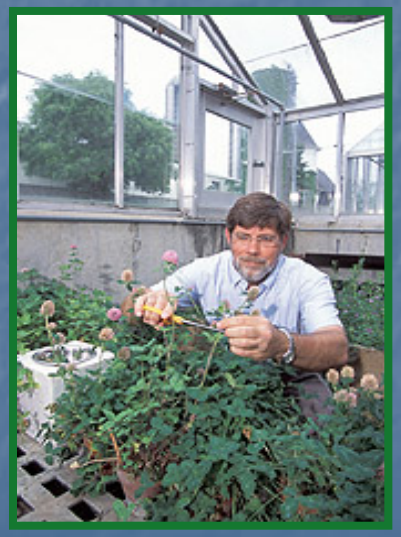
U.S. Dairy Forage Research Center

Greener Horizons for Crops, Cows, and Communities



What is the USDFRC?

One of more than research 100 units in the

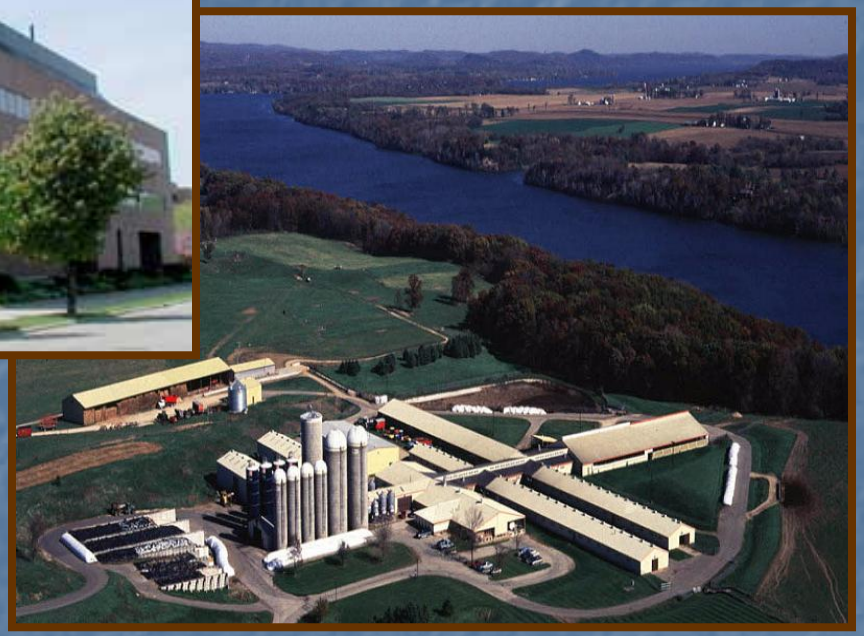
Agricultural Research Service (ARS),

which is part of the

U.S. Department of Agriculture (USDA)

Three main locations . . .

Labs, greenhouses and offices on the UW-Madison campus.



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

Institute for Environmentally Integrated Dairy Management

Marshfield, WI

Also scientists at:

St. Paul, MN

Ithaca, NY


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.
WISCONSIN
WISCONSIN STATE BRAND 582
BUTTER
BUTTER

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?

- 21 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.*

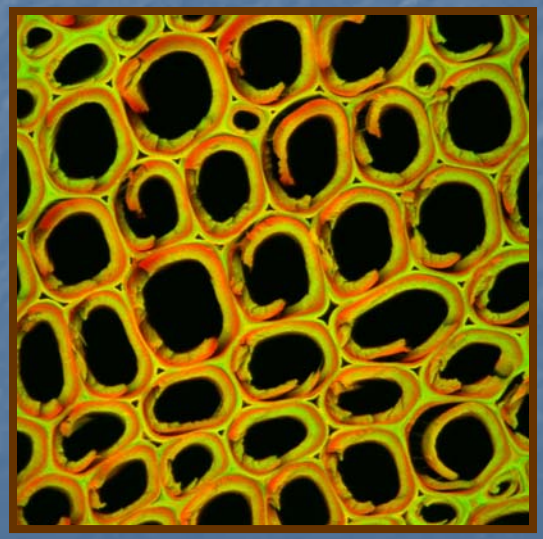


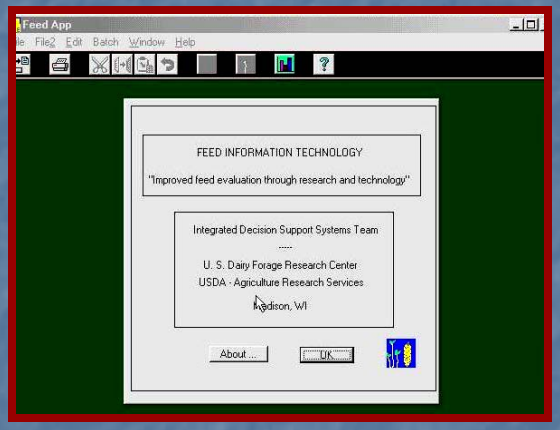
Photo courtesy of Lloyd Donaldson,
Scion Research, Rotorua, NZ

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

Harvest method

Growing conditions

Storage method



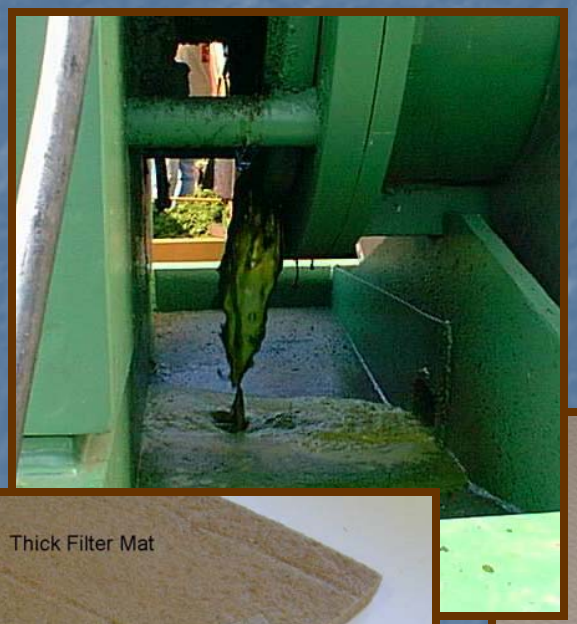
Ration factors

Animal factors

Lab analyses

- 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 . . .

- Four dairy scientists
- Four agronomists
- Two ag engineers
- Two plant geneticists
- Two plant physiologists
- Three soil scientists
- One chemist
- Two microbiologists
- One Dairy Systems Specialist







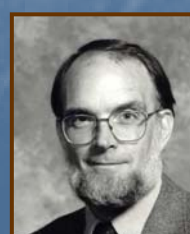


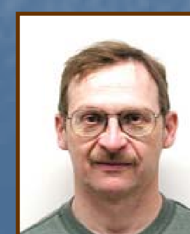






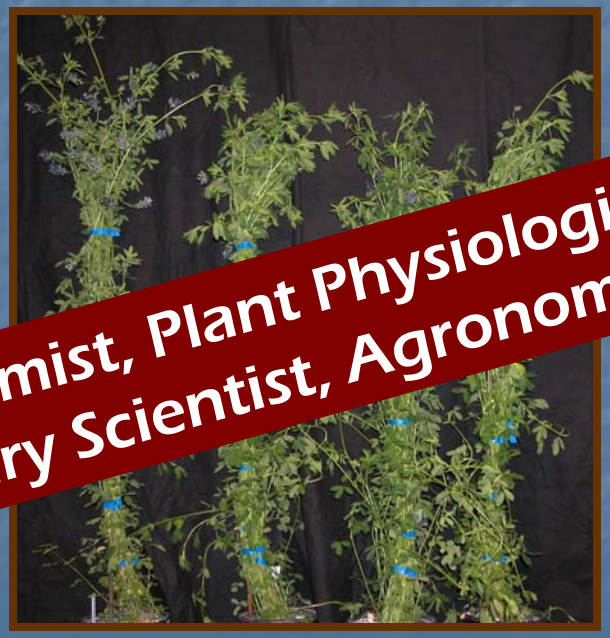





For example . . .

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



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

For example . . .

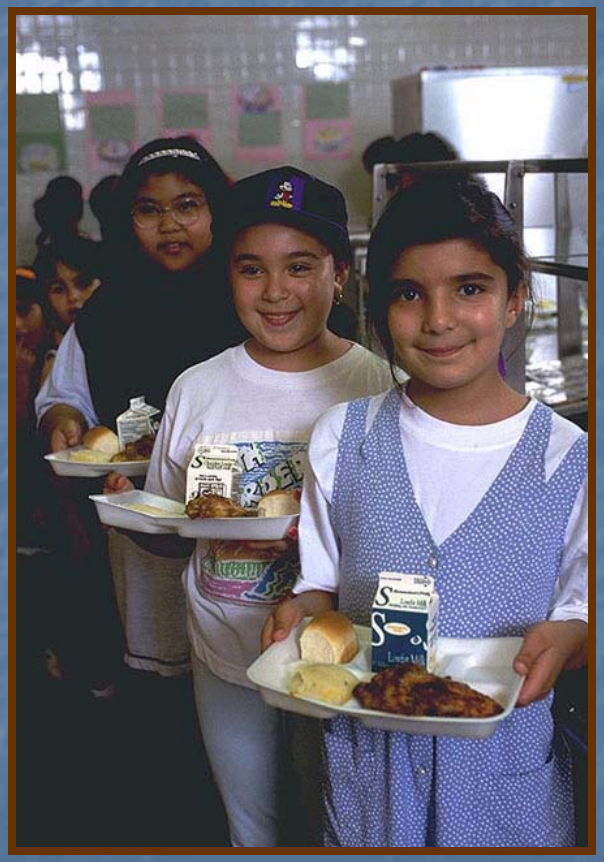
- Designing forage plants with enhanced value for dairy production, profitability, and sustainability.

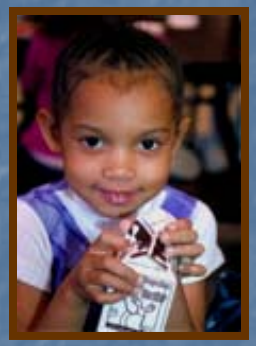
Molecular Geneticist, Plant Physiologist, Agronomist, Chemist, 2 Geneticists

Why have research related to dairy?

Dairy products provide 72% of our dietary calcium

Dairy products provide 19% of our dietary protein





Dairy products also provide . . .

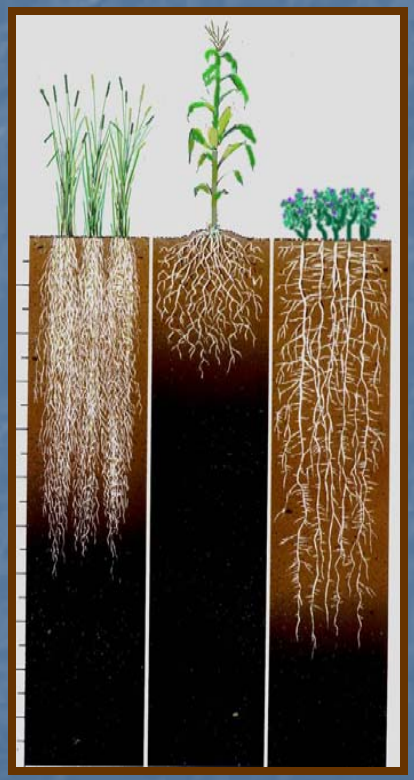
Nutrient	% contributed by dairy
Phosphorus	33 %
Vitamin A	22 %
Riboflavin	26 %
Vitamin B12	20 %
Potassium	18 %
Magnesium	16 %


Why have research related to forage?

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 visiting the U.S. Dairy Forage Research Center!