THE SAMUEL ROBERTS NOBLE FOUNDATION

AG News and Views

*A monthly publication of the Noble Foundation's Agricultural Division*

Volume 34 / Number 10 / October 2016

FORAGE

# Producers make important contributions to useable science

by Chad Ellis / crellis@noble.org

## Never before

has the agriculture industry faced as many challenges as we do today, and they are not expected to subside anytime soon. We have all seen the statistics: 9 billion people by 2050. Feeding this increased population will require at least a 60 percent increase in agricultural productivity. This must be done in the face of climate change and other land use changes. Further complicating agricultural production are landowner rights and management goals on how to operate farms and ranches, which also influence productivity and profitability.

As an industry, we don't face these challenges in a vacuum. We have to get ahead of the curve in order to address these challenges. Don't despair because the agricultural field and community are innovative in the face of challenge, but it will not be an easy task. Working together and building on innovation may have the greatest effect when "usable science" is the approach by which change is made.

So what is usable science? How do we know we are doing "the right science" to address the challenges facing land managers, practitioners, policy makers and the public working to ensure the future sustainability of agriculture? And how do we make that science usable to those addressing these problems?

The Samuel Roberts Noble Foundation and the Sustainable Rangelands Roundtable and Consortium for Science, Policy and Outcomes at the Arizona State University partnered to convene a workshop for the future directions of usable science for rangeland sustainability. The workshop brought together ranchers, landowners, nongovernmental organizations, scientists and agencies into one room to discuss the concept of useable science. The goal was to move science forward by helping define research questions that would be most useful to the end user on rangelands. The full record of the conference is available at http://sustainablerangelands.org/projects_usable_science.shtml.

### Usable science

- Useable science adapts to meet the changing needs of decision-makers and includes those decision-makers throughout the scientific process.
- Traditional research can be thought of as research questions driven by scientists, whether applied or not, versus designing the end user into the decision-making process to facilitate usable outcomes.
- Usable science is not new science but rather an integrated approach to science that informs decision-making and responds to societal capabilities and goals.

More times than not, decision-makers and end users are at the mercy of traditional science where scientists do their research, publish their results, and those outputs go into the "vat of knowledge" from which we expect potential users to draw from to answer the questions they face. Science can best meet the users' needs when those needs are considered throughout the institutions, policies and processes of the scientific process. Science is more likely to be usable if knowledge producers (researchers) are informed by the needs and practices of science consumers (land managers, practitioners and policy makers) so that the intended use of the science is understood and developed accordingly.

The usability of science will be a function of the context of its potential use and the processes to produce the scientific knowledge. The process of identifying usable science should start with a defined problem to be answered rather than identifying an interesting research question. At this stage, cooperative planning between producers and users of scientific knowledge is critical to developing the questions and approaches that

in usable science and outcomes. Usable science is successful when scientists and decision-makers take ownership in building relationships and mechanisms that foster the co-production of knowledge.

We, as farmers, ranchers and land managers, have a working knowledge of agriculture, natural resources and livestock operations. The perspectives from users who deal with the daily management of the resources are equally relevant to addressing a scientific question. "Science" can be an intimidating or misunderstood word, especially for people who don't see themselves in that arena. As agricultural producers, engage in the conversation and in usable science projects. Clearing that hurdle is critical to developing working relationships and conversations with scientists who may not have the level of working knowledge as the on-the-ground practitioners. The primary tenet of usable science is that the end users, the producers, are involved in the evolution of the project design, data analysis and interpretation, meaning the entire process is partially shaped by end-user input. This is truly the epitome of the coevolution of knowledge, and what we strive for at the Noble Foundation. ■