

Genome map will help breeders develop better wheat varieties

Pumphrey, Carter say achievement improves breeding efficiency

By MATTHEW WEAVER
Capital Press

An international team of researchers has mapped the wheat genome, a breakthrough that breeders say will make their work more efficient as they unlock the mysteries of which genes impact traits such as yield or resistance to disease.

More than 200 scientists from 73 research institutions in the International Wheat Genome Research Consortium published an article in the international journal Science, including a detailed description of the complete bread wheat genome.

The genome is the complete set of an organism’s



Mike Pumphrey, spring wheat breeder at Washington State University, says mapping the wheat genome represents a “tipping point” for breeding new varieties.



Washington State University winter wheat breeder Arron Carter says mapping the wheat genome will help him better understand traits as he develops new varieties.

Photos by Matthew Weaver/Capital Press File

DNA — the building blocks that create all of its traits. Knowing the structure of the genome will help researchers understand which genes — or combinations of genes — impact various traits.

“It’s all going to translate into better varieties for (farmers), and probably a little faster at getting new varieties out

to them,” said Washington State University winter wheat breeder Arron Carter.

Breeders will be better able to understand which genes control the traits they’re looking to improve and include in new varieties, he said.

“We’ll understand yield potential better, because right now, yield is just kind of a

black box,” Carter said. “I weigh the bag, and whichever bag weighs the most has the best yield, but I don’t know why.”

Understanding which genes impact yield will allow Carter to breed higher yielding wheat varieties.

Another example: Carter could release a variety today

that has good resistance to stripe rust, but he doesn’t necessarily know which genes provide that resistance. With genome sequencing, breeders can identify different resistance genes and “pyramid” them together, Carter said.

The same goes for the genes involved in end-use quality, another black box.

“You make a cookie, and it’s a good cookie, but we don’t know all the reasons why it’s a good cookie,” Carter said. “All of these traits that are important to the grower, we’re going to start actually understanding the genes involved.”

It typically takes 7-8 years to breed a new wheat variety. Mapping the genome won’t necessarily accelerate the process, but it will make it more efficient, Carter said. Breeders will still need to evaluate varieties in the field to be sure they’re performing as expected.

Carter and WSU spring wheat breeder Mike Pumphrey

said they will work closely with WSU “cyber breeder” Zhiwu Zhang, assistant professor of statistical genomics, to understand which genes impact various traits.

Carter said mapping the genome is a good starting place, but much remains to be discovered.

“It’s a big genome, it’s complex,” he said. “A lot of what they call repetitive DNA ... really doesn’t code for anything, we don’t think. Trying to piece that all together is still going to take some time.”

Pumphrey said the achievement represents “a tipping point.”

He compares the achievement to the dramatic increase of diagnostic tests in human medicine.

“We’ve been able to do this type of research for years, but it was extremely cost-prohibitive, time-intensive or labor-intensive,” he said. “This sort of democratizes our ability to do more research.”

Pacific Northwest pear forecast increases

By DAN WHEAT
Capital Press

PORTLAND — Pear harvest is underway in all four growing regions of the Pacific Northwest, and Pear Bureau Northwest is forecasting a larger fresh crop than it did in June.

The new estimate is 20.2 million, 44-pound boxes, up from 18.9 million. If the new forecast holds it will be the fourth largest crop in history and the largest organic crop with organics making up 2 million boxes, or 10 percent of the crop.

“After last year’s very small crop our growers are pleased to have a full crop of great quality pears to meet growing consumer demand,” said Kevin Moffitt, the Pear Bureau president in Portland.

“Retailers have a strong opportunity for pear category growth in the produce department this season and we are prepared to provide them with individual category analysis, consumer insights and effective promotions to drive pear sales,” Moffitt said.

Picking will continue through September in the Wenatchee, Yakima, Hood River and Medford districts.

The new estimate is for 9.9 million boxes of Green d’Anjou, 5.3 million boxes of Bartlett, 3.2 million boxes of Bosc, 1 million boxes of Red d’Anjou and other varieties rounding out the balance.

The Pear Bureau’s international promotions focus on Mexico, Central America, India, the Middle East and Asia.

To combat increased competition overseas, the bureau is initiating one- to two-month promotional agreements with key retailers to increase shelf space and improve space and location of USA pears in stores.

NE Oregon thinning project passes legal muster

Forest Service is thinning 2,000 acres in Wallowa-Whitman National Forest

By MATEUSZ PERKOWSKI
Capital Press

Environmentalists will appeal a federal judge’s ruling that a 2,000-acre thinning project in Northeast Oregon’s Wallowa-Whitman National Forest didn’t violate environmental law.

Last year, the Greater Hells Canyon Council and Oregon Wild non-profits filed a lawsuit challenging the Lostine Public Safety Project, which aims to reduce wildfire and insect problems along roughly 11 miles of the Lostine River.

A U.S. magistrate judge disagreed with the plaintiffs’ contention that the fuel reduction project was improperly excluded from environmental studies under the National Environmental Policy Act and dismissed their other allegations.

Those findings have been upheld by U.S. District Judge Michael Simon, who has ruled in favor of the U.S. Forest Service and Wallowa County — which intervened in the case — by dismissing the lawsuit.

“We have never opposed the true public safety aspects of this project. But the heavy industrial logging will not improve public safety in the Lostine,” said Darilyn Parry Brown, EHCC’s executive director.

Simon has agreed with the earlier



Associated Press File

A federal judge has given the go-ahead for a thinning project along the Lostine River in northeast Oregon.

ruling that the federal government properly used a “categorical exclusion” to exempt the project from the usual requirement of preparing an environmental assessment or more in-depth environmental impact statement.

In this case, the agency didn’t have to analyze whether “extraordinary circumstances” called for such studies due to provisions in the 2014 Farm Bill that allowed “categorical exclusions” outright for certain eco-

logically oriented forest treatments, the ruling said.

Likewise, wildlife and botanical reports associated with the project meet the requirements of the forest plan for the Wallowa-Whitman National Forest and didn’t violate the National Forest Management Act by failing to ensure “species viability and recovery,” the ruling said.

The project also complies with the “wild and scenic river” plan for

the Lostine River because the Forest Service properly determined its long-term effects would benefit the river’s “outstandingly remarkable values,” according to the judge.

The agency’s collaboration on the project was sufficient under the Healthy Forest Restoration Act as well, the ruling said. “Instead of participating, plaintiffs often objected to how the Project was being developed, rather than providing meaningful, substantive input.”

Wolf pups spotted near Mount Hood; species remains federally protected

By GEORGE PLAVEN
Capital Press

A new pair of wolves in the White River Unit south of Mount Hood has produced at least two new pups this year, according to the Oregon Department of Fish and Wildlife.

The pups were photographed Aug. 10 by a remote camera on the Warm Springs Indian Reservation, marking the first time wolves have reproduced in Oregon’s northern Cascade Mountains since the species returned to the state in the 2000s. Wolves living in the area west of highways 395, 78 and 95 are listed as a federally endangered species, and are managed by the U.S. Fish

and Wildlife Service. ODFW removed wolves from the state endangered species list for Eastern Oregon in 2015.

Environmental groups celebrated the news as another step forward for wolves after they were extirpated from the state decades ago. Josh Laughlin, executive director of Cascadia Wildlands, said the development is also a “stark reminder that we need to ensure strong state and federal protections remain in place for recovering wolves so they can continue to re-occupy their historic territories across Oregon.”

By the end of 2017, Oregon had a minimum known population of 124 wolves, mostly concentrated in the northeast corner of the state.



Courtesy Confederated Tribes of Warm Springs

Two wolf pups were recently spotted by a trail camera on the Warm Springs Indian Reservation, confirming the first known reproduction of wolves in the Oregon Cascades.





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