

People & Places

Quest for the best apple

By DAN WHEAT
Capital Press

WENATCHEE, Wash. — When Kate Evans was a little girl in Sheffield, England, she enjoyed pulling apart plants in her parents' garden.

She was seeing how they were made. She was looking for flower and leaf buds.

"My parents were fine with it. We had lots of flowers. There were enough to spare," she says with a smile.

Forty years later, she's developed and manages what is arguably the most advanced apple breeding program in the world. It's the first to use DNA testing for fruit quality, in other words aimed at the best firmness, crispness, juiciness, flavor, sweetness and storability of apples.

Some European apple breeding programs were first in applying DNA testing to disease resistance, she said.

Evans came to the Washington State University Tree Fruit Research and Extension Center in Wenatchee seven years ago as an associate professor of horticulture and pome fruit (fruit produced by flowering plants) breeder and head of the center's apple breeding program. She succeeded Bruce Barritt who retired and had started the program 14 years earlier.

Evans had her doctorate in plant molecular biology and had spent 16 years leading apple and pear breeding programs for East Malling Research, in England.

When she arrived in Wenatchee, the center's apple breeding program was just heading toward DNA testing.

"It was in its absolute infancy, so a lot of the work I've focused on is how to use that technology to develop the logistics of the application because it has to be 100 percent accurate regarding the traceability of the data to the individual seedlings," she said.

"When you use the data, you remove or throw away the seedling. So it's terminal selection. If you make a mistake and throw away the wrong one, you've wasted everything," she said.

DNA testing is done at seedling selection stage and prior to that in selecting the most efficient parent combinations to produce desired characteristics.

Previously, parents were chosen for their general fruit and tree characteristics, but with DNA genetic markers parents



Dan Wheat/Capital Press

Kate Evans, Washington State University apple breeder, looks at fruit from breeding selections at the WSU Tree Fruit Research and Extension Center, Wenatchee, Wash., Nov. 17. The apples came out of cold storage and were brought to room temperature for a week before being measured for firmness, crispness, flavor and juiciness.

can be better selected to reduce the number of poor progeny. A genetic marker is a gene or short sequence of DNA that's a good indicator of a specific trait or characteristic.

"You can have markers for single traits, markers for multiple traits and several markers for the same trait. Not often is a trait controlled by a single gene," she said.

"We know acidity is predominately controlled by two major genes, but for other more complicated characteristics the DNA tests only explain a portion of the overall characteristic," Evans said.

A lot of research is going into identifying more DNA markers. But it is slow work. The USDA-funded RosBREED project led by geneticists Amy Lezzoni, professor of plant breeding at Michigan State University and Cameron Peace, associate professor of horticulture at WSU in Pullman, is making progress.

Quality and storability are the overriding targets of the WSU apple breeding program. Producers want fruit that pleases consumers and stores well for year-long sales.

More specifically, Evans uses DNA testing to aim for desired levels of flavor or sweetness versus tartness (sugar versus acidity), firmness, texture

Western Innovator

Kate Evans

Age: 49

Born and raised: Sheffield, England

Family: Husband, Peter Smytheman, entomologist and research intern WSUTFREC. Children: Thomas, 16; Chloe, 15; Luke, 12; and Mathew, 10.

Education: Bachelor's in genetics and plant biology, Leeds University, Leeds, England, 1988; doctorate in plant molecular biology from Durham University, Durham, England, 1991.

Occupation: associate professor horticulture and pome (fruit produced by flowering plants) fruit breeder, WSU Tree Fruit Research and Extension Center, Wenatchee, Wash.

Work History: Senior research leader responsible for commercial and strategic apple and pear breeding at East Malling Research, East Malling, Kent, England, 1992-2008.



and ripening.

It takes about 18 years from crossing parents for hybrid seed to reach commercial release of a new variety.

"The DNA technology is more focused on efficiency than speed, but in five years we may be at a point of having sufficient DNA markers for important characteristics that we will be able to take out one of the selection phases and save three to four years," Evans said.

Three new varieties were released from the program in recent years, all from Barritt's breeding. WA 2 didn't gain traction in the industry because

there was no commercial name and companies were leery of marketing a variety that could end up with multiple names. WA 5 had some long-term storability issues. WA 38, released over the past several years, was given the name Cosmic Crisp™ by WSU in 2014. Proprietary Variety Management, a Yakima company that specializes in variety management, is assisting WSU with the apple.

Nurseries budded trees this past fall and there may be 500,000 trees, instead of 300,000, divvied out to growers by lottery for planting in the spring of 2017, Evans said.

"I've heard more than 1 million are on order for 2018, so that's high industry interest," Evans said.

Any apple released by WSU has to be available to all growers. That's in contrast with the trend of recent years of apple companies gaining exclusive North American rights to European and other foreign varieties and managing them with their own growers.

There's value in the program producing varieties for all Washington growers and varieties suitable for Washington's climate, Evans said.

WA 38 was bred from Enterprise and Honeycrisp in 1997 by Barritt. It has great sweet, tangy flavor and great texture and beauty, Evans said. It has many qualities of the popular Honeycrisp but with fewer horticultural challenges, she said.

Evans said she doesn't know when the next variety will be released. Four selections are in the final phase but they may or may not reach release, she said.

Beside the apple program, Evans is starting a pear rootstock breeding program.

"One of the major challenges is the lack of a dwarfing, precocious, cold-hardy rootstock that would enable the pear industry to move into modern orchard production systems," she said.

Idaho couple to be honored for years of Farm Bureau service

By JOHN O'CONNELL
Capital Press

INKOM, Idaho — Throughout the past two decades, Carol Guthrie has served in all levels of Farm Bureau Federation, working to get women more involved in the organization's activities.

When she was first appointed as Bannock County Farm Bureau's women's leadership chair, Carol and the county president's wife were the lone women organizing essay and speech contests and other efforts to promote agricultural awareness in their community.

Nowadays, however, Bannock County has arguably the state's most active women's committee, thanks to a policy Guthrie helped implement requiring couples to join the county Farm Bureau board together.

Fittingly, Carol and her husband, Jim, will be honored as a couple on Dec. 2 in Fort Hall when they're presented with the prestigious Presi-



John O'Connell/Capital Press

Jim and Carol Guthrie feed cattle together at their Inkom, Idaho, ranch. The couple will receive the prestigious President's Cup award on Dec. 2 during the Idaho Farm Bureau Federation's annual banquet.

dent's Cup award during Idaho Farm Bureau Federation's annual banquet.

Idaho Farm Bureau spokesman John Thompson said the state board makes nominations for the President's Cup, a lifetime achievement award recognizing extraordinary service to state agriculture.

"Their leadership has been up there with the very best people we've ever had," Thompson said.

Jim became active in Farm Bureau shortly before his wife, when he ran for the Bannock County board at the encouraging of his son, Doug, a Farm Bureau agent.

Jim has served on the county board ever since, and has worked especially hard in supporting the organization's efforts to protect private property rights.

Jim encouraged his son, Sen. Jim Guthrie, R-McCammon, to introduce a bill in the state Legislature barring greenbelt trail organizations from condemning private property to complete trails. The bill passed last year. More recently, Guthrie lobbied in support of land owners who successfully stopped a county proposal to forcibly validate easements to access public land through their private property.

"This year has probably been the busiest year we've had on account of private property rights," Jim said.

Carol went on to be elected to the district and then state Farm Bureau boards. When she joined the state organization, she said 19 counties had active women's committees. All but three counties had active women's committees when she left the

state board last year, having been elected to serve with American Farm Bureau Federation. Carol said Farm Bureau President Bob Stallman likes to utilize women in lobbying, convinced lawmakers are more swayed by their arguments.

"Where men are all business, women have a personal story about how a bill is going to affect their families," Carol said.

Carol and Jim recently attended the American Agri-Women Conference in Maine, where groundwork was laid for a coalition of women from various farm groups to work toward common goals.

On their ranch, the Guthries carved a unique niche, specializing in roping cattle, which they leased for roping competitions in four states. They also built an expansive, indoor arena to host roping competitions. In recent years, they've scaled back the roping business, shifting toward beef cattle, but still host an occasional event.

Calendar

To submit an event go to the Community Events calendar on the home page of our website at www.capitalpress.com and click on "Submit an Event." Calendar items can also be mailed to Capital Press, 1400 Broadway St. NE, Salem, OR 97301.

Friday, Nov. 20

Agri-Business Council of Oregon Denim & Diamonds Auction, Dinner & Awards, 5 p.m. Oregon

Convention Center, Portland, 503-595-9121.

Friday-Saturday Nov. 27-28

Open Alpaca Barn, Alpacas of Oregon, Sherwood, 503-628-2023.

Tuesday-Thursday Dec. 1-3

Idaho Farm Bureau 2015 Annual Meeting, Shoshone Bannock

Hotel, Fort Hall, Idaho.

Saturday-Wednesday Dec. 5-9

California Farm Bureau Federation 97th Annual Meeting, Peppermill Resort and Spa Casino, Reno, Nev.

Monday-Tuesday Dec. 7-8

Oregon Seed Growers League

Annual Meeting, Salem Conference Center, Salem, 503-364-1673.

Tuesday-Thursday Dec. 8-10

Oregon Farm Bureau Annual Meeting, Sun River, Ore., <http://www.oregonfb.org/events/>

Sunday-Wednesday Jan. 10-13

American Farm Bureau Annual

Convention, Orlando, Fla.

Tuesday-Thursday Jan. 12-14

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

Thursday-Friday Jan. 14-15

Oregon Mint Growers 67th Annual Meeting, Salishan Lodge & Golf Resort, Gleneden Beach.

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