Water for Agriculture Webinar Series

"When people buy in and have ownership over the puzzle and they're actively interested in it, farmers or other kinds of environmental actors can do a lot more."

Promise and Peril in Participatory Approaches to Water Quality Research

Dr. Douglas Jackson-Smith, Professor of Water Security
School of Environment and Natural Resources, The Ohio State University

Dr. Douglas Jackson-Smith recently joined us for our Water for Agriculture Webinar Series to share lessons he has learned while involved in participatory water quality research projects throughout his career. His talk outlined types of participation in agricultural research. On one end of the spectrum is conventional on-farm research, during which scientists make decisions without any organized participation from farmers. Moving towards increased participation, ***consultative research*** includes input from farmers, but the scientists maintain authority on research decisions. Dr. Jackson-Smith explained that ***collaborative research*** is interested in "bringing people inside the research box" to engage farmers, landowners, and other stakeholders in the design, implementation, and co-production of knowledge throughout the research project. The combination of lay knowledge and scientific knowledge can lead to improved science and increased chances of the science leading to action outside of academic institutions.

Degrees of Participation in Agric. Research

(Lilja and Ashby 1999; Johnson et al. 2003)

- **Conventional** *on-farm research*:
  - Research is done on-farm, but scientists make decisions without organized communication with farmers;
- **Consultative**:
  - Scientists make final decisions about research design, but with organized input from with farmers; scientists may or may not let this information affect their decisions;
- **Collaborative**:
  - Decision-making authority about research design is shared between researchers and farmers through structured two-way communication processes;
- **Collegial**:
  - Farmers make final decisions (collectively or individually); researchers provide input and advice, but role is to support farmer-initiated, farmer managed program;
- **Farmer experimentation**: no researcher participation

In introducing the audience to three projects he has been involved in, Dr. Jackson-Smith provided some real-world examples of what consultative and collaborative research look like "in the trenches."

The first, iUTAH (or "Innovative Urban Transitions and Aridregion Hydro-Sustainability") examines urban water sustainability, bringing together an extensive team of over 100 scientists across 9

institutions and many cities. This project utilized an advisory group, but Dr. Jackson-Smith described it as largely consultative in nature, as ultimately researchers within the team made all of the decisions and engagement with partners was limited. Nevertheless, the project team found that when partnerships were made with decision-makers in the design and conduct of research, the information produced by the project was more likely to be used to guide decision-making.

"The scientists definitely learned a lot about farming and the basic dynamics and constraints that farmers face, while the participatory farmers got a much better understanding of the logic and constraints of science."

Next, Dr. Jackson-Smith introduced "Practiced by Farmers but Untested by Scientists", a project he has been a part of since arriving at Ohio State. This research takes a look at a soil balancing practice that is widely used and believed by farmers, but thought to be ineffective by scientists. The complex design of this particular project made on-farm research difficult and led to a small sample with considerable variation in conditions. The scientific experiments suggested that soil balancing had little to no effect, but the project advisory group was resistant to accepting the findings. Ultimately, the research team found that their definition of this soil balancing practice was much narrower in scale than that of farmers, so the farmers didn't think that the research was testing the correct practice. Dr. Jackson-Smith pointed out that if this consultative project had been more collaborative, and included the farmers in the research design, this may have been avoided.

Finally, Dr. Jackson-Smith discussed the Judith Basin Nitrogen Project. This farming-dependent valley in central Montana has had elevated levels of nitrate in their groundwater wells, but locals were very afraid of being told that they could not use the fertilizer they depended on anymore. More collaborative in nature, this project started from the most fundamental question: was fertilizer causing the increased nitrates? Guided by farmers, and using data collected from large working farm fields, results suggested that crop rotations (particularly fallowing) were much more integral to the problem than fertilizer usage. This led to design of best management practices that were much less threatening to the livelihoods of farmers and more useful to solving the problem.

As others have observed, collaborative research entails unique challenges for researchers and stakeholders alike. Producers and stakeholders are busy and sometimes hesitant to devote large amounts of time to a project without knowing what they will get out. Deeply collaborative research also requires skills that are outside of a scientists training. Scientists and stakeholders may be interested in different kinds of questions. But while Dr. Jackson-Smith acknowledges that collaborative research is "not for the faint of heart," he continues to see the value in using a participatory and engaged approach to agricultural research. The goal of these collaborative projects is to "involve the farm community in an active and substantive way," in all aspects of the research project, including research design. Ultimately, he explained, "if farmers ask questions, we should devote resources to answer those questions. Whether we think they are the right questions or not, it's part of the process of learning some surprising things about the world that we didn't understand."

To view the full webinar, click here.

Dr. Jackson-Smith is a rural sociologist who uses social science research tools and collaborations with interdisciplinary teams to study the human dimensions of complex agricultural and environmental change. His work often involves participatory approaches that engage stakeholders directly in the design, conduct, and analysis of scientific research and modeling.

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