Modern agriculture relies on nutrients to attain a level of crop productivity that meets the increasing demands for food, feed, fiber, and fuel for a world population that is increasing in both numbers and affluence. However, the introduction of nutrients into the landscape can have unintended consequences on environmental quality when the added nutrients are transported away from the intended area of use. Surface water, groundwater, and coastal estuaries are all susceptible to excessive nutrients. Members of the Nutrients and Environmental Quality Community of ASA seek to understand how nutrients are lost from agricultural systems, how they are transported through watersheds, the impacts they have on the environment, and the options for mitigating these losses.

Focus

The Nutrients and Environmental Quality Community primarily focuses on nitrogen and phosphorus since both of these nutrients are used in large amounts and have clearly identified environmental risks associated with them, but any nutrient that could have an impact on the environment falls within the scope of this community. The relevance of our community to current events was accentuated in the 2014 news cycle when nutrients were associated with several environmental problems. Phosphorus losses from agriculture were implicated in the cyanobacterial bloom in Lake Erie that shut down the intake for the Toledo water treatment plant for three days last August, and in an ongoing environmental issue, nitrate-nitrogen losses from the Corn Belt into the upper Mississippi River watershed have been linked to the hypoxic zone in the Gulf of Mexico. More recently, the Des Moines Water Works is considering litigation against drainage districts in three northwestern Iowa counties because the drainage water they release into the Raccoon River, a source of drinking water for Des Moines, contains high concentrations of nitrate. Managing the balance between agricultural productivity and losses to the environment is one of the biggest challenges we face and will take the diligence and skill of many fine minds to achieve.

Activities

Members of the Nutrients and Environmental Quality Community are involved in research, extension, education, and consulting activities related to nutrient management throughout the U.S. and the world. Some of the topics currently being addressed by Community members include:

- Nutrient load reductions in the Mississippi River basin, Chesapeake Bay, and other river systems;
- Nutrient loss through tile drainage;
- Improving fertilizer use practices (4Rs);
- Conservation practices to reduce nutrient losses.

During the most recent 2014 Annual Meeting in Long Beach, the community organized both oral and poster sessions and also co-sponsored with the Soil & Water Management & Conservation Division of SSSA, a symposium titled, “Management Practices Impact on Soil Nitrogen Conservation.” At the upcoming 2015 Annual Meetings in Minneapolis, the community will host a symposium titled, “A Critical Assessment of Phosphorus Reduction Goals and Mitigation Strategies,” which will also serve as a lead-in to the SERA-17 (Organization to Minimize Nutrient Loss from the Landscape) meetings that begin after the ASA meeting. Several additional topical sessions are planned with a focus on conservation planning, nitrogen loss through tile drainage, and the efficacy of cover crops to reduce nitrate loss.

Participants

The Nutrients and Environmental Quality Community currently has 1,533 members from 60 different countries. The United States accounts for 83.5% of the members followed by Canada, Australia, Brazil, and Japan providing 4.9, 1.8, 1.2, and 0.7%, respectively. There is a significant overlap in membership between our Community and SERA-17, and we collaborate closely with that group when planning symposia and topical sessions. Our Community also collaborates with other communities and divisions with common interests. Your input is vital to ensure our Community is positioned to give value to you as a venue for discussion, a source of information, or a place to connect with your professional peers.

We welcome input and questions to our leadership, Dr. John Sloan, chair, National Great Rivers Research & Education Center (jjsloan@lc.edu); Dr. Sam Feagley, vice-chair, Texas A&M University (sfeagley@ag.tamu.edu); and Keith Reid, past chair, Agriculture and Agri-Food Canada (keith.reid@agr.gc.ca).

J. Sloan, chair of the ASA Nutrients and Environmental Quality Community

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