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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

[1]Metropolitan 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 Wilchelns; 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).[2] 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.

[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 tom 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.

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Figure 1. Percentage change in farmland acreage, 1992-1997, using the expanded definition

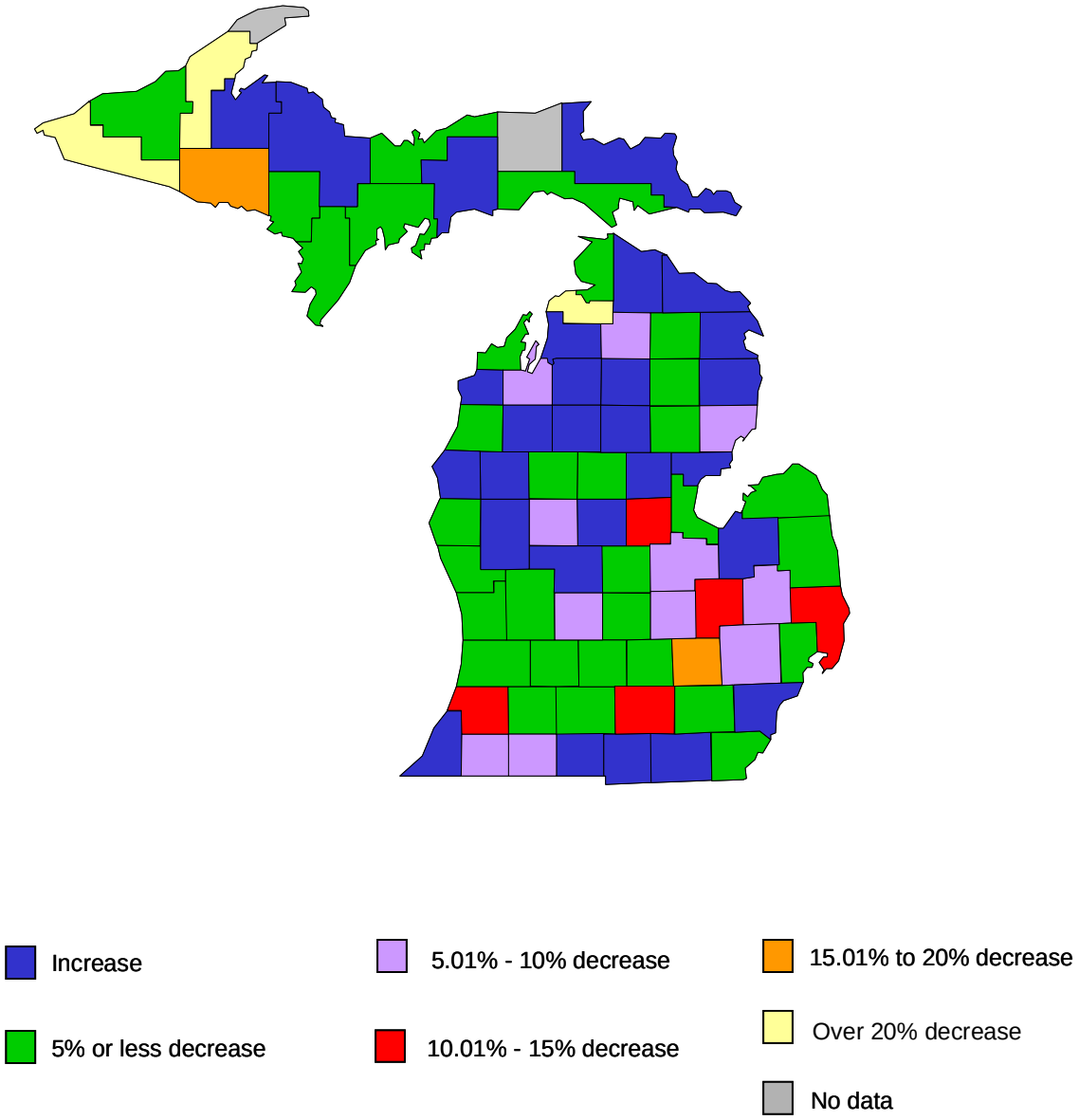

Figure 2. Percentage change in farmland acreage, 1992-1997, using a constant definition

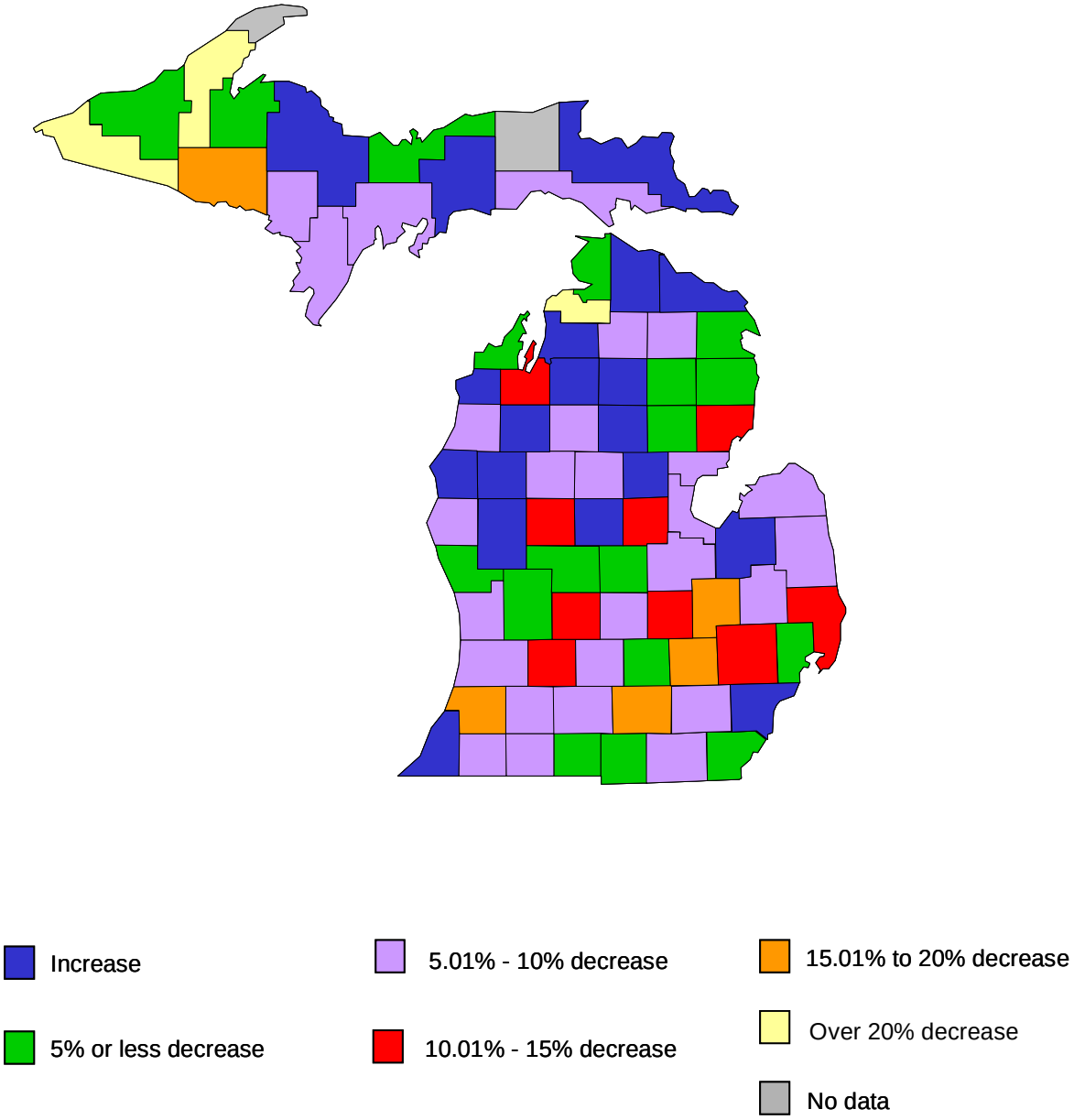

Table 1. Changes in farmland acreage, 1992-1997, using expanded and constant definitions.

County	Farmland acres in 1992	Farmland acres in 1997 using expanded definition (% change)	Farmland acres in 1997 using constant definition (% change)
Alcona	42,572	43,383 (1.91)	42,058 (-1.21)
Alger	16,099	16,029 (-0.43)	16,029 (-0.43)
Allegan	246,403	236,936 (-3.84)	232,611 (-5.60)
Alpena	77,493	78,047 (0.71)	76,607 (-1.14)
Antrim	51,517	55,166 (7.08)	52,572 (2.05)
Arenac	82,418	86,240 (4.64)	77,262 (-6.26)
Baraga	14,104	14,988 (6.27)	13,839 (-1.88)
Barry	165,371	164,815 (-0.34)	148,243 (-10.36)
Bay	181,052	175,931 (-2.83)	171,902 (-5.05)
Benzie	19,844	22,556 (13.67)	20,278 (2.19)
Berrien	166,886	173,958 (4.24)	169,795 (1.74)
Branch	227,665	234,076 (2.82)	218,024 (-4.23)
Calhoun	244,927	243,151 (-0.73)	231,566 (-5.46)
Cass	186,431	176,831 (-5.15)	172,846 (-7.29)
Charlevoix	41,037	31,077 (-24.27)	30,021 (-26.84)
Cheboygan	40,871	50,582 (23.76)	47,296 (15.72)
Chippewa	92,809	98,979 (6.65)	98,475 (6.11)
Clare	64,084	62,831 (-1.96)	60,731 (-5.23)

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

County	Farmland acres in 1992	Farmland acres in 1997 using expanded definition (% change)	Farmland acres in 1997 using constant definition (% change)
Isabella	199,733	216,651 (8.47)	207,364 (3.82)
Jackson	210,638	181,287 (-13.93)	175,464 (-16.70)
Kalamazoo	154,482	146,927 (-4.89)	144,414 (-6.52)
Kalkaska	16,076	21,375 (32.96)	17,899 (11.34)
Kent	190,706	186,453 (-2.23)	182,454 (-4.33)
Keweenaw	264	no data	no data
Lake	18,047	22,971 (27.28)	21,128 (17.07)
Clinton	256,236	243,850 (-4.83)	236,749 (-7.61)
Crawford	1,402	2,568 (83.17)	2,568 (83.17)
Delta	72,777	70,232 (-3.50)	68,771 (-5.50)
Dickinson	28,415	28,298 (-0.41)	26,930 (-5.23)
Eaton	233,921	231,870 (-0.88)	216,307 (-7.53)
Emmet	40,365	40,115 (-0.62)	40,115 (-0.62)
Genesee	137,082	117,968 (-13.94)	115,850 (-15.49)
Gladwin	61,535	68,036 (10.56)	63,795 (3.67)
Gogebic	5,965	4,197 (-29.64)	4,197 (-29.64)
Grand Traverse	66,789	61,767 (-7.52)	58,175 (-12.90)
Gratiot	277,400	276,833 (-0.20)	270,228 (-2.59)

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

County	Farmland acres in 1992	Farmland acres in 1997 using expanded definition (% change)	Farmland acres in 1997 using constant definition (% change)
Hillsdale	231,557	257,469 (11.19)	228,785 (-1.20)
Houghton	29,161	23,126 (-20.70)	22,641 (-22.36)
Huron	438,914	424,122 (-3.37)	412,074 (-6.12)
Ingham	193,688	190,405 (-1.69)	189,002 (-2.42)
Ionia	254,793	236,652 (-7.12)	226,802 (-10.99)
Iosco	47,308	42,667 (-9.81)	40,873 (-13.60)
Iron	29,763	23,823 (-19.96)	23,823 (-19.96)
Lapeer	193,956	178,249 (-8.10)	174,651 (-9.95)
Leelanau	64,973	62,129 (-4.38)	61,700 (-5.04)
Lenawee	336,273	336,468 (0.06)	318,172 (-5.38)
Livingston	118,764	98,297 (-17.23)	96,793 (-18.50)
Luce	9,391	no data	no data
Mackinac	22,178	21,513 (-3.00)	20,697 (-6.68)
Macomb	70,306	68,829 (-2.10)	66,840 (-4.93)
Manistee	48,029	47,521 (-1.06)	43,661 (-9.09)
Marquette	23,290	26,624 (14.32)	26,124 (12.17)
Mason	73,437	77,103 (4.99)	75,130 (2.31)
Mecosta	121,153	111,974 (-7.58)	106,346 (-12.22)

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

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

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

County	Farmland acres in 1992	Farmland acres in 1997 using expanded definition (% change)	Farmland acres in 1997 using constant definition (% change)
Saginaw	318,125	297,842 (-6.38)	294,770 (-7.34)
Sanilac	444,407	429,706 (-3.31)	414,632 (-6.70)
Schoolcraft	13,908	15,742 (13.19)	15,742 (13.19)
Shiawassee	236,799	214,153 (-9.56)	212,067 (-10.44)
St. Clair	181,569	162,887 (-10.29)	159,174 (-12.33)
St. Joseph	234,823	217,345 (-7.44)	211,580 (-9.90)
Tuscola	324,111	333,099 (2.77)	325,041 (0.29)
Van Buren	206,781	177,360 (-14.23)	170,343 (-17.62)
Washtenaw	188,958	180,223 (-4.62)	176,397 (-6.65)
Wayne	22,488	39,102 (73.88)	36,925 (64.20)
Wexford	31,427	43,321 (37.85)	32,465 (3.30)
Michigan Total	10,088,170	9,860,949 (-2.25)	9483604 (-5.99)

Source: USDA, NASS, 1999 and 2001.

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

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

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.

County	Labor and Proprietors' Income – Farming ($1000)	Labor and Proprietors' Income – Non-farm ($1000)	Farm Income as Percent of Total
Alcona	311	49,540	0.62
Alger	182	83,496	0.22
Allegan	33,537	1,115,544	2.92
Alpena	165	384,929	0.04
Antrim	4,751	145,738	3.16
Arenac	7,411	109,009	6.37
Baraga	4	78,653	0.00
Barry	3,083	354,536	0.86
Bay	13,745	1,300,895	1.05
Benzie	1,800	92,568	1.91
Berrien	16,791	2,231,123	0.75
Branch	11,708	396,154	2.87
Calhoun	5,612	2,274,964	0.25
Cass	13,285	321,712	3.97
Charlevoix	572	313,001	0.18
Cheboygan	404	185,736	0.22
Chippewa	-1,068	362,822	0.00
Clare	2,012	192,209	1.04
Clinton	12,263	400,075	2.97
Crawford	0	120,289	0.00
Delta	1,119	448,992	0.25
Dickinson	498	410,809	0.12
Eaton	5,656	892,397	0.63
Emmet	414	438,967	0.09
Genesee	122	7,158,027	0.00
Gladwin	403	129,105	0.31
Gogebic	-165	151,029	0.00
Grand Traverse	1,462	1,269,296	0.12

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.

County	Labor and Proprietors' Income – Farming ($1000)	Labor and Proprietors' Income – Non-farm ($1000)	Farm Income as Percent of Total
Gratiot	21,392	392,053	5.17
Hillsdale	10,609	453,444	2.29
Houghton	238	340,059	0.07
Huron	37,125	370,520	9.12
Ingham	4,384	6,331,410	0.07
Ionia	9,497	482,309	1.93
Iosco	1,016	267,557	0.38
Iron	-70	99,296	0.00
Isabella	6,570	650,756	1.00
Jackson	2,501	1,941,682	0.13
Kalamazoo	20,695	4,212,303	0.49
Kalkaska	970	149,798	0.64
Kent	28,966	11,014,839	0.26
Keweenaw	0	10,073	0.00
Lake	-327	43,657	0.00
Lapeer	4,323	607,821	0.71
Leelanau	5,885	132,650	4.25
Lenawee	16,838	1,045,022	1.59
Livingston	2,328	1,282,942	0.18
Luce	747	69,653	1.06
Mackinac	134	119,530	0.11
Macomb	8,600	13,373,550	0.06
Manistee	981	201,335	0.48
Marquette	82	864,671	0.01
Mason	4,160	295,038	1.39
Mecosta	4,450	322,922	1.36
Menominee	2,836	242,654	1.16
Midland	1,006	1,513,418	0.07
Missaukee	8,310	70,812	10.5
Monroe	12,665	1,490,541	0.84
Montcalm	19,204	533,699	3.47

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.

County	Labor and Proprietors' Income – Farming ($1000)	Labor and Proprietors' Income – Non-farm ($1000)	Farm Income as Percent of Total
Montmorency	-268	49,157	0.00
Muskegon	7,981	1,949,511	0.41
Newaygo	7,287	307,427	2.32
Oakland	8,437	30,210,069	0.03
Oceana	14,052	154,704	8.33
Ogemaw	2,214	148,242	1.47
Ontonagon	-4	93,366	0.00
Osceola	288	217,895	0.13
Oscoda	139	53,817	0.26
Otsego	-91	293,870	0.00
Ottawa	60,289	3,333,457	1.78
Presque Isle	1,972	99,396	1.95
Roscommon	-122	153,392	0.00
Saginaw	12,646	3,406,306	0.37
Sanilac	936	1,547,689	0.06
Schoolcraft	13,149	747,418	1.73
Shiawassee	24,914	335,912	6.90
St. Clair	113	77,499	0.15
St. Joseph	788	528,148	0.15
Tuscola	23,617	395,104	5.64
Van Buren	23,338	609,062	3.69
Washtenaw	3,148	7,113,168	0.04
Wayne	5,422	38,361,049	0.01
Wexford	1,139	389,419	0.29
Michigan	583,102	160,912,702	0.36

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

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

County	Land in Farms (acres)	Total Land (acres)	Percent of Land in Farms
Metro Counties	4,246,481	10,208,484	41.60
Allegan	236,936	529,873	44.72
Bay	175,931	284,627	61.81
Berrien	173,958	362,982	47.92
Calhoun	243,151	447,452	54.34
Clinton	243,850	364,973	66.81
Eaton	231,870	366,033	63.35
Genesee	117,968	403,980	29.20
Ingham	190,405	355,273	53.59
Jackson	181,287	453,452	39.98
Kalamazoo	146,927	359,235	40.90
Kent	186,453	595,815	31.29
Lapeer	178,249	423,536	42.09
Lenawee	336,468	466,678	72.10
Livingston	98,297	370,891	26.50
Macomb	68,829	300,030	22.94
Midland	79,667	336,476	23.68
Monroe	209,715	355,293	59.03
Muskegon	73,113	322,435	22.68
Oakland	45,366	575,400	7.88
Ottawa	170,627	357,839	47.68
Saginaw	297,842	520,291	57.25
St. Clair	162,887	443,391	36.74
Van Buren	177,360	391,443	45.31
Washtenaw	180,223	454,047	39.69
Wayne	39,102	367,039	10.65
Non-metro counties	5,614,468	25,250,508	22.24
Alcona	43,383	435,247	9.97
Alger	16,029	589,949	2.72
Alpena	78,047	371,153	21.03
Antrim	55,166	305,558	18.05
Arenac	86,240	238,098	36.22

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

County	Land in Farms (acres)	Total Land (acres)	Percent of Land in Farms
Baraga	14,988	583,806	2.57
Barry	164,815	354,029	46.55
Benzie	22,556	204,192	11.05
Branch	234,076	320,720	72.98
Cass	176,831	316,393	55.89
Charlevoix	31,077	266,225	11.67
Cheboygan	50,582	462,440	10.94
Chippewa	98,979	999,960	9.90
Clare	62,831	364,757	17.23
Crawford	2,568	359,846	0.71
Delta	70,232	748,915	9.38
Dickinson	28,298	491,925	5.75
Emmet	40,115	300,855	13.33
Gladwin	68,036	330,665	20.58
Gogebic	4,197	712,033	0.59
Grand Traverse	61,767	299,278	20.64
Gratiot	276,833	364,624	75.92
Hillsdale	257,469	386,088	66.69
Houghton	23,126	647,466	3.57
Huron	424,122	536,983	78.98
Ionia	236,652	366,291	64.61
Iosco	42,667	354,822	12.02
Iron	23,823	760,143	3.13
Isabella	216,651	368,746	58.75
Kalkaska	21,375	359,699	5.94
Lake	22,971	365,394	6.29
Leelanau	62,129	220,234	28.21
Mackinac	21,513	650,255	3.31
Manistee	47,521	350,101	13.57
Marquette	26,624	1,182,581	2.25
Mason	77,103	315,527	24.44
Mecosta	111,974	362,779	30.87

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

County	Land in Farms (acres)	Total Land (acres)	Percent of Land in Farms
Menominee	109,661	670,297	16.36
Missaukee	90,027	363,290	24.78
Montcalm	237,771	354,461	67.08
Montmorency	21,025	355,529	5.91
Newaygo	122,294	542,741	22.53
Oceana	127,994	345,416	37.06
Ogemaw	73,239	366,811	19.97
Ontonagon	32,516	844,754	3.85
Osceola	108,250	367,337	29.47
Oscoda	13,904	364,769	3.81
Otsego	34,450	334,273	10.31
Presque Isle	82,466	428,875	19.23
Roscommon	4,139	338,315	1.22
Sanilac	429,706	616,214	69.73
Schoolcraft	15,742	758,096	2.08
Shiawassee	214,153	345,200	62.04
St. Joseph	217,345	319,794	67.96
Tuscola	333,099	519,883	64.07
Wexford	43,321	366,676	11.81
Michigan	9,860,949	35,458,992	27.81

Source: USDA, NASS.