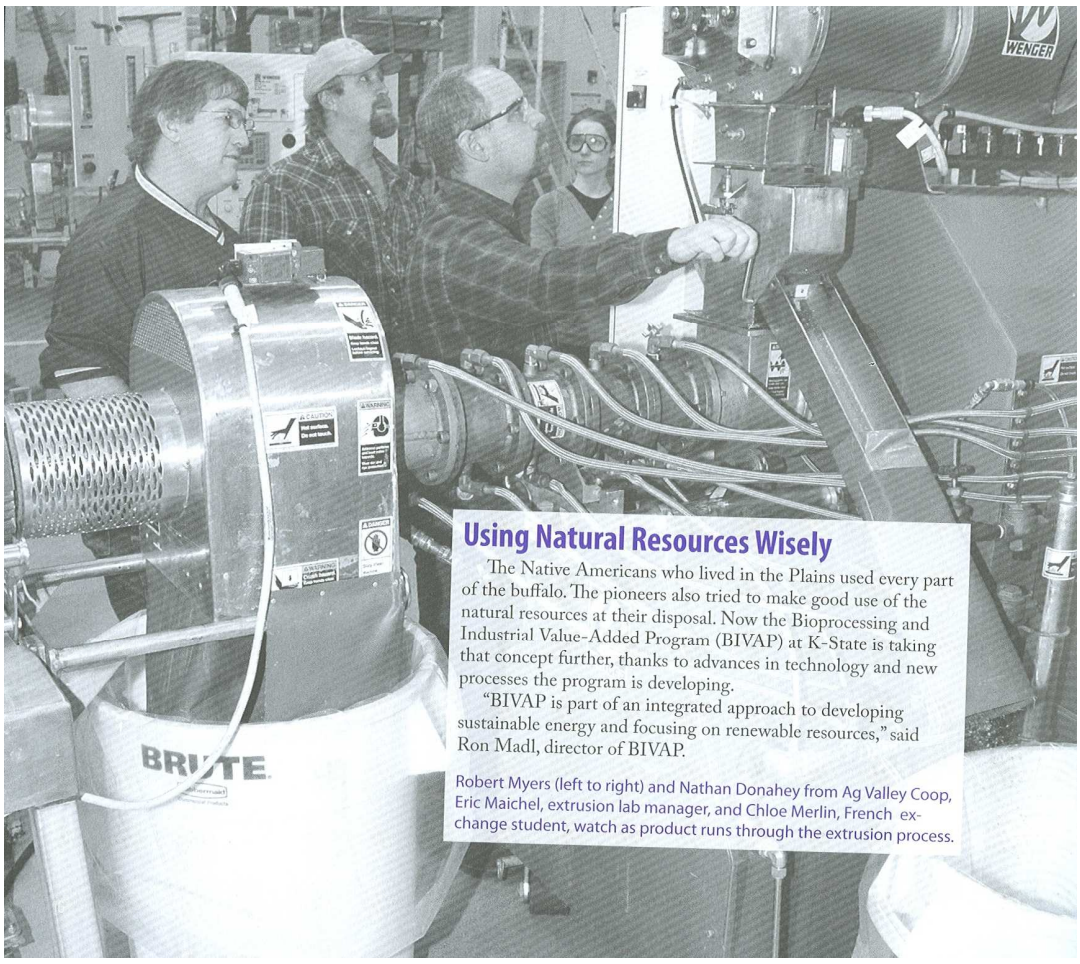
K-State Research and Extension
Kansas State University

An Informal Report to the Kansas Legislature
January 2008



Using Natural Resources Wisely

The Native Americans who lived in the Plains used every part of the buffalo. The pioneers also tried to make good use of the natural resources at their disposal. Now the Bioprocessing and Industrial Value-Added Program (BIVAP) at K-State is taking that concept further, thanks to advances in technology and new processes the program is developing.

"BIVAP is part of an integrated approach to developing sustainable energy and focusing on renewable resources," said Ron Madl, director of BIVAP.

Robert Myers (left to right) and Nathan Donahey from Ag Valley Coop, Eric Maichel, extrusion lab manager, and Chloe Merlin, French exchange student, watch as product runs through the extrusion process.

"From the plant geneticists who are designing plants that can be converted more efficiently into energy, to the agronomists who are working on optimized growth patterns to improve sustainability and efficiency, to the scientists in BIVAP who are developing chemical processes to make better use of the co-products of ethanol production – all are finding ways to use every part of the plant fiber."

BIVAP houses research in the areas of extrusion, fermentation, and biomaterials, and leases space to industry for research and development of products that could result in new Kansas businesses.

"My team works with both private industry and academic researchers to develop continuous processing for different kinds of products, including snack foods, pet foods, and industrial products," said Eric Maichel, operations manager for the extrusion lab. "Producers can test new formulas and processes in the lab under carefully controlled conditions. About 30 companies have used the extrusion lab, with about 90 percent being repeat customers."

Robert Myers, feed division manager for Ag Valley Coop, Edison, Neb., and K-State milling science alumnus Nathan Donahey, mill manager for Ag Valley Coop in Norton, Kan., recently processed wet distiller's grains at the extrusion center. They had conducted a test run several weeks earlier.

Fermentation research is a key component of making full use of the distiller's grain (DG) co-products from ethanol production. DG is currently used as animal feed; however, continued expansion of the ethanol industry will produce more DG than needed for feed. Research is being conducted to find alternative uses. Also, new fermentation organisms are being developed to produce other biofuels to replace products currently made from petroleum.

The Bio-Material and Technology Lab, under the direction of Susan Sun, has done research in adhesives and composites that is paying off in new products such as BioBarrels – an edible, biodegradable container for livestock supplements. Sun said another product that will soon be available is an agricultural mulch film to replace the more common black plastic. Other research is devoted to developing adhesives for a wide variety of applications – from stamps to construction, from wood veneer glue to children's paste and art paints.

BIVAP is part of the Grain Science and Industry Complex. The 33,000-square-foot facility, built using state and K-State Research and Extension funds, was dedicated in 2005.

Ron Madl
rmadl@k-state.edu, 785-532-7035

Researchers Map Wheat Genome

A team is mapping the wheat genome, so breeders can create new varieties of wheat with specific desirable characteristics. They received a $700,000 grant from the U.S. departments of Agriculture and Energy to look at a sources once discarded by farmers – the leaves and stem of wheat plants – for ways to produce ethanol for biofuels.

Bikram Gill, bsgill@k-state.edu, 785-532-6176

K-State Named Change Agent State for Diversity

K-State Research and Extension now is part of a national initiative that will allow K-State to partner with other land-grant universities working to bridge cultural differences. Changes in demographics – an increase in the Hispanic population and increases in the percent of population living below the poverty line and percent of Kansans now 65 or older – underscore the need to develop educational programs to serve a wide range of interests, values, beliefs, and needs.

Paula Peters, ppeters@k-state.edu, 785-532-1562
Zelia Wiley, zwh@k-state.edu, 785-532-5793