

# NUTRIENT MANAGEMENT & WATER QUALITY

## Nutrients are essential for crops, but must be managed properly.

Nutrients provided by fertilizer, manure, compost, cover crops, and other means are essential for the profitable, sustainable production of crops for food, fiber, and bioenergy. Nutrient management is key to maintaining or increasing plant productivity, ensuring soil health, protecting ground and surface water resources from potential harm, and using farmers' time and money efficiently.

## Collaborative research impacts nutrient management.

A team of scientists from 15 land-grant universities, the USDA, and private companies is providing up-to-date information and standardized tools and practices to help farmers, crop advisors, policymakers, and others make cost-effective nutrient management decisions that maximize crop productivity while minimizing impacts on water quality.

### Working together, scientists can:

- Share resources
- Exchange ideas and information
- Study a wide range of crops and growing conditions
- Reduce duplication of research and Extension efforts
- Develop reliable, consistent recommendations
- Share information more widely





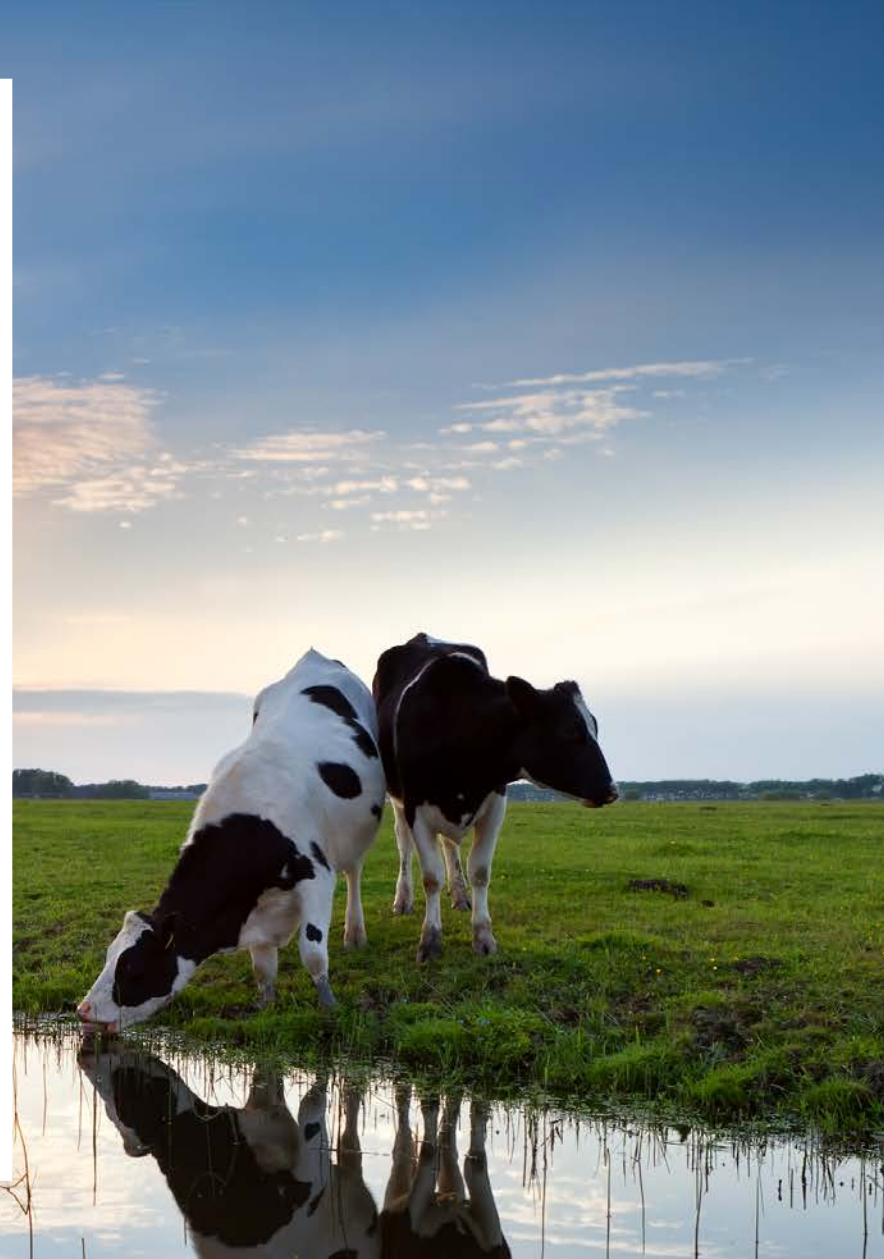
## Research and Extension efforts are improving nutrient management.

Researchers refined nutrient recommendations by studying the requirements of specific crops like corn, wheat, sugar beets, snap peas, and processing tomatoes; testing and calibrating soil analysis tools and methods; and measuring the efficacy of new fertilizers.

Researchers determined the fate of nutrients and measured their impacts on soil and water quality. For example, scientists studied the transport of nitrogen and phosphorus in irrigated agricultural watersheds in semi-arid regions and helped public health departments test soils for metals.

Researchers identified best practices for applying fertilizers on pastures and desert vegetable crops; using biosolids (solid organic matter from sewage treatment) as fertilizer for dryland crops in the Pacific Northwest; and minimizing cover crop water use in the Southwest. Scientists also adapted the CropManage tool for vegetables in Hawaii, Guam, and American Samoa.

This group educated government agencies, industry, farmers, fellow scientists and students, and others about nutrient management. Group members support programs that work with over 200 manure, compost, and soil analysis labs to certify their testing methods and results. The University of California trained over 600 crop advisors so that they are certified to sign off on required nitrogen management plans. Webinars, newsletters, and magazine articles, reached tens of thousands of subscribers. New Mexico State University created a video series on soil sampling that can be used in K-12 schools, college courses, and trainings for Master Gardeners, crop advisors, and others. These videos had 31,299 views in 2018. Group members also host the Western Nutrient Management Conference, which has had increased attendance in recent years.



### PROJECT FUNDING & PARTICIPATION

*WERA103: Nutrient Management and Water Quality (2015-2020)* was funded in part by the Multistate Research Fund through USDA-NIFA and by grants to project members at participating institutions: University of Arizona, Brigham Young University, University of California, Colorado State University, University of Hawaii, University of Idaho, University of Illinois, University of Minnesota, Montana State University, New Mexico State University, Nevada Cooperative Extension, Oregon State University, University of Tennessee, Utah State University, Washington State University, and University of Wyoming along with partners at the USDA-ARS, Agriculture Laboratory Proficiency Program, Dellavalle Laboratory, Inc., IDA Consulting Services, Inc., J.R. Simplot CO, Manure, Compost and USGAPT Proficiency Programs, Nutrien, Qualitech, Soil Science Society of America North American Proficiency Testing Program, Soiltest Farm Consultants, Inc., Western Ag Innovations Inc., Wilbur-Ellis Company, and Yara North America. In 2020, WERA103 was renewed through 2025. Learn more: [bit.ly/WERA103](https://bit.ly/WERA103)