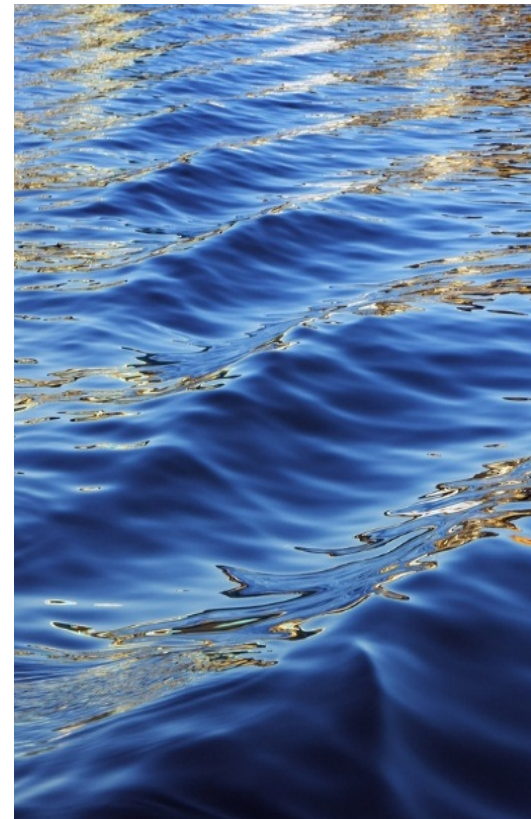




# USDA Agricultural Research Service - Resources for Regional Scientific Collaboration

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AGRICULTURAL RESEARCH SERVICE

# Topics

- ARS Structure and Research Priorities
- Current Cooperative Research
- Opportunities for International Cooperation





# ARS Structure and Research Priorities



# USDA Agricultural Research Service



USDA's principal  
intramural scientific  
research agency

- 7,000 employees
- 1,800 PhD scientists
- \$1.124 billion 2014  
budget
- 900+ research  
projects



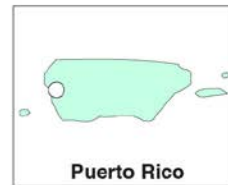
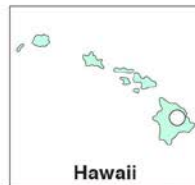
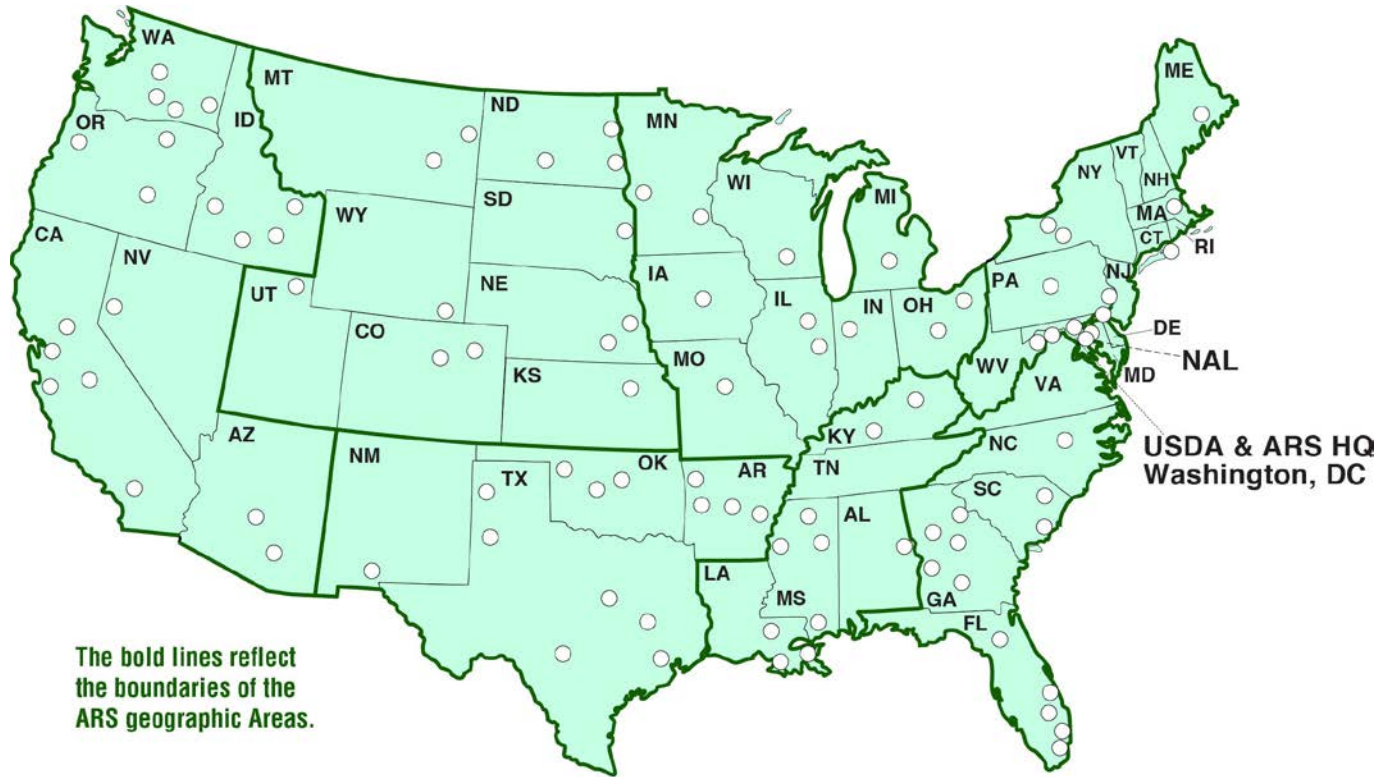
AGRICULTURAL RESEARCH  
SERVICE

# ARS Research

- Farm-to-table research scope
- Information and technology transfer
- Administration, Congress, and stakeholder priority setting process
- International collaborations



# ARS Lab Locations



# ARS National Programs

## Animal Production and Protection

- Food Animal Production
- Animal Health
- Veterinary, Medical, and Urban Entomology
- Aquaculture

## Nutrition, Food Safety and Quality

- Human Nutrition
- Food Safety
- Quality and Utilization of Agricultural Products

## Natural Resources and Sustainable Agricultural Systems

- Water Availability and Watershed Management
- Climate Change, Soils, and Emissions
- Biorefining
- Agricultural and Industrial Byproducts
- Pasture, Forage, and Rangeland Systems
- Agricultural System Competitiveness and Sustainability

## Crop Production and Protection

- Plant Genetic Resources and Genetic Improvement
- Plant Diseases
- Crop Protection and Quarantine
- Crop Production



# Current Cooperative Research





# ARS: Overseas Research

- European Bio Control Lab (France, with Greece satellite)
- South American FUEDEI (Argentina, Foundation)
- Sino-American Bio Control Lab (China, CAAS agreement)
- Australian Bio Control Lab (Australia, CSIRO agreement)



# PROCINORTE

- Established in 1999 by Inter-American Institute for Cooperation on Agriculture's Northern Region (U.S., Canada, Mexico)
- Thematic areas:
  - Genetic resources
  - Tree fruits
  - Plant health
  - Animal health
- ARS to host Board of Directors meeting in Fall, 2016



# Partner: Embrapa- Labex

- Established 1998 with ARS
- Brazil Scientists to ARS
- Improves bi-lateral relationship and cooperation
- Synergizes research efforts and resources



# Agricultural Model Intercomparison and Improvement Project (AgMIP)

- Managing and scheduling irrigation for efficient water use
- Innovative surface and subsurface irrigation tools and techniques
- Improved irrigation and cropping for reuse of degraded water
- Sensor technologies for site-specific irrigation water management
- Cropping and management strategies under limited water supplies
- Researchers from 40 countries modeling crops, economics, climate, IT

# ARS Database System For Sharing Crop Genetics And Genomics



## Genbank Database

- Priority for US Departments, US Agencies, international partners.
- Integrated resource system, research community support, sustainable.
- GRIN supports US NPGS. Global partner Bioversity International.
- Expanding links to genetic and genomic databases



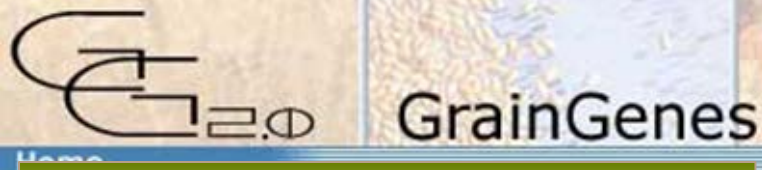
## Genetic and Genomic Databases

- MaizeGDB, Gramene, Maizesequence.org, genome sequences, genetics, mutants
- 15 genomes and growing – gene identification, annotation, markers, genotypes, trait data, transcriptome, metabolic pathways



## Genetic and Genomic Databases

- SoyBase – 30 years of soybean genetics and trait data
- LIS – 3 legume genomes (10 in 2011). Gene identification, annotation, markers, genotypes, trait data, transcriptome. Serves global research community



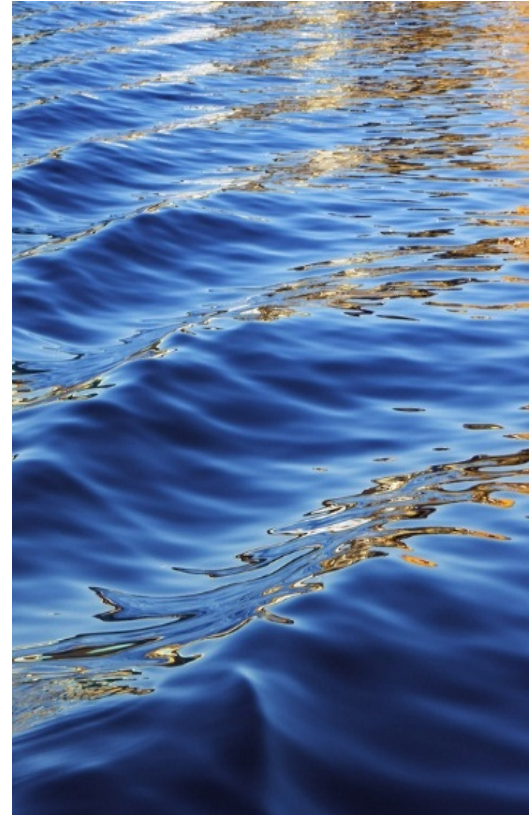
Tassel (USDA), DNA Subway (iPlant/(NSF), KnowledgeBase (DOE)

## Tool Development

- New tools to address emerging challenges in plant biology. 3K/16K/21K TASSEL users



# Opportunities for International Cooperation



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# Potential New Collaborations

- Genetic improvement of crops
- Animal health
- Aquaculture
- Big Data Challenges



# Potential New Collaborations

- Bioenergy
- Climate change
  - Modeling
  - GHG emissions and mitigation
  - GRACEnet
  - Water use
  - LTAR Network
- Agricultural Byproducts







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