Oregon’s No. 1 nut gets better with new OSU varieties

OSU’s new hazelnuts are immune to the yield-reducing eastern filbert blight fungus

The hazelnut is Oregon’s official nut. It’s no surprise given that Oregon grows 99 percent of the U.S. crop. Oregon’s approximately 600 growers produced $63 million of hazelnuts in 2012 harvested on 29,000 acres.

But more than 20 years ago, the future looked bleak. A disease called eastern filbert blight was threatening to devastate orchards.

So OSU researchers set to work, crossbreeding tree varieties for resistance to it. They’ve since released 17 cultivars that are immune. The latest contribution was in 2013 with Wepster, a high-yielding, blight-resistant hazelnut whose smaller size makes it ideal for the baking and chocolate industries.

Growers don’t need to spray these new varieties with fungicides – and that helps their bottom line and the environment. The trees are taking root. A survey found that more than half of the 2,730 acres planted between 2009 and 2012 were Jefferson, a variety released by OSU in 2009. Unofficial estimates, however, say the number of new acres during that time was 11,000 to 12,000, with more than half being Jefferson.

OSU targets invasive stink bug that threatens valuable crops

Halting pest’s spread in Oregon is vital to future of hazelnut, wine industries

The brown marmorated stink bug is not a picky eater. The invasive species has a taste for more than 100 types of crops, including staples of the Oregon economy: blueberries, wine grapes, cherries, hazelnuts and others. Since 2009, the insect has damaged hundreds of millions of dollars of fruit in the eastern U.S.

Recognizing the pest’s threat to Oregon agriculture, the OSU Extension Service is teaching farmers how to acclimate to the stink bug’s behavior and it’s teaching people how to distinguish it from look-alikes. OSU researchers have also combed the state for the bug, finding it in 13 counties – including all of the Willamette Valley – and even near some large agricultural operations.

Additionally, OSU is studying a possible non-pesticide solution: a tiny wasp from China. Smaller than a pinhead, the wasp lays its eggs in the stink bug’s eggs, thus preventing them from hatching.

Source: OSU entomologist Vaughn Walton

Sources: Polly Owen, manager of the Hazelnut Marketing Board; USDA National Agricultural Statistics Service; OSU hazelnut breeder Shawn Mehlentbacher
OSU canola study informs policy makers amid debate among seed growers

ODA asks OSU to see if canola can grow in Willamette Valley without pollinating other crops

A dispute is brewing in the Willamette Valley. Grass-seed farmers want to grow canola, a rotation crop that can be turned into food and fuel. But vegetable-seed farmers fear that canola, a member of the Brassica family, will pollinate some of their crops and make them genetically impure and unmarketable.

What’s at stake is the valley’s $25 million a year Brassica seed industry. There’s also the attractive canola market, which brought in $357 million for U.S. farmers in 2011.

So the Oregon Department of Agriculture asked OSU for science-based answers. In field trials, researchers found that canola seeds stay viable in the soil for two or three years, raising the risk that canola could become a weed in subsequent crops or along roadsides and waterways. OSU concluded that for the time being, canola shouldn’t be grown in the valley. In a later report, researchers also found that pollen from a large field of genetically-engineered canola could overwhelm a small planting of, say, Siberian kale.

Allowed east of the Cascades, Oregon farmers harvested 6,900 acres of canola in 2012.

Sources: Oregon Department of Agriculture; U.S. Department of Agriculture’s National Agricultural Statistics Service; and OSU weed scientist Carol Mallory-Smith

OSU teaches Oregonians to raise honey bees as hives struggle

Nearly 300 people enrolled in the Oregon Master Beekeeper Program in 2012 and 2013

As honey bees struggle for survival, people are recognizing their role in pollinating key crops and they’re increasingly interested in raising them in their backyards. So the Oregon State University Extension Service developed the Oregon Master Beekeeper Program to teach them how to do so.

Participants are paired with mentors in cities around the state. They learn to harvest honey, treat for pests and diseases and help colonies survive the winter. Graduates of the program are required to share their new knowledge with the community, such as with beekeeping clubs and local schools.

Honey bees are crucial pollinators for blueberries, pears, cherries, apples and some vegetable seeds. They pollinated $19 billion of U.S. crops in 2010. Between 1989 and 2010, the number of managed honeybee colonies in the U.S. fell by 850,000 (or 24 percent) to hit 2.68 million. The number of colony rentals needed to meet pollination recommendations was 30.4 million in 2010.

Sources: Ramesh Sagili, a honeybee research specialist with the OSU Extension Service; Cornell University’s study “Insect Pollinated Crops, Insect Pollinators and U.S. Agriculture: Trend Analysis of Aggregate Data for the Period 1992–2009”; OSU Extension Service’s 2011 Oregon County and State Agricultural Estimates report
Cleaner air, lower costs

FRL research and outreach is decreasing emissions from lumber drying and maintaining Oregon manufacturing competitiveness

The plumes of steam coming from kiln drying of green lumber at sawmills contain lots of water and some volatile organic compounds (VOCs). VOCs such as methanol and formaldehyde are listed by the EPA as hazardous air pollutants subject to control under the 1990 Clean Air Act Amendments. Lumber manufacturers must demonstrate to regulators and the public that their operations meet standards for protecting air quality, while minimizing costs so they can stay competitive with foreign producers.

Research conducted by Professor Michael Milota of OSU’s Forest Research Laboratory provided the scientific basis for new emission regulations that ensure environmental safety at minimal cost. The research is credited with saving smaller Oregon lumber manufacturers $15 to $20 million in unnecessary regulatory expenses.

Milota annually teaches a short course to Oregon dry kiln operators about his research and how to reduce emissions and maximize quality and profitability. The economy benefits from a competitive wood products industry, especially in rural communities, and all Oregonians benefit from improved air quality.

OSU helps fishermen find healthy stocks of salmon

OSU researchers use DNA profiles to help fishermen avoid endangered salmon

Large closures to commercial salmon fisheries have jeopardized industry and community vitality. Such lengthy closures could be avoided if up-to-the-moment data were available to distinguish stocks at sea.

Through the Collaborative Research on Oregon Ocean Salmon project, Oregon State University researchers used genetic fingerprints to determine locations of weak and healthy stocks. They’ve found patterns suggesting that fish from certain rivers move in “pulses” through the ocean. This kind of real-time tracking will help fisheries managers direct fishing toward robust populations of salmon and away from endangered stocks.

The OSU Extension Service worked with fishery managers to train Oregon and California fishermen in new data-collection methods, including first-ever catch-and-release methods in closed areas, to record the location of salmon at sea. More than 400 commercial fishers participated in the sampling, receiving over $1 million in compensation.

The West Coast fishing industry landed $20 million of ocean salmon in 2012, the ninth lowest level on record.

Source: Pacific Fishery Management Council’s Review of 2012 Ocean Salmon Fisheries report; Collaborative Research on Oregon Ocean Salmon project
Ranchers steer clear of juniper risk with OSU’s help

OSU research discovers common tree causes premature birth in pregnant cows

When a veterinarian in eastern Oregon noticed a pattern of dead calves, he asked the Oregon State University Extension Service about it. The university identified western juniper as the culprit.

OSU researchers discovered that cows that eat bark, berries or branches from western juniper trees late in pregnancy are more likely to abort their calves or give birth early. OSU researchers found that the tree contains toxins known as labdane acids. These chemical compounds constrict the flow of oxygen to a fetus. The researchers estimate that juniper causes 5 percent to 10 percent of lost cow pregnancies. Until OSU’s investigations, the tree’s harmful effect on pregnant cattle was unknown.

Since then, OSU Extension experts have taught ranchers about juniper’s harmful effects. They’ve also crafted strategies for steering foraging cows away from the tree and its debris. OSU is also investigating whether juniper consumption inhibits conception.

Oregon’s ranchers sold $800 million of cattle and calves in 2011.

Sources: Tim Deboodt, a range management specialist with OSU Extension in Crook County; OSU Extension’s 2011 Oregon Count and State Agricultural Estimates report

Forestry students propose new management plan for Oregon public lands

Class project proposal would provide for both economic benefits and ecological services

Is it possible to create a management plan for Oregon forests that includes more logging and significantly more funds for timber-dependent counties, while protecting old growth, curtailing clear cutting, providing for ecological services such as carbon storage, diverse habitat for songbirds, butterflies, deer and elk?

Yes, according to forestry students under the guidance of K. Norman Johnson, an OSU distinguished professor in the Forest Research Laboratory. The students’ proposal has potential to help break years of political gridlock over the management of public lands in western Oregon, while serving some important ecological and economic goals.

The innovative proposal, which has been presented to the staffs of several Oregon political leaders, provides a possible way forward that would produce a sustainable and predictable level of income for counties.
OSU helps give young salmon a safer commute down the Columbia

Alternative nesting sites lure hungry birds away from salmon headed to sea

Oregon State University is helping young Columbia River salmon and steelhead stay out of the gullets of Caspian terns.

An OSU study found that terns nesting on Rice Island in the Columbia River estuary gobbled up about 12 million of the ocean-bound youngsters per year, roughly 10 percent of the salmon and steelhead that made it to the estuary.

So with assistance from OSU, various management agencies developed new nesting habitat at East Sand Island at the mouth of the river where there’s a wider variety of fish for terns to eat. It worked. The relocated terns — up to 10,000 breeding pairs — eat less than half as many juveniles as at Rice Island.

The Army Corps of Engineers then created more colonies, including building an island in southern Oregon’s Crump Lake. Nearly 160 terns that had been banded at East Sand Island showed up at colonies in interior Oregon and northeastern California in 2012.

That’s good news for the state’s ocean and in-river fishing industry, which harvested $6.7 million of salmon in 2011.

Sources: Oregon Department of Fish and Wildlife; OSU seabird biologist Dan Roby

Healthier embryonic and neonatal diet helps chickens’ survival

OSU research says omega-3 fatty acids give chicks a head start

Oregon State University has shown that feeding hens omega-3 fatty acids improves their chicks’ chances of survival. The U.S. broiler industry has historically struggled with high levels of chick mortality; 4 percent of chicks, the equivalent of about 500 million, die soon after birth each year.

OSU has also found that feeding baby chicks diets high in omega-3s within five hours of hatching further increases survival rates. In addition, the university is feeding hens new formulations of flaxseed and camelina with hopes that they’ll produce more consistent and robust offspring.

Oregon producers sold $88 million worth of eggs in 2011, making them the state’s 15th most important agricultural commodity. They sold $63 million of broilers that year.

Sources: Gita Cherian, a poultry nutritionist at OSU
OSU Extension helps Oregon’s $13 million cranberry industry float to the top

Research helps reduce frost damage and monitor root growth

Native to North America, cranberries were first planted in Oregon in 1885. Now the state ranks fourth in the nation in cranberry production. Perched on the southwestern edge of the state, cranberries are a $13 million industry and an important part of the coastal Oregon economy.

But fickle frosts can damage tender buds and wipe out an entire crop in a matter of hours. To allow growers better protection against killing frosts, OSU Extension horticulturists have developed in-field sensors to determine at what temperature and at what bud stage to take action against damage from frost. Such an early warning system will save growers electricity, water, and time.

In related studies, OSU researchers have developed tools for monitoring cranberry root growth in relation to fertilization. Tiny cameras lowered through tubes in the ground capture evidence of the cranberry plant’s longevity (some vines can live up to 100 years) and the response to additions of herbicides and fertilizer. Such information will save growers the cost of unnecessary inputs.

Source: National Agricultural Statistics Service

Tiny pest insect casts costly shadow over Oregon’s small fruit industry

Quick response and collaborative detective work helped contain this sudden invasion

The spotted wing drosophila fly is a threat to Oregon’s small and stone fruit industries. Its larvae feed on ripening fruit, making it unmarketable. Native to southeast Asia, the small insect was first detected in the Willamette Valley in 2009.

In response, Oregon State University researchers and Extension specialists organized a Pacific Northwest team of scientists. With help from a $5.7 million grant, researchers have developed monitoring strategies and educated growers, processors, and distributors about the fly. They’ve also described the fly’s genome and produced publications on how to look for the pest, protect fruit and recognize damage to it. Additionally, they provide growers with up-to-date online information that allows them to assess the risk of infestation and potential crop loss. Scientists have also tested pesticides to combat the fly and shared their findings with the public. They are also evaluating control strategies that don’t use pesticides. Researchers noted that in 2011, producers who followed the recommended monitoring protocols avoided excess pesticide applications.

Oregon ranks third nationally in the production of sweet cherries and blueberries and first in raspberries. It sold $80 million of sweet cherries and $74 million of blueberries in 2011. In the absence of detection and control measures, economists project a potential loss of $31 million per year to Oregon’s small and stone fruit industry.

Source: Linda Brewer, manager of the spotted wing drosophila project at OSU; OSU Extension’s 2011 Oregon County and State Agricultural Estimates report