Agroforestry Research: The network of windbreaks at the ARDC is the only replicated shelterbelt research site in the United States.

Established in 1966 by Professor Walt Bagley, the network consists of six, 40 to 45-acre windbreak systems and is home to the longest running study on crop response to wind protection. Long-term yield averages indicate that wind protection provides an increase in yield of 15% for winter wheat, 12% for corn, and 16% for soybeans.

While yields in individual years may vary considerably due to growing conditions, primarily rainfall, economic analysis indicates that an investment in windbreaks pays for itself in 7 to 10 years and results in long-term returns in the range of 4 to 6%. These long-term averages include the yield losses associated with the land planted to the windbreak and yield losses due to competition immediately adjacent to the windbreak. Long-term yield trials continue and indicate very positive impacts of well-designed field windbreaks.
Principal Investigator: Dr. Jim Brandle with technical support from Bruce Bolander and Mike Cieslik

Long-Term Windbreak Studies: Long-term studies on the ecological role of windbreaks and other woody components of the agroecosystem in maintaining biological biodiversity, their impact on predatory species (both birds and insects) and their role in biological control of crop pests have indicated the value of the ecosystem services provided to all as a result of well managed agricultural ecosystems. In order to capture these values we have been developing a Healthy Farm Index. The Healthy Farm Index is a tool that integrates ecological, economic, and social parameters to assess how land-use and land-cover patterns influence biodiversity, production, and other ecosystem services.
Principal Investigators: Dr. Jim Brandle and John Quinn, Ph.D. candidate

ARDC Organic Farm Systems Research: Building on 30 years of windbreak research, 45 acres of protected land were certified organic in 2008 in the shelterbelt area. The ARDC organic farm is part of a new network of University organic research sites across Nebraska and is supported by a USDA grant. Other organic sites are located at: the Haskell Ag Lab (HAL) near Concord, the South Central Ag Lab (SCAL) near Clay Center and the High Plains Ag Lab (HPAL) at Sidney. These four sites represent a statewide effort in interdisciplinary research.

The land at each organic research site is intended to support further organic research and outreach. The project provides opportunities for ongoing research in cover crop management for providing organic sources of nitrogen and weed control and development of wheat varieties for organic producers.

At the ARDC site, the primary rotation is wheat, followed by manure or cover crop, followed by corn and then soybean with wheat planted immediately following soybean harvest. Wheat breeding, biodiversity monitoring, and cover crop projects currently use part of the organic land at the ARDC. Current cover crops include: berseem clover, field peas, cow peas, hairy vetch, and soybeans. Indicators for the Healthy Farm Index, a new farm assessment tool, are being developed at the ARDC in collaboration with the sites and participating farmers. Biological monitoring has identified 63 bird species at the ARDC. Local organic farmer groups have been an integral part of our research efforts and are frequent visitors to the site.
Principal Investigators: Dr. Charles Shapiro, Agronomy - HAL; Dr. Jim Brandle, Natural Resources - ARDC; Dr. Steven Knezevic, Weed Science - HAL; Dr. Bob Wright, Entomology – SCAL; Dr. Chuck Francis, Agronomy; Dr. Steve Baenziger, Agronomy; Dr. Drew Lyon, Agronomy – HPAL; Liz Sarno, Extension Educator; and and John Quinn, Ph.D. Candidate
Website: http://organic.unl.edu

University of Nebraska Institute of Agriculture and Natural Resources Strategic Plan

Vision and Mission
The Institute of Agriculture and Natural Resources serves Nebraska by providing internationally-recognized science and education to assure the state's competitiveness in a changing world.

To fulfill this vision with its firm focus on Nebraska, we must achieve world-class excellence in: the life sciences, ranging from molecular to global systems; sustainable food, fiber, and natural resource systems that support a bio-based economy; economics and environments for a sustainable future; and human capital development of children, youth and families.

We do that by: advancing knowledge along the continuum from fundamental research to application and education necessary to meet the current and emerging needs of the state; preparing professionals for the future; creating and implementing solutions to critical problems; expanding partnerships across UNL, the NU system, and beyond; cultivating public-private partnerships. In short, we fulfill our mission by being at work for Nebraska.

A unique shop is located at the ARDC. The Nebraska Forest Service Fire Equipment Shop refurbishes excess government equipment into usable fire fighting equipment for rural fire departments. The shop services and repairs fire equipment, for volunteer fire departments, as well as equipment utilized by the Nebraska Forest Service.

This is a cooperative program with the U.S. Forest Service in which vehicles that have become excess to the needs of the federal government are acquired, reconditioned and assigned for firefighting. The programs are called the Federal Excess Personal Property (FEPP) and Fire Fighter Property programs.

Fire districts across Nebraska have obtained essential fire-fighting equipment at an affordable price. 380 refurbished units have been distributed. Conservatively, the total replacement value of these trucks would be $17.6 million dollars if these fire departments had to purchase new units.
Nebraska State Forester: Dr. Scott Josiah
Nebraska Fire Program Leader: Don Westover
www.nfs.unl.edu/program-wildlandfireprotection.asp