriculture is of particular concern. Much of the specialty fruit and vegetable production in the United States occurs in southern states, which are experiencing the most rapid rates of land development in the country. In fact, most states have specific niches for specialty commodities – Michigan is the largest producer of tart cherries in the U.S., ranks second in the production of celery, and ranks third in apple and asparagus production (Kleweno and Matthews). While producers of many of these products have benefitted from growing local markets created by growing populations, competition for land and water resources has, in some cases, cut deeply into production areas. In a 1997 report on farmland loss, the American Farmland Trust included two areas in western Michigan (the *southwestern Michigan fruit and truck belt*, comprised of land in Allegan, Berrien and Van Buren counties, and the *western Michigan fruit and truck belt*, comprised of land in Antrim, Benzie, Charlevoix, Emmet, Grand Traverse, Kalkaska, Leelanau, Manistee, Mason and Oceana counties) among its list of the twenty most threatened farmland areas in the U.S. (Sorensen, Greene and Russ).
Local Economies

Agricultural land conversion is a concern in areas where local economies are highly dependent upon agricultural activity. The USDA Economic Research Service has defined as farming-dependent those counties which derive 20 percent or more of their total labor and proprietors’ income from farming (Cook and Mizer). Using this definition, and data from 1987-1989, a 1994 study designated only Huron and Missaukee counties as farming-dependent. (The study looked only at non-metro counties.) Table 3 presents results using data from 1990-1999; no counties in Michigan (metro or non-metro) met the 20 percent threshold for this period. Missaukee County had 10.5 percent of labor and proprietors’ income from farming during that period; Huron and Oceana Counties had 9 and 8 percent.

A broader view of economic dependence on agriculture considers income from the total food and fiber system. If a county hosts one or more industries that support agriculture – for example, farm input production and distribution or food or fiber processing and distribution – that county may be more dependent upon agriculture as a whole. The importance of farmland preservation to that economic activity will depend upon the extent to which the supporting industries rely upon local or regional farm production activities.

Growth Management

Statewide, Michigan counties have, on average, 28 percent of their land base in farmland. However, metropolitan counties in Michigan (counties in Metropolitan Statistical Areas)¹ have, on average, 42 percent of their land base in farmland (table 4). As these metropolitan areas continue to grow, the largest core of Michigan’s farmland is subject to greater development pressures. Farmland preservation is one of many issues nested in discussions of growth management.

Pressures on local financial resources caused by population growth and changes in land use are one area of concern. When development of residential and commercial areas increases the demand for public services and utilities, local governments are faced with finding the resources to satisfy those demands. New subdivisions and added traffic mean new roads may be needed. New

¹Metropolitan Statistical Areas are defined by the U.S. Census as areas that include cities and contiguous groups of cities with a total of more than 50,000 in population.
homes likely require access to public water supply and wastewater treatment systems. (Alternatively, private water supply and wastewater systems may introduce a host of other environmental issues.) New structures, often widely dispersed, mean changes in the way fire protection is offered. A growing population can overload local schools.

The desire to maintain a rural landscape, combined with concerns about the costs of growth, create a public interest in land use policy tools that help communities achieve a preferred development pattern. Research suggests that a more compact spatial pattern of development will save taxpayer and homeowner dollars. A study of costs associated with different growth patterns in Michigan concluded that a denser, managed growth pattern would, when compared to less dense growth, result in savings of 14-18 percent in public utility costs, 12 percent in road costs, and 7 percent in housing costs (Burnett et al.). Other conversations about spatial patterns focus attention on other desired attributes, including walkable communities, transportation networks, public parks and green spaces.

*Environmental Amenities*

One widely cited problem associated with urbanizing land use patterns is the perceived loss of environmental amenities provided by farmland, forests, and other open landscapes. From a broad, public perspective, this may be the principal reason for concern about the loss of farmland. When asked about the importance of farmland preservation, residents in several states have told researchers that loss of environmental and natural amenities ranks equal to or higher than loss of agricultural production capacity as a basis for concern about farmland loss (Kline and Wilcheln; Rosenberger; Halstead; Bergstrom, Dillman and Stoll). Environmental amenities include things like wildlife habitat, surface and ground water quantity and quality, open space, and natural areas. Clearly, not all farmland, or agricultural management practices, will provide the same environmental amenities. Where the objective of farmland preservation activities is preservation of environmental amenities, the location of the farmland may be an important element of preservation programs. Provision of environmental amenities may change, however, as management, production technologies, market forces, or land ownership change.

Summarizing arguments for farmland preservation into these four categories captures most, although not all, reasons generally given for why public policy should address farmland
conversion. Clearly, however, the working definition of a farm or farmland, coupled with the objectives of a farmland preservation program, will influence what approach, or combination of approaches, to farmland preservation are most appropriate. The capacity of farmland to produce agricultural products, local economic benefits, a preferred growth pattern, and environmental amenities is likely to vary depending on the location of the land and the type of farm operation that is being preserved. In addition, while the location of the farmland is fixed, the type of farm operation may change over time. These are important issues from a policy perspective. If we have a limited public budget to support farmland preservation, which farmland should be preserved?

Farmland preservation programs range from exclusive agricultural zoning to programs that purchase development rights from farmland owners. Different programs can target different objectives. If the public is most concerned about loss of environmental amenities associated with the conversion of agricultural land and other open spaces to developed uses, and research suggests this is so, then criteria for targeting farmland preservation efforts may require reevaluation.

**Farmland Preservation in Michigan**

There are two state-level farmland preservation programs in Michigan. These are the P.A. 116 program and the Purchase of Development Rights (PDR) program, both administered by the Michigan Department of Agriculture (MDA). Farmland owners participating in the P.A. 116 program enter into development rights agreements with the state. Under the agreement, a farmland owner transfers development rights to the state for a period of no less than 10 years and, in return, claims a credit against state income tax liability for the amount by which property taxes exceed 3.5% of household or business income. Upon expiration of the development rights agreement, an amount equal to the tax credits from the last seven years is placed as a lien against the property. The lien is due when the land is sold or converted to a non-agricultural use.

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2 Both are authorized by the Farmland and Open Space Preservation Act, passed in 1974 and most recently amended in 2000 (codified as parts 361 and 362 of the Natural Resources and Environmental Protection Act, Act 451).
The current eligibility requirements for P.A. 116 are that farmland be (1) 40 acres or more in size under one ownership, with 51% or more of the land area devoted to agriculture; (2) 5 acres or more under one ownership, but less than 40 acres, with 51% or more of the land area devoted to agriculture, that has produced a gross annual income from agriculture of $200 per year or more per acre, (3) a farm designated by MDA as a specialty farm under one ownership that has produced a gross annual income from an agricultural use of $2,000 or more, or (4) parcels of land under one ownership that are not contiguous but that constitute an integral part of a farming operation.

Any income collected from P.A. 116 liens provides funds for the state’s PDR program. The state PDR program purchases, outright, the development rights from farmland owners. The landowner retains all other rights in the land, but development for non-agricultural purposes is precluded. With the 2000 amendment, the state PDR program can also make grants to township- or county-administered PDR programs whose local farmland preservation efforts satisfy certain requirements.

When MDA reviews applications from farmland owners seeking to sell development rights, the applications are scored based upon several criteria. These include (a) agricultural capacity of the land, (b) degree of development pressure, (c) location of the land relative to other preserved areas, (d) whether the land is currently subject to a P.A. 116 agreement, (e) whether the land is within a local governmental unit that is committed, as evidenced by its comprehensive land use plan, to preserving farmland, and (f) availability of local funds to match, or offset, state expenditures (MDA, Farmland Preservation Office). A higher score is given to highly productive agricultural land that is facing greater development pressure, that is located in closer proximity to other preserved areas, that has been enrolled in P.A. 116, and that is located within a local governmental unit clearly committed to preserving farmland.

Both the P.A. 116 program and the PDR program were designed to support farmers and to protect land in agricultural use. Initial public support for the P.A. 116 program centered around efforts to preserve farmland in rapidly urbanizing areas. However, a 1995 study found that the ten fastest growing areas in Michigan had only 23% of their farmland acres in P.A. 116 agreements, compared to 45 percent of farmland statewide (Harvey and Norgaard). The low enrollment in
rapidly urbanizing areas suggests that, if preserving farmland in areas facing the greatest development pressures is an objective of farmland preservation in Michigan, the P.A. 116 program is unlikely to deliver the desired results in these areas of highest development pressure.

The PDR program is both more general and more targeted than the P.A. 116 program. It is more general in that it focuses on characteristics of the land resource, rather than on an economic definition of a farm. It is more targeted in that it focuses on the agricultural productive capacity of the land. However, the PDR program also emphasizes location, especially relative to development pressures and other preserved areas, and the importance of community planning and participation as important criteria in allocating funds.

Neither P.A. 116 nor the PDR program focus on growth management or preservation of environmental amenities as components of a farmland preservation effort. However, these objectives are clearly more suited to local involvement in farmland preservation than to a state-level effort. Growth management is part of local land use planning and regulation. Also, local preferences for preservation of environmental amenities may figure prominently in local land use planning. The structure of the PDR program, with an opportunity for local governments to obtain state grant funds to support local PDR programs, provides a window of opportunity for local communities to examine their farmland preservation objectives and assess where preservation efforts are best targeted. An understanding of what the communities want can be structured into their comprehensive plans and their allocation of farmland preservation funds.

**Summary**

Inventories of land use and land use change suggest that Michigan is losing farmland to non-farm uses. Those losses are not occurring evenly across the state, and the fact that much of Michigan’s farmland is located in metropolitan counties suggests that urban growth in a few counties will impact farmland losses most significantly. Farmland provides many valued services, but there is some evidence that the non-agricultural services (for example, impacts on landscape patterns and provision of environmental amenities) are motivating much of the public’s support for farmland preservation. However, what we call farmland has changed over time, and not all farmland provides these services equally. This suggests that a successful farmland preservation program hinges on its capacity to achieve the following: (1) recognize that farmland provides a
bundle of services, the quality and quantity of which varies from farm to farm and over time on the same farm, (2) identify which farmland can provide the services demanded by the public supporting the program, and (3) preserve farmland in a manner that ensures protection of the services demanded. As the state and local units of government explore ways to preserve farmland, an improved understanding of the actual status of farmland conversion patterns in the state, the public’s objectives in preserving the services supplied by farmland, and the policy alternatives for satisfying those objectives will be important to assuring public support for farmland preservation activities.
References


Figure 1. Percentage change in farmland acreage, 1992-1997, using the expanded definition
Figure 2. Percentage change in farmland acreage, 1992-1997, using a constant definition
Table 1. Changes in farmland acreage, 1992-1997, using expanded and constant definitions.

<table>
<thead>
<tr>
<th>County</th>
<th>Farmland acres in 1992</th>
<th>Farmland acres in 1997 using expanded definition (% change)</th>
<th>Farmland acres in 1997 using constant definition (% change)</th>
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Table 1 (Continued). Changes in farmland acreage, 1992-1997, using expanded and constant definitions.

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<th>County</th>
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Table 1 (Continued). Changes in farmland acreage, 1992-1997, using expanded and constant definitions.

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Table 1 (Continued). Changes in farmland acreage, 1992-1997, using expanded and constant definitions.

<table>
<thead>
<tr>
<th>County</th>
<th>Farmland acres in 1992</th>
<th>Farmland acres in 1997 using expanded definition (% change)</th>
<th>Farmland acres in 1997 using constant definition (% change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menominee</td>
<td>110,014</td>
<td>109,661 (-0.32)</td>
<td>101,606 (-7.64)</td>
</tr>
<tr>
<td>Midland</td>
<td>89,173</td>
<td>79,667 (-10.66)</td>
<td>76,861 (-13.81)</td>
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<tr>
<td>Missaukee</td>
<td>88,322</td>
<td>90,027 (1.93)</td>
<td>82,388 (-6.72)</td>
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<tr>
<td>Monroe</td>
<td>217,095</td>
<td>209,715 (-3.40)</td>
<td>207,882 (-4.24)</td>
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<tr>
<td>Montcalm</td>
<td>224,030</td>
<td>237,771 (6.13)</td>
<td>218,211 (-2.60)</td>
</tr>
<tr>
<td>Montmorency</td>
<td>22,056</td>
<td>21,025 (-4.67)</td>
<td>20,002 (-9.31)</td>
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<tr>
<td>Muskegon</td>
<td>73,661</td>
<td>73,113 (-0.74)</td>
<td>71,363 (-3.12)</td>
</tr>
<tr>
<td>Newaygo</td>
<td>115,338</td>
<td>122,294 (6.03)</td>
<td>118,454 (2.70)</td>
</tr>
<tr>
<td>Oakland</td>
<td>48,236</td>
<td>45,366 (-5.95)</td>
<td>43,041 (-10.77)</td>
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<tr>
<td>Oceana</td>
<td>129,083</td>
<td>127,994 (-0.84)</td>
<td>121,700 (-5.72)</td>
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<tr>
<td>Ogemaw</td>
<td>75,345</td>
<td>73,239 (-2.80)</td>
<td>72,214 (-4.16)</td>
</tr>
<tr>
<td>Ontonagon</td>
<td>32,980</td>
<td>32,516 (-1.41)</td>
<td>32,516 (-1.41)</td>
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<td>Osceola</td>
<td>108,726</td>
<td>108,250 (-0.44)</td>
<td>101,845 (-6.33)</td>
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<tr>
<td>Oscoda</td>
<td>14,081</td>
<td>13,904 (-1.26)</td>
<td>13,494 (-4.17)</td>
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<tr>
<td>Otsego</td>
<td>36,272</td>
<td>34,450 (-5.02)</td>
<td>33,340 (-8.08)</td>
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<tr>
<td>Ottawa</td>
<td>176,305</td>
<td>170,627 (-3.22)</td>
<td>167,350 (-5.08)</td>
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<td>Presque Isle</td>
<td>79,921</td>
<td>82,466 (3.18)</td>
<td>81,385 (1.83)</td>
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<td>Roscommon</td>
<td>3,786</td>
<td>4,139 (9.32)</td>
<td>4,139 (9.32)</td>
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</tbody>
</table>
Table 1 (Continued). Changes in farmland acreage, 1992-1997, using expanded and constant definitions.

<table>
<thead>
<tr>
<th>County</th>
<th>Farmland acres in 1992</th>
<th>Farmland acres in 1997 using expanded definition (% change)</th>
<th>Farmland acres in 1997 using constant definition (% change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saginaw</td>
<td>318,125</td>
<td>297,842 (-6.38)</td>
<td>294,770 (-7.34)</td>
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<td>Sanilac</td>
<td>444,407</td>
<td>429,706 (-3.31)</td>
<td>414,632 (-6.70)</td>
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<td>Schoolcraft</td>
<td>13,908</td>
<td>15,742 (13.19)</td>
<td>15,742 (13.19)</td>
</tr>
<tr>
<td>Shiawassee</td>
<td>236,799</td>
<td>214,153 (-9.56)</td>
<td>212,067 (-10.44)</td>
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<tr>
<td>St. Clair</td>
<td>181,569</td>
<td>162,887 (-10.29)</td>
<td>159,174 (-12.33)</td>
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<tr>
<td>St. Joseph</td>
<td>234,823</td>
<td>217,345 (-7.44)</td>
<td>211,580 (-9.90)</td>
</tr>
<tr>
<td>Tuscola</td>
<td>324,111</td>
<td>333,099 (2.77)</td>
<td>325,041 (0.29)</td>
</tr>
<tr>
<td>Van Buren</td>
<td>206,781</td>
<td>177,360 (-14.23)</td>
<td>170,343 (-17.62)</td>
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<tr>
<td>Washtenaw</td>
<td>188,958</td>
<td>180,223 (-4.62)</td>
<td>176,397 (-6.65)</td>
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<tr>
<td>Wayne</td>
<td>22,488</td>
<td>39,102 (73.88)</td>
<td>36,925 (64.20)</td>
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<tr>
<td>Wexford</td>
<td>31,427</td>
<td>43,321 (37.85)</td>
<td>32,465 (3.30)</td>
</tr>
<tr>
<td>Michigan Total</td>
<td>10,088,170</td>
<td>9,860,949 (-2.25)</td>
<td>9,483,604 (-5.99)</td>
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</table>

Table 2. Land cover/use of nonfederal rural land in Michigan, 1992 and 1997 (1000 acres).

<table>
<thead>
<tr>
<th></th>
<th>Cropland</th>
<th>CRP land</th>
<th>Pastureland</th>
<th>Forest land</th>
<th>Other rural land</th>
<th>Total rural land</th>
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</thead>
<tbody>
<tr>
<td>1992</td>
<td>8,985.4</td>
<td>254.5</td>
<td>2,378.2</td>
<td>16,053.2</td>
<td>2,119.1</td>
<td>29,790.4</td>
</tr>
<tr>
<td>1997</td>
<td>8,539.7</td>
<td>321.4</td>
<td>2,032.3</td>
<td>16,354.2</td>
<td>2,178.3</td>
<td>29,425.9</td>
</tr>
<tr>
<td>% change</td>
<td>- 4.96</td>
<td>26.29</td>
<td>-14.54</td>
<td>1.88</td>
<td>2.79</td>
<td>-1.22</td>
</tr>
</tbody>
</table>

Source: USDA, NRCS, 2001a.
Table 3. Farming Dependency of Michigan Counties based on Labor and Proprietors’ Income from Farming as a Percent of Total Income, Average for 1990-1999.

<table>
<thead>
<tr>
<th>County</th>
<th>Labor and Proprietors’ Income – Farming ($1000)</th>
<th>Labor and Proprietors’ Income – Non-farm ($1000)</th>
<th>Farm Income as Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcona</td>
<td>311</td>
<td>49,540</td>
<td>0.62</td>
</tr>
<tr>
<td>Alger</td>
<td>182</td>
<td>83,496</td>
<td>0.22</td>
</tr>
<tr>
<td>Allegan</td>
<td>33,537</td>
<td>1,115,544</td>
<td>2.92</td>
</tr>
<tr>
<td>Alpena</td>
<td>165</td>
<td>384,929</td>
<td>0.04</td>
</tr>
<tr>
<td>Antrim</td>
<td>4,751</td>
<td>145,738</td>
<td>3.16</td>
</tr>
<tr>
<td>Arenac</td>
<td>7,411</td>
<td>109,009</td>
<td>6.37</td>
</tr>
<tr>
<td>Baraga</td>
<td>4</td>
<td>78,653</td>
<td>0.00</td>
</tr>
<tr>
<td>Barry</td>
<td>3,083</td>
<td>354,536</td>
<td>0.86</td>
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<tr>
<td>Bay</td>
<td>13,745</td>
<td>1,300,895</td>
<td>1.05</td>
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<tr>
<td>Benzie</td>
<td>1,800</td>
<td>92,568</td>
<td>1.91</td>
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<tr>
<td>Berrien</td>
<td>16,791</td>
<td>2,231,123</td>
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<td>Branch</td>
<td>11,708</td>
<td>396,154</td>
<td>2.87</td>
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<tr>
<td>Calhoun</td>
<td>5,612</td>
<td>2,274,964</td>
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<tr>
<td>Cass</td>
<td>13,285</td>
<td>321,712</td>
<td>3.97</td>
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<tr>
<td>Charlevoix</td>
<td>572</td>
<td>313,001</td>
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<tr>
<td>Cheboygan</td>
<td>404</td>
<td>185,736</td>
<td>0.22</td>
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<tr>
<td>Chippewa</td>
<td>-1,068</td>
<td>362,822</td>
<td>0.00</td>
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<tr>
<td>Clare</td>
<td>2,012</td>
<td>192,209</td>
<td>1.04</td>
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<tr>
<td>Clinton</td>
<td>12,263</td>
<td>400,075</td>
<td>2.97</td>
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<tr>
<td>Crawford</td>
<td>0</td>
<td>120,289</td>
<td>0.00</td>
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<tr>
<td>Delta</td>
<td>1,119</td>
<td>448,992</td>
<td>0.25</td>
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<td>Dickinson</td>
<td>498</td>
<td>410,809</td>
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<td>Eaton</td>
<td>5,656</td>
<td>892,397</td>
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<tr>
<td>Emmet</td>
<td>414</td>
<td>438,967</td>
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<td>Genesee</td>
<td>122</td>
<td>7,158,027</td>
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<td>Gladwin</td>
<td>403</td>
<td>129,105</td>
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<tr>
<td>Gogebic</td>
<td>-165</td>
<td>151,029</td>
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<tr>
<td>Grand Traverse</td>
<td>1,462</td>
<td>1,269,296</td>
<td>0.12</td>
</tr>
</tbody>
</table>
Table 3 (Continued). Farming Dependency of Michigan Counties based on Labor and Proprietors’ Income from Farming as a Percent of Total Income, Average for 1990-1999.

<table>
<thead>
<tr>
<th>County</th>
<th>Labor and Proprietors’ Income – Farming ($1000)</th>
<th>Labor and Proprietors’ Income – Non-farm ($1000)</th>
<th>Farm Income as Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gratiot</td>
<td>21,392</td>
<td>392,053</td>
<td>5.17</td>
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<td>Hillsdale</td>
<td>10,609</td>
<td>453,444</td>
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<td>238</td>
<td>340,059</td>
<td>0.07</td>
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<tr>
<td>Huron</td>
<td>37,125</td>
<td>370,520</td>
<td>9.12</td>
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<tr>
<td>Ingham</td>
<td>4,384</td>
<td>6,331,410</td>
<td>0.07</td>
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<td>Ionia</td>
<td>9,497</td>
<td>482,309</td>
<td>1.93</td>
</tr>
<tr>
<td>Iosco</td>
<td>1,016</td>
<td>267,557</td>
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<tr>
<td>Iron</td>
<td>-70</td>
<td>99,296</td>
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<td>Isabella</td>
<td>6,570</td>
<td>650,756</td>
<td>1.00</td>
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<td>Jackson</td>
<td>2,501</td>
<td>1,941,682</td>
<td>0.13</td>
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<tr>
<td>Kalamazoo</td>
<td>20,695</td>
<td>4,212,303</td>
<td>0.49</td>
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<tr>
<td>Kalkaska</td>
<td>970</td>
<td>149,798</td>
<td>0.64</td>
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<td>Kent</td>
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<td>Keweenaw</td>
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<td>10,073</td>
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<td>4,323</td>
<td>607,821</td>
<td>0.71</td>
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<td>132,650</td>
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<td>1,045,022</td>
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<tr>
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<td>119,530</td>
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<td>13,373,550</td>
<td>0.06</td>
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<td>201,335</td>
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<td>864,671</td>
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<td>295,038</td>
<td>1.39</td>
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<td>Mecosta</td>
<td>4,450</td>
<td>322,922</td>
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<td>Menominee</td>
<td>2,836</td>
<td>242,654</td>
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<tr>
<td>Midland</td>
<td>1,006</td>
<td>1,513,418</td>
<td>0.07</td>
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<td>Missaukee</td>
<td>8,310</td>
<td>70,812</td>
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<tr>
<td>Montcalm</td>
<td>19,204</td>
<td>533,699</td>
<td>3.47</td>
</tr>
</tbody>
</table>
Table 3 (Continued). Farming Dependency of Michigan Counties based on Labor and Proprietors’ Income from Farming as a Percent of Total Income, Average for 1990-1999.

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<th>County</th>
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<th>Labor and Proprietors’ Income – Non-farm ($1000)</th>
<th>Farm Income as Percent of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Montmorency</td>
<td>-268</td>
<td>49,157</td>
<td>0.00</td>
</tr>
<tr>
<td>Muskegon</td>
<td>7,981</td>
<td>1,949,511</td>
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<tr>
<td>Newaygo</td>
<td>7,287</td>
<td>307,427</td>
<td>2.32</td>
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<td>8,437</td>
<td>30,210,069</td>
<td>0.03</td>
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<td>Oceana</td>
<td>14,052</td>
<td>154,704</td>
<td>8.33</td>
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<tr>
<td>Ogemaw</td>
<td>2,214</td>
<td>148,242</td>
<td>1.47</td>
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<td>93,366</td>
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<td>139</td>
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<td>Roscommon</td>
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<td>747,418</td>
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<td>Shiawassee</td>
<td>24,914</td>
<td>335,912</td>
<td>6.90</td>
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<tr>
<td>St. Clair</td>
<td>113</td>
<td>77,499</td>
<td>0.15</td>
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<tr>
<td>St. Joseph</td>
<td>788</td>
<td>528,148</td>
<td>0.15</td>
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<tr>
<td>Tuscola</td>
<td>23,617</td>
<td>395,104</td>
<td>5.64</td>
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<tr>
<td>Van Buren</td>
<td>23,338</td>
<td>609,062</td>
<td>3.69</td>
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<tr>
<td>Washtenaw</td>
<td>3,148</td>
<td>7,113,168</td>
<td>0.04</td>
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<tr>
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<td>5,422</td>
<td>38,361,049</td>
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<tr>
<td>Wexford</td>
<td>1,139</td>
<td>389,419</td>
<td>0.29</td>
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<tr>
<td>Michigan</td>
<td>583,102</td>
<td>160,912,702</td>
<td>0.36</td>
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</tbody>
</table>

Table 4. Percent of Land Base in Farmland, by County, 1997.

<table>
<thead>
<tr>
<th>County</th>
<th>Land in Farms (acres)</th>
<th>Total Land (acres)</th>
<th>Percent of Land in Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metro Counties</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allegan</td>
<td>236,936</td>
<td>529,873</td>
<td>44.72</td>
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<tr>
<td>Bay</td>
<td>175,931</td>
<td>284,627</td>
<td>61.81</td>
</tr>
<tr>
<td>Berrien</td>
<td>173,958</td>
<td>362,982</td>
<td>47.92</td>
</tr>
<tr>
<td>Calhoun</td>
<td>243,151</td>
<td>447,452</td>
<td>54.34</td>
</tr>
<tr>
<td>Clinton</td>
<td>243,850</td>
<td>364,973</td>
<td>66.81</td>
</tr>
<tr>
<td>Eaton</td>
<td>231,870</td>
<td>366,033</td>
<td>63.35</td>
</tr>
<tr>
<td>Genesee</td>
<td>117,968</td>
<td>403,980</td>
<td>29.20</td>
</tr>
<tr>
<td>Ingham</td>
<td>190,405</td>
<td>355,273</td>
<td>53.59</td>
</tr>
<tr>
<td>Jackson</td>
<td>181,287</td>
<td>453,452</td>
<td>39.98</td>
</tr>
<tr>
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<td>146,927</td>
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<td><strong>Non-metro counties</strong></td>
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<td>36.22</td>
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Table 4 (Continued). Percent of Land Base in Farmland, by County, 1997.

<table>
<thead>
<tr>
<th>County</th>
<th>Land in Farms (acres)</th>
<th>Total Land (acres)</th>
<th>Percent of Land in Farms</th>
</tr>
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<tbody>
<tr>
<td>Baraga</td>
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<tr>
<td>Barry</td>
<td>164,815</td>
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<td>Branch</td>
<td>234,076</td>
<td>320,720</td>
<td>72.98</td>
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<tr>
<td>Cass</td>
<td>176,831</td>
<td>316,393</td>
<td>55.89</td>
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<td>266,225</td>
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<td>Clare</td>
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<td>Mecosta</td>
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<td>362,779</td>
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Table 4 (Continued).  Percent of Land Base in Farmland, by County, 1997.

<table>
<thead>
<tr>
<th>County</th>
<th>Land in Farms (acres)</th>
<th>Total Land (acres)</th>
<th>Percent of Land in Farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Menominee</td>
<td>109,661</td>
<td>670,297</td>
<td>16.36</td>
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<tr>
<td>Missaukee</td>
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<td>21,025</td>
<td>355,529</td>
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<td>122,294</td>
<td>542,741</td>
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<td>127,994</td>
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Source: USDA, NASS.