

## Ch 13: The Midwest



- Became the heartland in 19<sup>th</sup> century
- Slower-paced
- Agrobusiness replaces small farm and closure in manufacturing-globalization
- Agriculture legacy=soil erosions, loss of wetlands, groundwater contamination; industry and power plants=air, water, and land pollution.

- Small farms must identify a niche, contract with a corporation, or be unprofitable
- Unions are dismantled, retirees lose their pension
- People, particularly young people, are leaving the region How to create jobs while improving the enviro.?



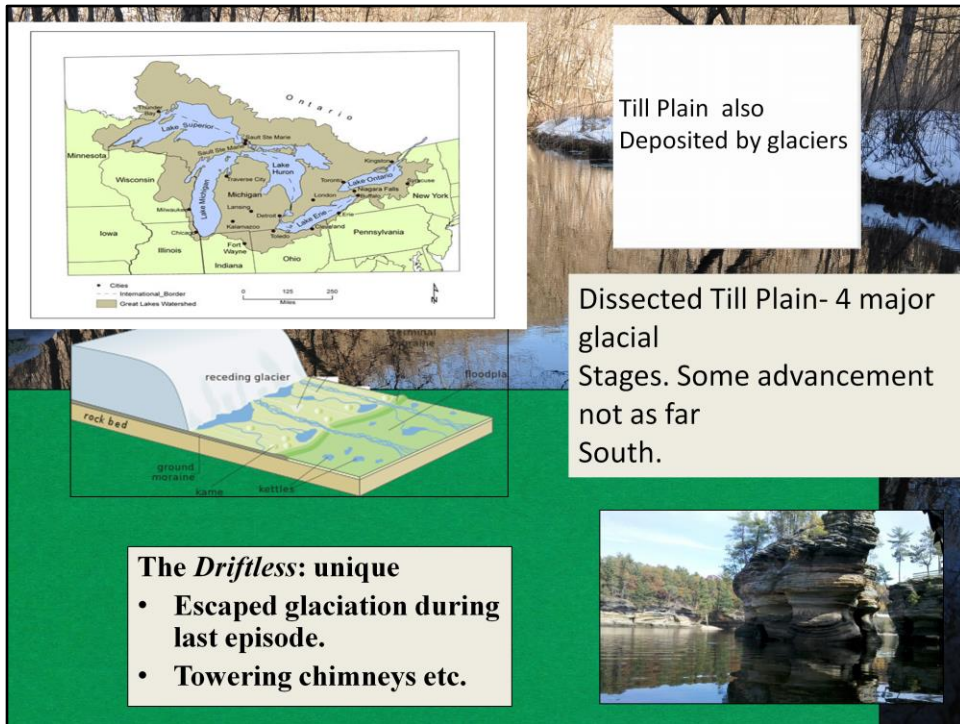
Elkhart, IN

Heartland –transportation connected agriculture to more populated eastern markets.

## Physical geography:

- Some variation in glacial history
- Commonalities- abundant water, stone-free, moraines offer ridge relief, glaciers retreat and wind-blown fertile loess soil accumulated over prairie, tall grasses and hardwood forest.
- Forest fell to farmers
- Corn Belt, Dairy Belt.

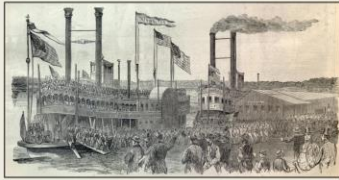




Great Lakes- Result of retreat of glaciers 10,000 years ago. Left behind thousands of lakes and wetland features. Kettle lakes when large block of ice breaks off and buried in glacial outwash and then melted.

**Water:**  
**Great Lakes (20% of world's fresh water)**  
**and the Mississippi river**

- **Abundance of water but ...**
- **Portage, rapids, swamps etc.**
- **So had to build canals, drain wetlands etc.**
- **Green Revolution – need for more water**
- **Decaying infrastructure-Levees New Orleans 2007 and collapse of I-35 bridge in Minneapolis**

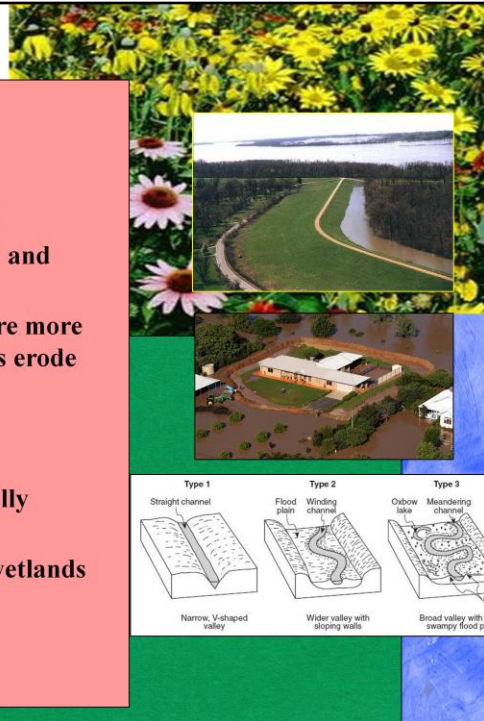


Green Revolution-1960s- More fuel-based pesticides, herbicides and fertilizers.



## Managing water- p313

- Steep vs meandering rivers
- Natural and artificial levees
- Rivers that flood enrich the topsoil
- When floods are rapid, rivers erode
- Natural levees tend to slowly breach and deposit- natural topsoil
- Artificial levees breach when they are more full, and thus breach faster, and thus erode more
- + increases the chances of flooding downstream
- Expensive to keep rebuilding-federally funded.
- Solutions? Remove structures and wetlands act as natural flood control



Rivers want to meander- Cut through path of least resistance. –Meander belts.

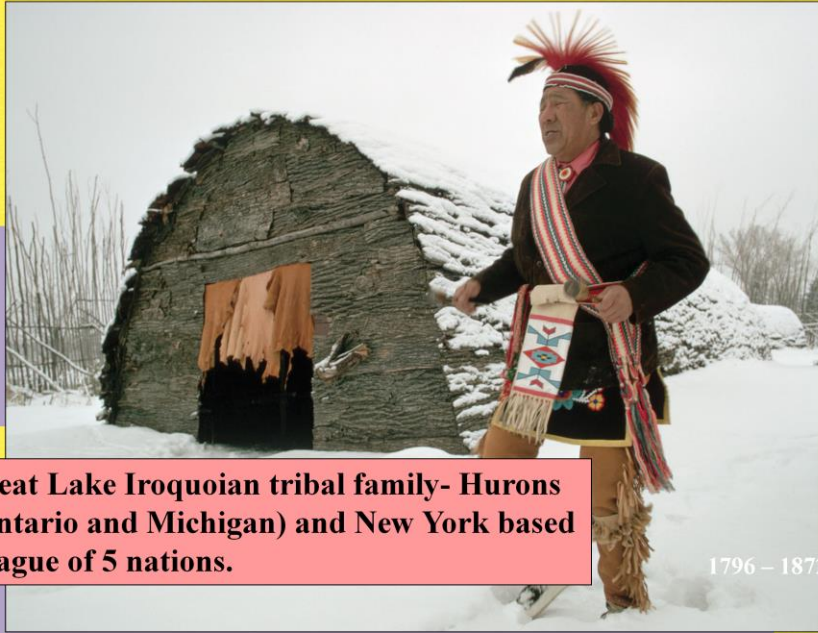
# Climate

- Humid continental climate- more extremes than coastlines. – 4 seasons
- Land heats and cools faster than water.
- Lack of natural barriers- Wind blows freely across prairie and many directions- Artic, humid Gulf winds.
- Great Lakes help stabilize local climate- large body of water.
- Lake effect- water to clouds and snow

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Specific heat property and ability of heat to mix more rather than solid surface.

### Historical geography:



**Great Lake Iroquoian tribal family- Hurons  
(Ontario and Michigan) and New York based  
League of 5 nations.**

1796 – 1872

Sedentary Iroquoian tribes lived in longhouses in semi permanent villages practicing – growing corn, beans, squash, and tobacco.



# West of Appalachians

- 1763- 120,000 settlers
- 1820-2.5 million
- 1830-3.5 million
- New govt. needs a source of income and pay off debts.
- Land Ordinance of 1785-Township and Range system.

**1820-50s: Indian Removal Era allotment Era:**  
**Indian lands sold to non-Indians**



## Cultural perspectives:

- Red barn farmstead, steel industries, main street small towns = nostalgia-ridden American psyche
- Replaced by?
- Sluggish population growth, aged remain. Brain drain- young educated people are moving
- -Industry fled high union wages, environmental regulations- Moved off-shore or less regulated states.
- Cost of new efficiency must be counted differently:  
*Triple Bottom Line (TBL)*
  - Profits, Planet, and People



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TBL= profits planet and people. –financial environmental and social performance.

## Union Representation

The Midwest remains a stronghold of union authority, especially in manufacturing.

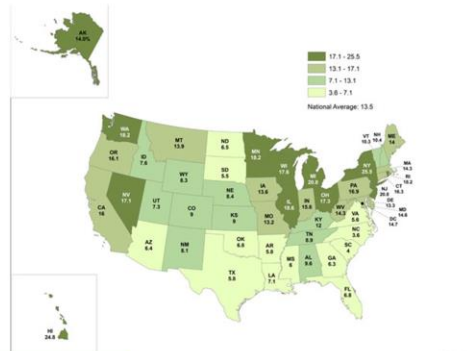


TABLE 13.11. Manufacturing Job Losses, January 2000 to January 2009

	% Job loss
Michigan	45.5
North Carolina	37.2
Ohio	35.1
New York	33.5
South Carolina	31.9
Massachusetts	30.2
Georgia	29.7
Illinois	27.9
United States	26.8
California	25.6
Florida	25.2
Arizona	18.7
Texas	15.8

Source: Center for Continuing Study of the California Economy, "Why Are Manufacturing Job Losses So Large?" March 2009, at <http://www.insightcod.org/uploads/mcp/Why%20Are%20Manufacturing%20Losses%20So%20Large.pdf>

## Economy-Agriculture

- ▶ Farms replaced by: monoculture, CAFOs
- = smaller, fewer farms, razor-thin profits for farmers (older, work on contract according to corporate specs.)
- ▶ Land is sold to developers
- ▶ Or must develop a niche market

**CSA- Community supported agr.**



TABLE 13.6. GMO Crops Grown in the United States, 2010

Food	Modification	Percentage of total U.S. crop
Soybeans	Herbicide resistant	94
Corn	New genes Bt bacterium added	73
Cotton (cottonseed oil)	Bt protein gene added	75
Rapeseed (canola)	New genes added	90
Sugar beets	Herbicide resistant	95

Source: Economic Research Service, "Adoption of Genetically Engineered Crops in the U.S." at <http://www.ers.usda.gov/Data/BiotechCrops/>; canola, <http://www.npr.org/templates/story/story.php?storyId=129010499>; sugar beets, <http://www.npr.org/templates/story/story.php?storyId=129891767>

CAFO- concentrated animal feeding operation

Csa: community supported agriculture- local farm to resident population. – Niche market-Included are organic, grass fed cows, and organic local dairies. Tradition agriculture relied on crop rotation to reduce diseases weeds, and pests. –Also renews soil itself.

## GMOs

- **GM crops: “any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology”**
- **Aligned with globalized transport of food.**
- **U.S. average is 1500 miles field to table.**
- **Must look good, be profitable, and long shelf life. Taste is sacrificed.**

# GMOs

## Pros

- Saved labor costs
- Plant disease resistance
- Insect resistance
- Help world shortages-growing population
- Less expensive in short term



## Cons

- Super weeds and gene transfer
- Harm soil productivity
- Allergic reactions and diminishing antibiotic efficacy.
- Fossil-fuel dependent – globalized market
- Depletes water
- More expensive in long run

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High yield corn depletes water.

EU- Rejected for human consumption- 2005 changed stance- allowing gMO crop for animal feed and implementing risk assessment program to study effects of gMOs.

Has slowed export of US crops.





### Biofuels: Ethanol

Biofuels are produced from renewable sources. Food crop biofuels, especially corn, have been most prevalent in the U.S. Using corn for biofuels has interrupted worldwide food supplies and raised prices since 2007. Food maker and livestock producers have scrutinized corn subsidies for ethanol a renewable, high-octane grain alcohol that has led to huge price increases for corn.

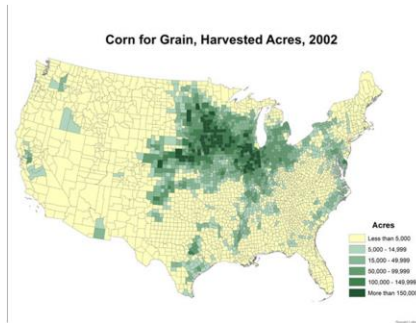
Corn belt- Ideal for corn since 1850 growing. U.S. produces 50% of world's corn. Also contributes to livestock production.

Image Source:

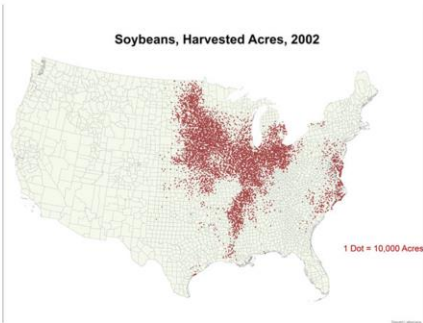
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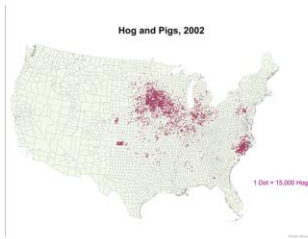
# Agriculture

## Corn Belt



## Soybean Belt





## Hogs

Until the 1980s Iowa and other Midwestern states dominated the traditional hog farm industry raising 80 percent of commercial hog farms, but in 2005 the top Midwestern states produced 52 percent of all hogs

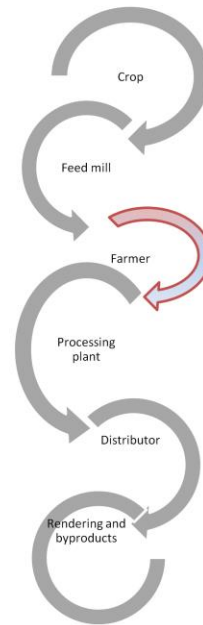
TABLE 13.8. Hog Inventory Rank in Top-Ranked States, 1987-2007

	1987	1992	1997	2002	2007
Iowa	1	1	1	1	1
North Carolina	7	3	2	2	2
Minnesota	4	4	3	3	3
Illinois	2	2	4	4	4
Indiana	3	5	5	5	5
Missouri	6	7	6	6	7
Nebraska	5	6	7	7	6
Oklahoma	—	24	9	8	8
Kansas	10	10	10	9	10
Ohio	8	9	8	10	9

Source: National Agricultural Statistics Service, at <http://www.nass.usda.gov>

# Vertical Integration

Hogs are raised in CAFOs where, a thousand hogs are raised in each concrete-slatted, metal CAFO barn. In 2011, 45 percent of all contracted hogs were in operations with more than 5,000 hogs. In the hog industry this is succinctly stated as “from birth to bacon,” or “from conception to consumption.”



Vertically integrated corporations

Chickens- Layer hens- Commercial cages egg production. 75 companies more than 1 million layers. Iowa Capitalizes on soy meal to chickens. 2010- Iowa, Ohio, Pennsylvania



## Dairy

Dairying is one of the top agricultural commodities in seven Midwestern states and in Michigan and Wisconsin's number one commodity.

TABLE 13.7. Significance of Dairy Products: Lake States, California, United States, 2007

	Number of operations	Number of farms with 500+ head	State rank	Average number of cows (000)	Annual milk production per cow
California	2,200	1,100	1	1,813	22,440
Wisconsin	14,200	280	2	1,247	19,310
Minnesota	5,100	90	6	460	18,817
Michigan	2,700	115	8	335	22,761
United States	69,995	3,320		9,189	20,447

Source: National Agricultural Statistics Service, at <http://www.nass.usda.gov>

Hard to compete with Ca.- Some Midwestern farmers identified niche marks with artisan cheese market. –Avoid hormones and graze cows longer. Many are organic and family run. New dairy farms in Ohio and southern Michigan- financed and built by Dutch farmers- Many CAFOs

Map source: <http://www.epa.gov/agriculture/ag101/printdairy.html>

## Sustainable farming

- <http://www.growingpower.org>
- In 1993, Growing Power was an organization with teens who needed a place to work. Will Allen was a farmer with land.
- Milwaukee has blossomed into a national and global commitment to sustainable food systems.





*Coal Burning Power plant  
Facility 3, Toledo, Ohio*

*Due to be shut down in  
2012 for non-compliance  
with emission standards*

Midwestern industry grew when environmental pollution was not legally recognized as a health risk,, results—respiratory disorders—were considered a part of life, especially for the urban poor. Technology is capable of cleaning up the pollutants, but the cost and the lack of political will have halted progress.

**TABLE 13.9. National Rankings of the Top Four Polluting Midwestern States**

	Ohio	Indiana	Illinois	Michigan
Total environmental pollution	5	9	16	20
Air pollution	1	8	14	15
Water pollution	10	2	11	35
Energy consumption	5	11	7	9
Coal consumption	4	1	6	9

Source: Energy Information Administration, at <http://www.scorecard.org>

**TABLE 13.10. Coal-Burning Power Plants**

	Sulfur dioxide	Nitrogen oxide	Carbon dioxide	Mercury
% Industry emissions	97	92	86	100
% National emissions	67	23	40	41

Source: Environmental Protection Agency, Clean Energy, at <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>, <http://www.mass.gov/dsp/foia/cstypes/rgfact.doc>; U.S. Energy Information, <http://www.eia.gov/coal/electricity/page/print2/chapter3.html>

Note: Fifty-six percent of power plants are coal burning. They create these percentages of emissions for the entire industry.

# Economy

- Auto Industry meltdown.
- Tourism- Largely within state.
- Exception is tribal gambling- 1995-2004 revenues escalated by 400% (overall).
- Midwest leads with 117 tribal casinos.
- Tribes pawns to outside interest?

# Cities

- Chicago Illinois
- Good public transportation, encourage bicycles
- Boeing
- Agricultural trade.
- Planted half million trees.
- Green roofs



# Cities

- Detroit, Michigan
- 83% white and 16% African American
- Most segregated city in U.S.
- Loss of urban tax base and infrastructure deterioration.
- 37.6 % poverty rate
- Urban gardens



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Largest African American majority.

## Cities

- Minneapolis-St. Paul Minnesota
  - Youthful population-creativity and tolerance.
  - Mall of America-connected by light rail to airport.
  - 20% of city green space.
  - First to integrate sustainability within city planning.
- Poor public transport but bicycling encouraged-new bike paths.



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Minneapolis is a major city in Minnesota that forms "Twin Cities" with the neighboring state capital of St. Paul. Bisected by the Mississippi River,