

Developing Producer Driven Research and Education

U. W. - Discovery Farm Program

Fred Madison, Dennis Frame
Co-directors, University of Wisconsin–Extension



Goals of Program



- 1) Evaluate the effects of farming systems on the air, water and soil
- 2) Gain a better understanding of farming systems - how they operate
- 3) Work with families to identify modifications to systems that insure economic viability
- 4) Insure fairness of environmental regulations

Discovery Farm Locations



Buffalo County

- Two paired basin sites (stream)

Iowa County

- Up/down stream and one field site

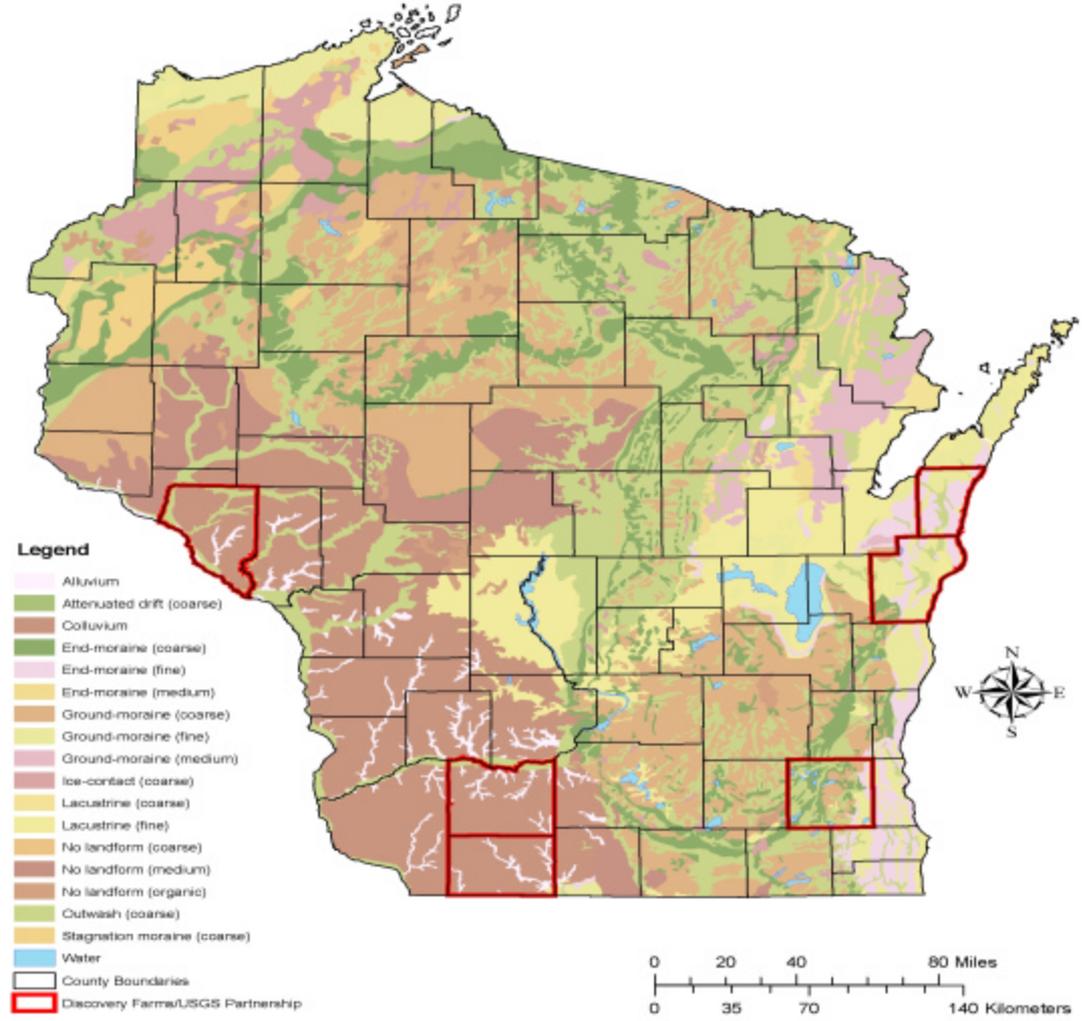
LaFayette County

- Three paired basin sites (field)

Kewaunee County

- Three paired basin sites (field)
- Two tile line sites

Landforms and surficial deposit textures of Wisconsin



Discovery Farms Special Projects

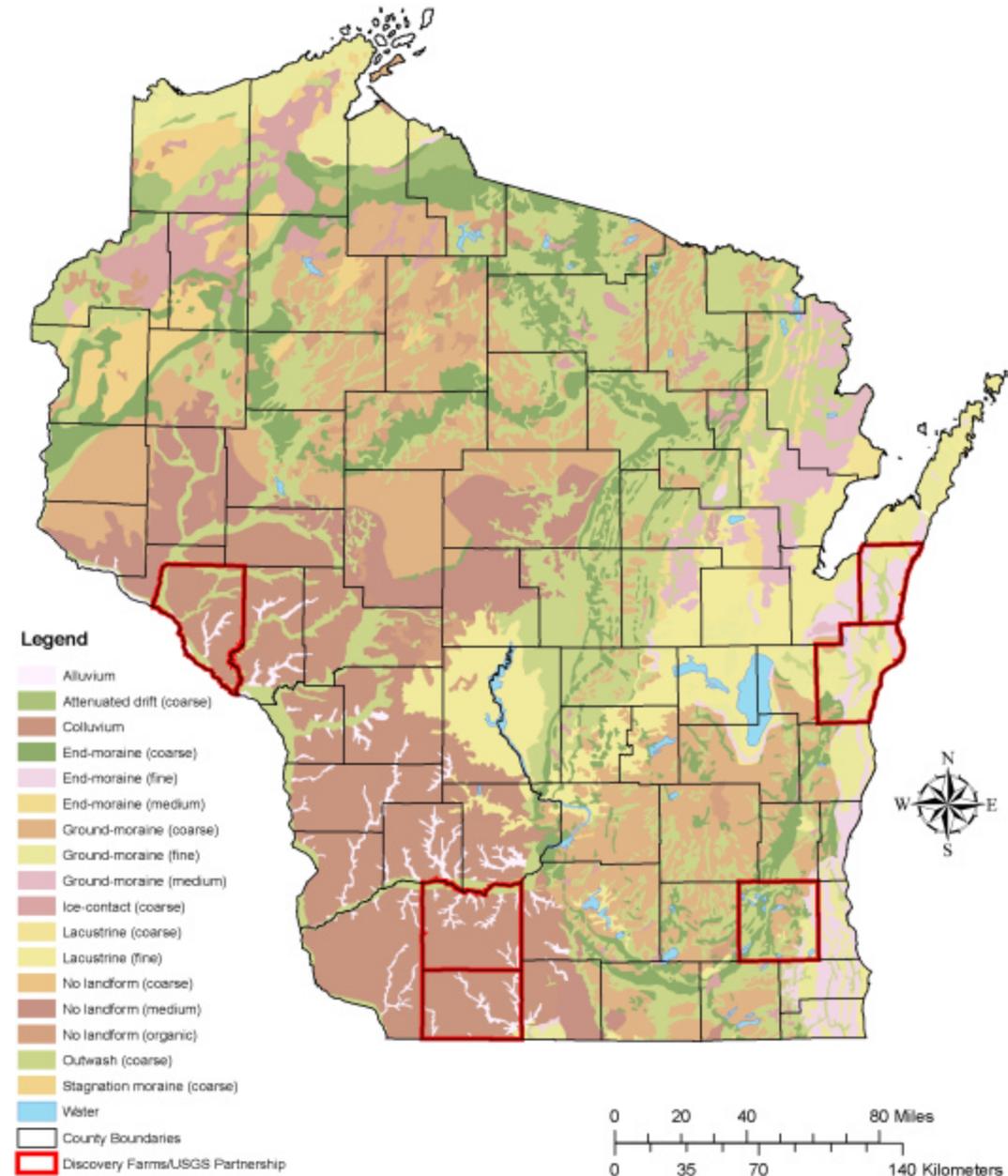
Manitowoc County

- Up / down stream sites
- One small basin site
 - One tile site
- One large basin site

Waukesha County

- One small basin site
- Two tile monitoring sites

Landforms and surficial deposit textures of Wisconsin



Monitoring Agriculture



Surface water



Tile lines



...the brains of the operation

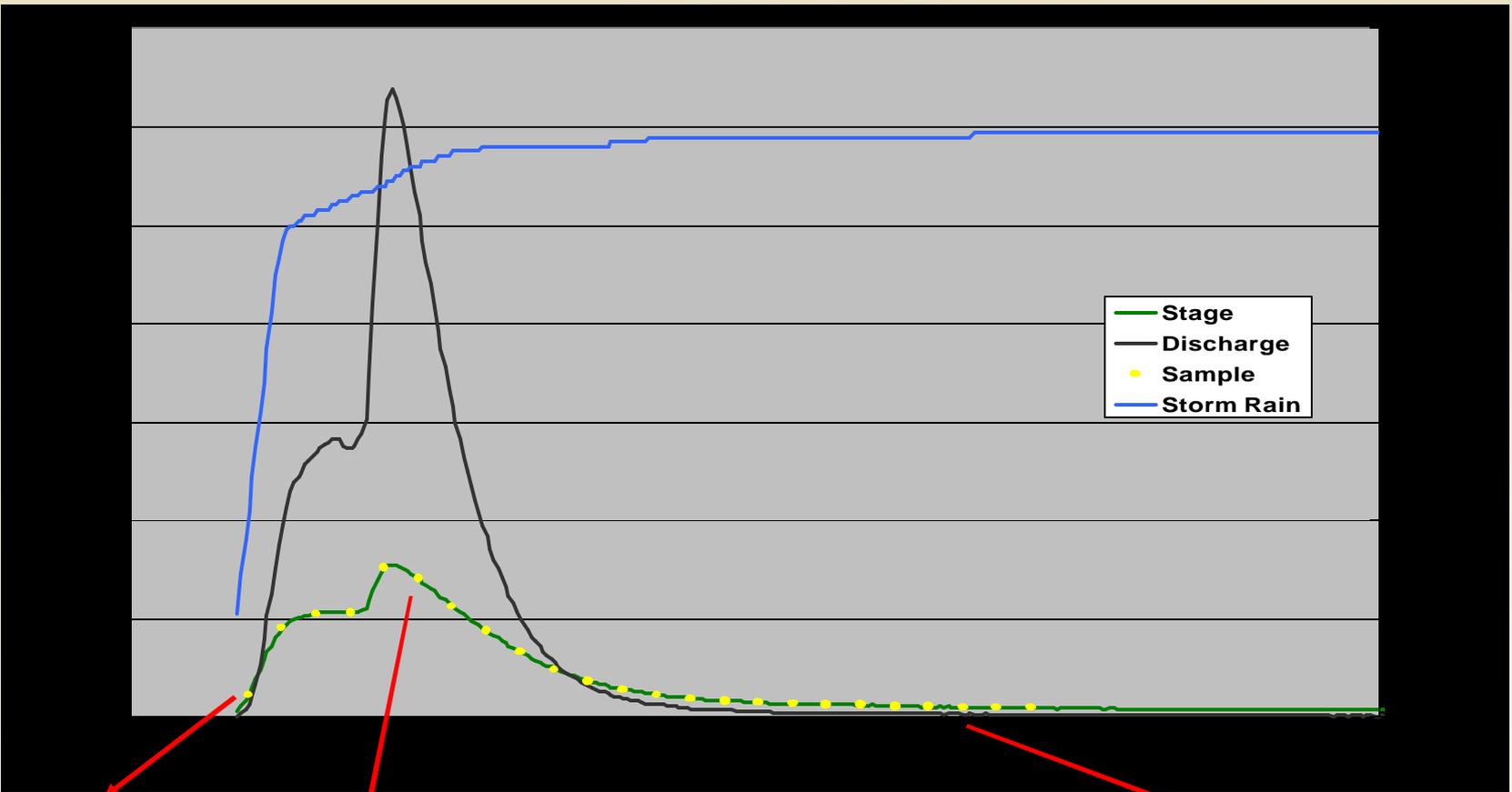


What else are we collecting?

- **Meteorological data:** precipitation, wind speed and direction, air temperature, solar radiation, relative humidity, soil moisture and temperature



...and when we get lucky!



Data suggests



- Predicting runoff must be broken into two time periods:
 - Runoff on frozen ground / snow melt period,
 - Runoff on non-frozen ground.
- **Let's look at frozen ground period.**

Frozen ground



- On average 60 – 75% of the annual runoff occurs on frozen ground (rain or snow melt). **Data from all our sites indicate that around 90% of the nutrient and sediment losses that occur in any given year happen before the 15th of June.**
- Why not ban winter spreading?
- We believe it is more important to identify critical conditions than dates.

Frozen ground



- **Manure should not be applied during the February – March period when the potential for rain or melting snow is high.**
- **However, if soils are fit and manure can be incorporated, then applications can occur.**

Frozen ground



- **Manure storage systems must be managed to insure that storage is available during the February – March time period.**
 - Better to spread in December or January if the conditions are right (incorporate liquid manure)

Frozen ground



- **Our belief is that educated producers can manage manure in a manner that reduces losses in the winter period if:**
 - **Acceptable alternatives are identified,**
 - **Systems are in place to handle unusual circumstances,**
 - **Training for staff is provided,**
 - **Producers understand that it is necessary.**

Non-Frozen Period



- The non-frozen ground period has conditions that need to be met for surface-water runoff to occur.
 - Soil moisture levels
- A single storm can produce the majority of surface-water runoff losses for an entire year.
 - Design criteria (25 year / 24 hour storm)

Non-Frozen Period



- The goal is to develop a critical condition index that helps identify acceptable spreading conditions.
- Over time, we should be able to estimate acceptable spreading rates.

Partnerships



- Steering Committee consists of 23 producer groups from throughout the state (dairy, beef, pork, corn, beans, potato and vegetable, cranberries, etc.)
- In 2006 our staff (6) taught at 153 educational programs for producers, consultants, agency personnel and citizens
- Strong support from the livestock industry
 - Would like to see more farms in program
 - Would like to have more educational meetings
 - Willing to work on funding issues both within the state and federal government

Funding

Contributors to UW-Discovery Farms Core Farms \$2,060,107

