Agricultural Land, Farms and Other Statistics

Anna Haines, Professor and Extension Specialist
Aaron Thompson, Associate Professor and Extension Specialist
Center for Land Use Education and University of Wisconsin-Stevens Point, College of Natural Resources

Presentation on February 21, 2017 at Food, Land & Water Project, Working Lands Workgroup
Wisconsin Land in Farms

- Approximate land area acres, 2012: 34,661,189
- Proportion in farms percent, 2012: 42
- Land in farms, 2012: 14,557,700
Number of Farms - 2012

SOURCE: Census of Agriculture Website
Number of Farms - Difference

Wisconsin Difference in Number of Farms

-582 - 199
-200 - 0
1 - 182

SOURCE: Census of Agriculture Website
Average Acres Per Farm - 2007

Wisconsin 2007 Average Acres Per Farm

- Less than 165
- 165 - 193
- 194 - 233
- 234 or more

SOURCE: Census of Agriculture Website
Average Acres Per Farm - 2012
Average Acres Per Farm - Difference

Wisconsin 2007-2012 Difference in Average Acres

-29 - 13
-11 - 1
0 - 24
25 - 95

SOURCE: Census of Agriculture Website
Acres in Farms - 2007

 Wisconsin 2007
Total Acres in Farms

- Less than 88,000
- 88,001 - 158,800
- 158,801 - 267,700
- 267,701 - 402,100
- 402,101 or more

SOURCE: Census of Agriculture Website
Acres in Farms - 2012

2016
14.4 million acres


SOURCE: Census of Agriculture Website
Acres in Farms - Difference

Statewide Average Decline per year of 124,375

2012-2016 ~ -168,000
Or ~ -42,000 per year

SOURCE: Census of Agriculture Website
### Tenure

<table>
<thead>
<tr>
<th>Type</th>
<th>Acres 2007</th>
<th>Acres 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full owners</td>
<td>52,711,292</td>
<td>52,451,292</td>
</tr>
<tr>
<td>Part owners</td>
<td>20,000,000</td>
<td>20,000,000</td>
</tr>
<tr>
<td>Tenants</td>
<td>20,000,000</td>
<td>20,000,000</td>
</tr>
</tbody>
</table>

**Privately held ag land acres = 25,855,696**

**Foreign held ag land acres = 360,235**

   (mostly forest)

**% foreign held = 1.4**

2014 Canada, Netherlands, Germany, UK, Italy, All Others
**Farm Size**

# of Farms by Farm Size

- 2,000 acres or more
- 1,000 to 1,999 acres
- 500 to 999 acres
- 260 to 499 acres
- 220 to 259 acres
- 180 to 219 acres
- 140 to 179 acres
- 100 to 139 acres
- 70 to 99 acres
- 50 to 69 acres
- 10 to 49 acres
- 1 to 9 acres

**# of Acres by Farm Size**

- 2,000 acres or more
- 1,000 to 1,999 acres
- 500 to 999 acres
- 260 to 499 acres
- 220 to 259 acres
- 180 to 219 acres
- 140 to 179 acres
- 100 to 139 acres
- 70 to 99 acres
- 50 to 69 acres
- 10 to 49 acres
- 1 to 9 acres

- Acres 2012: orange bars
- Acres 2007: green bars

0 500,000 1,000,000 1,500,000 2,000,000 2,500,000 3,000,000 3,500,000 4,000,000 4,500,000 5,000,000 5,500,000 6,000,000 6,500,000 7,000,000 7,500,000 8,000,000 8,500,000 9,000,000 9,500,000 10,000,000 10,500,000 11,000,000 11,500,000 12,000,000 12,500,000 13,000,000 13,500,000 14,000,000 14,500,000 15,000,000 15,500,000 16,000,000 16,500,000 17,000,000 17,500,000 18,000,000 18,500,000 19,000,000 19,500,000 20,000,000 20,500,000 21,000,000 21,500,000 22,000,000 22,500,000 23,000,000 23,500,000 24,000,000 24,500,000 25,000,000
Agricultural program payments

Amount from state and local government

- **Average per farm in $**
  - 2012: [Bar Graph]
  - 2007: [Bar Graph]

- **$1,000**
  - 2012: [Bar Graph]
  - 2007: [Bar Graph]

- **farms**
  - 2012: [Bar Graph]
  - 2007: [Bar Graph]
Total Acres from 2003-2016 = 91,715
Average Annexation in Acres = 59
Average Annexed Acres Per Year = 6,551
Total acres annexed from 2003-2016 of total acres = .27%
Total acres annexed from 2003-2016 of total agriculture acres = .62%

Source: Wisconsin Department of Administration
Agricultural Acres

- Decline in Farmland averaged 124,375 per year
- Annexations account for 6,551 per year

- What accounts for 117,824?
  - Some speculation:
    - Noise in the data
    - Reforestation
    - Farmers retiring
      - Not selling, fallow fields, ??
    - Beginning farmers with low acreage
    - Random houses outside of urban areas
Portage County Case Study

- What accounts for the decrease in farmland??
  - Number of housing units 2000-2010 = 708
  - Equivalent to each new housing unit on about 19 acres

- However, amount of annexed land 2003-2010 = 1,452
- Which leaves 11,984 or about 17 acres per housing unit

- Growth in housing units in towns = 6%
- Growth in cities and villages = 15%
How much farmland do you think is being lost to urban development? … in the United States?

32 Million Acres

From 1997 to 2007
Or 3.2 Million acres / year based on total land in farms reported by the USDA Census of Agriculture

It’s complicated!
• These numbers aren’t telling us what is happening to the land. Is it being planted in trees, left fallow, or developed?
Comparing Datasets Used to Track Rate of Farmland Conversion

- Census of Agriculture: Survey of agricultural producers conducted every 5 years by USDA National Agriculture Statistical Service
- NRI: Sample of land uses at 800,000 locations nationally; transition to annual design limits access to data after 1997. Produced by Natural Resources Conservation Service

Comparison

- Census of Agriculture Variables, 1992-2002
  - Land in Farms
  - Total Cropland
- National Resources Inventory, 1992-(2002)*
  - Farmland Converted to Developed Uses

Loss of Farmland Statistics

- **Illinois**
  - 60,525 acres
  - -84,197 acres
  - -414,200 acres

- **Indiana**
  - -560,061 acres
  - -455,632 acres
  - -288,000 acres

*Projected
Spatial analysis identified more than 1 million acres of farmland was converted to developed uses from 1992 to 2002 in IL & IN (Thompson & Prokopy, 2009)

Inconsistencies, especially in Ag. Census numbers created need for new approach
Simple Approach

Historic land cover data +
Recent land cover data

Clean the results

Confirm results
(Regression Analysis)
How much farmland do you think is being lost to urban development? … in Wisconsin?

**Farmland Conversion**

Table 1. WI Farmland Loss by the Numbers

<table>
<thead>
<tr>
<th>Source</th>
<th>Timeframe</th>
<th>Total Farmland Conversion</th>
<th>Annual Rate of Farmland Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRCS National Resources Inventory</td>
<td>1982 to 2007</td>
<td>(loss) 520,500 acres</td>
<td>(loss) 20,820 ac / yr.</td>
</tr>
<tr>
<td>*Spatial Analysis Results</td>
<td>1992 to 2010</td>
<td>(loss) 396,583 acres</td>
<td>(loss) 22,032 ac / yr.</td>
</tr>
</tbody>
</table>
How much farmland do you think is being lost to urban development? ... in Wisconsin?

**Farmland Conversion**
Table 1. WI Farmland Loss by the Numbers

<table>
<thead>
<tr>
<th>Source</th>
<th>Timeframe</th>
<th>Total Farmland Conversion</th>
<th>Annual Rate of Farmland Conversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRCS National Resources Inventory</td>
<td>1982 to 2007</td>
<td>(loss) 520,500 acres</td>
<td>(loss) 20,820 ac / yr.</td>
</tr>
<tr>
<td>*Spatial Analysis Results</td>
<td>1992 to 2010</td>
<td>(loss) 396,583 acres</td>
<td>(loss) 22,032 ac / yr.</td>
</tr>
</tbody>
</table>

Comparing Results with U.S. Census Population Change

Table 2. Counties with the Highest Rate of Conversion

<table>
<thead>
<tr>
<th>DNR Region</th>
<th>County</th>
<th>*Acres Farmland Converted to Developed Uses 1992 to 2010</th>
<th>U.S. Census 1990 to 2009 Population Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE</td>
<td>Waukesha</td>
<td>21,768</td>
<td>78,439</td>
</tr>
<tr>
<td>SC</td>
<td>Dane</td>
<td>20,466</td>
<td>124,272</td>
</tr>
<tr>
<td>NE</td>
<td>Outagamie</td>
<td>16,516</td>
<td>36,645</td>
</tr>
<tr>
<td>NE</td>
<td>Brown</td>
<td>14,974</td>
<td>52,725</td>
</tr>
<tr>
<td>NE</td>
<td>Winnebago</td>
<td>11,817</td>
<td>23,050</td>
</tr>
<tr>
<td>SE</td>
<td>Racine</td>
<td>10,357</td>
<td>25,567</td>
</tr>
<tr>
<td>SE</td>
<td>Washington</td>
<td>10,357</td>
<td>35,353</td>
</tr>
</tbody>
</table>
CLUE: Megatrends

Total Cropland
10.1 Million Acres
(~25% pasture)

Farmland Loss
22,000 acres / year lost

Pasture to Corn
>100,000 acres / year

Figure B3: 2003-2010 Percent of Total County Acreage
Converted from Pasture to Corn Production

Wisconsin Cropland
This map shows the percent of total land cover in each county
classified as cropland. The table below shows farmland use by
acreage and selected crops by harvested acreage.
## Grassland Loss

**Central Wisconsin:**
- 1992: ≈1.25 million acres
- 2010: ≈ 1 million acres

**CWGCA:**
- 1992: ≈ 330,000 acres
- 2010: ≈ 280,000 acres

### 15% LOSS IN GRASSLAND HABITAT

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Acres Converted</th>
<th>Percent Converted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Row Crop Agriculture</td>
<td>26,466</td>
<td>53%</td>
</tr>
<tr>
<td>Forestry</td>
<td>19,138</td>
<td>39%</td>
</tr>
<tr>
<td>Urban/ Development</td>
<td>3,260</td>
<td>7%</td>
</tr>
<tr>
<td>Other land uses</td>
<td>826</td>
<td>1%</td>
</tr>
</tbody>
</table>
Farmer Attitudes

Survey Sample (Marathon County, WI)

Response Rate: 43 percent
- 375 addresses total
- 22 bad addresses/cover letter returned
- 3 refusals
- 150 surveys received

Sample Design
- Parcel Data: Within watershed, >40 acres
- Farmland: >30% of acreage in agriculture
- Private Landowners: Removed corporations and out of county mailing addresses
- Stratified: 175 owners randomly selected from upper, middle, and lower watershed

Dear Central Wisconsin Landowner,

As a rural landowner in the Big Eau Pleine watershed you have been selected to receive a survey being conducted by the UW-Extension Center for Land Use Education at UW-Stevens Point. We are working with members of your community to support local efforts to identify ways that watershed stakeholders can work more effectively with agricultural producers and landowners. It’s clear that farmers and rural landowners like yourself are being faced with new challenges all the time, from food production to wildlife habitat, and important things are happening on farms all across Central Wisconsin. Many people interested in a strong future for agriculture in our area are also trying to determine the right way to include farmers in decision making about water quality protection. That is the purpose of this research project – your participation in this confidential survey will influence the future of these efforts by providing those working on these challenges with an understanding of what is important to you, the landowners, who take part in shaping this unique working landscape every day.

We know your time is important so we’ve worked hard to keep it short and are trying to not to take up more than 20 minutes of your time, so please take this at your convenience and skip any questions that are uncomfortable or that you don’t know how to answer. If you have any complaints about your treatment as a participant in this study please contact Dr. Debbie Palmer, Interim IRB Chair at (715) 346-3953, e-mail at dpalmer@uwsp.edu, or mail at University of Wisconsin-Stevens Point, Science Building D240, Stevens Point Wisconsin 54481.

While your participation is voluntary, as a farmer, producer, or landowner in Central Wisconsin your input can help ensure that those who live and work in this landscape are represented in plans being developed for the Big Eau Pleine. Remember all results will be kept confidential so we’re just looking for your opinions. That’s it! If you have any questions or comments about this project you may contact us using the information provided below.

Thank you for your time and we’re looking forward to hearing from you!

Dr. Aaron Thompson, Assistant Professor  Ryan Haney, Research Assistant
E-mail: aaron.thompson@uwsp.edu  E-mail: ryan.haney@uwsp.edu
Phone: 715.346.2278  Phone: 715.346.2497
University of Wisconsin-Stevens Point  TNR 207, Stevens Point WI 54481
Demographic Finding: There is a diverse community of agricultural landowners, many of whom are not directly involved in production activities on their land (leasing).

-This requires not treating all landowners as if they share the same priorities (or make their decisions based on the same factors).

<table>
<thead>
<tr>
<th>Farm Characteristics: Quick Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Land Owned</strong></td>
</tr>
<tr>
<td>Avg. 87.1 Acres</td>
</tr>
<tr>
<td><strong>Gross Farm Sales</strong></td>
</tr>
<tr>
<td>Avg. $50,000 - $100,000</td>
</tr>
<tr>
<td><strong>Landlord Only</strong></td>
</tr>
<tr>
<td>57.9%</td>
</tr>
<tr>
<td><strong>Off-farm Job</strong></td>
</tr>
<tr>
<td>31.7%</td>
</tr>
<tr>
<td><strong>Crop Farmer</strong></td>
</tr>
<tr>
<td>17.2%</td>
</tr>
<tr>
<td><strong>Raise Livestock</strong></td>
</tr>
<tr>
<td>17.2%</td>
</tr>
<tr>
<td><strong>Retired Farmer</strong></td>
</tr>
<tr>
<td>17.2%</td>
</tr>
</tbody>
</table>
**FS Group 1: STRONG ENVIRONMENTAL STEWARDSHIP VIEWS (34 Percent)**

This group clearly separated from the all respondents with a strong positive response to the Stewardship Scale and a strong negative response to the Business scale. This result demonstrates that approximately 34 percent of agricultural landowners hold positive environmental attitudes characterized by strong support for statements that express views like, “**good farming results from placing equal importance in managing both the agricultural and natural areas of my farm;**” and disagreement with statements that express views like, “**modifications to my farm that increase production, such as the removal of grasslands, fence rows, or grass field buffers have little impact on the environment.**”

**Support for Government Involvement:**

Mean = -0.7
**Stakeholder Profile**

**FS Group 2: BALANCED STEWARDSHIP AND BUSINESS VIEWS (60 Percent)**

The individuals whose responses clustered together to form Group 2 (60 percent of total valid responses) hold a much more moderate view of environmental stewardship. While their total score is on average significantly lower than Group 1, but they still express positive agreement with statement like, “a successful farmer is someone who continuously valuates the environmental impact of their farm and adopts new approaches to protect the environment.” The Farm as a Business Scale is where the real differences between groups occurs as we see a positive mean score for Group 2, reflecting strong support for statements like, “good farming requires using all available acreage as efficiently as possible to maximize yields.” The clear business focus of this group doesn’t discount their positive stewardship attitudes, but rather demonstrates the complexity of balancing both stewardship and business interests – even for individuals as they make decisions with trade-offs between competing priorities.
Overall likely ratings are low (only 2 over 50%), but other than NRCS & WDNR the ‘unlikely’ ratings are very small – meaning there is likely some flexibility with who can develop into the agriculture contact for the BEP.

**Mean scores ranging from +2 (Very likely) to -2 (Very unlikely)**

<table>
<thead>
<tr>
<th></th>
<th>NRCS</th>
<th>WDNR</th>
<th>County</th>
<th>Alliance</th>
<th>UWEX</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group 1</strong></td>
<td>.45</td>
<td>.29</td>
<td>.58</td>
<td>.77</td>
<td>1.03</td>
<td>.69</td>
</tr>
<tr>
<td><strong>Group 2</strong></td>
<td>-.07</td>
<td>-.12</td>
<td>.40</td>
<td>.54</td>
<td>.62</td>
<td>.46</td>
</tr>
</tbody>
</table>
Application: Approach

Approaches To Working Together

There are many issues that can affect water quality; however, working to reduce nutrient loading in the Big Eau Pleine Reservoir coming from agricultural runoff is one area where work is already underway. Please provide your level of agreement with each of the following statements that complete the sentence below:

Efforts to address water quality problems associated with agricultural runoff in the Big Eau Pleine are more likely to be successful if…

<table>
<thead>
<tr>
<th>Experts work cooperatively with the farmers and landowners to identify solutions to agricultural runoff.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>D</td>
<td>N</td>
<td>A</td>
<td>SA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The general public is not allowed in on the process as it is more likely to create conflict than to generate cooperation.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>D</td>
<td>N</td>
<td>A</td>
<td>SA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Government doesn’t just dictate what is going to happen, but listens to the people who are truly getting their hands dirty in the farming world.</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD</td>
<td>D</td>
<td>N</td>
<td>A</td>
<td>SA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-1</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Approach 1: “Experts work cooperatively with the farmers and landowners to identify solutions to agricultural runoff.”

Mean scores ranging from +12 (Strongly agree) to -12 (Strongly disagree)

<table>
<thead>
<tr>
<th>Approach 1</th>
<th>All</th>
<th>+3.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS Group 01</td>
<td>+5.3</td>
<td></td>
</tr>
<tr>
<td>FS Group 02</td>
<td>+2.3</td>
<td></td>
</tr>
</tbody>
</table>

Approach 1: (6-Item Scale) Cooperate, Consistency, Resources

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experts work cooperatively with the farmers and landowners to identify solutions to agricultural runoff</td>
<td>+.99</td>
</tr>
<tr>
<td>A written plan is developed for the entire county that provides rural landowners with recommendations for how to reduce agricultural runoff</td>
<td>+.45</td>
</tr>
<tr>
<td>Resources are allocated to landowners to assist them in developing written plans to reduce agricultural runoff on their farms</td>
<td>+.53</td>
</tr>
<tr>
<td>Efforts focus on ensuring that all landowners have equal access to available funding to address agricultural runoff</td>
<td>+.76</td>
</tr>
<tr>
<td>Efforts focus on ensuring that any regulation to address agricultural runoff are consistent so that all landowners are held to the same standards</td>
<td>+.82</td>
</tr>
<tr>
<td>A formal board is created to provide advice to local government about how to address agricultural runoff in the rural landscape</td>
<td>-.02</td>
</tr>
</tbody>
</table>
Dear Central Wisconsin Landowner,

We need your help to understand how landowners in your community should be included in making conservation decisions. With an increased demand on the landscape to produce food, fuel, and fiber for an ever growing population it’s important to work with landowners to find responsible ways to manage natural resources. Our survey provides you with the opportunity to have your voice heard and your priorities understood by agencies and organizations working in your area. Regardless if you’re a farmer, own or manage farmland, or are simply a neighbor of a farmer we value your opinion.

Your participation is voluntary, but understand that based on your location and the number of acres you own your opinions are valued. We anticipate this survey taking about 15 minutes of your time and you are welcome to skip any questions that make you feel uncomfortable, or you do not understand. We understand that this is asking a lot of you and we are very appreciative of your time and honesty, please complete as much of the survey as possible and return it to us in the enclosed postage paid envelope. If you have any complaints about your treatment as a participant in this study please call Dr. Debbie Palmer, Interim IRB Chair at UW-Stevens Point at (715) 346-3953.

Any and all other questions you may have in regards to this survey or this research project can be directed to either of the contacts below. Thank you for your assistance and we look forward to learning more about your priorities.

Sincerely,

Jacob C. Hernandez
Graduate Research Student
Email: Jeren090@uwsp.edu
College of Natural Resources
University of Wisconsin - Stevens Point
Stevens Point WI, 54481

Dr. Aaron Thompson, Ph.D
Assistant Professor of Land Use Planning
Email: Aaron.Tompson@uwsp.edu
Phone: 715-346-2578

Response Rate: 4-wave
- 35.8% response rate
- Yielded 112 (n=112) completed and returned surveys
- 2.5% returned as bad addresses
Stakeholder Profile

Objective 1

Develop a typology of Central Wisconsin farmers based on collective belief systems toward collaborative conservation approaches.

(68%) Group 1: “The Individuals”
- One-On-One based approach
- Prefer to work with more locally based partners and are less inclined to work with WDNR
- Grassland habitat management

(22%) Group 2: “The Collaborators”
- One-On-One based approach or Farmer-Led Councils
- Willing to work with wide variety of partners - Most likely to be reached by NRCS
- Grassland habitat management

(10%) Group 3: “The Maintainers”
- One-On-One based approach or Farmer-Led Councils
- Willing to work with all partners
- Grassland habitat management

Objective 2

Investigate differences and similarities that exist between different farmer typologies.
Stakeholder Profile

Efforts to address issues affecting grassland loss in Central Wisconsin are more likely to be successful if.....

Group 1: “The Individuals”

Respondents who hold this view generally believe that efforts to address issues affecting grassland loss in Central Wisconsin are more likely to be successful if...

The government listens to the people who are getting their hands dirty in the farming world. They believe the government shouldn’t just dictate what is going to happen. They disagree with others who think a formal board to advise local government or locally elected officials will increase success of efforts. Moreover, involvement from the general community will create conflict rather than generate cooperation. While community members should be involved in the planning process to help identify issues individuals should be allowed the freedom to implement individually tailored solutions.

Key Idea ➔ Members of this group would like to have their opinions heard in a more one-on-one setting...
And there you have it.
Median Acres - 2007

SOURCE: Census of Agriculture Website
Median Acres - 2012

Wisconsin 2012 Median Acres

- Less than 71
- 72 - 95
- 96 - 125
- 126 or more

SOURCE: Census of Agriculture Website
Median Acres - Difference