

# CAFOs for Basin Educators

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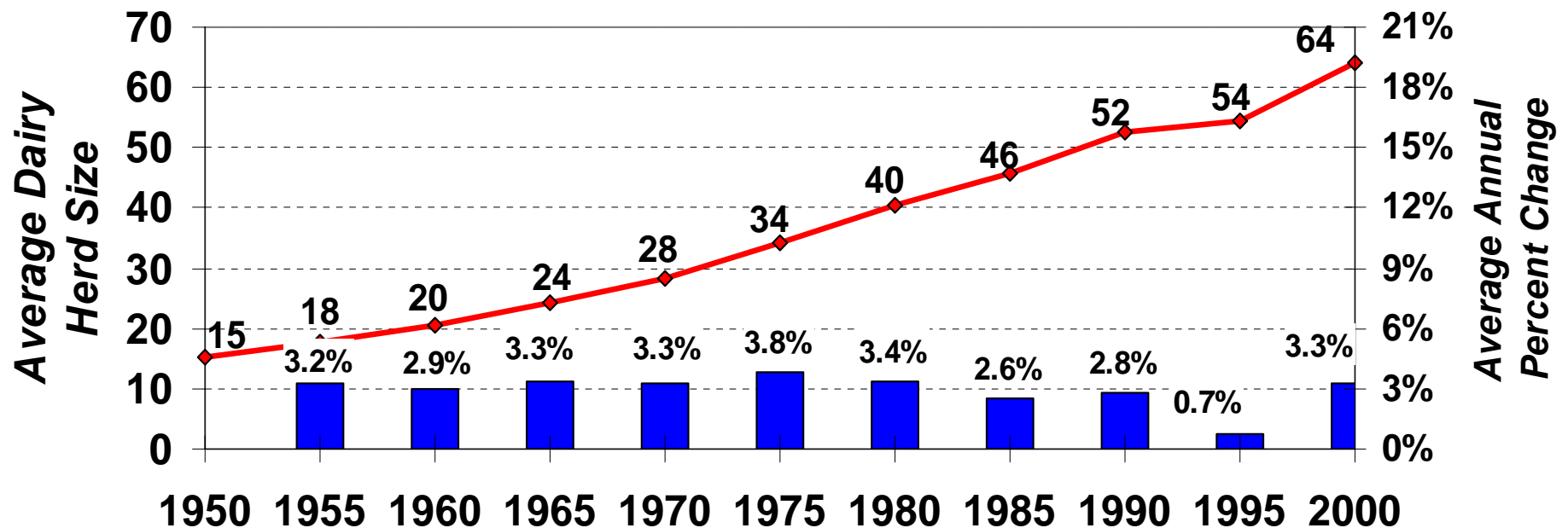
# What is a CAFO?

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- Concentrated Animal Feeding Operation
  - Regulatory Standard: farms with over 1000 Animal Units
- What is an Animal Unit?
  - 1,000 lb. Equivalent
  - Dairy Cows = 1.4 animal units
  - With young stock, dairy herds ~ 2 AU per milk cow
- Number of CAFOs increasing in recent years
  - About 110 ‘permitted’ or in the pipeline (68 dairy)

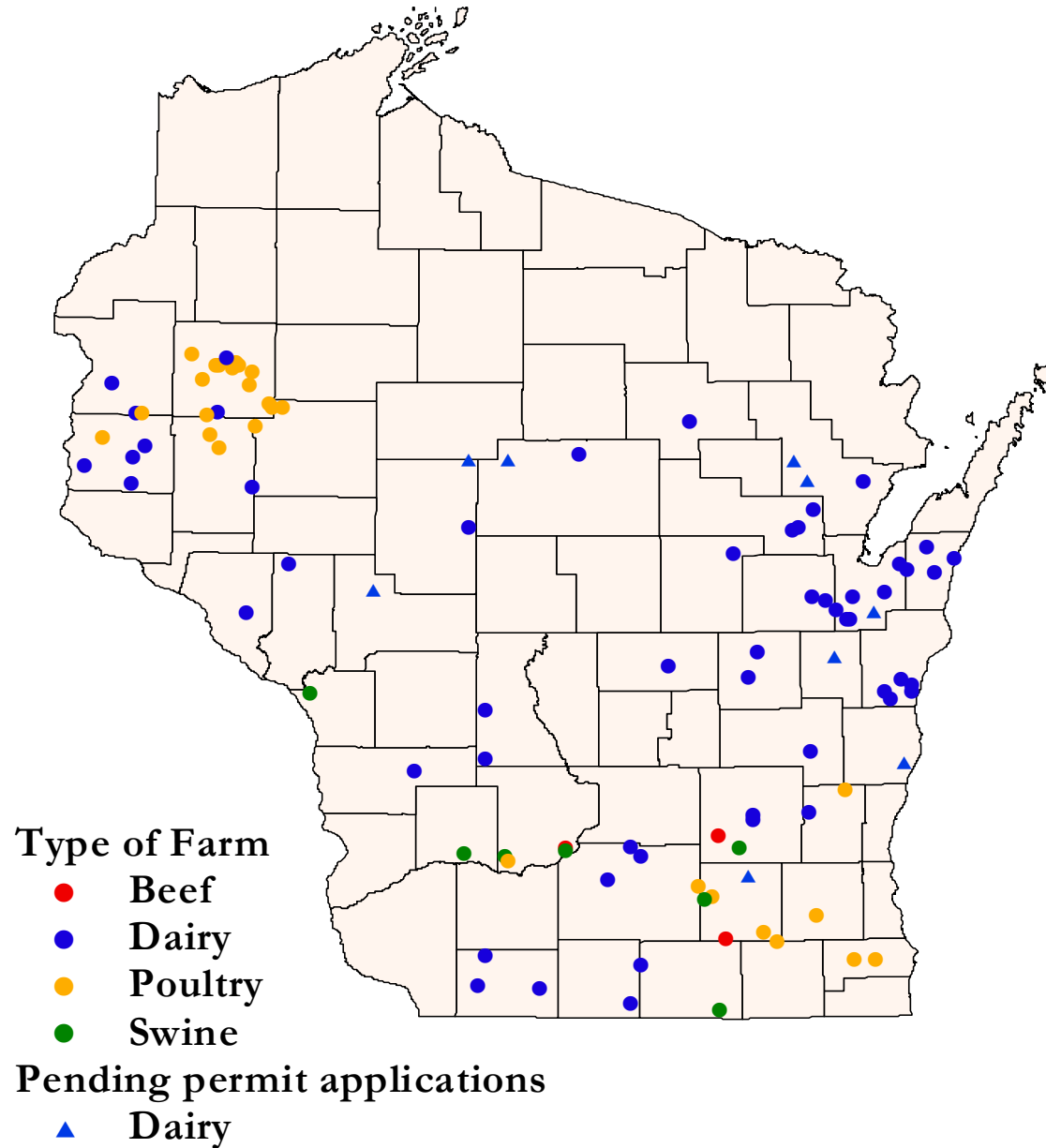
# Dairy Herd Growth Since 1950

## AVERAGE SIZE OF WISCONSIN DAIRY HERDS, 1950-2000



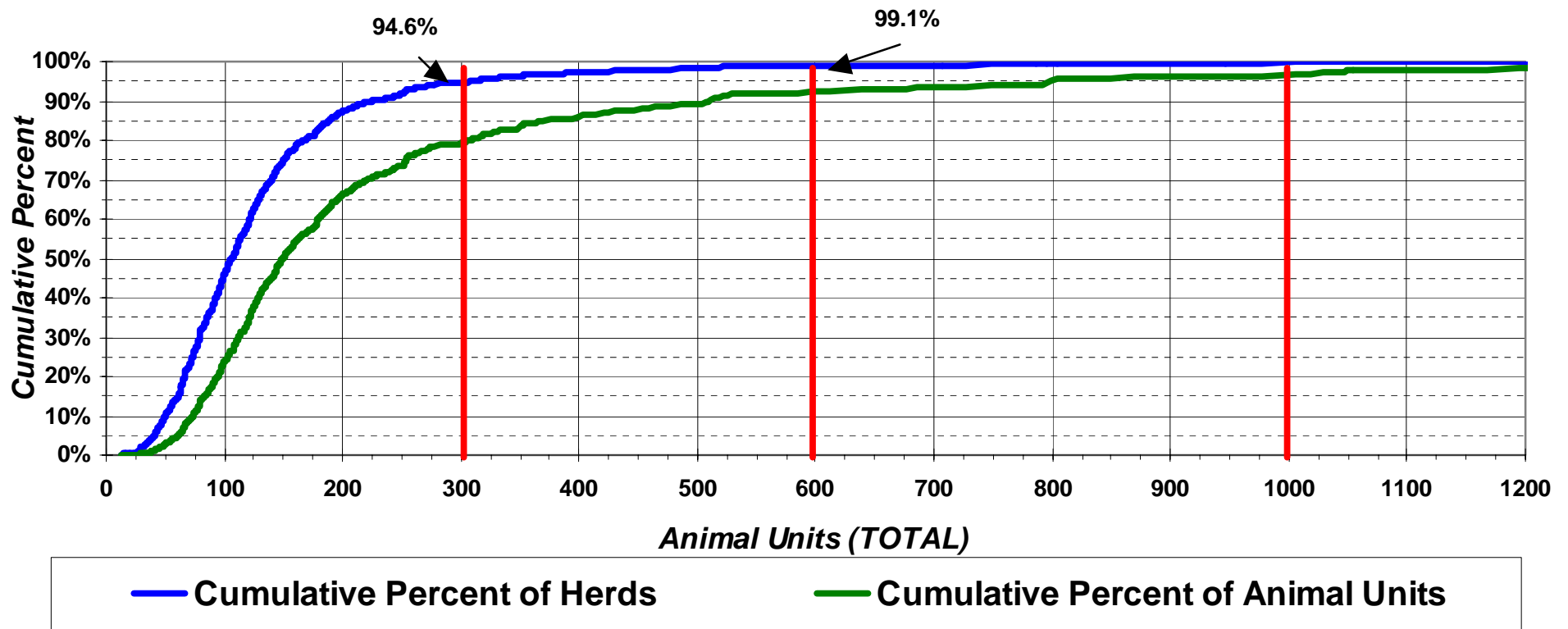
- Average Annual Percent Change Previous Period
- ◆ Average Dairy Herd Size

# Location of Wisconsin CAFOs



# Impact of different AU thresholds

Percent of Wisconsin Dairy Farms  
Falling Below Various Animal Unit (AU) Thresholds

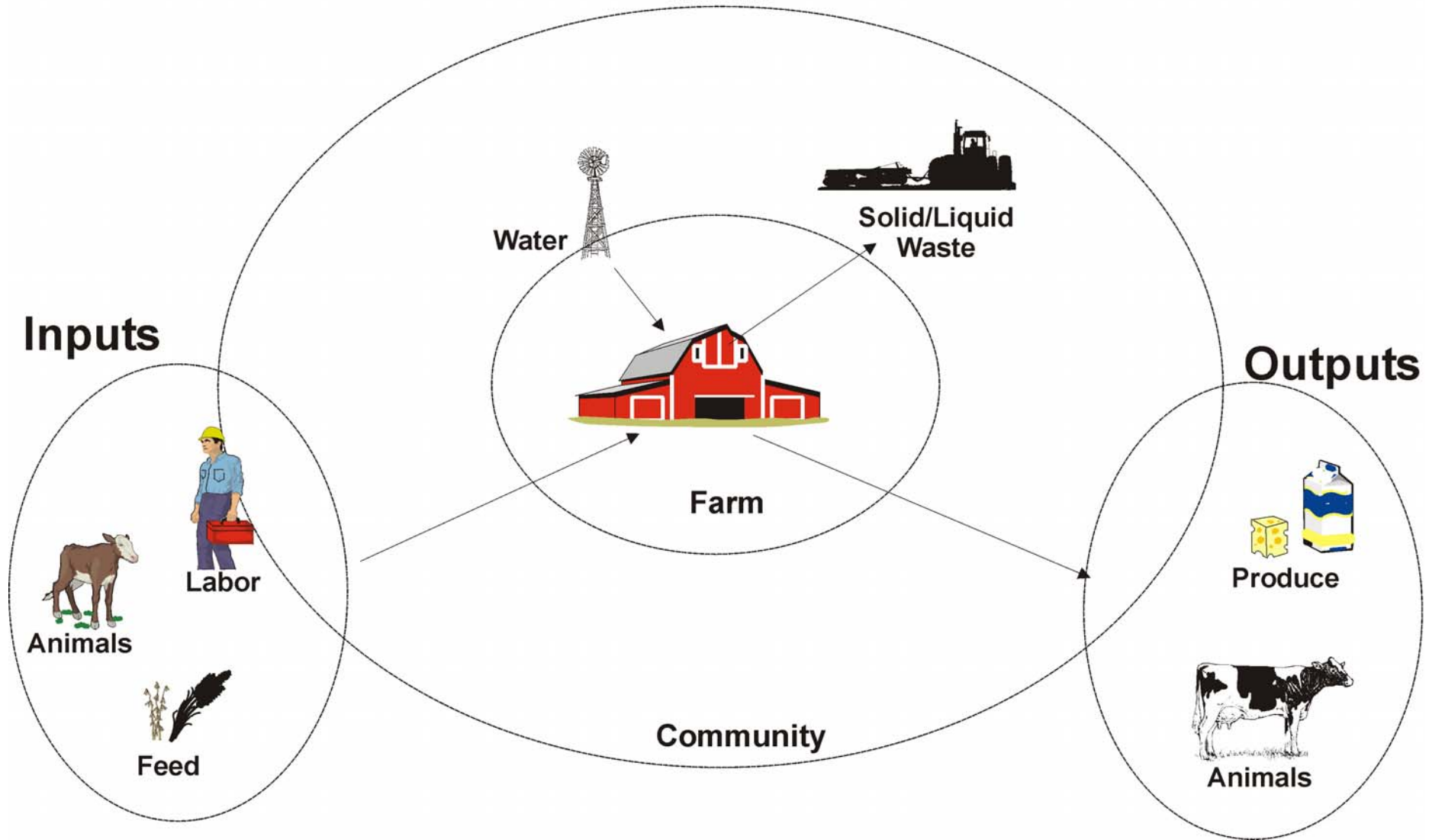


# What do these trends mean?

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- The industry is modernizing, but traditional mid-sized farms are persistent
- Expansion comes in many forms
  - Many more “intermediate” scale , i.e. those expanding to 100-250 cows
  - Threshold of what is considered “big” will be determined locally
- Most expanders are local family businesses
- Most have sufficient land (for manure N) -- though they don't always utilize it all well

# Local Official's Perceptions About CAFO's



# Perceptions About CAFOs

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- Potential for both positive and negative impacts:
  - Economic
  - Environmental
  - Social
- Farmer's ability to manage is crucial



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# Perceptions About CAFOs

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- Economic
  - Where does the money go?
  - Support for local Ag economy?
  - Infrastructure support needed
  - Impact on land values?



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# Perceptions About CAFOs

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- Environmental Impacts
  - Nutrient imbalance
  - Groundwater depletion
  - Ground & surface water contamination
  - Odor, noise, dust, lighting, spills, pets, pathogens
  - Raised awareness in Ag community



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# Perceptions About CAFOs

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- Societal Impacts
  - Changing rural communities
  - Reduced food security
  - New labor force
    - New social services
    - Community conflict
    - Loss of local self reliance



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# Consequences of Livestock Production Intensification

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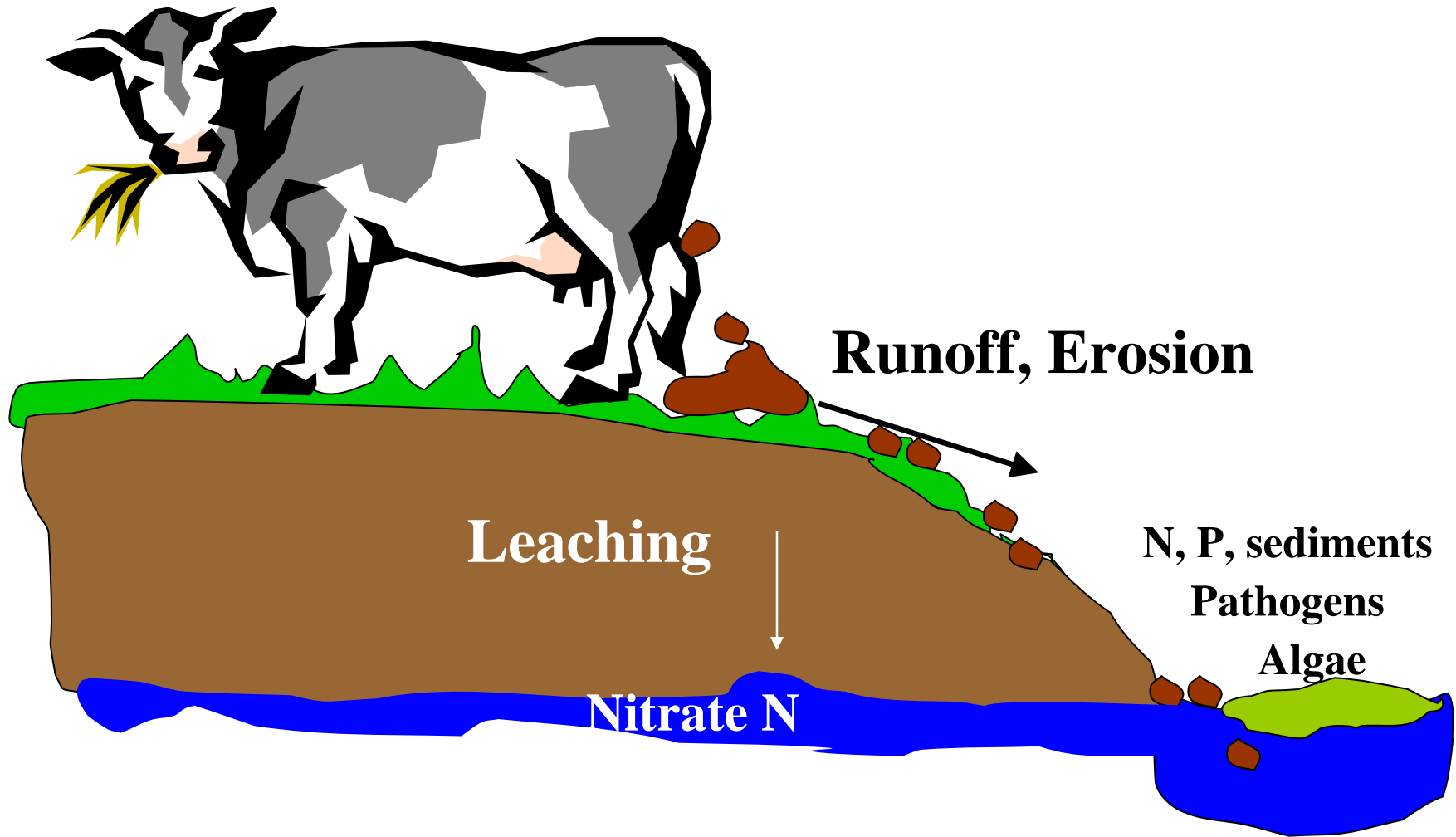
- Nutrient surpluses created on livestock farms
- Increased separation of crop and livestock production
- Decline in acreage of on-farm cropland available for land spreading manure
- More livestock operations closer to urbanizing areas
- Increased costs and labor for manure storage and disposal



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# Non-point Pollution from Livestock Manure



# Manure Nutrients: Nitrogen

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- **Manure N can leach into ground water : major form of concern is nitrates (NO<sub>3</sub>-N)**
- **Health concerns related to methemoglobinemia (“blue baby” syndrome) and possible links to GI cancers**
- **Drinking water standard is currently 10 ppm NO<sub>3</sub>-N**
- **N can be dissolved in runoff—link to Gulf of Mexico “dead zone.”**
- **Manure applied to soil surface can be lost as ammonia (NH<sub>3</sub>) gas (acid rain) and nitrous oxide (greenhouse gas)**

# Manure Nutrients: Phosphorus

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- **Unlike N, P conserved in soils; tends to build up from repeated manure applications**
- **P can move off ag. fields both in dissolved form (runoff) and attached to soil particles (erosion)**
- **Dissolved P concentrations in runoff from manured fields typically 0.1-1 ppm**
- **P concentrations >0.02 ppm cause algal blooms in fresh surface waters**
- **High concs. of P in surface waters linked to human pathogen outbreaks (Pfiesteria in East Coast)**

# **Approaches to Minimize Farm Nutrient Contributions to Non-point Pollution**

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- **Nutrient budgets for inputs, outputs and manure**
- **Change animal diets to lower available N and P contents**
- **Accurate land spreading of manure on fields with nutrient needs**
- **P versus N based manure application rates**
- **Manure handling and storage systems that simplify recovery of manure nutrients and provide greater flexibility for spreading manure on ag. fields**
- **Move manure off farm or process manure to add value**

# Livestock Agriculture as Source of Pathogens to Watersheds

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- Major pathogens include bacteria, viruses and protozoa
- Risk depends on BOTH pathogen presence and ability to survive in environment--survival outside water very low
- Ruminant (cattle) manure identified as potential source of Cryptosporidium, Giardia, E. coli O157
- Animals from young stock represent highest potential risk to environment

# Management Recommendations to Control Pathogens

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- **Adopt farm biosecurity practices**
  - use clean water
  - avoid manure transport among farms
- **On-farm water treatment to kill pathogens**
- **Restrict movement of contaminated feces into water courses**
  - prevent runoff from barns, exercise lots
  - separate calf manure from adult manure
  - Use composting or heat treatment to kill pathogens

# DNR-related analyses/permits

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- Environmental Analysis/Assessment
- WPDES-Wisconsin Pollutant Discharge Elimination System
- Storm Water Construction Site Permit
  - If disturbing > 5 acres
- High-capacity well permit
  - May be public well if serving >25 people

# What does a WPDES permit do?

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- Provides public disclosure
- Manure storage structure plans checked
- Increases likelihood that farm nutrient management plans are sound
- At minimum, plans based on NRCS 590 Standard (N-based manure application rates)



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# Odors

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- Production facilities-buildings or feedlots
- Manure storage and treatment facilities
  - lagoons, storage pits, composting
- Land spreading
- Dead animals



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# Odors

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- Technologies of long-term storage and reduced bedding increase odor problems
- Objective measurements not yet available
- Odor problem depends on many factors, and there are no simple solutions
- Surest way to minimize conflict are separation distances, but may be too costly
- DNR is beginning to pay attention



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# What can *farmers* do to deal with concerns?



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## Be a good neighbor!

- Treat others like you would like to be treated
- Would your proposed action be OK, if everyone did it ?
- To have good neighbors, you must be a good neighbor.



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# What can *farmers* do to deal with concerns over expansion?



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- Demonstrate in action and words your respect for neighbors, community and environment.
  - Communicate plans for expansion in as much detail as neighbors want.
  - Clearly communicate how you are meeting and perhaps exceeding standards for siting and operating the facility.
  - Understand as part of your decision making how the facility may impact the neighbors.



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# What can *farmers* do to deal with concerns over expansion (cont.)?

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- Clearly communicate when you will spread manure and listen to neighbors about dates you should avoid.
- Try to understand and appreciate neighbors concerns without judging them.
- Communicate how your manure management plan is making the best use of nutrients and protecting the environment.
- Consider landscaping as a part of your overall planning.



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# What can *farmers* do to deal with concerns over expansion (cont.)?

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- Encourage neighbors to communicate their concerns to you before they complain to others.
- Develop a plan for handling complaints which demonstrates that you are being reasonable.
- Keep listening for neighbors concerns.
- When mistakes happen, learn to apologize, take responsibility and appropriate action



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# County Planning Options

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- Pursue joint comprehensive planning projects
  - Include shared policy frameworks for agricultural development, and rural land & resource preservation.
- Provide leadership for municipalities in urbanizing & suburbanizing
  - Pursue joint “infill” strategies supporting compact development patterns.



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# County Regulatory Options

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- Leadership & Choreography:
  - By ordinance, establish preliminary meeting of developer/farmer with all parties that directly or indirectly regulate location, design, construction, installation, land use or operations of ag expansion projects.
- Establish/Revise existing agricultural districts to reflect changes in ag economy.
- Bonding for manure pit closures.



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# Town Planning Options

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- Use comprehensive planning process to create consensus around community visions and values.
- Adopt long-range goals addressing community quality of life, ag development, and residential development.
- Use local planning process to create policy frameworks for issues like agricultural expansion.
- Discuss & plan for your local economy.



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# Town Regulatory Options

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- Zone for Ag expansion, proximity of residential
- High quality ordinance administration
- Adopt, interpret & enforce building permits
- Use preliminary site plan review
- Conditional Use Permits as tool
- Creative use of minimum acreage rule, density
- “Ag Use” statements for new residents



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