PALOUSE: Tri-state land-grants design long-term study of inland NW dryland ag impacts

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THE UNIVERSITY OF IDAHO’S PALOUSE Research, Extension, and Education Center (PREEC) on the Moscow campus and on nearby working farms are key elements in planning for a new multi-million dollar federal long-term study of dryland agriculture and ways to sustain it. Three land grant universities are teaming up to pursue funding for an integrated effort to protect rain-fed cereal production systems in Washington, Oregon, and northern Idaho.

If funded for the long term, it will resemble the National Science Foundation’s Long Term Ecological Research network, which has just one site dedicated to long-term study of an agroecosystem—Michigan State University’s W.K. Kellogg Biological Station. The new USDA-sponsored network will extend long-term research to the diversity of U.S. agriculture.

Tri-state goals. Scientists from Idaho, Oregon, and Washington’s land-grant universities want to study effects of non-irrigated wheat and other cereal crops on soil carbon and soil management that may be impacted by climate change and other factors in the Northwest’s interior. University of Idaho (UI), Oregon State University (OSU), and Washington State University (WSU) scientists are using a $200,000 U.S. Department of Agriculture grant to map out a single coordinated project. Headquartered in Moscow, but dependent upon formal links to research, extension, and education centers in all three states, if funded, the study will begin in about two years and continue for a decade. “This project will allow us to establish a comprehensive long-term approach to sustaining agricultural productivity and the economic well-being of the entire region,” said project lead Sanford Eigenbrode, UI entomologist. Leadership includes UI’s James Gosz, Jodi Johnson-Maynard, and J.D. Wulffhorst plus WSU and OSU colleagues.

Research partnerships among institutions and disciplines are necessary to address complex nature problems and long-term sustainability, said Eigenbrode.

Other UI collaborations. Eigenbrode and colleagues from other UI colleges work together with Costa Rica’s Tropical Agriculture Research and Higher Education Center (CATIE) to evaluate the resilience of ecological and social systems in changing landscapes in Idaho and Costa Rica. That International Graduate Education Research Traineeship project, funded by $3.2 million from the National Science Foundation, is led by UI entomology’s Nilsa Bosque-Pérez.

Potato cyst nematode research progress

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PROGRESS IS BEING MADE in understanding the potato cyst nematode (PCN), which recently appeared to pose a major threat to the state’s most famous crop.

After its April 2006 discovery in 7 Bingham and Bonneville County fields, Idaho and federal officials launched an aggressive effort to quarantine and eradicate the pest. A major part of that effort relied on the UI’s PCN Laboratory to produce PCN cysts for use in research to control and eradicate the pest from Idaho potato fields.

First challenge was to learn how to rear the microscopic worm in the laboratory, a step in understanding its biology and finding ways to control it. That effort was tougher than it first appeared, said Robert Zemetra, UI professor of plant breeding and genetics and coordinator of the PCN Lab. Being able to produce a reliable supply of cysts has allowed the lab to help develop both short-term and long-term strategies to control PCN in Idaho.

One project led by UI’s Jeerapun “Tong” Worapong isolated fungi from Idaho field cysts that may infect the cysts and limit hatching of the nematodes, a possible natural biocontrol agent to control the current PCN infestation and prevent future Idaho field infestations.

PREEC/MOSCOW

University of Idaho’s Palouse Research, Extension, and Education Center (PREEC)

PREEC AT A GLANCE
• 1,250 acres established in 2007 by combining 4 units:
  · West Farm on campus - 1920
  · North Farm - 1940s
  · Parker Farm - 1956
  · Kambitsch Farm - 1993
• Infrastructure value: $10.6M
• Staff: 12.5 positions and many part-time students

The Palouse Research, Extension, and Education Center on the University of Idaho’s Moscow campus draws together on- and off-campus facilities to assist researchers statewide. The merged farms, greenhouses, and other facilities aid research, extension, and education statewide.

Parker Farm east of Moscow and Kambitsch Farm near Genesee (pictured above) primarily aid plant science research, extension, and teaching by CALS departments of Plant, Soil and Entomological Sciences and Biological and Agricultural Engineering, plus the USDA-ARS, UI faculty, staff, and students, and for foundation seed production by the Idaho Agricultural Experiment Station.

more on PREEC on back page
Biodiesel gives 4.5 times the energy than it takes to produce

FIND MORE at www.uiweb.uidaho.edu/bioenergy/TechNoteLCA.pdf

BIODIESEL HAS THE HIGHEST energy balance of any U.S.-produced transportation fuel, 4.56:1. This energy balance measures energy output for biodiesel (4.56) to fossil fuel input to produce the renewable fuel (1).

The latest report completed by UI Biological and Agricultural Engineering Prof. Dev Shrestha and a USDA team shows increasingly efficient biodiesel production from soy, including cultivating, harvesting, transporting, crushing, processing, and fuel transport.

In 1998, the energy balance was 3.2:1. Improvements resulted from farming techniques requiring less fuel, more efficient soybean crushing, and more efficient conversion to biodiesel. By 2015, the balance may reach 5.44:1. Petroleum diesel has a negative energy balance and yields only 0.83 units of usable energy per unit of fossil energy consumed.

With the highest energy content of any alternative fuel produced in the U.S., biodiesel has higher average cetane than diesel and similar fuel economy, horsepower, and torque. Work continues to improve yields of traditional crops on existing acres and new feedstocks to bolster the most diversified fuel on the planet.

The Palouse Research, Extension, and Education Center (PREEC) oversees some 1,250 acres from Moscow to Genesee and more than $10.6 million in infrastructure, including sophisticated greenhouses, entomology laboratories, historic barns, livestock facilities, a research laboratory, farm operations center, and dairy.

Research—short-term spanning a single growing season or less and long-term spanning several growing seasons—is conducted routinely at both Parker and Kambitsch farms. A plant growth center at the 6th Street Greenhouse on campus provides a modern growing environment for all university researchers, teachers, and students who wish to conduct research and teach plant science laboratories in a controlled environment.

FOCUS AREAS
Crop research focuses on wheat, barley, oilseeds, and foundation seed. Some research highlights:

Crops/Organics—Winter and spring wheat, spring barley, pea, lentil, chickpea, spring and winter canola and rapeseed, mustard, camellina, sunflower, and a number of horticultural species. Five acres of Parker Farm certified for organic crop production are used by the student Soil Stewards who sell organic produce grown here.

Biodiesel gives 4.5 times the energy than it takes to produce