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# THIS IS NOT YOUR FATHER'S WORLD OF NITROGEN MANAGEMENT

**Dr. Cliff Snyder**
Director, Nitrogen Program
**csnyder@ipni.net**

Many of us older citizens can remember times when our fathers toiled day and night, to coax meager crop yields from fields they owned; land which often had suffered from less-than-stellar management by their forefathers. Many current farmers are coping with a legacy of excessive or "recreational" soil tillage; and an inheritance of complacency about optimal soil fertility management and appropriate conservation practice implementation. A high percentage of absentee land ownership sometimes makes it difficult for a farmer to focus on more than the land rental check; causing inadequate attention to sustained soil productivity and reduced loss of nitrogen (N) from the soil to water and air resources.

On the positive side, more research, environmental monitoring, and rapid dissemination of information via the internet are making an increasing number of non-farm citizens aware of groundwater, surface water, and air quality challenges associated with agricultural N losses. It is good to see urban millennials and others taking interest in the "who and the how" of food production; farm management and productivity that enables us all to enjoy reasonably priced, nutritious meals three times a day. Yet, many non-farm citizens do not understand or trust sound agricultural science. Too many increasingly rely on less-than-scientific blogs, tweets, and social media to form their opinions about agriculture. That situation heightens the need for greater agricultural transparency and management practice documentation; to allow farmers to track their own performance and to help increase public trust and confidence in improved on-farm N stewardship.

More farmers with "boots-in-the-field" experience are using newer tools, technologies, and information to raise crop yields, and getting more of the applied N in the crop. Some believe that more sophisticated crop, soil, and nutrient management is becoming a necessity; especially in the face of greater weather uncertainty and extremes than were experienced by previous farming generations. Farmers have a vested interest in knowing the amounts of N being lost from their fields and farms, and have a heightened desire for improved models to better predict those losses, and the best economic practices to mitigate the losses. Those advances in understanding and management capability to reduce N losses, cannot be accomplished without expanded investment in research and better collaboration between agricultural and environmental scientists. That desirable partnering should always aim to improve and sustain farm productivity and profitability, through even better efficiency and effectiveness of crop production inputs; especially N inputs in balance with other essential nutrients and site-specific soil and water conservation.

To some, it is surprising that folks so far-removed from farming know more about N in groundwater, surface water, and air quality monitoring in an agricultural watershed than the farmers who reside

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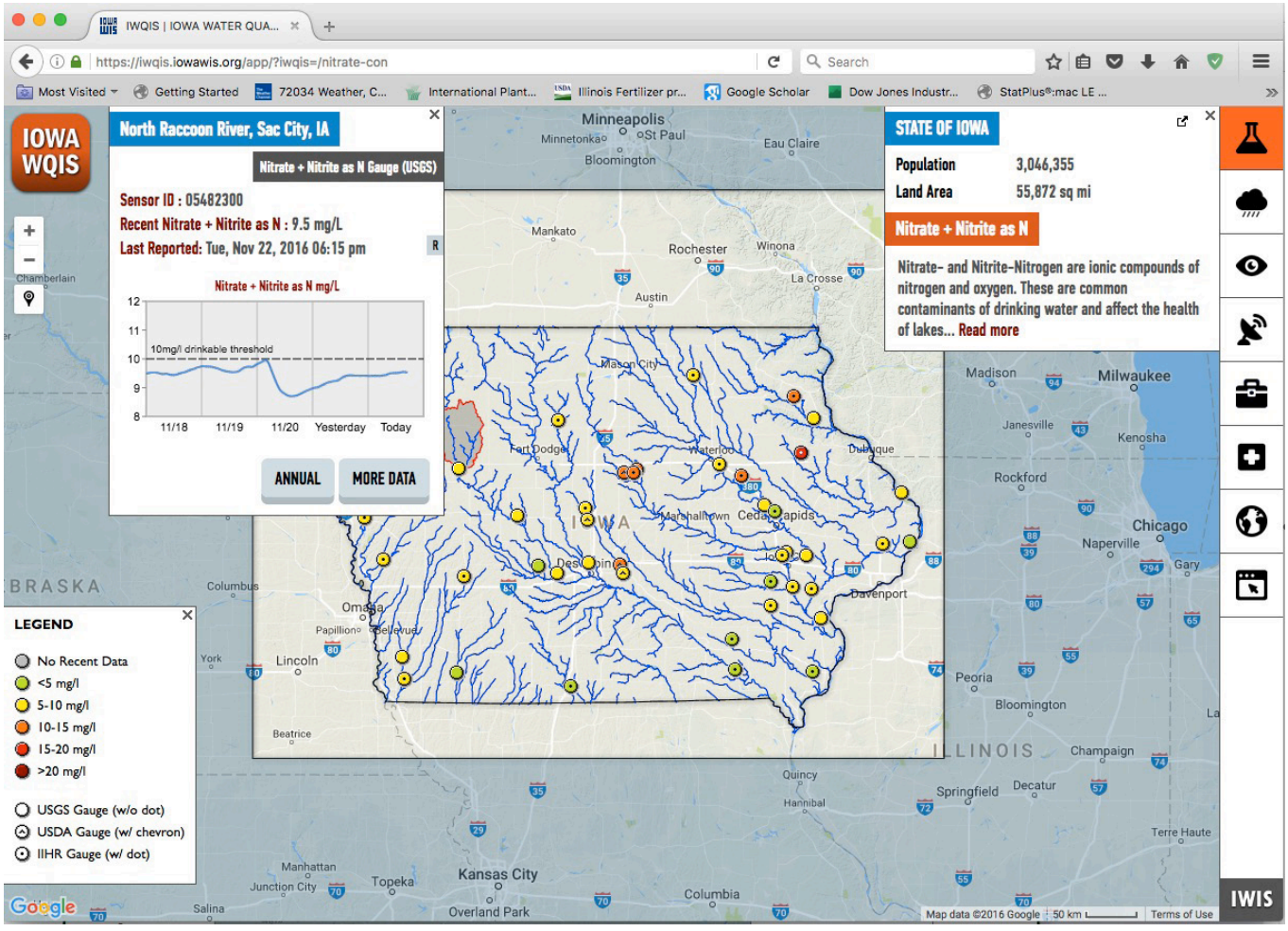
and operate in that watershed. Computers, advanced instrumentation, and spatial technologies make it increasingly possible for people anywhere on our planet to learn about environmental quality and what is happening on the farmstead and local watersheds.

The days are past when one could be comfortable and satisfied with N input rates that were determined by a simple factor times the expected crop yield. There are better ways to optimize crop N management, and newer technologies and tools that may be used to ratchet up crop N recovery and N performance on the farm. Can we all work better together where we face environmental N loss challenges that are a legacy of the actions of at least two prior generations? … without making it impossible for farmers to reap a profit from their dedicated efforts that help nourish and sustain society?




*An example of real-time monitoring and sensing of nitrate levels is the Iowa Water Quality Information System website: http://iwqis.iowawis.org/.*


INTERNATIONAL PLANT NUTRITION INSTITUTE

3500 Parkway Lane, Suite 550, Peachtree Corners, GA 30092-2844 U.S.
Phone: 770-447-0335 | Fax: 770-448-0439 | www.ipni.net