# **Feeding Idaho**

Across the properties that make up the <u>Idaho Agricultural Experiment Station</u>, University of Idaho researchers work to provide solutions to agricultural problems across the state and tackle questions about everything from food processing and workforce development to human dietary needs and water resources. One subset of researchers focuses on breeding plants that will enhance crop quality, reliability, productivity and disease resistance.

These researchers often develop plant varieties that U of I or regional organizations license to seed companies. Individual businesses will even sometimes sponsor U of I researchers to breed plant varieties for their exclusive use. Some of U of I's successes and current projects throughout the Idaho Agricultural Experiment Station include:

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### Wheat



Soft Asian noodles and bread are both made of wheat, but the genetic differences in the crop help create starkly different textures. And U of I breeders continually tweak the grain using current genomics technologies. Jianli Chen, associate professor at the Aberdeen Research and Extension Center and D. Blaine Jacobson Endowed Wheat Breeding Professor, is currently creating wheat meant to solve emerging or re-emerging problems stemming from warming growing seasons. She wants her wheat lines to be resistant to the wheat-eating Hessian fly, a fungal disease called fusarium head blight and a genetic protein defect.

Although numerous companies license U of I wheat seed, the university works closely with Limagrain Cereal Seeds.

"They use their established sales staff to promote our owned and jointly owned wheat varieties, which are excellent for production throughout the Western United States and specifically the Pacific Northwest," said Mark McGuire, associate dean of research and director of the Idaho Agricultural Experiment Station.

#### Mustard



Mustard is much more than a hot dog topping. Matthew Morra, a professor in the Department of Soil and Water Systems, and Louise-Marie Dandurand, a research associate professor in the Department of Entomology, Plant Pathology and Nematology, are testing whether the chemical responsible for mustard's spicy taste can be repurposed for biopesticides and food preservation.

Dandurand is testing the efficiency of a mustard-meal — the seed minus the oil — biopesticide on potato cyst nematodes, which are agricultural pests of potatoes. Applied prior to planting, the biopesticide kills the nematode eggs, and the animals cannot hatch to feed on potato plants.

## Canola



Canola, a relative of rapeseed, can be used for culinary oil and animal food stock, but finding new or niche markets can be important for the success of a breeding program, said Jack Brown, a professor in the Department of Plant Sciences. Brown and other U of I canola breeders have pounced on a number of these smaller markets.

In response to some countries — and some Americans — not wanting to purchase genetically modified canola, U of I developed the only non-genetically modified canola on the market. U of I was also the first to produce a canola low in polyunsaturated fats.

Beyond opening new markets, U of I's breeding program has improved canola productivity: Farmers planting winter canola earned \$142 per acre in 1992 and now earn \$456 per acre, while spring canola profits have risen from \$227 per acre in 1992 to \$848 per acre.

#### **Potatoes**



Because each new potato variety takes 10-15 years to develop, test and license, breeding potatoes is a marathon, not a sprint. A good potato variety needs to produce high yields, have the classic potato taste and texture, and store well. Potatoes can easily build up sugars in storage, which results in darker-colored fries — a no-no in potato processing.

U of I researchers work with their counterparts at the Northwest Potato Variety Development Program, or the Tri-State Program, which includes Oregon State University, Washington State University and the U.S. Department of Agriculture-Agricultural Research Service. Together, they develop and evaluate the potato selections emerging from regional breeding programs. Only potato varieties that meet the potato industry's high standards are subsequently released for commercial production.

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