

CORE CONCERNS Changing climate presents water, infestation issues for apple industry across the nation

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Body

Apple growers in northern **climates** such as Michigan and Vermont are facing more outbreaks of a nemesis long battled by Washington apple growers - a pathogen known as fire blight that when left unchecked can decimate entire orchards.

While officials believe **climate change** and warmer conditions when apple trees are blossoming are contributing to fire blight's spread, warmer and drier conditions alone continue to be the single largest threat to Washington's apple industry that relies completely on irrigation.

"You don't produce tree fruit without irrigation," said Chad Kruger, the director of Washington State University's Tree Fruit Research and Extension Center in Wenatchee. "Unlike a lot of wheat, which is dryland, you never plant a fruit tree without knowing you have irrigation water."

Jon DeVaney, president of the Washington State Tree Fruit Association, said warmer weather isn't necessarily a bad thing for the state's nation-leading apple industry.

"Certain varieties of fruit are more susceptible to heat," DeVaney said. "Certain weather conditions are good or not good for tree fruit."

That assumes the growers have access to irrigation, however.

"Our **climate** issues surround more about water management," he said. "Where the irrigation systems of central Washington set up, they assume a certain amount of snowpack."

"If that alters, that can create drought conditions in the basin."

Kruger was taking part Thursday in a webinar with other officials discussing the most recent 20-year outlook for available water for growers known as the 2021 Columbia River Basin Long-Term Water Supply & Demand Forecast.

A mandate requires the study be updated every five years by the Washington Legislature.

Kruger said 2015 was the last time snowpack was so low that some producers did not get the irrigation water they expected. While the future outlook depends on myriad stakeholders, decision-makers and water-rights holders, more years of reduced irrigation availability are expected.

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"Warming affects our snowpack. What we are projecting is that there will be more frequent curtailment events, or frequent years when irrigation uses get impacted," Kruger said.

Washington has more than 1 million acres that rely on irrigation.

"It's absolutely huge," Kruger said of the issue. "Water and labor are two of the three biggest issues facing agriculture in the state."

FIRE BLIGHT

While snowpack depletion poses the greatest threat to the industry, Washington growers for years have had to manage fire blight, a bacteria that infects trees mostly as they bloom.

"If you get a rainfall during a bloom and the pathogen is present, that's when you get an outbreak of fire blight," Kruger said. "It's not just changes in temperature. There are a lot more complicating factors."

Patrick and Sara McGuire have been growing apples on 150 acres near Ellsworth, Michigan, since they were married 25 years ago.

They grow a mix of sweet apples and the bitter varieties suited for making hard cider.

Last spring, they put in a new crop of Honeycrisps, one of America's favorite apples, only to discover an unwelcome visitor just a few weeks later: fire blight.

"We actually removed about \$10,000 worth of trees by hand," Patrick McGuire said. "It might've been 25% of that lot."

Terry Bradshaw, a research assistant professor at the University of Vermont, said cider apple trees are at risk because the European varieties they rely on are biennial, making them especially vulnerable to fire blight.

"(They will produce) a lot of fruit in one year and a little in the other," Bradshaw said. "It's just wall-to-wall blossoms during bloom - those are a whole lot more targets (for the bacteria) to hit."

If one crop of cider apples is lost to fire blight, it will be two years before those trees produce again, he said.

With a 10-year pipeline from ordering trees to producing fruit, that kind of setback could prevent growers from staying afloat.

"Twenty-five years ago, fire blight was novel, it was rare," Bradshaw said. "Now climate change is a thing, and fire blight is a thing, and everyone thinks about it every year."

Nikki Rothwell, a specialist with the Northwest Michigan Horticulture Research Center at Michigan State University, said the climate crisis isn't just problematic in terms of fire blight, but also because it's allowing for more generations of insect pests each year.

"If growers cannot mitigate risk in some way, fruit farming is not a sustainable model or business," she said.

RISK IN WASHINGTON

Karen Lewis is a regional fruit tree specialist with the WSU Center for Precision & Automated Agricultural Systems.

She said from 2016 to 2018, Washington had considerably more days of fire blight risk than the previous 10 years.

"In areas where climate change results in warmer springs, fire blight risk will increase," Lewis said.

Since fire blight is easily spread by wind, rain and insects, stopping it in the McGuires' Honeycrisps in Michigan was key to reducing the chance it would infect their 60 acres of cider trees.

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"Fire blight was not typically a problem in northern Michigan, because we're so far north and these bacteria really love warm weather," Rothwell said. "That's really **changed**."

Rothwell said colleagues in Canada have contacted her because they are seeing fire blight for the first time and have no experience in treating it.

Chemical sprays aren't an option for Tieton Cider Works in Yakima, since the company is working toward organic certification for its 50 acres of apples.

General manager Marcus Robert said Tieton anticipates selling about 150,000 cases of cider this year, representing about \$5.5 million in sales, mostly in the Pacific Northwest, California and Idaho.

Robert said they'll visually inspect the orchard for any signs of infection, prune bad stems off the trees, take them out of the orchard and burn them. But there is a price to be paid.

"By June or July, you're seeing a lot of impact in the orchard," he said. "You end up with less canopy, and less canopy means less fruit."

Notes

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