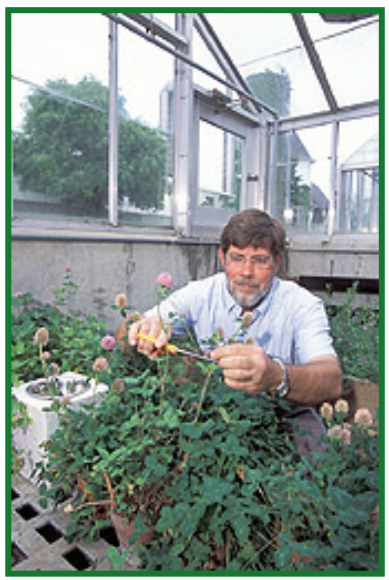
U.S. Dairy Forage Research Center

Greener Horizons for Crops, Cows, and Communities



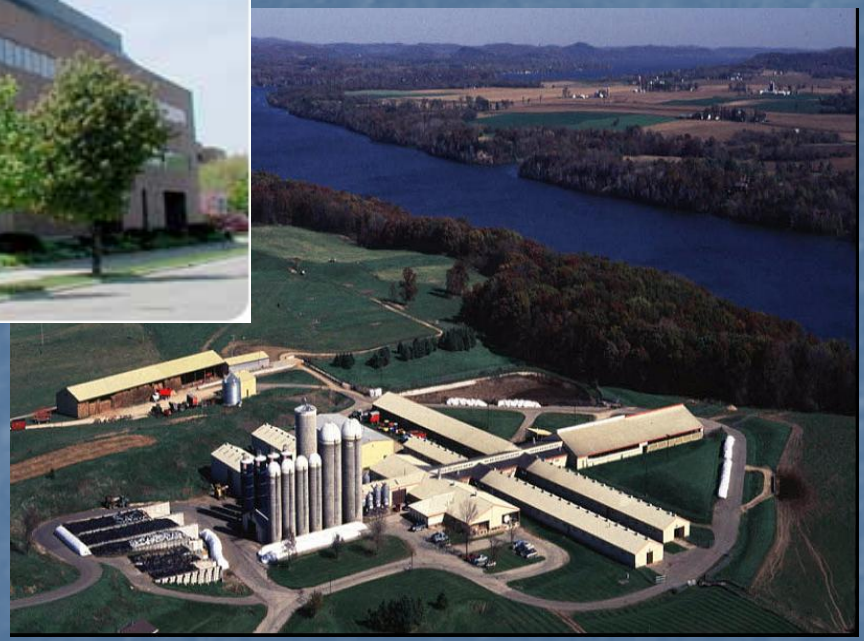
What is the U.S. Dairy Forage Research Center ?

- One of about 100 locations nationally in the Agricultural Research Service (ARS), which is part of the . . .

- U.S. Department of Agriculture

Two main locations . . .

Labs, greenhouses, and offices on the University of Wisconsin-Madison campus.



2,000-acre, 320-cow research farm near Prairie du Sac, Wisconsin.

Also scientists at:

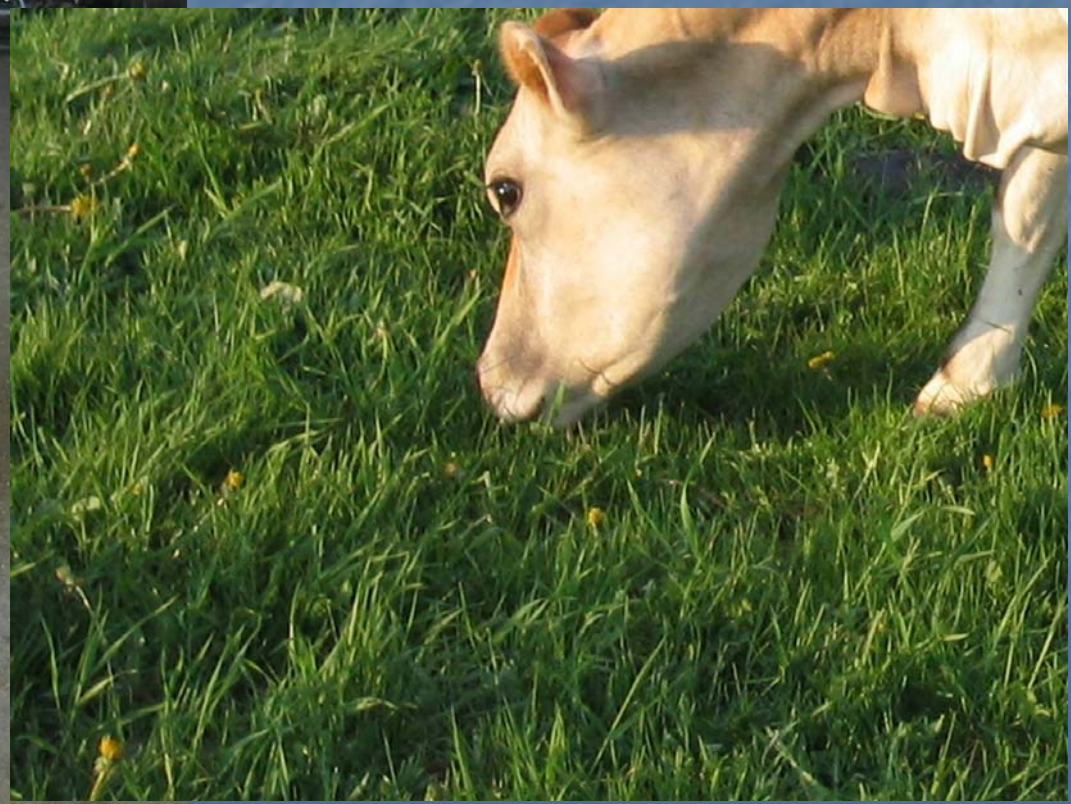
- St. Paul, MN
- Ithaca, NY
- New unit being formed in Marshfield, WI – *Institute for Environmentally Integrated Dairy Management*

Mission:

To develop knowledge and tools needed to enhance sustainable and competitive dairy forage systems that . . .

. . . protect the environment,

. . . promote animal health,



. . . and ensure a safe,
healthy food supply.
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What is forage?

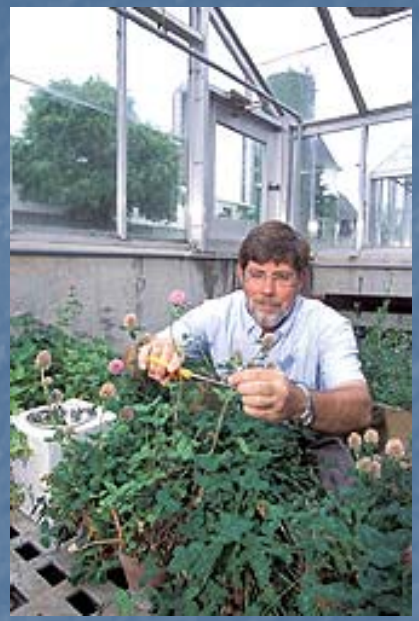
Grasses and legumes fed to animals in the form of:

- Pasture
- Hay
- Silage

Most common dairy forages are:

- Alfalfa hay and silage
- Corn silage
- Temperate grasses and legumes for pasture

Who is the USDFRC?



- 17 research scientists
- 18 technicians
- Visiting scientists from around the world
- Graduate students
- Undergraduate students

What are some areas of study at the USDFRC?

- Identifying cell wall factors limiting digestibility and forage utilization in sustainable dairy farming.

- Completing an evaluation system that will provide site-specific nutritive values for feeds.

- **Integrating crop, pasture, feed, and manure management systems for dairy farms.**

- Creating value-added products from plant materials.

- **Maximizing protein efficiency in dairy production.**

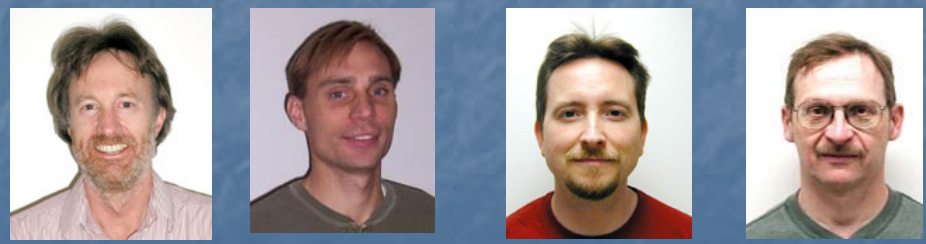
- Designing forage plants with enhanced value for dairy production, profitability, and sustainability.

We take a multidisciplinary approach to our research –

- Dairy and forage together – you can't improve a plant without knowing how it works in the cow!
- Our scientists have many different areas of expertise.
- Yet they work together to make sure all angles are covered in research.

Our team includes . . .

- Three dairy scientists
- Three agronomists
- Two ag engineers
- Two plant geneticists
- Two plant physiologists
- One soil scientist
- One chemist
- One microbiologist



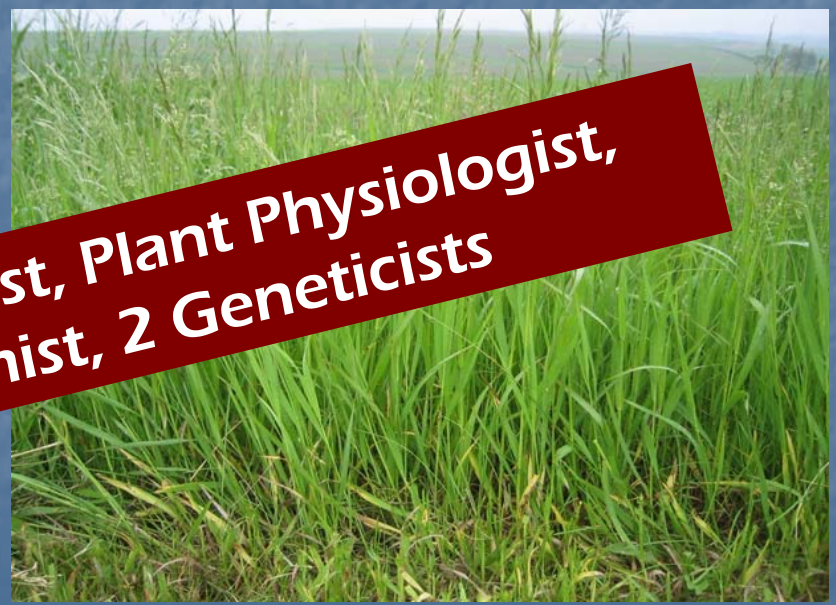
Example #1 of multidisciplinary approach:

For our research on "Identifying cell wall factors limiting digestibility and forage utilization in sustainable dairy farming," we have six scientists working together . . .

Chemist, Plant Physiologist, Microbiologist, Dairy Scientist, Agronomist, Geneticist

Example #2 of multidisciplinary approach:

For our research on "Designing forage plants with enhanced value for dairy production, profitability, and sustainability," we also have six scientists working together . . .

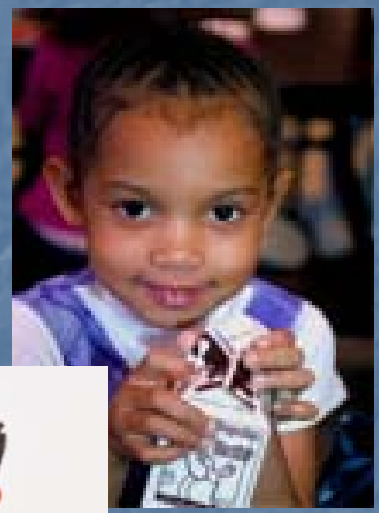


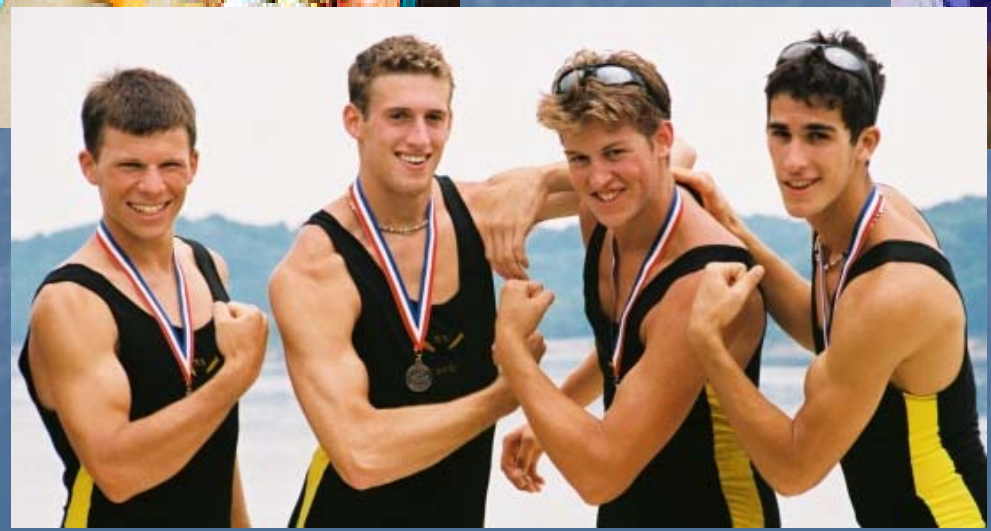
Molecular Geneticist, Plant Physiologist, Agronomist, Chemist, 2 Geneticists

Why is it important to have national research related to milk production?

Dairy products provide 72% of our dietary calcium

Dairy products provide 19% of our dietary protein





Dairy products also provide . . .

Nutrient	% contributed by dairy
Phosphorus	33 %
Vitamin A	22 %
Riboflavin	26 %
Vitamin B12	20 %
Potassium	18 %
Magnesium	16 %

Why is it important to have national research that promotes the use of forage in dairy systems?

Forage: It's good for the environment

Improves soil structure & health:

- Vigorous root structure below – roots up to 10 or feet deeper
- Vigorous canopy above – protects soil surface
- Improves water infiltration in soil
- Increases organic matter in soil

Protects soil from erosion and degradation:

- More continuous ground cover
- Can be grown in areas not suited for row crops

Protects water supply:

- Less surface runoff of water
- Takes up nutrients (like nitrates) so they don't leach to ground water

Forage: It's good for the cow

- Keeps cows healthy and productive
- Provides needed fiber
- Legumes are a good source of protein

Forage: It's good for the farmer

- Sustainable low-input crop for grazing
- Reduces need for purchased protein
- Legumes reduce the need for purchased fertilizers

Thank you

for your interest in the

U.S. Dairy Forage Research Center!