



USDA Agricultural Research Service

In Madison, Wis.

Federal research for:

- **dairy forage**
- **cereal crops**
- **vegetable crops**

Helping to feed America



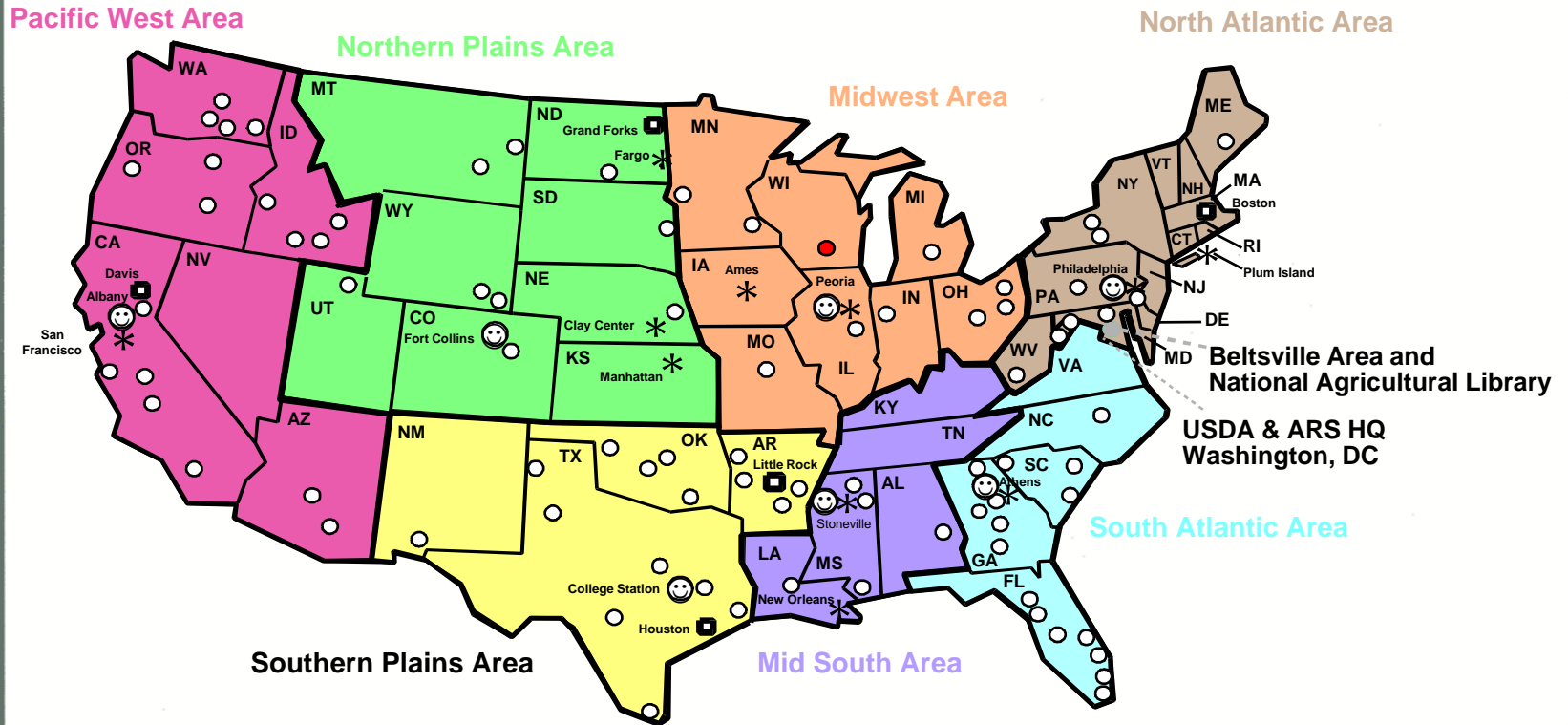
Nationally . . . what is the Agricultural Research Service?

- Agency of the
U.S. Department
of Agriculture

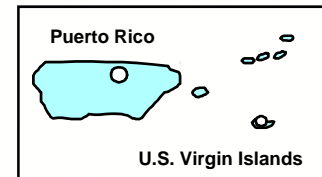
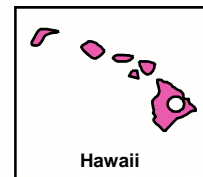


- 8,000 employees
- Over 2,000 research
scientists
- About 1,200
research projects
ongoing
- Over 100 locations
across the U.S.
- Four overseas labs

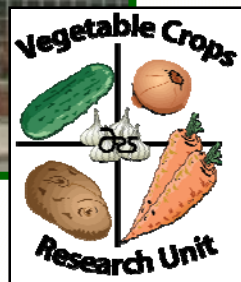
Nationally: ARS research locations



- ☺ Area Offices
- ✈ Research Centers
- Human Nutrition Centers
- Research Locations



Locally: ARS units in Madison, WI



ARS Has a Broad Mission

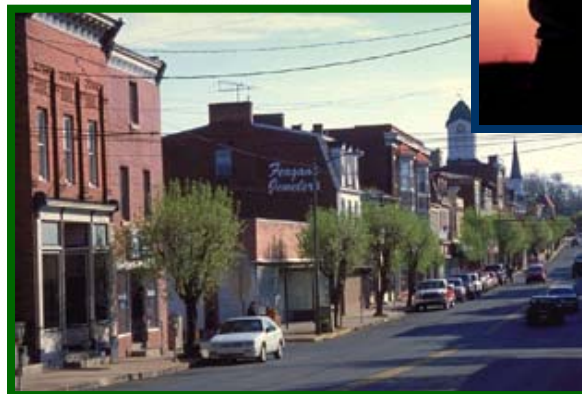
ARS conducts research to develop and transfer solutions to agricultural problems of high national priority and provides information access and dissemination to:

- ensure high-quality, **safe food** and other agricultural products;
- assess the **nutritional needs** of Americans;



ARS Mission. cont.

- sustain a **competitive agricultural economy**;
- enhance the natural resource base and the **environment**;
- and provide **economic opportunities** for rural citizens, communities, and society as a whole.



ARS Research

touches the lives of every American!

In what we eat!



In what we wear!



In what we buy!



Who Works For ARS In Madison?

■ We employ –

- Research Scientists
- Postdoctoral Research Associates
- Professional, Administrative, and Technical Staff
- Secretarial and Clerical Staff
- Trades and Crafts Workers
- Student and Summer Employees



Madison Research Scientists Work in a Variety of Disciplines

Agricultural Engineering

Bioinformatics

Chemistry

Microbiology

Plant Pathology

Soil Science

Environmental Science



Agronomy

Dairy Nutrition

Biochemistry

Biology

Genetics

Physical Science

Plant Science

A closer look at . . .

The 3 units in Madison.

Cereal Crops



Vegetable Crops

Dairy Forage





Cereal Crops Research Unit



Mission:

- Improve the quality of cereal crops for food
- Evaluate malting quality of barley

Projects:

- Improve nutritional qualities of oats
- Study the biochemistry of malting
- Study the function of barley genes
- Find ways to combat barley & rice diseases



Cereal Crops Research Unit

Nutritional qualities of oats

We investigate commercial and health-related aspects



Biochemistry of malting

We examine the factors affecting malting quality



Cereal Crops Research Unit



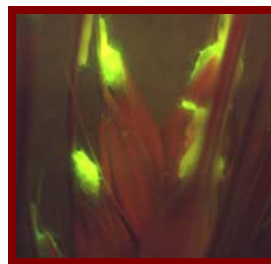
Function of barley genes

We determine
how genes
function

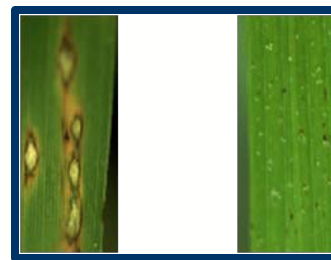


Combat barley & rice diseases

We develop
ways to detect
and combat
pathogens



Biotechnology



Rice Blast Disease
Resistance



Improved Production

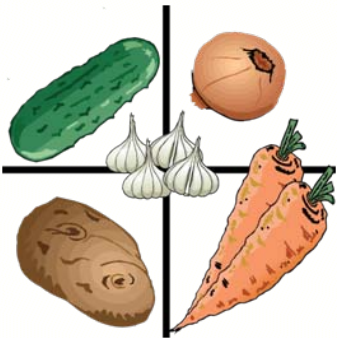


Cereal Crops Research Unit

The Barley and Malt Quality Analysis Lab:

- Analyzes barleys submitted by public sector plant breeders.
- **Mission:** To provide accurate and timely reports on the malting quality of experimental lines so that the plant breeders can make informed decisions on which lines to utilize in their breeding programs.

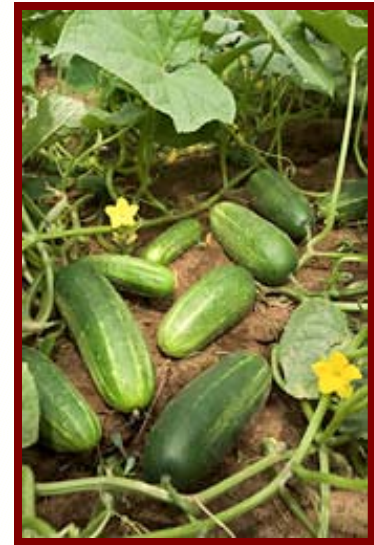


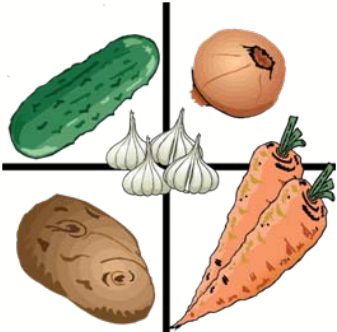


Vegetable Crops Research Unit

Mission:

- Improve the yield and quality of vegetables
- Develop new genetic technologies



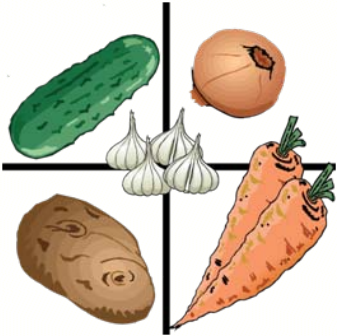


Vegetable Crops Research Unit

Crop Improvement

We develop vegetable crops
with improved yield and quality





Vegetable Crops Research Unit

Genetic maps

We find the location of traits.



Vegetable Crops Research Unit

Risk of Genetic Modified Crops

We determine the socio-ecological risk associated with genetic modification.



Evolution & domestication

We collect exotic potatoes and determine their potential utility for potato improvement.



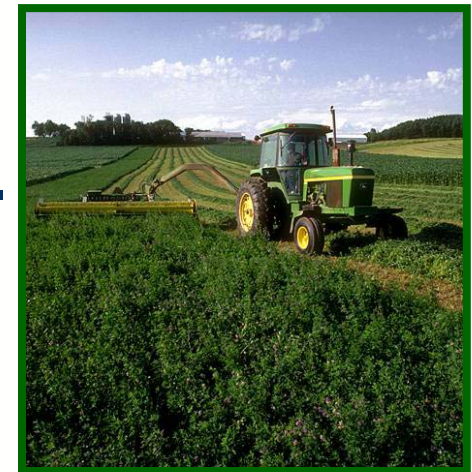
U.S. Dairy Forage Research Center



Mission:

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

- protect the environment,
- promote animal health, and
- ensure a safe, healthy food supply.



U.S. Dairy Forage Research Center



Research Focus:

IMPROVING
DIGESTION
OF FORAGE NUTRIENTS

Improving nutrient
digestibility to enhance forage utilization
in lactating dairy cow feeding systems.



U.S. Dairy Forage Research Center



Research Focus:

FEED EVALUATION METHODS

Methods for improving
feed evaluation for use in enhancing lactating
dairy cow efficiency and nutrient management.



U.S. Dairy Forage Research Center



Research Focus:

REDESIGNING
FORAGES
AND FORAGE SYSTEMS

Redesigning forage
germplasm and production systems for efficiency,
profit, and sustainability of dairy farms.



Forage: Friend to cows
and the environment

Forage is good for the environment!

- improves soil structure & health
- protects soil from erosion
- protects the water supply

Forage keeps cows healthy and
productive and provides needed fiber.

U.S. Dairy Forage Research Center



Research Focus:

BASIC
FORAGE RESEARCH



Opportunities and limits
to perturbing forage plant biochemistry,
growth, and development for improving
forage nutritional benefits in dairy systems.

U.S. Dairy Forage Research Center



Research Focus:

**MANAGING MANURE
NUTRIENTS**

**Improving dairy forage
and manure management to reduce
environmental risk.**



U.S. Dairy Forage Research Center



Research Focus:

**VALUE
ADDED
PRODUCTS**

Creating value-added renewable products from plant materials in systems that are economically and environmentally sustainable.

Forage isn't just for cows anymore.

Potentially, forages could:

- remove contaminants from the soil
- produce ethanol
- be used to make:
 - ✓ food- and feed-based protein concentrates
 - ✓ bio-adhesives
 - ✓ fiberboard and paper pulp



ARS In Madison

Where we have an impact on everyday life in America!

