

People & Places

‘Cyber breeder’ improves wheat varieties

Zhiwu Zhang sorts through field, molecular data to help breeding

By **MATTHEW WEAVER**
Capital Press

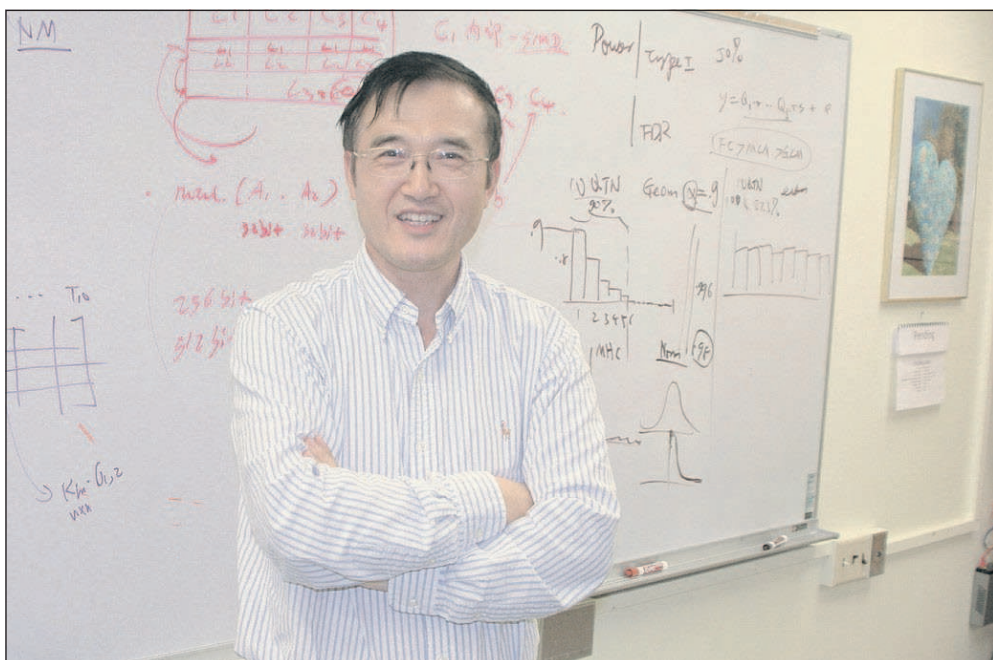
PULLMAN, Wash. — Zhiwu Zhang rarely actually touches wheat, but his work helps put better varieties of the popular grain into growers’ hands.

As a statistical geneticist — he calls himself a “cyber breeder” — at Washington State University in Pullman, Wash., Zhang combines information from “field” wheat breeders and researchers who identify molecular markers.

Wheat farmers are most concerned with yield, end-use quality and production cost, all traits determined by how genetics and the environment interact, Zhang said. “There are hundreds and even thousands of genes associated with yield,” he said. “Gathering favorite genes together takes time. Fortunately, DNA sequencing technologies provide the opportunity to pinpoint where those genes are on the genome.”

Deoxyribonucleic acid — called DNA — is a molecule that carries the genetic instructions within most living organisms. Attributes such as drought tolerance are located at specific spots on the lattice-like structure of DNA.

“We’re trying to get them together, turn this big data into some knowledge,” he said. “Then field breeders can turn it into a variety that can really increase the income of



Matthew Weaver/Capital Press

Washington State University assistant professor Zhiwu Zhang stands in the middle of his lab Oct. 16 in Pullman, Wash. As statistical geneticist, Zhang compiles information from field breeders and molecular DNA sequencing to enable wheat breeders to improve the varieties they develop for farmers.

the farmer.” Zhang is developing the computer programs and databases necessary for wheat breeders to sort through millions of data points associated with genetic markers and gene sequences, said Rich Koenig, associate dean of the College of Agricultural, Human and Natural Resource Sciences, director of WSU Extension and interim chairman of the crop and soil sciences department. “The explosion of data has created a need for ‘genetic software engineers’ to enable breeders to sort through all of these data and make good breeding and selection decisions,” Koenig said.

Zhang’s work should help breeders better select lines that have the potential to outperform other cultivars in the field, WSU winter wheat breeder Arron Carter said. “Effectively, we are testing better material under field conditions, which should have higher yield potential, better disease resistance and better end-use quality,” Carter said. “It will speed up the process a little bit, but mainly helps us get the best material out to the field as a starting point.”

Breeders will still have to do years of field testing to ensure stability across locations and years, Carter said. Zhang’s work helps identify the best wheat lines early in the process, allowing breeders to begin making crosses sooner.

Zhang has an agricultural background. He raised animals and worked in the field from childhood in China, and got his bachelor’s degree in animal science. He went on to study genetics, statistics and computer science in getting

his master’s and Ph.D. degrees and postdoctoral training.

His first job was predicting breeding values, helping beef breeders select bulls for better yield, carcass quality and less calving difficulty.

Zhang’s second job was to develop statistical methods and computing tools to dissect the genetic architecture of key complex traits in maize. Zhang developed a compressed model that reduced computing time from weeks to hours.

Jobs such as Zhang’s did not exist a decade ago, Koenig said. Now, they are in high demand among modern breeding programs.

“Zhiwu has an international reputation and is recognized for developing leading platforms to process and screen genetic information,”



Western Innovator

Zhiwu Zhang

Title: Assistant professor, Washington State University; Washington Wheat Distinguished Professorship for Statistical Genetics

Age: 55

Current location: Pullman, Wash.

Hometown: Shulan, China

Education: Bachelor’s degree in animal science and master’s degree in animal breeding and genetics, Jilin Agriculture University, Changchun, China; Ph.D. in animal breeding and genetics, Northeast Agricultural University, Harbin, China; Ph.D. in statistical genetics, Michigan State University

Family: Married; son James, 26; daughter Joia, 14

Website: <http://css.wsu.edu/zhiwu-zhang/>

Koenig said.

Zhang hopes his work will increase farmers’ net income, be environmentally friendly and sustainable.

Sequencing wheat varieties is currently limited by cost. The wheat genome is five times bigger than the human genome, with many gaps, Zhang said.

“Mathematically and accurately filling those gaps is critical to transform DNA sequencing into a useful tool for wheat breeding,” he said.

‘Owlcapone’ returns? Time to call Elliot Nest

SALEM, Ore. (AP) — Maybe it’s time to call crime-buster Elliot Nest to take down that pesky bird of prey “Owlcapone.”

A few blocks away from the state Capitol in Salem, the year is ending the way it began — with an aggressive owl going after people.

At least two attacks have been reported more than a mile north of a park where joggers were attacked in January, said Julie Curtis, spokeswoman for the Department of State Lands.

Dwight French said he was jogging from his office to a parking garage Monday when he felt a bump on the back of his head. He turned around



AP Photo/Stations-Journal, Danielle Peterson

John Kleeman, Parks Operations Supervisor for Salem, Ore., installs signs at Bush’s Pasture Park last February, warning visitors of owl attacks. An owl has again begun to attack joggers north of the park.

and saw an owl fly into the trees and stare at him. As he crossed a street, the owl hit

him again and then a third time.

“At the moment it was

just really bizarre and kind of scary for a minute,” he told the Statesman Journal.

French sustained several little cuts. He said it looks like he “got a really violent haircut.”

The January attacks on several joggers got national attention, most of it humorous.

Inspired by a segment from MSNBC host Rachel Maddow, Oregon’s capital city posted “angry owl” warning signs in the park where the owl was likely defending its nest against perceived threats. The Statesman Journal had an online naming contest, with “Owlcapone” getting the most votes. And, of course, there’s

an Owl Attacks Facebook page.

David Craig, a biology professor and animal behavior specialist at Willamette University, said there’s no way of knowing if the owl that attacked French is the notorious Owlcapone establishing a new home or if it’s another barred owl.

He said this is the time of year when owls are courting and establishing their territory, which makes them aggressive. They lay eggs as early as February.

If an owl scratches you and it breaks the skin, Craig recommends monitoring the wound like you would a cat scratch.

Fungus kills trees critical to Hawaii’s native forests

By **AUDREY MCAVOY**
Associated Press

HONOLULU — A newly discovered fungus is killing a tree that’s critical to Hawaii’s water supply, endangered native birds and Hawaiian cultural traditions like hula.

The disease called rapid ohia death has hit hundreds of thousands of ohia lehua trees on the Big Island. As of last year, it was found to have affected 50 percent of the ohia trees across 6,000 acres of forest, but it’s believed to have spread further since then. To date, it’s been found primarily in Puna but also in Kona and Kau. It hasn’t been seen anywhere else in the world.

Robert Hauff, the forest health coordinator at the state Department of Land and Natural Resources,

said the state is planning aerial surveys next month to learn how many acres are affected by the fungus. A world expert in similar diseases is also expected to visit the islands to advise the state on how to control the outbreak.

“Worst case scenario is that it spreads statewide and it decimates all of our ohia forests. It’s a pretty bleak picture,” Hauff told reporters at a news conference in Honolulu.

Ohia is important to the water supply because it’s so effective at soaking water into the ground and replenishing the watershed. It’s critical for native birds because the animals feed on its nectar. It provides a canopy to native plants growing underneath it in the forests.

The state Department of Agriculture has created rules prohibiting moving wood, flowers and other

parts of the ohia tree between islands.

Christy Martin, a spokeswoman for the Hawaii Coordinating Group on Alien Pest Species, said the fungus is “sneaky” because it can infect a tree for months before showing any symptoms.

“So somebody could think they’re walking through a healthy forest, picking up wood and doing whatever they’re doing collecting for lei and not know they’re dealing with an infected tree,” Martin said after the news conference.

Sam Ohu Gon III, senior scientist and cultural adviser at the Nature Conservancy of Hawaii, said ohia wood was used for weapons, hula instruments, homes and temples in ancient Hawaii. Many Hawaiian proverbs and sayings reference the tree.

Man leaves chickens in lobby of Oregon tax office

EUGENE, Ore. (AP) — Police say an Oregon man angry with his tax situation left a flock of seven chickens inside the state revenue office.

Police in Eugene said in a news release they responded to a report Wednesday afternoon of chickens left in the lobby of the Oregon Department of Revenue.

Police and an animal welfare officer rounded up the fowl, and they were taken to an animal shelter.

Officers gave 66-year-old Louis Adler, of Creswell, a trespass notice requiring him to stay away from the office or risk a citation.

The Register-Guard reports no people or animals were injured.

Adler couldn’t immediately be reached for comment.

State agency spokesman Derrick Gasperini told the Guard the staff had prior dealings with Adler and he was “frustrated by the outcome.”

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2016 Precision Farming Expo, Three Rivers Convention Center, Kennewick, Wash.

Idaho Irrigation Equipment Show and Conference, Nampa Civic Center, Nampa, Idaho.

Friday, Jan. 8

2016 Precision Farming Expo, Three Rivers Convention Center, Kennewick, Wash.

American Farm Bureau Annual Convention, Orlando, Fla.

Saturday, Jan. 9

American Farm Bureau Annual Convention, Orlando, Fla.

Sunday, Jan. 10

American Farm Bureau Annual Convention, Orlando, Fla.

Monday, Jan. 11

American Farm Bureau Annual Convention, Orlando, Fla.

Tuesday, Jan. 12

American Farm Bureau Annual Convention, Orlando, Fla.

Kennewick, Wash.

Far West AgriBusiness Association annual winter conference, College of Southern Idaho, Twin Falls, Idaho.

Potato Expo 2016, Mirage Hotel and Casino, Las Vegas, Nev.

Wednesday, Jan. 13

American Farm Bureau Annual Convention, Orlando, Fla.

Cropping Systems Conference, Three Rivers Convention Center, Kennewick, Wash.

Potato Expo 2016, Mirage Hotel and Casino, Las Vegas, Nev.

Thursday, Jan. 14

Far West AgriBusiness Association annual winter conference, College of Southern Idaho, Twin Falls, Idaho.

Oregon Mint Growers 67th Annual Meeting, Salishan Lodge and Golf Resort, Glenden Beach, Ore.

Potato Expo 2016, Mirage Hotel and Casino, Las Vegas, Nev.

Friday, Jan. 15

Oregon Mint Growers 67th Annual Meeting, Salishan Lodge and Golf Resort, Glenden Beach, Ore.

Wednesday, Jan. 20

2016 EcoFarm Conference, Asilomar Conference Grounds, Pacific Grove, Calif.

Thursday, Jan. 21

2016 EcoFarm Conference, Asilomar Conference Grounds, Pacific Grove, Calif.

Friday, Jan. 22

2016 EcoFarm Conference, Asilomar Conference Grounds, Pacific Grove, Calif.

Saturday, Jan. 23

2016 EcoFarm Conference, Asilomar Conference Grounds, Pacific Grove, Calif.

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To Reach Us

Toll free 800-882-6789
Main line 503-364-4431
Fax 503-370-4383
Advertising Fax 503-364-2692

News Staff

N. California
Tim Hearден 530-605-3072

E Idaho

John O’Connell 208-421-4347

Idaho

Carol Ryan Dumas 208-860-3898

Boise

Sean Ellis 208-914-8264

Central Washington

Dan Wheat 509-699-9099

E Washington

Matthew Weaver 509-688-9923

Oregon

Eric Mortenson 503-412-8846
Mateusz Perkowski 800-882-6789

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