

COLLEGE OF AGRICULTURAL, HUMAN, AND NATURAL RESOURCE SCIENCES

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IPS, Barley, Wire Worm

Posted by steven.reynolds | September 2, 2009

New WSU Ag Degrees More Focused, Rigorous, Built to Serve Industry Needs

Newly configured agriculture degree programs at Washington State University are refocused and ready to produce graduates especially able to meet the emerging needs of the industry in Washington and beyond.

“Our ag programs have always been strong as far as content and hands-on learning opportunities,” said Kim Kidwell, associate dean for Academic Programs in the WSU College of Agricultural, Human, and Natural Resource Sciences. “But, these newly configured degrees bring much more focus to the coursework and organize it in ways that are clearer to our students and more relevant to the industry that ultimately will hire them.”

The Agricultural and Food Systems degree, which originated in 2006, is delivered collaboratively by a variety of departments with the college, Kidwell said, including crop and soil sciences, horticulture, entomology, plant pathology and economics. “The whole idea is to help students understand that agriculture in the real world consists of systems, not isolated silos,” Kidwell said. “The AFS degree program emphasizes just how integrated the science disciplines are when it comes to growing food.”

Majors within AFS include agricultural education, agricultural technology and production management, agricultural and food business economics, agricultural and food security and organic agricultural systems. The organic major was the first of its kind to be offered in the United States.

A new degree in Integrated Plant Sciences also takes an integrated, interdisciplinary approach. It is offered jointly by crop and soil sciences, horticulture and landscape architecture, entomology, plant pathology and food science. “IPS focuses on the science of plant life from molecule to market,” Kidwell said.

Majors within IPS include agricultural biotechnology, field crop management, fruit and vegetable management, nursery and greenhouse management, landscape design and implementation, turf grass management and viticulture and enology. The V&E program is the only four-year wine education program offered in the Pacific Northwest.

Both degree programs still include the opportunities to learn by doing for which WSU is known. Immersion-based internships are required for both AFS and IPS majors.



Focusing on the emerging science needed by a growing industry, WSU has reconfigured its key ag majors.

For more information on WSU’s degree program in Integrated Plant Sciences, please visit: www.ips.wsu.edu

For more information on WSU’s degree program in Agricultural and Food Systems, please visit: www.afs.wsu.edu

Innovative Wireworm Trap Could Help Growers Customize Control of Wheat Pest

Aaron Esser, a WSU Lincoln–Adams Extension educator, researches economically viable solutions to problems experienced by wheat producers. It may come as a surprise then that most of Aaron’s time is spent with a pair of pantyhose.

Wireworm, the larval form of the common click beetle, poses multiple problems for wheat producers. The worms hollow out the wheat, prevent germination and, patch by patch, can destroy an otherwise productive field. Controlling wireworm is expensive: insecticide costs can be staggering, according to Esser. He has been working on a solution that will make the pests less damaging to the industry.

Esser’s solution is a wireworm trap that has the potential to save producers thousands of dollars. The simple but effective innovation is made of a pair of pantyhose baited with a 50–50 wheat and corn mixture. Used to capture and count wireworm in a particular field, the trap will help growers tailor insecticide use to their particular situation.

The trap is currently being used in a 20–acre on–farm trial focused on reducing pest populations and yield loss while improving the farmer’s bottom line. “Using the results from the trial and extrapolating it to the whole field, there’s a nearly \$30,000 difference in profitability” Esser said.

“For some 30 years, an insecticide called Lindane was really effective with controlling wireworms and cheaper than current options. However, the EPA has removed this product from the market,” Esser said.

Other complications, such as misdiagnosed field damage, have caused farmers to throw up their hands as regards wireworm presence. “Most farmers tend to ignore wireworms. I want to change that,” Esser said.

Esser recently surveyed wheat producers to learn how many scouted for wireworm. “Initially, 72 producers said they scout for wireworms and 135 said they don’t,” Esser said. After he gave a presentation on the pantyhose trap and the dangers of wireworm presence, producers changed their minds. “134 said they will scout for wireworms and 27 said they wouldn’t.”

–Lyndon Dacuan, Marketing, News, and Educational Communications intern



Aaron Esser constructs a wire worm trap.

For more information about WSU Extension in Lincoln and Adams counties, please visit: <http://bit.ly/7z4CC>.

WSU Researcher Hopes to Expand Barley Market with New Varieties

A WSU scientist hopes to expand the barley market by developing new varieties that can be better used as food. Steve Ullrich, professor of crop and soil sciences, is using cross breeding to develop varieties of barley that will make it more attractive and valuable to farmers, processors and consumers.

“Barley is very nutritious; it just hasn’t been appreciated as a significant food source,” Ullrich said.

In 2006, the FDA put out a health food benefit endorsement for barley. Because barley has a relatively high soluble fiber content, it can lower blood-cholesterol and blood-glucose levels. Barley is also high in vitamin E derivatives.

“This endorsement has given more attention to barley,” Ullrich said. “We now see it in more breakfast cereals because it can be incorporated in many ways.”

Ullrich is taking several genetic approaches to create food-grade barley varieties. In addition, he’s working to improve feed-grade barley to make it more environmentally friendly.

One approach is to develop a hullless variety. The hull that covers barley is

originally part of the flower. It can be mechanically removed, but that takes a lot of work. The hullless gene genetically impairs the cement that holds the hull on, so it comes off easily when it is threshed.

Another approach is to increase the beta-glucan content, the major soluble fiber component of barley. The waxy gene in barley influences the kind of starch the grain makes, and it indirectly increases the beta-glucan content; which can help lower blood-cholesterol and blood-sugar levels.

Ullrich is also working to reduce barley's proanthocyanidin content. Proanthocyanidin is a natural compound found throughout the plant world. By creating proanthocyanidin-free barley, the kernels, flour and resulting products are brighter white. This increases product appeal without affecting nutritional quality. The absence of proanthocyanidins also improves the quality of beer because proanthocyanidins mix with protein and make the beer hazy when chilled.

Lowering barley's phytic acid content is another trait Ullrich is working on, one that is important for barley used as livestock feed. Phytic acid stores phosphorus, a pollutant. Since phytate is indigestible, it travels through the animal and is excreted as a pollutant, especially in water. By lowering the phytic acid in barley, the phosphorus can be digested by the animal, thus reducing pollution.

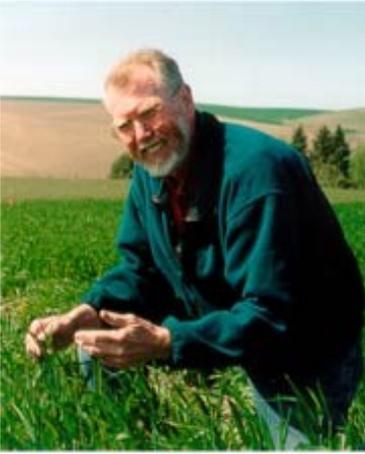
"We have lines in test that have three of the four traits," Ullrich said. "We already have a couple waxy, hullless lines that could be ready for variety release next year."

It's difficult to create hullless barley that yields as well as hulled varieties. Ullrich pointed out that demand for hullless barley would probably require a premium over the price of feed barley, such as occurs for malting barley, in order to induce farmers to raise it.

Ullrich is hopeful that food-grade barley will indeed expand the agricultural market. "Barley already has a place in the agricultural production systems," he said.

Barley is well adapted to the Pacific Northwest. Washington is No. 4 in the nation in barley production, after North Dakota, Idaho and Montana. "Barley works well in crop rotations with winter wheat, as well as peas and lentils, so new high-value varieties should fit right in to existing rotations."

-Holly Luka, Marketing, News, and Educational Communications intern



Scientist Steve Ullrich is working on genetic approaches to create food-grade barley. Middle: Covered and, bottom, hulless barley.

For more information on crop improvement research at WSU, please visit:
<http://bit.ly/MRjK4>

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