Testing typically takes four days, rush tests take two

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and livestock. Fescue toxicosis causes fescue foot — dry, dead tissue in the extremities; summer slump in which animals develop hyperthermia; reduced food intake; and reproductive and lactation difficulties.

Ergot toxicosis can cause diarrhea, high temperature, rapid breathing, poor appetite and weight loss.

David Bohnert, director of the Eastern Oregon Agricultural Research Center and a professor at OSU, has researched methods of alleviating toxicosis symptoms, such as giving animals seaweed extract or other compounds to help reduce the absorption of toxins.

Researchers, however, have found that while they alleviate some symptoms, they don't eliminate all.

"There is no 'silver bullet' that will solve all the alkaloid problems seen with some varieties of tall fescue," Bohnert said in an email. "Each product can be part of the overall tool box to help manage high-alkaloid forage; however, risk, cost and each ranch's available infrastructure will determine what option, or combination of options, is best for that particular operation."

In addition to impacting livestock, one of the three diseases, ergot, can decrease seed yield by as much as 10 percent, according to OSU researchers.

To combat ergot, they have been studying how weather conditions contribute to it by conducting spore trapping in perennial ryegrass seed production fields in the Columbia Basin. They found that the best time to apply fungicide is between May 15 and June 7 in a typical year.

Earlier this year, the program also received funding to investigate potential biocontrol options to manage ergot.

Burning to baling

Oregon farmers grew about 332,000 acres of grass seed worth $345 million in 2016, according to the USDA National Agricultural Statistics Service. Among the varieties of grass seed grown in the state are fescue, perennial ryegrass, annual ryegrass, bluegrass and bentgrass.

Before the 1990s, the straw residue left after grass seed harvest was typically burned to rid the fields of pests and diseases. However, after the phase-out of field burning in most of Oregon, straw is now baled and sold locally and overseas as livestock feed.

At first, some of the straw was exported to countries such as Japan, which reported the first cases of fescue toxicity. In 2000, 5,400 cases were reported in Japan, according to the OSU Endophyte Service Lab.

"The ships got stopped at the port because livestock was getting sick and it was traced back to Northwest feed," Holman, the OSU faculty research assistant, said. "They wanted proof that the feed was safe."

A solution was developed: Growers would test their grass seed straw before shipping it. Since 2009, the number of cases of livestock illness has dropped to zero, and has remained stable except for a few minor blips, according to Dr. A. Morrie Craig, a professor of toxicology at the OSU College of Veterinary Medicine. He also helped create the Endophyte Service Laboratory.

Photos by Aliya Hall/Capital Press

Dr. A. Morrie Craig, professor of toxicology at the OSU College of Veterinary Medicine, helped create the Endophyte Service Lab.

A student worker, Jessica Bowers, performs a solid phase extraction in grass seed straw. This is one of 19 steps in the process of determining the amount of alkaloids in a sample. Testing typically takes four days.

Testing straw

When Craig helped form the laboratory, he felt it would become a "world leader."

From 2005 to 2013 the lab received an average of 3,497 test requests a year. Of the samples tested so far this year, only about 7 percent were positive for high toxin content.

The testing typically takes four days, and rush tests take two. However, the lab has been short one technician, which has slowed this season's testing.

The test is a "19-step process to get accurate numbers, plus the lab has a second set of eyes to do the quality control," Craig said.

Roger Beyer, executive director of the Oregon Seed Council, said it's "essential" for grass seed growers to have a program to test the endophyte level, and that OSU is the laboratory of choice.

"Testing is crucial to the shipment of straw for feed," he said. "There are other uses for straw, but not really for the amount we produce."

Beyer said more than 6,000 tons of straw are exported each year from Oregon's Willamette Valley.

"There's a lot of unknowns in the world of endophytes," he said. "Some people think we should establish different levels in varieties to eliminate testing, but every year environmental factors can change the levels of the endophyte."

Because the level of endophyte isn't solely based on grass varieties, Beyer said the industry has to test.

"We do our best to meet people's needs," Holman said. "It's hard, it's a lot of work, very detail-oriented, "but it feels good to know it makes a difference that you come to work every day; what we're doing makes a difference on a daily basis."

Benefits of toxins?

The same toxic endophytes that can make animals ill can also help prevent airline disasters. East Coast airports such as John F. Kennedy, Newark Liberty and LaGuardia have discovered that high-endophyte grasses have a natural insecticide that kills bugs. By planting the grasses around the airports, the insect population is reduced, attracting fewer birds. Birds are a hazard to airplanes, as they can be sucked into jet engines and damage them.

James Loudon, principal landscape architect in the Port Authority of New York and New Jersey Engineering Department, said in a blog created by the port authority that he and his team do "whatever we can to discourage birds, because birds cause the greatest threat to aircraft in flight during landings and takeoffs."

"By limiting the edible delights of birds and the places they gather to feed and reproduce, we can discourage them from visiting the airports," said Laura Francoeur, a microbiologist at the port authority. "Which goes a long way towards protecting the flying public from deadly bird strikes."

Mountain View Seeds in Salem, Ore., is one of the few dealers that sell airports high-endophyte grasses, and has a system in place to verify the levels of endophyte before it is shipped.

"Endophytes are a living organism," Aaron Kuenzi, executive vice president of Mountain View Seeds, said. "Over time it will just fade away."

He cited an example of grass seed with a high level of endophyte sitting for five years in a warehouse. It could start at a level of 90 percent, but by the time it's shipped the level could drop to 20 percent.

Mountain View maintains the correct level of endophyte by storing the seed in a cooler, and testing for endophyte presence before shipping it.

"We want to make sure that when we say it's a high endophyte that ... it actually is," Kuenzi said.

Endophyte-free

While it is possible to develop fescue strains with little or no endophyte presence — typically referred to as "novel" — it is less attractive for grass seed producers because their primary product is the seed, not the straw. The endophytes help protect the grass plant from insects and dry weather.

Kuenzi said that it's been great to have an alternative place for this seed production byproduct, but "ultimately, if we don't satisfy the user or consumer of the seed, we won't have production of the straw either."

Mountain View Seeds has also developed non-endophyte varieties for its forage market with animal health in mind, but Kuenzi said less than 25 percent of its acreage is dedicated to it.

However, according to Bohnert, the OSU professor, that still represents progress.

"They have started moving away from more toxic endophytes and using the ones with lower (levels)," he said. "So, I think they are adjusting."

Beyer, the seed council director, said that novel endophyte is the trend that the industry is working toward, especially for farmers who grow tall fescue as forage in their pastures.

"It's an expensive conversion to get rid of endophyte grasses and put in novel (grasses)," he said. "But growing novel, we can grow it without testing it."

He said that 17 to 20 percent of forage pasture and livestock regions have converted, and researchers say that acreage is increasing by 2 percent a year.

"We have a ways to go, but we're working on it," Beyer said.

Solution by dilution

Although researchers have yet to find a long-term management solution for endophytes, in the short term "solution by dilution" has been effective in keeping animals healthy.

"It is a good feed product if it's used safely, but you have to know what you're dealing with in the first place," Holman said.

Bohnert suggests switching bales daily if endophyte is present, to give livestock a day off. He said it's "the easiest (method) by far."

Also, once farmers know the endophyte level of their hay, they can blend it with other types of hay that don't have endophytes.

Controlling the endophyte is a delicate balance for farmers and ranchers, as well as for seed producers. Kuenzi has brothers who farm and understands the desire to grow only endophyte-free seeds, but he needs to think of his main customers first.

"It's keeping in mind the ultimate product in this is the seed that goes to the marketplace, not necessarily the straw that's harvested as a byproduct," Kuenzi said. "For us, it's finding that balance of satisfying the consumer and the farmer that's growing (the seed)."

The one thing that everyone agrees on is testing for the endophyte toxin is crucial.

"A lot of people have become aware of the situation, the fescue problems are not like they were," Bohnert said. Since 2002, "people have been very aware of potential problems. All you have to do is test, and if you're feeding grass seed straw that has the potential of alkaloids, spend the money and have it tested so you can have peace of mind."

A bag of certified seed at Mountain View Seeds has been checked at every stage for the right level of endophyte. Mountain View Seeds sells high-endophyte seed to airports to help keep birds away from planes that are landing and taking off.

Washington had its 18th driest August on record; Oregon, Idaho received roughly half of normal rainfall

DROUGHT from Page 1

In Oregon, drought conditions were noted for the first time this summer. The northwest corner, making up 13 percent of the state, was in moderate drought.

Among all Western states, change was most dramatic in Washington. Moderate drought covered 55 percent of the state, up from 2 percent the week before.

Drought touched all or portions of 34 of Washington's 39 counties, leaving a swath of "abnormally dry" conditions over Central Washington and southeast Washington.

Assistant State Climatologist Karin Bumbaco, who contributes data to the drought monitor, said precipitation deficits are higher in Western Washington and northeast Washington than in the middle of the state, which receives little summer rain anyway.

"The change this week has been driven mostly by a lack of precipitation," she said.

Washington had its 18th driest August on record, receiving about one-quarter the normal amount of precipitation. Oregon and Idaho received roughly half their normal rainfall. California was actually slightly wetter than average. National weather records date back to 1895.

Spring rains and melting snow swelled water supplies at the beginning of the irrigation season in Washington.

The state Department of Ecology sent cut-off notices to more than 100 water-right holders in two watersheds in August, but none in the past week, an agency official said Thursday.

Most streams in Washington were at or above normal levels, the U.S. Geological Survey reported Thursday.

Yakima River Basin reservoirs, filled last spring by melting snow, held more water than usual for this time of year, according to the U.S. Bureau of Reclamation.

"If we had this summer on the heels of a dry, warm winter, it would be terrible," Bond said.

The U.S. Climate Prediction forecast, with an unusually high degree of probability, that Washington, Oregon, Idaho and Northern California will have higher than normal temperatures for the rest of September.

Bond said the hot summer may be a "taste of the weather that will tend to be more common in future decades," but it's "not the new normal."

Hirst ruling undermines Department of Ecology's authority to manage water

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The Supreme Court, in a 6-3 decision, ruled last year that individual landowners must prove their new well won't diminish existing water rights, including stream flows for fish. Dissenting judges said the majority placed an intolerable burden on individuals. The Washington Farm Bureau joined other groups in denouncing the ruling as an assault on rural families, communities and economies.

The Hirst ruling undermined the Department of Ecology's authority to manage water. Republicans and Democrats have been unable to agree on a program to offset the cumulative impact of new wells.

The Inslee administration has not offered a solution. The governor said in April that responding to the Hirst decision should not distract lawmakers from issues he considered more important.

"A governor is elected to lead the state, and I feel there has been a lack of leadership on this issue," Senate Agriculture Committee Chairwoman Judy Warnick, R-Moses Lake, said Wednesday. "Often I've seen a governor step in when legislators can't reach an agreement, and this governor hasn't done that."

Inslee should convene a special session to address the Hirst ruling and pass a capital budget, she said. "He's spent a good amount of time going around the state talking about the capital budget, and I just need to remind him he has the ability to call us back."

Inslee spokeswoman Tara Lee said in an email that the Governor's Office has been meeting with legislators. She noted the governor supported a two-year moratorium on implementing the Hirst decision to give landowners time to finish their homes and for legislators to agree on a permanent fix.

"Regardless, there is no justification for linking Hirst to the capital budget and holding up action on one until a resolution is found on the other," she wrote. "Failure to pass a construction budget also costs our state billions of dollars in lost investments and jobs."

Warnick said a moratorium is the only proposal she's heard from the governor's office. Republicans reject a moratorium, arguing it would imply acceptance of the decision and leave landowners, lenders and counties in no better position to make long-term plans.

The building industry hired HR2 Research and Analytics of Bellevue to assess the potential economic consequences of the Hirst decisions. Besides losses stemming from a shutdown in land sales, well drilling and home building, the firm estimated $37 billion in lost property values.

The Hirst decision stemmed from a lawsuit filed in Whatcom County by the environmental group Futurewise and others. The suit successfully challenged Ecology's policy of allowing new wells in an area where a river sometimes falls below state-set minimum levels to protect fish.