USDA Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE

WATER RESEARCH

Numerous scientists across laboratories and disciplines at the Beltsville Agricultural Research Center (BARC) are working to advance water quality and conservation in agriculture.

A PRECIOUS RESOURCE

Water is at the center of a thriving world. It keeps us healthy, helps grow our food, and sustains life on this planet. The availability and safety of water is at risk. Climate change, including extreme weather, drought, and floods, and poor water management threaten this precious and finite resource. We need all hands on deck to make sure we protect our water for generations to come.

THE BELTSVILLE IMPACT

BARC researchers across laboratories and scientific disciplines (see right) are taking action to improve water management practices and enhance water quality in our food and agricultural systems. Their research helps support small, mid-sized and large farms in the mid-Atlantic region, across the country, and around the world.

KEY RESEARCH AREAS

Water Management and Conservation

- Developing satellite-based remote sensing technologies to enhance our understanding of the agricultural water cycle, monitor drought and flood conditions, and improve on-farm decision making (HRSL)
- Creating nanoparticle based adhesive coatings to repel organic matter and reduce water used to wash farm equipment (FQL)
- Contribute to research on controlled environment agriculture (CEA), which can reduce water use by up to 90% in the production of leafy greens and other produce (FQL, EMFSL)

Water Quality

- Developing low-cost, on-farm filtration technologies to remove zoonotic parasites from irrigation water (EMFSL, APDL)
- Utilizing drone-based imaging techniques coupled with traditional microbiological methods to detect *E. coli* in ponds that may be used for crop irrigation (EMFSL)
- Employing computer modeling to predict the fate of potential pathogens in agricultural water (EMFSL)
- Developing biofilm-based detection methods and alternative treatment approaches to detect and remove water contaminants and pathogens (EMFSL)
- Improving sampling tools to detect pesticide breakdown products to optimize water quality, soil health, and overall sustainability of farms of all sizes (SASL)

LABORATORIES

- Hydrology and Remote Sensing Laboratory (HRSL)
- Sustainable Agricultural Systems Laboratory (SASL)
- Environmental Microbial and Food Safety Laboratory (EMFSL)
- Food Quality Laboratory (FQL)
- Animal and Parasitic Diseases Laboratory (APDL)

DISCIPLINES

Hydrology, microbiology, soil science, food technology, horticulture, plant physiology, plant pathology, parasitology, chemistry, ecology, engineering

Water is life, water is food. Leave no one behind.

This briefing coincides with World Food Day 2023, which is focused on improving management of the world's most precious resource: water. Each of us has a role to play in ensuring we have a safe and sustainable water supply. BARC scientists are among those actively working on water issues every day.

16 October 2023
World Food Day
FAO