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# WSU's Green Times – March 2015

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## Fighting tulip diseases, weeds with cover crops

Rotating cover crops in tulip fields shows promise for fighting disease in the economically important flower bulb, according to early research findings at the Northwestern Washington Research and Extension Center in Mount Vernon.

In the first round of testing, the occurrence of tulip fire disease was cut by growing a rye-pea mix in August before planting tulip bulbs in October. If second-year results are similar, producers may have a new strategy for fighting the disease, which is caused by the fungus *Botrytis tulipae*.

“The break cover crops provide may be enough to get rid of the disease in the soil,” said doctoral student Yushan “Sherry” Duan. “If we can manage this disease with cover crops, then tulip growers could potentially continue to plant the same crop each year – and not have to alternate between tulips and daffodils.”

[Doctoral student Yushan “Sherry” Duan with emerging tulips from a WSU Mount Vernon greenhouse trial. \(Photo by Kim Binczewski, WSU Mount Vernon\)](#)

Doctoral student Yushan “Sherry” Duan with emerging tulips from a WSU NWREC in Mount Vernon greenhouse trial.

## Top crop for sale and tourism

(Photo by Kim Binczewski, WSU NWREC)

This time of year in the Skagit Valley, the annual Tulip Festival in April attracts hundreds of thousands of visitors from around the world to this small farming community an hour north of Seattle. Commercial and small-scale growers reap shares of the state's \$12 million-per-year ornamental bulb industry during the short growing and harvest season.

Though weeds and diseases take their toll, Northwest growers may someday have an added weapon as a result of cover crop research conducted by weed scientist Tim Miller, Duan and WSU plant pathologist Gary Chastagner.

Duan was enlisted in 2012 to study the impacts of plow-down and cover crops on field production of tulips – one of 25 research projects funded under the U.S. Farm Bill through Washington State Department of Agriculture Specialty Crop Block Grants totaling \$3 million.

## Replacing fumigation, pesticides

“Ornamental bulb farmers are limited to fumigation and a small assortment of highly regulated fungicides and pesticides, which can be costly to their bottom line if multiple applications are needed each year,” said Duan. “For the small-scale growers, fumigation is not an option due to restrictions on many of the chemicals that were previously available for agricultural purposes.”

“Our research has been twofold,” Miller said. “First, we wanted to see whether cover crops or green manure plow-down crops can reduce competition from weeds and soil-borne pathogens, and perhaps reduce the need for pesticide applications. Second, we wanted to find out whether growing these crops immediately before tulips negatively affects flower or bulb production by creating field conditions that are unfavorable for tulips.”

## Collaboration on many fronts

Cut-flower tulip grower Roger Knutson helped Duan establish her half-acre plots on his land near Sumner, Wash., where she planted two cover crops. The cover crops were planted in mid-summer, grown for four weeks and then plowed into the soil about a month prior to planting tulip bulbs.

“We planted the cover crops and he planted the tulips,” Duan said. “It was a real team effort.”

Miller and Duan are also conducting companion trials at the WSU research

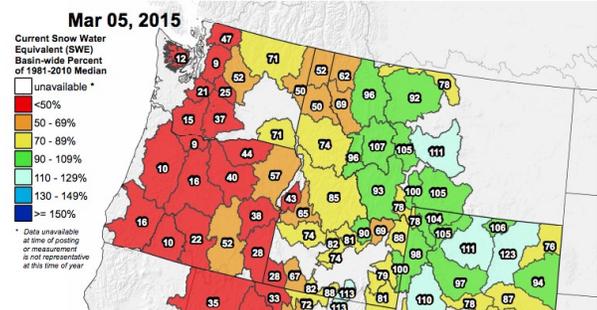
center in Mount Vernon. In a controlled experiment, Duan is working closely with Chastagner, using soil infested with the fungi that cause tulip fire and tulip-gray-bulb rot prior to planting cover crops to determine if the cover crops can help reduce the incidence of these diseases.

“We planted cover crops either in July or in August to see how the planting date affects cover crop growth or their ability to control soil-borne diseases,” said Duan. “We are also evaluating how quickly cover crops break down in the soil before planting tulips. Cover crop residue left on the soil surface should [also] help reduce weed seed germination in the tulip crop.”

## Is this the new climate normal?

With a record breaking high temperatures in the Pacific Northwest this winter and lack of snow, Chad Kruger director of WSU's Center for Sustaining Agriculture and Natural Resources explores what the “new normal” of warmer winters could mean for agriculture in the Pacific Northwest. Read the [full blog post](#) by Chad Kruger.

Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal



## Organic grain and hay growers, sellers link on Extension online bulletin board

It is a good time to be an organic farmer, if Washington State University's new [Organic Grain Sales Bulletin Board](#) is anything to go by.

Of 15 advertisements on the online board, created four months ago by WSU Extension, a dozen are from would-be buyers of organic crops like barley, oats, spelt and hay.

That's encouraging, says [Diana Roberts](#), Extension Educator for Spokane County. She created the online board as an evolution from an older email listserv linking growers and customers.



“It’s a community service connecting buyers and sellers,” Roberts said. “I was working with organic farmers, and they were saying, ‘I don’t know how to sell my crops.’”

While Roberts continues to send emails to the listserv, she wanted a site that was searchable and timely.

On the bulletin board, farmers and buyers submit their goods or needs, their location, and contact information. Roberts is the moderator. It’s up to buyers and sellers to work out the price, quality, certified organic status and delivery method of any deal.

Recently, Roberts has noticed a “definite increase” in demand for food and animal feed crops from Northwest buyers and people farther afield.

“I have not had requests for this amount, and this variety, before,” she said. “There’s an opportunity for people who want to go into organic production.”

Check out the Organic Grain Sales Bulletin Board at <http://smallgrains.wsu.edu/organic-grain-sales-bulletin-board/>.

To sign up to for the listserv, send an email to [robertsd@wsu.edu](mailto:robertsd@wsu.edu).

## WSU scientists to study cider apple qualities

Cider apple qualities and consumer preferences will be evaluated thanks to a \$40,000 “Emerging Research Issues” grant received in February by Washington State University researchers.

“The cider industry will gain a better understanding of the impact of growing environment, location and harvest method on fruit quality – and whether or not these differences are valued by the cider maker or detectable by consumers,” said Carol Miles, horticulture professor at the WSU Northwestern Washington Research and Extension Center in Mount Vernon and lead on the study.

The grant is one of eight awarded by the WSU College of Agricultural, Human and Natural Resource Sciences, or CAHNRS. These grants support innovative approaches to resolving significant issues – including social and economic factors – faced by the state’s agricultural industries.

Miles will evaluate fruit quality of several cider apple varieties harvested from four orchards in Washington to see if there are differences due to environment. She also will use a mechanical harvester at NWREC research

orchard in Mount Vernon to determine the impact of that technique on fruit and juice quality. (Read about [related research](#)).

Miles has been investigating cider apple production at Mount Vernon since 2007. For this study, her WSU project collaborators in Pullman are Peter Tozer, research associate in the School of Economic Sciences, and Carolyn Ross, associate professor in the WSU/UI School of Food Science.

Tozer is working to determine how cider makers value certain juice qualities such as tannin level. Tannin is a bitter-tasting organic substance present in some plant tissues. Cider apples have high levels of tannin compared to dessert apples, but it is uncertain if cider makers pay more for juice that is high in tannin.

Ross, who manages the CAHNRS Sensory Evaluation Unit, will evaluate the sensory qualities of cider made from juice from Miles' experiments to see whether consumers can detect differences due to location or harvest method. Ross will compare two evaluation methods: a human tasting panel and electronic tongue technology. (Read more about the [electronic tongue](#)).



Cider qualities are evaluated in a processing lab at the WSU NWREC in Mount Vernon. (Photo by Kim Binczewski, WSU NWREC)

## Volunteers raise the roof on relocated hoophouse

The new Eggert Family Organic Farm got a new plastic hoophouse late last month. Two dozen volunteers and staff came out on a chilly February morning to install the plastic cover.

The farm grows vegetables in the hoophouses which serve to extend the growing season – warm season crops in the summer and cool season greens in the winter and spring. Hoophouses are used year round and produce some of the highest yields on the farm.

To learn more about hoophouses, also known as high tunnels, check out

these resources: <http://mtvernon.wsu.edu/hightunnels/>  
and <https://pubs.wsu.edu/ListItems.aspx?Keyword=high%20tunnel>



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