

Institute of Agriculture and Natural Resources — AT WORK FOR NEBRASKA

**Agriculture is Nebraska's leading industry.
One in three Nebraska jobs — rural and urban —
depends upon it.**

The Institute of Agriculture and Natural Resources (IANR) at the University of Nebraska–Lincoln, Nebraska's primary provider of agriculture and natural resources programs in support of Nebraska agriculture, helps keep that industry strong and growing.

In IANR, agriculture means everything from the farm gate to the restaurant plate. Tremendous science. Production. Food safety. New product development. Resource management. Water. Rural development. Human resources. Nutrition. And so much more.

Through research, teaching and extension education, IANR is an engine for economic and social sustainability and growth in Nebraska.

Research to add value to Nebraska commodities, develop new products and grow emerging markets, such as the biosciences — food, fiber and fuel from renewable resources. Research to sustain and protect the environment, so key to Nebraska's position as a powerhouse agricultural state. Research for Nebraska's human resources — youth, families and communities.

Extension education to carry the new knowledge discovered through research throughout Nebraska, so Nebraskans can put it to immediate use in their lives.

Classroom teaching to build the skilled workforce needed for the 21st century, with the leadership skills essential to help Nebraska communities survive and thrive.

An independent study* found the return on state dollars Nebraska invests with IANR is 15 to 1.

Fifteen to 1. For Nebraska. Where one in three jobs depends on agriculture.



Following are a few examples of the many ways IANR returns — with interest — Nebraska's investment in it.

Feed and fuel

IANR scientists are working on ways to improve the corn, ethanol and cattle industries, and further reduce greenhouse gasses. For example, IANR animal scientists have proven the feasibility, benefits and economic advantages of feeding ethanol byproducts wet instead of dry, which saves cattle feeders \$10 to \$50 per head. It's estimated that from 1992 through 2007 the cumulative benefit to Nebraska surpassed half a billion dollars — and yearly impact is growing. In 2007 alone the benefit was \$38 to \$39 million. UNL research also found that ethanol from corn directly emits about 51 percent less greenhouse gas than gasoline. From other IANR studies, switchgrass grown for biofuel produced more than five times the energy needed to grow, harvest and be processed into cellulosic ethanol. This promising biomass crop would cost producers just \$60 per ton to produce.



Nearly full yields with less water

IANR is a leader in addressing complex, important water management issues for Nebraska and the region to help ensure aquifer availability for future generations. Extension field days in the Republican River Basin have focused on teaching producers to achieve nearly full yields with less water, thus helping preserve the economic viability of farmers as well as communities in this water-short area. The water miser strategy used 31 percent less water while reducing corn yields only 3 percent; pumping costs-savings usually more than offset yield loss. The value of savings according to the 661 farmers attending 2005-2008 field days was \$12.2 million for the



*No state tax funds were used in financing this study.

four-year period, with annual savings expected to continue. The estimated 2.1 inches of water saved per acre per year is about 15 to 20 percent of a typical irrigation usage per year.

Professional program in veterinary medicine

UNL, in collaboration with Iowa State University's College of Veterinary Medicine, offers qualified Nebraska students an opportunity to pursue a doctorate in veterinary medicine. The Professional Program in Veterinary Medicine builds on the considerable strengths and assets of these two quality land-grant universities. Each year 25 Nebraska students begin the veterinary medicine program at UNL, and after completing two years, move to Iowa State for their last two years of study. For Nebraska's large livestock industry, well-trained and educated veterinarians are vital.

Alternative crops

Alternative crops research conducted at the High Plains Agricultural Laboratory near Sidney, part of IANR's Panhandle Research and Extension Center, has added greatly to the Panhandle's economy. One example is birdseed; its total direct impact on the region is projected at \$4.5 million a year. Sunflowers are a common alternative crop, with potential irrigated yields reaching 3,000 or even 4,000 pounds per acre. At late 2007 prices of 20 cents per pound, that potentially is \$800 per acre. Panhandle-based research also is exploring the potential of other oil-producing seeds such as canola and camelina, which not only produce oil for human consumption, but can be used for producing biofuels and byproducts for livestock.

Crop Management and Diagnostic Clinics

Extension offers a variety of educational clinics, workshops and field days across Nebraska to provide farmers and ranchers the latest research-based information they need. One example is Crop Management and Diagnostic Clinics. In 2008 the clinics drew around 500 participants from 63 Nebraska counties and 11 other states who influence or manage nearly 3.74 million acres.

Participants valued the knowledge gained at the clinics at an average of \$8 per acre, or a total of over \$31 million based on acreage involved.

Reducing feedlot heat stress

Heat stress is a cattle killer. IANR research has resulted in management tools to help reduce this danger to feedlot animals. In the 2005 heat wave alone, it's estimated these tools saved the cattle industry in northeast Nebraska between \$10 million and \$27 million in death and performance losses.



Equipping tomorrow's leaders

The College of Agricultural Sciences and Natural Resources equips students to provide the skilled workforce and leadership needed for Nebraska communities to survive and thrive. The college historically averages around 65 percent of its graduates taking their first jobs out of college in Nebraska, a brain gain for the state.

Fighting cholesterol with beef tallow and soybeans

Human trials are testing a new cholesterol-fighting compound that mixes stearic acid from beef tallow with plant sterols from soybeans. Developed by an IANR nutrition scientist, the compound outperformed commercially available plant-based food additives in animal studies and works at least as well as widely prescribed cholesterol-lowering statin drugs.



Tim Carr displays a new cholesterol-fighting compound.

Wheat's happening

IANR-developed wheat varieties that perform well in Nebraska fields and offer the quality characteristics millers and bakers demand is worth roughly \$60 million annually to Nebraska producers, based on increased yield and 2008 prices. Yield improvement in these varieties means Nebraska wheat growers can feed 3.3 million more people a year on less acres than were in production in the 1960s.

THE POWER OF RED.™ AT WORK FOR NEBRASKA.

Visit atworkfornebraska.unl.edu for more information about how IANR is at work for Nebraska.