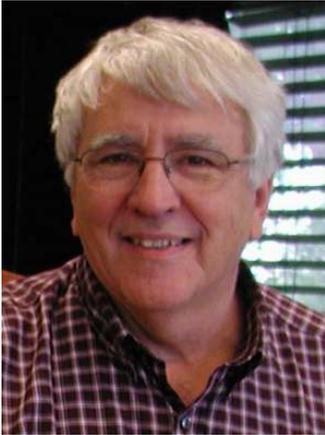




# Water for Agriculture Webinar Series



## The Sugar Creek Method of Research and Farmer Team Building to Achieve Improved Water Quality

### Richard H. Moore

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The Water for Agriculture Webinar Series welcomed Dr. Richard H. Moore, who shared the Sugar Creek Method of research and farm team building to achieve improved water quality in the Sugar Creek Watershed of north-central Ohio. The Sugar Creek Method is a community-based approach to watershed management that emphasizes local action and decision-making based on scientific data. The Project is a partnership between a team of social and natural scientists at The Ohio State University (OSU), three teams of local farmers, the local Soil and Water Conservation Districts, the Ohio EPA, and the Alpine Cheese Dairy. In this webinar, Dr. Moore shared how residents of the Sugar Creek area have formed unique communities in three sub-watersheds, created new relationships with their environment and among themselves, and have been implementing strategies to monitor and remediate the water in their stream.

Dr. Moore first introduced the Sugar Creek Watershed and emphasized the site's importance as a case study. Sugar Creek is in north-central Ohio in Wayne and Holmes Counties, the leading dairy counties in the state. Labeled as Ohio's second most polluted watershed by the state's EPA in 1998, the Sugar Creek Watershed provided an opportunity for Ohio State's Agro-ecosystems Management Program (AMP) to engage with stakeholders on their questions and concerns regarding their local environment and natural resources. The resulting Sugar Creek Project was established in 2000 by Dr. Moore, Jason Parker, and Dr. Mark Weaver, social scientists at OSU, in close collaboration with natural scientists Ben and Deb Stinner and technicians Dave McCartney and Deana Hudgins.

The Sugar Creek Method is a community-based approach to watershed management that emphasizes local action and decision-making based on scientific data. It has six main characteristics: (1) Treat each stream as unique physically, biologically, and socially; (2) Focus on headwaters and benchmark water quality; (3) Catalyze participatory learning communities at the local level that seek their own sub-watershed visions; (4) Collaborate with downstream teams with the help of Extension and soil and water quality professionals; (5) Build on the concept that

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a healthy environment leads to healthy people and profitable agriculture; and (6) Seek to find more sustainable approaches at the family, property, sub-watershed, community, and watershed levels through a holistic approach.

The Sugar Creek Method builds largely on Robert Rhoades’ “Farmer-back-to-farmer” (1982) model, which holds that successful agricultural research and development must *begin* and *end* with the farmer. In practice, this means obtaining information about, and achieving an understanding of, the farmer’s perception of the problem and accepting the farmer’s evaluation of the solution. Thus, research must strive to close the diagnosis and adaptation circle, from proper identification of the problem to farmers’ acceptance or rejection.

The Sugar Creek Project works with local farmers to jointly explore water quality and related issues and helps increase awareness of the major impairments and to examine the influences of culture on ecological function. “When we started,” Dr. Moore explained, “people said, ‘What do you know about watersheds?’ We didn’t know anything, so we said, ‘Teach us everything you know,’ and that’s how we moved forward.” As the Sugar Creek Project evolved, “many of our key ideas came from the dynamic relationship between the local people, the researchers, and the partner agencies; almost all of our grants came from the problems identified by the farmers.”

The Sugar Creek Project focuses on three sub-watersheds (shown below), each of which boast different cultural characteristics: Upper Sugar Creek (German heritage), North Fork (mixed German heritage and Amish), and South Fork (mostly Amish). When it came to farmer recruitment, in the case of the Upper Sugar Creek Farmer partners, the farmer group was self-selected. In late 2000, a “learning circle” in the Upper Sugar Creek sub-watershed was initiated by one farmer, who invited three other farmers to assist in forming a watershed group. These three individuals, in turn, invited additional participants. Unlike many watershed groups, which try to be inclusive by inviting diverse population segments, the Upper Sugar Creek Farmer partners wanted to include only farmers willing to take concrete measures to improve ecology on their own farms.

**SUGAR CREEK WATERSHED PROJECT**

- EPA’s Ohio model for building community support
- Transforming Ohio’s second most impaired watershed

**Upper Sugar Creek—Farmer Partners**  
Few Amish

**North Fork—Community leaders task force; Green Field Farms**  
Half Amish

**Middle Fork—Alpine Cheese Nutrient Trading Project**  
**South Fork—Alpine Cheese Nutrient Trading Project**  
Mostly Amish

Richard Moore

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Dr. Moore described how, in the autumn of 2000, the original 12 farmers teamed up with the Ohio State AMP research group to investigate the degree and sources of water impairment in Upper Sugar Creek. Dr. Moore explained, “The farmers had a distrust of the EPA... They didn’t trust the EPA support document that came out in 1998, stating that they had the second-highest pollution levels in the state.” While waiting for the OSU AMP team to conduct its own water quality testing results to verify the EPA data, the Farmer partners decided that they would “do something good for the watershed, regardless of if the EPA pollution level findings were accurate or not.”

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*“Permission for research comes from local people. We try to keep good community relations, and that’s central to our approach.”*

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Beginning in May 2001, the research team worked with the Farmer partners to conduct biweekly water quality testing of various parameters at a density of 1 to 2 square miles per testing site for 21 sites, what Dr. Moore describes as being one of the highest sampling densities in the U.S. Continuous flow monitoring and sampling for several sites were introduced in 2008 and increased to 105 sites by 2010. Presently the team samples 51 sites as part of the Alpine Nutrient Trading Plan. Along with their water sampling efforts, the Sugar Creek Farmer partners identified additional research needs that spurred grant applications, the Alpine Cheese nutrient trading program, a social survey, and requests for different water samples for their specific inquires such as nitrates in drinking well water. Dr. Moore explained, “Permission for our research comes from local people; we try to keep good community relations, and that’s central to our approach.” Water quality remediation efforts occurred through nitrogen filtering, increased fencing, and riparian buffer efforts. Outreach activities meant to build community and improve local education about the environment manifested through partnerships with local schools, local Soil and Water Conservation Districts, family days, and Farmer Partner tours across the watershed. Ultimately, the Sugar Creek Project’s testing and mediation efforts were deemed a success in 2017, when the Ohio Environmental Protection Agency declared that the Sugar Creek Watershed had “doubled its number of good streams and halved the number of impaired streams over 20 years.”

Concluding the webinar, Dr. Moore offered summary lessons about working in collaborative research and community-building partnerships. “We need to first catalyze local level participatory learning by centering local values and social organizations; we need to keep them part of that vision,” Dr. Moore shared. “Participatory stakeholder teams need to take the lead in deciding the topic,” he added; “So when we have meetings, they set the topics and the agenda. We’re only there to facilitate and discuss with them.” Dr. Moore described how collaborative research methods need to make space for farmer participants to claim space in such projects, noting, “They’re not just research subjects; they’re part of the process.” “Permission for our research comes from local people,” Dr. Moore concluded. “We try to keep good community relations, and that’s central to our approach.”

To view the full webinar, [click here](#).

For more information about the Sugar Creek Method, [click here](#).

**Dr. Richard H. Moore**, Senior Fellow, National Council for Science and the Environment  
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