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**2016 Michigan Land Values  
and  
Leasing Rates**

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## **2016 MICHIGAN AGRICULTURAL LAND VALUES**

Michigan State University (MSU) has collected information on land values since 1991 using a survey of appraisers, lenders and others involved in Michigan agriculture. The goal of the MSU study is to provide information on the value of land based on agricultural and non-agricultural use. The survey also collects information on leasing rates and practices in the state. This report contains the results for the MSU land value survey conducted in spring of 2016.

### **Survey Methods**

The survey sample consists of members of the Farm Managers and Rural Appraisers Association, Michigan Agricultural Lenders, County Equalization Directors in Michigan, and members of the Farm Bureau Advisory Committees on feed grains, oil seeds, wheat, dry beans and sugar beets. These respondents often had access to a significant amount of land appraisal, transaction, and leasing information. Some respondents were reporting for a group of individuals who received the questionnaire, such as a Farm Credit Service branch or an appraisal group.

The survey questionnaire was mailed in March and April with responses coming in through May of 2016. Each potential respondent received a cover letter encouraging their participation in the study and a two-page questionnaire asking for information on farmland prices, values and rental rates. A follow-up letter asking for participation in the survey and a second copy of the questionnaire was sent to non-respondents approximately four weeks following the original questionnaire.

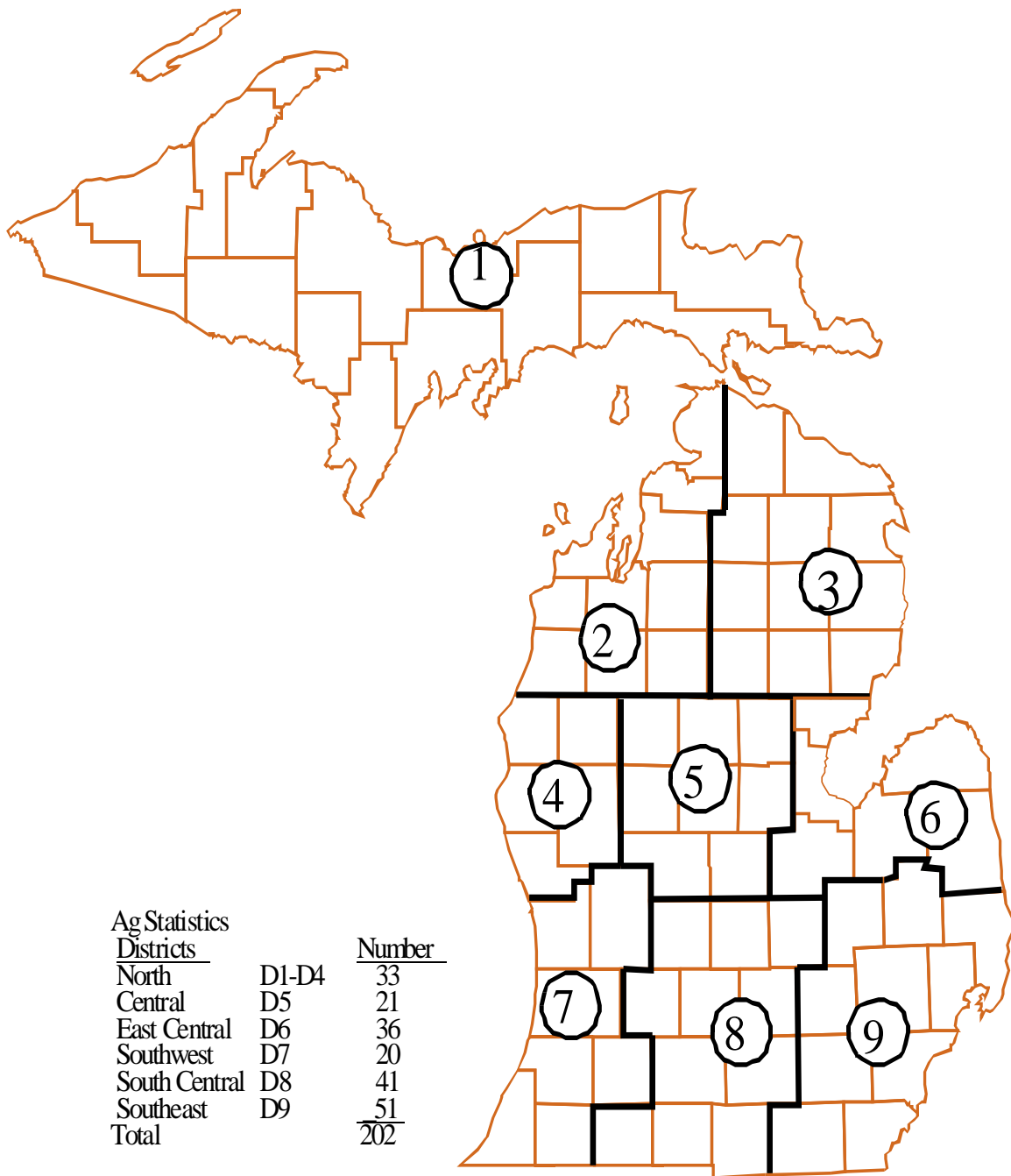
After accounting for overlap between the different groups, the 2016 sample consisted of 499 potential respondents. A total of 202 questionnaires were returned with useable information. In order to account for potentially large differences in soil and climate characteristics, information is reported separately for different state regions. Results are reported for two halves of the state, the southern-lower peninsula and the upper and northern-lower peninsula, which are split at a line running from Oceana County across to Bay County as shown in Figure 1. There were 168 responses received from the southern half of the Lower Peninsula (Area 2 in Figure 1). The remaining 34 responses were received from the

Upper and Northern Lower Peninsula (Area 1 in Figure 1). This is a reasonable correspondence between the location of respondents and the geographic distribution of agricultural production in the state. Figure 1 shows the distribution of respondents by county. Figure 2 shows the total number of responses by the Agricultural Statistics District in the state. Results are also reported for the nine Agricultural Statistics Districts across the state (Figure 2). The results for Districts 1 through 4 were combined because of a low number of responses in that region. In addition, results are only reported for each question when at least five responses were received for a reporting area.

Respondents were asked to provide the current agricultural-use value of the farmland, change in value during the last year, expected change in value during the next year, cash rental rate for their geographic area, and information on the non-agricultural-use value of farmland was requested. Estimates on agricultural-use values for farmland were reported separately for tilled (non-irrigated) field crops, non-tilled field crops, fruit, sugar beets, and irrigated land. Price data on non-agricultural use land values were collected for residential, commercial, and recreational development. Respondents were also asked to indicate the counties to which their information corresponds. In addition, an opportunity was provided for each respondent to rank the major agricultural factors influencing land values and cash rents. Similarly, a ranking was requested of the major factors influencing land values in rural areas for land that appears destined to transition to non-agricultural uses.

Efforts were made to gather reports only the value of land in agricultural production. However, it is difficult to separate out non-agricultural influences on land prices, so the agricultural-use values will contain influences from relevant non-agricultural-uses. The magnitude of these influences varies across regions. The influences of non-agricultural factors on farmland values are addressed in detail later in the report.





**Figure2. Agricultural Statistics Districts and Number of Respondents**

## Agricultural-Use Farmland Values

Average agricultural farmland values are reported by region in Table 1. In the Southern Lower Peninsula, the average value of tilled field cropland was \$5,011 per acre while non-tilled field cropland averaged \$3,739 per acre. In the Upper and Northern Lower Peninsula tilled and non-tilled field crop land averaged \$2,139 and \$1,742 per acre, respectively.

**Table 1. Michigan Average Agricultural Land Values, 2016**

Region	Land Type				
	Field Crop Tiled	Field Crop Non-tilled	Sugar Beet	Irrigated	Fruit Trees
	\$/acre				
Michigan	4,676	3,490	6,547	5,212	7,700
Southern Lower Peninsula	5,011	3,739	6,882	5,709	7,446
Upper & Northern Lower Peninsula	2,139	1,742	3,063	2,290	5,250
Districts 1-4	2,237	1,873	N/A*	2,460	7,810
District 5	3,775	3,019	5,256	4,751	N/A
District 6	5,420	3,710	7,003	6,830	N/A
District 7	5,325	3,710	N/A	6,338	7,618
District 8	5,169	3,764	4,700	5,164	N/A
District 9	4,801	3,635	5,000	6,225	N/A

\*Note: Results were only reported when a minimum of five responses were received. These cases are denoted "N/A" in the table.

For land primarily producing field crops (e.g., grains), Agricultural Statistics Districts 6, 7, 8 and 9 in Southern Michigan had similar agricultural land values. For tilled farmland these values averaged \$4,800 to \$5,400 per acre and \$3,600 to \$3,700 per acre for non-tilled land. Land in the Upper Peninsula and Northern Lower Peninsula, Districts 1-5, had lower average prices for field cropland.



Fruit and sugar beets are commodities produced in Michigan that historically generate both higher gross and net income per acre than general field crops. The highest priced agricultural land in Michigan is capable of producing fruit and located in proximity to Lake Michigan. This land planted to fruit trees is highly valued not only because of its earnings potential from the harvested fruit but also because of non-agricultural demand due to view and proximity to Lake Michigan. Land values reported for fruit tree acres averaged \$7,700 per acre. Most responses on fruit land values came from District 2, 4, and 7, North and Southwest Districts of Michigan. Fruit tree land in the North (D1-D4) averaged \$7,810 per acre and Southwest District (D7) averaged \$7,618 per acre, these acres are typically used for tree fruit production.

Land that can support sugar beets in its crop rotation averaged \$6,547 per acre in 2015 a \$765 per acre decrease over the 2015 value of \$7,312. The sugar beet production is concentrated in the East Central and South East Districts. Irrigated land value in 2016 averaged \$5,212 per acre in the state, a decrease of 11.9% from the 2015 value.

#### *Expected changes in Farmland Values*

Respondent average expected land price changes during the next 12 months are displayed in Table 2. Expectations were that Michigan farmland values will decrease in value in the coming year. Field crop tilled land values in Michigan were expected to decrease by 3.1% tilled cropland and 2.7% for non-tiled cropland. Michigan sugar beet land values were expected to decrease 4.0%. The largest expectations on changes in percentage land value were for District (D1-D4) at -4.1% for tilled and -5.7% for non-tiled in District 5. Overall, Michigan irrigated land values are expected to decrease 2.5% during the upcoming year.

**Table 2. Expected Percentage Change in Michigan Farmland Value, 2016**

Region	Land Type				
	Field Crop Tiled	Field Crop Non-tiled	Sugar Beet	Irrigated	Tree Fruit
	% Change				
Michigan	-3.1%	-2.7%	-4.0%	-2.5%	-3.6%
Southern Lower Peninsula	-2.9%	-2.5%	-4.2%	-2.8%	-4.3%
Upper & Northern Lower Peninsula	-4.7%	-4.8%	-2.6%	0.7%	0.0%
District 1-4	-4.1%	-1.9%	1.0%	0.5%	-2.5%
District 5	-3.1%	-5.7%	-2.9%	-2.0%	N/A*
District 6	-3.6%	-3.6%	-3.7%	-7.7%	N/A
District 7	-0.9%	2.5%	N/A	-3.3%	-5.0%
District 8	-2.1%	-1.2%	N/A	-2.7%	N/A
District 9	-3.6%	-3.2%	-4.3%	-2.5%	0.0%

\*Note: Results were only reported when a minimum of five responses were received. Those categories without enough responses are denoted “N/A” in the table.

### **Farmland Leasing**

Since 2013 the Farm Land Value Questionnaire has collected information on land rental agreements based on cash rent without a bonus and cash rent with a bonus payment. Given uncertain farm commodity prices, yields and operating expenses, operators and land owners may choose to avoid fixed cash rent and put flexibility in the cash-rent arrangements.

Table 3 displays cash rents without bonus, with bonus and percentage of land leased. In Michigan cash rent without bonus in 2015 was \$128 per acre with 76% of land leased. Cash rent of \$121 with a bonus of \$30 per acre with 11% of land leased. Cash leasing was the dominant form of land rental while 13% of the crop acres were in some a share rental arrangement.

The Upper and Northern Lower Peninsula cash rent without bonus was \$93 per acres with 86% and only 3% of land was leased using a bonus. District (D6) had the highest average cash rent without bonus was \$145 per acre with 65% of land leased and cash rent of \$155 with a bonus of \$30 per acre with 16% of land leased using cash rent with bonus.

*Crop Acres Leased*

In the Southern Lower Peninsula, an estimated 86% of leased or rented field crop acres were controlled by cash leases (with or without bonuses), while 89% of the leased or rented cropland in the Upper and Northern Lower Peninsula used cash leasing. Cash rent was the dominant leasing arrangement in all reporting districts of Michigan.

**Table 3. Cost of Leased Farmland by Arrangement Type, 2016**

<b>Region</b>	<b>Cash Rent without Bonus</b>	<b>% Land Cash Rent</b>	<b>Cash Rent with Bonus</b>	<b>Cash Bonus</b>	<b>% Land Cash Rent with Bonus</b>	<b>Share Rent</b>
	\$/acre	%	\$/acre	\$/acre	%	%
Michigan	128	76	121	30	11	13
Southern Lower Peninsula	133	74	124	33	12	13
Upper & Northern Lower Peninsula	93	86	87	15	3	12
Districts 1-4	85	83	13	0	4	14
District 5	119	76	139	32	9	15
District 6	145	65	155	30	16	18
District 7	143	87	110	N/A*	N/A	N/A
District 8	126	83	107	37	8	8
District 9	128	75	98	N/A	13	12

\*Note: Results were only reported when a minimum of five responses were received.

*Cash Rent Levels*

Cash rent amounts and their relationship to land price are summarized in Table 4. The highest cash rents per acre in Michigan tended to be associated with higher projected incomes per acre. Cash rents in the Southern Lower Peninsula averaged \$146 per acre for tilled cropland and \$98 for non-tiled cropland. In the Upper and Northern Lower Peninsula, tilled field cropland rented for an average of \$87 per acre and non-tiled cropland rented for an average of \$66 per acre. The highest rent levels for field

cropland were found in the East Central (D6) where tilled land commanded an average cash rent of \$178 per acre. Sugar beet land in Michigan rented for an average of \$224 per acre, and irrigated cropland rented for \$203 per acre. The Michigan cash rent value for tilled field cropland of \$140 per acre for the state was a decrease of \$1 per acre from the previous year. Sugar beet cash rental per acres increased by \$45 per acre and irrigated cropland decreased by \$27 per acre from 2015.

**Table 4. Average Cash Rent and Value Multipliers for Michigan Agricultural Land Use, 2016**

Region	Land Type							
	Field Crop Tiled		Field Crop Non-tiled		Sugar Beet		Irrigated	
	Rent (\$/acre)	Value/Rent (ratio)	Rent (\$/acre)	Value/Rent (ratio)	Rent (\$/acre)	Value/Rent (ratio)	Rent (\$/acre)	Value/Rent (ratio)
Michigan	140	33	95	37	224	29	203	26
Southern Lower Peninsula	146	34	98	38	233	30	211	27
Upper & Northern Lower Peninsula	87	24	66	26	144	19	84	27
District 1-4	69	32	45	42	0	N/A	99	25
District 5	109	35	83	36	182	29	83	57
District 6	178	30	94	39	230	30	201	34
District 7	127	42	118	31	N/A	N/A	200	32
District 8	129	36	108	35	165	28	187	28
District 9	144	33	92	40	254	20	293	21

\* Note: Results were only reported when a minimum of five responses were received.

#### *Land Value-to-Rent Multiplier*

The value-to-rent ratios were calculated by dividing the land value reported by the corresponding cash rent value reported by each respondent (Table 4). The value-to-rent ratio for tilled field crops in was 33 (i.e., land price was 33 times the rental rate) in Michigan. Southern Lower Peninsula sugar beet land had a value-to-rent ratio of 34, while irrigated land value-to-rent ratio was 27. In the Upper and Northern Lower Peninsula the ratio for field cropland tilled was 24. The value-to-rent ratio calculation and movement is analogous to the price/earnings ratio in equity stocks and funds traded on national

exchanges. Higher value-to-rent ratios indicate potential upward pressure on rents or downward pressure on land price. Lower values indicate the reverse. However, there is no reason that neither all types of land nor all regions should have the same ratio.

### **Non-Agricultural-Use Values of Farmland**

The value of farmland for non-agricultural by use are summarized in Table 5. For residential and commercial uses, these values were significantly above the agricultural-use value of the land and therefore tended to exert upward pressure on surrounding farmland values. The average value of farmland being converted to residential development was \$8,367 per acre in the Southern Lower Peninsula and \$3,096 per acre in the Upper and Northern Lower Peninsula. The highest residential development values were found in the Southwest (D7) where the average value was \$8,887 per acre.

The average value for farmland that was converted to commercial use was \$23,857 per acre for the state of Michigan. The value of farmland being converted to commercial use was \$24,325 per acre in the Southern Lower Peninsula and \$22,915 per acre in the Upper and Northern Lower Peninsula. However, the variance behind these estimated averages was quite high. The recreational development value of farmland averaged \$3,634 per acre in the Southern Lower Peninsula and \$1,836 per acre in the Upper and Northern Lower Peninsula.

**Table 5. Non-Agricultural-Use Value of Undeveloped Land in Michigan, 2016**

Region	Land Use		
	Residential	Commercial/Industrial	Recreational
	\$/acre		
Michigan	7,374	23,857	3,310
Southern Lower Peninsula	8,367	24,325	3,634
Upper & Northern Lower Peninsula	3,096	22,915	1,836
Districts 1-4	2,750	31,581	1,458
District 5	5,079	14,150	2,900
District 6	2,750	14,433	3,191
District 7	8,887	23,000	3,680
District 8	7,555	14,818	3,697
District 9	10,932	57,456	4,264

**Factors Influencing Land Values and Rents in Michigan**

The survey also solicited opinions about the major factors driving land values. Respondents were provided the opportunity to indicate their perception of the importance of agricultural-related factors that influenced farmland values and cash rents. Factors including farm expansion, government programs, interest rates, and prices of agricultural commodities were rated on a scale from one to five with one being “Not Important” and five being “Very Important.” The mean ratings are presented in Table 6. For Southern Lower Michigan, grain prices, expansion by farmers, and milk price were the highest-ranking items at 4.6, 4.4, and 4.2, respectively. Next in order of importance were livestock price, energy prices, and agricultural commodity programs. Livestock prices that impact land price vary by the dominant livestock species grown in the reporting area. As commodity prices change, cash flow also changes

affecting demand for agricultural land. Expansion by farmers suggests the strategy of lowering costs of production by exploiting the concept of economies of size (i.e., costs decrease as the fixed costs of controlling capital inputs, such as machinery, are spread over more acres) or the need for more land to support a possible expansion of the management team associated with the expansion. For the Upper and the Northern Lower Peninsula, the two highest agricultural related factors influencing land prices were expansion by farmers, grain price, and milk price.

**Table 6. Rating Importance of Agricultural Factors Affecting Value of Michigan Farmland, 2016**

Regions	Expansion by farmers	Government Programs			Prices			
		Conser vation	Ag commodity	Energy/ Fuel	Fruit	Grain	Livestock	Milk
	Average Score							
Michigan	4.3	2.8	2.8	2.8	2.2	4.4	3.8	4.1
Southern Lower	4.4	2.7	2.8	2.9	2.3	4.6	3.9	4.2
Upper & N. Lower	4.2	2.9	2.8	2.3	1.9	3.7	3.4	3.7
District 1-4	4.0	2.5	2.6	2.2	2.5	3.7	3.4	3.8
District 5	4.6	2.7	2.6	2.2	1.4	4.3	3.6	3.9
District 6	4.6	2.8	2.8	2.9	1.5	4.4	3.8	4.1
District 7	4.1	2.1	2.1	2.1	3.8	4.4	4.0	4.0
District 8	4.4	3.2	3.4	3.3	2.3	4.7	4.1	4.4
District 9	4.2	2.8	2.9	2.9	2.2	4.7	3.9	4.3

Note: Response scale was 1= not important, 2=somewhat unimportant, 3=neutral, 4=somewhat important, 5= very important.

Assessing the importance of non-agricultural factors upon land values in rural areas for land that appears destined to transition from ownership by farmers was addressed with the final set of survey questions. Many factors not related to agriculture can influence the value of agricultural land. Table 7 summarizes the non-agricultural factors influencing land values for land in rural areas that appears to be transitioning out of agriculture.

**Table 7. Rating of Non-Agricultural Factors Affecting Value of Michigan Farmland, 2016**

Regions	Interest Rates	Home Sites	Fishing Access	Hunting Access	Development	Small Farms	Wood Lots	Water Access	Energy Prices
	Average Score								
Michigan	3.9	3.1	2.4	2.0	2.9	3.0	2.8	2.8	2.6
Southern Lower	4.0	3.2	2.4	2.0	2.8	3.0	2.7	2.7	2.7
Upper & N. Lower	3.6	2.8	2.7	1.9	3.3	2.9	3.4	3.1	2.2
District 1-4	3.4	3.0	3.0	2.0	3.3	2.8	3.7	3.4	2.5
District 5	4.1	3.1	2.7	1.8	3.2	3.2	2.8	2.9	1.9
District 6	4.4	2.5	1.9	1.3	2.5	2.8	2.1	2.0	2.6
District 7	3.6	4.0	2.0	2.1	2.1	2.9	3.0	2.9	2.5
District 8	4.0	3.1	2.6	2.4	3.1	3.2	3.2	3.0	2.9
District 9	4.0	3.4	2.5	2.4	2.9	3.2	2.7	2.9	2.7

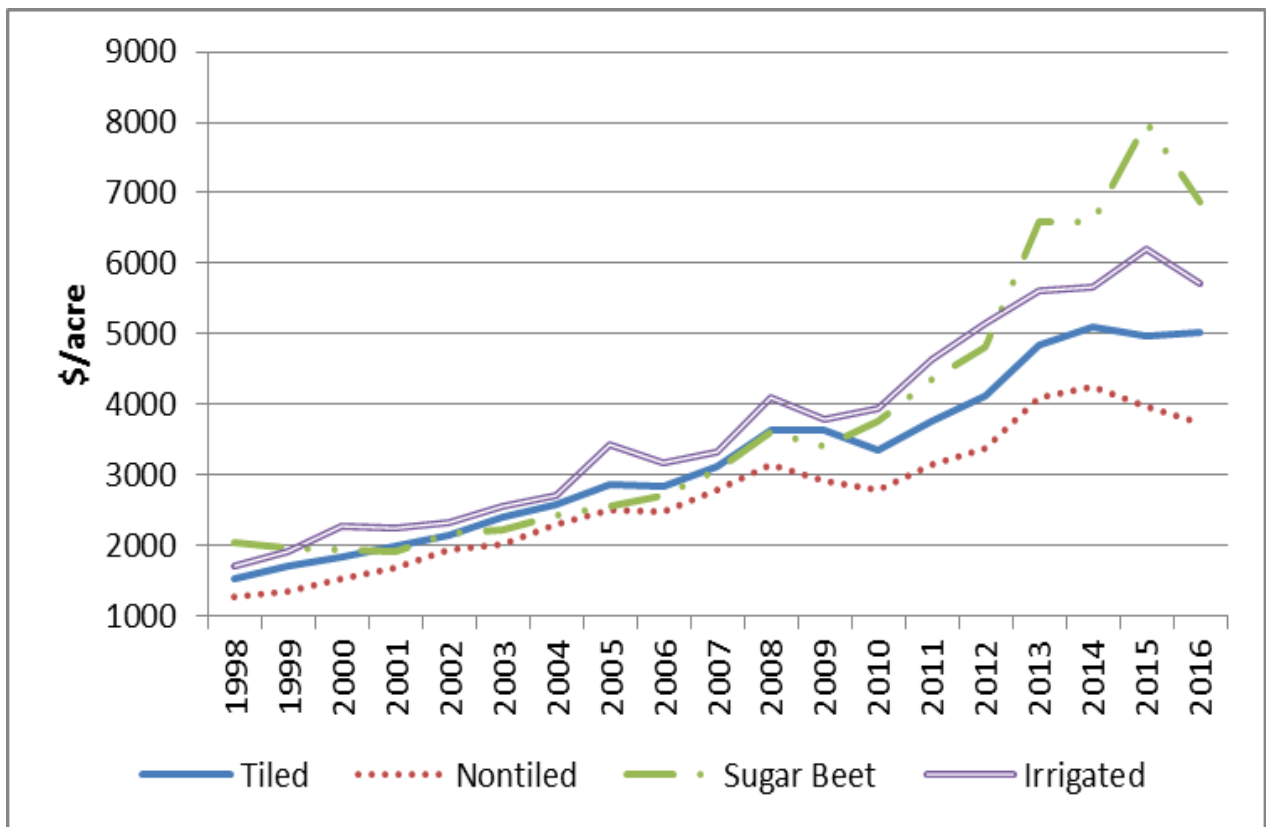
Note: Response scale was 1= not important, 2=somewhat unimportant, 3=neutral, 4=somewhat important, 5= very important.

The most important non-agricultural factor influencing Michigan land values were interest rates. For the Southern Lower Peninsula, interest rates ranked the highest. The second most important item was home sites. For the Upper and the Northern Lower Peninsula, the highest ranked non-agricultural factor influencing land values were interest rates, development, and water access.



### Long-Term Trends in Michigan Land Prices

Percentage change in land value from 1991-2015 are displayed in Table 8. These percentage changes are related to Southern Lower Peninsula region reported for Field Crop Tiled, Field Crop Non-tiled, Sugar Beet and Irrigated cropland. These values are in nominal terms—that is, not adjusted for inflation. The long-term trend has been growth in prices but with periodic, short-term downturns reflecting the influence of commodity prices, interest rates and the general economy.



**Figure 3. Average Price of Southern Lower Michigan Agricultural Land by Type, 1998-2016**

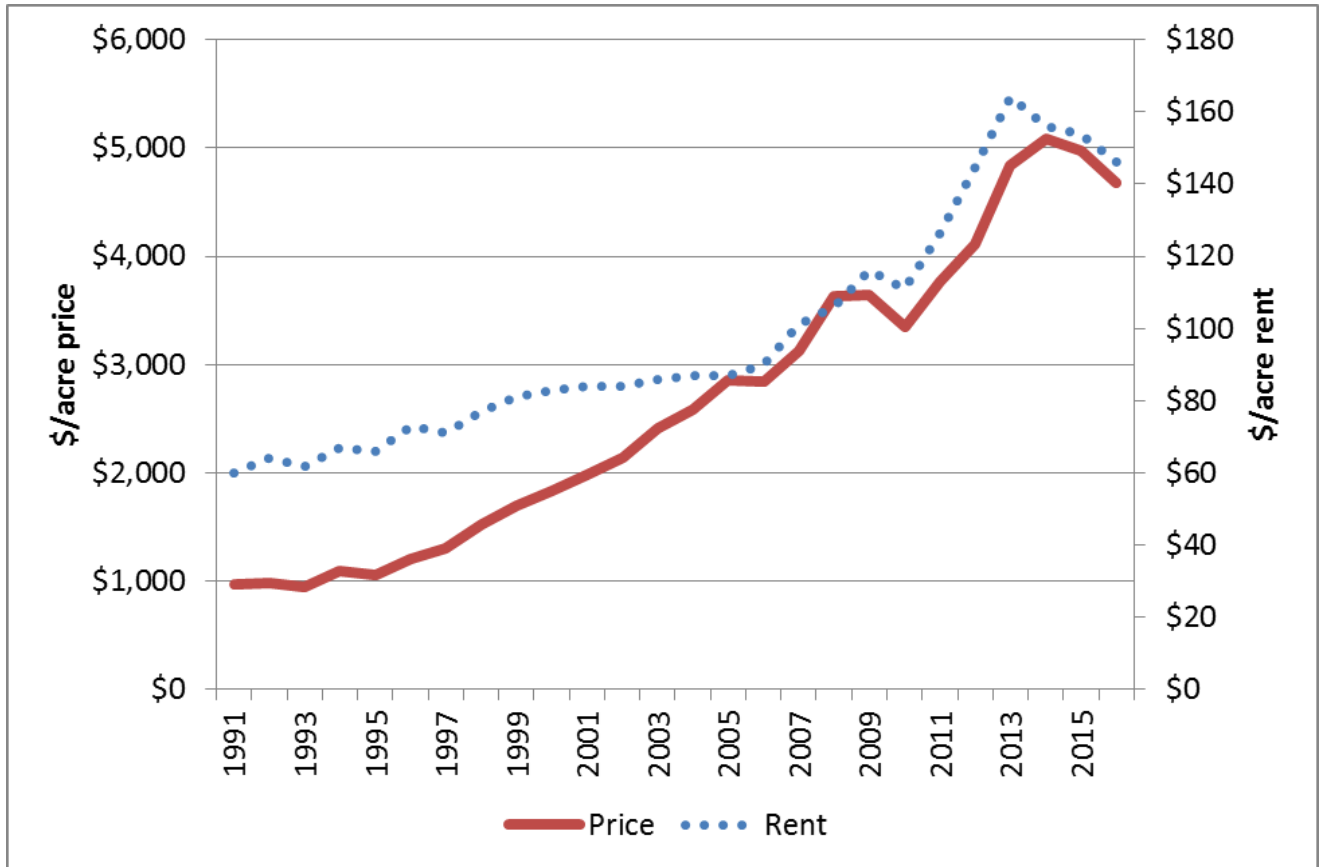
Table 8 displays the percentage change in average land price in Southern Lower Michigan from 1992 through 2016. The average price increase over this period was about seven percent for all agricultural use land. At that rate, land prices will double about every 10 years.

**Table 8. Southern Lower Peninsula Percentage Change in Land Value, 1998-2016**

Year	Land Type			
	Field Crop Tiled <sup>1</sup>	Field Crop Non tiled	Sugar Beet	Irrigated
	% Change			
1992	0.9	7.1	5.8	0.0
1993	-3.6	1.4	-12.1	-3.4
1994	15.0	8.2	13.5	21.8
1995	-2.5	0.8	6.1	7.1
1996	13.3	11.7	8.7	5.5
1997	7.8	12.1	6.0	-0.6
1998	16.9	18.1	15.5	21.1
1999	12.0	6.7	-3.0	11.4
2000	8.0	12.9	-1.9	19.1
2001	7.8	9.7	-1.5	-0.9
2002	8.2	14.7	13.5	3.9
2003	12.4	3.8	2.5	9.7
2004	7.5	14.1	9.2	5.9
2005	10.1	9.6	5.6	24.5
2006	-0.4	-1.4	6.2	-5.9
2007	9.8	12.4	12.7	4.6
2008	16.3	13.0	17.9	23.3
2009	0.4	-7.4	-5.6	-7.6
2010	-8.2	-4.4	10.5	4.1
2011	12.4	12.9	15.4	17.3
2012	9.3	7.4	10.6	11.2
2013	17.7	21.3	36.8	9.1
2014	5.1	3.9	0.0	0.9
2015	-2.2	-6.5	21.6	9.6
2016	0.6	-5.9	-14.0	-8.1
Average	7.0	7.0	7.2	7.3

<sup>1</sup> Beginning with the 1998 Survey, the question on agriculture land values and cash rents referred to "Field-crop tiled" and "Field-crop non-tiled." Previously the similar categories were referred to as Corn-Soybean-Cropland – above average and below average.

Figure 4 displays the average land price and rental rate for tilled field cropland in the southern lower peninsula of Michigan from 1991 through 2016. The series move together over that time period with a correlation between the two series is 97 percent.



**Figure 4. Michigan Average Farmland Prices and Rental Rates, 1991-2016**

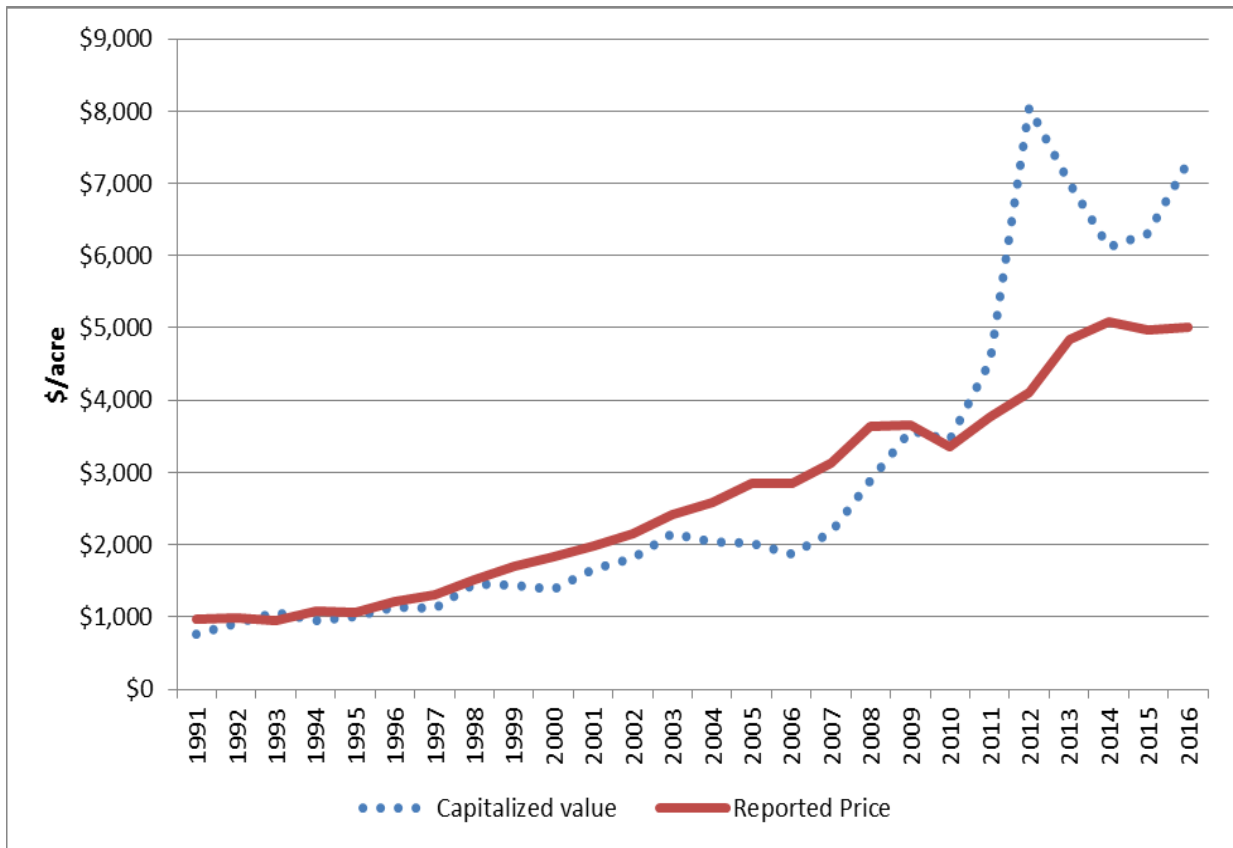
To further examine Michigan land prices, consider a simple model of capitalized farmland values where farmland value is expressed as a function of returns in perpetuity. In this case

$$\text{Value of farmland } (V) (\$/\text{acre}) = (\text{return per acre})/(\text{discount rate}),$$

where return per acre is equal to cash rent and the discount rate is set equal to the 10 year constant maturity treasury (CMT) rate. For example, in 2015  $V = (\$122/\text{acre})/(2.44\%) = \$5,000/\text{acre}$ .

If price is greater than capitalized value (V), then land price is too high or there is an expectation of either increased returns (land rents) or lower interest rates. If price is less than capitalized value, then price is too low or there is an expectation of either decreased returns (rent) or higher rates.

As Figure 5 displays, price was less than capitalized value consistently from 1998-2008. Beginning in 2009, price has consistently been below capitalized value reflecting an expectation of higher interest rates or decreased returns.



**Figure 5. Michigan Farmland Prices and Capitalized Values, 1991-2016**

## **Conclusions**

Farmland values in Michigan for 2016 were either unchanged or slightly down compared to 2015: Field Crop Tiled land increased by 0.6%, Non-tiled land decreased 5.9% Sugar Beet cropland decreased by 14.0%, and Irrigated cropland decreased by 8.1%. Rental rates in the southern lower peninsula averaged \$146 per acre for tilled ground and \$98 per acre for non-tiled ground, a decrease of \$8 for tilled and decrease of \$14 for non-tiled ground over 2015. Surrounding states realized similar changes in farmland price. A simple model of land value reveals that current prices are well below capitalized value reflecting an expectation of higher interest rates or lower returns.