

L u n c h ~ N ~ L e a r n S E M I N A R



THE NATIONAL COALITION FOR  
FOOD & AGRICULTURAL RESEARCH

**Program:**

A DIAGNOSIS OF TROUBLED WATERS

*“Assessing the Health of Streams in Agricultural  
Landscapes: The Impacts of Land Management  
Change on Water Quality”*

March 26, 2012

# PROGRAM

## *Welcome and Introduction*

DR. JOHN BONNER  
NATIONAL C-FAR REPRESENTATIVE

## *Distinguished Speaker*

DR. DONALD HUGGINS  
DIRECTOR  
CENTRAL PLAINS CENTER FOR BIOASSESSMENT  
KANSAS BIOLOGICAL SURVEY  
LAWRENCE, KANSAS

## *Open Forum*

## *Closing*

DR. JOHN BONNER

NATIONAL C-FAR IS a nonprofit, nonpartisan, consensus-based and customer-led coalition that brings food, agriculture, nutrition, conservation and natural resource stakeholders together with the food and agriculture research and extension community, serving as a forum and a unified voice in support of sustaining and increasing public investment at the national level in food and agricultural research, extension, and education. For additional information, go to [www.ncfar.org](http://www.ncfar.org); or contact Tom Van Arsdall, Executive Director, at [tom@vanarsdall.com](mailto:tom@vanarsdall.com).

## **ABSTRACT**

The health of streams in agriculturally dominated watersheds has long been assumed to be almost entirely dependent on nearby agricultural practices. In that regard, governments are making substantial investments in the modification of agricultural production activities. Conservation practices have, indeed, reduced nutrient, sediment, and contaminant loads to those streams, but evidence remains strong that water quality and stream health, especially of those waters draining into the Mississippi River, is still a challenge. Land management practices, then, obviously are but one of multiple factors affecting streams. These range from natural determinants of stream quality to imposed conditions related to current land use, farm practices, altered hydrology, legacy conditions from past uses, and other watershed activities. Understanding the role and interplay of land- and stream-related factors in determining water and stream quality is necessary in implementing watershed changes and allowing time for these changes to translate to stream improvements. The publication includes sections on the following: (1) stream ecology primer; (2) time lags between land management changes and water quality impacts; (3) watershed hydrology and material transport to streams; (4) buffering capacity of streams; (5) land resource characteristics impacting stream response to land management changes; and (6) restoration of stream health. As people focus on agriculture and even urban impacts on stream water quality and stream health, they must be aware that a variety of human alterations to streams as well as natural factors may collectively result in streams becoming enriched with sediment and nutrients. This publication considers that a whole systems approach, one that takes into account the many factors responsible for water and stream degradation, may be necessary to repair the quality of the nation's streams and rivers.

---

## **SPEAKER BIOGRAPHY**

**Don Huggins** is currently the director of the Central Plains Center for Bioassessment for the Kansas Biological Survey in Lawrence, Kansas, where he is also the Director of the Ecotoxicology Program and a Senior Scientist. Additionally, he has courtesy professorships in the Department of Civil Engineering and the Department of Evolutionary Biology and Ecology at the University of Kansas. His research interests include population studies and community- and ecosystem-level research, where his current efforts are directed toward assessment of the effects of watershed-level influences on stream ecosystems. Since 1974, he has been providing advisory and support services to the citizens of Kansas; local and regional planners; government officials; judiciary, legislative, and regulatory agencies; scientists and engineers; and special interest groups who are concerned or interested in our aquatic resources and environment with regard to its biota. Huggins' professional affiliations include the North American Benthological Society, the Central States Entomological Society, the Water Environment Federation, the Society of Environmental Toxicology and Chemistry, and the North American Lake Management Society. He received his B.A. in chemistry and biology from Westmar College in Lemars, Iowa; his M.S. in fisheries biology with a water resources minor from Iowa State University in Ames; and his Ph.D. in environmental health science from the University of Kansas in Lawrence.

## **SEMINAR SERIES DESCRIPTION**

National C-FAR's Seminar Series regularly presents leading-edge researchers to address pressing issues confronting the public and Congress. National C-FAR and the Seminar Series serve as a resource to policymakers and all congressional staff.

---

### **Seminar Series Contributing Sponsors**

American Seed Trade Association  
American Society for Nutrition  
Bayer CropScience  
CHS Foundation  
Council for Agricultural Science and Technology (CAST)  
Council on Food, Agricultural & Resource Economics (C-FARE)  
Dr. William Danforth  
Elanco Animal Health  
Eversole Associates  
Illinois Soybean Association  
Indiana Soybean Alliance  
Institute of Food Technologists  
National Farmers Union  
Riley Memorial Foundation  
Syngenta  
United Soybean Board  
University of Wyoming  
Weed Science Society of America

**THE NATIONAL COALITION FOR  
FOOD & AGRICULTURAL RESEARCH**

<http://www.ncfar.org>

R. Thomas Van Arsdall, Executive Director

Phone: (703) 509-4746

E-mail: [tom@vanarsdall.com](mailto:tom@vanarsdall.com)