WEATHER or not

Nurseries rely on forecasting firms to help protect crops from meteorological events

While shade trees can often handle a little snow, growers of other precious crops appreciate a heads-up before adverse weather hits, so that they can put protection plans in place.

By Tracy Ilene Miller

On *Wednesday AM LOW: 53-57! Warm and dry today, then much hotter and* dry. *Records? Main ridge will remain a dominant factor ruling our weather the next 2 weeks. However, a weak* *system will move thorough, BC today, Holding temps down a bit, and allowing a modified Marine push to remain over us.*

– ERF COMPANY INC., PORTLAND, OR

Phil Volker says he's been a "weather man" since he was a kid. He's certainly been into meteorology all his adult life, starting first at Oregon State University and then moving into television before forming his own consulting business more than 28 years ago.

He provides weather forecasting for more than the agriculture world, but those customers in the nursery

industry have come to rely on his hands-on approach to help them through hard times. One of the traits he says makes his job easier with nurseries is their independent-mindedness. Nursery people use his service but also look at other available data and their own experience to make decisions.

"Most of my nursery clients are independent thinkers. I help them any way I can and they will look at other sources," Volker says. "I give clients a voice of reason. I don't get overly panicked, and [I] provide them the most reasonable scenario."

And there are always failures ("I've had forecasts that I'm embarrassed about. You can look pretty stupid," he says.) but there are also the successes.

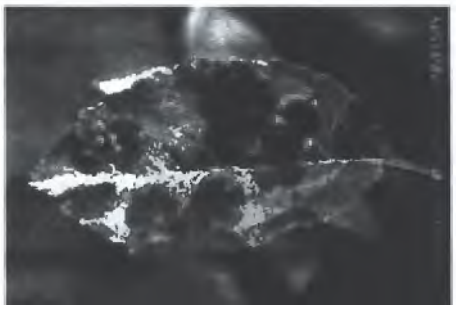
Volker remembers one memorable instance in February 1993 when he forecasted that a beautiful stretch of gorgeous weather would turn into a night of sticking snow. All his competitors said the temperatures would rise and it would turn to rain. At 6 p.m. that night, Volker added 4 inches of snow to the forecast for mainly the north Willamette Valley — which ended up with 12 inches of snow.

Greg Pilcher of Iseli Nursery says the Volker reports are an important part of the overall management strategy because they put into perspective data collected on-site. For instance, the daily temperature reports coming from Volker's firm, ERF Company, may be gathered from a farm a half-mile away causing a reliable, historical five-degree difference on Iseli property that is taken into consideration when reading the reports. Or the Volker reports in tandem with data collected at the nursery can help to figure cultural or nutrition practices that may have caused plants to react during weather events.

Volker's firm works with more than 40 nurseries and 150 agricultural clients in the Pacific Northwest and California, but his focus is Oregon. It costs $150 per month for nursery clients who are on a month-to-month contract and $85 per month for year-round contracts. Clients receive mail and fax updates, but the biggest benefit is the almost 24-7 service. Clients call Volker anytime, and he in turn makes special calls to tell them of particular events they may need to prepare for. He estimates he's on the phone to as many as 30 of his 40 nursery clients once per week.

The cold snap of January 2004 is one of those events that had him on the phone for hours. Not only were the conditions cold and snowy, hut they were icy as well. Weather forecasting helped him prepare clients for both the onset of the event and the prolonged nature of it. But, in the end, Mother Nature is still herself, and even with weather forecasting, there is only so much that can be done.

Brooks Tree Farm in Salem, Ore., has subscribed to Volker's service for more than 10 years. Co-owner Kathy LeCompte likes that the reports provide a multiple-day outlook and the phone consultations are no extra charge. She uses the reports to help advise customers whether they should be picking up trees.



With accurate weather forecasting, growers can apply copper to crops and avoid apple scab infections, which are caused by moist conditions at certain temperatures.

"If we know it's going to be too

Growers use meteorological forecasts to get a jump on pulling or placing poly over sensitive crops.

ERF Company uses weather-tracking data, such as this pressure-systems map on the National Oceanic and Atmospheric Administration site, to make forecasts for clients.

Phil Volker used this ocean surface pressure-systems map to help a freighter shave a week off a trip from China to Portland, guiding the vessel through calm seas under a high-pressure system.

cold or too wet, I'll ask them if they're sure they can plant," LeCompte says.

In addition, Volker provides an extra service to some nurseries during shipping season to give weather data from back East so that nurseries can coordinate shipments during frost-free or other adverse conditions.

LeCompte also uses the reports to help her determine where to send her crews.

"If I knew it was going to be hot, we know to send crews to higher elevation or to start at 6 o'clock to work more safely or more comfortably," she said. And LeCompte doesn't spray when she knows it's going to be hot. She's also potted plants when Volker predicted it was going to he unusually hot in order to have samples to test how the trees would behave if customers had claims about the performance of purchased seedlings.

On the other hand, the reports might help her determine when she needs to prewater for root pruning when there are going to he coder temperatures. And in winter, she checks every few hours to see if a winter temperature inversion will send crews to higher elevations. Because her farms are 40 to 50 miles apart, a report might identify a big storm that her crew could beat by starting work at one farm over another.

But of all the times she used Volker's services, she will never forget a storm in the mid-90s. "We honestly had no clue it was going to be as had as it was," she says.

One of her farms is in the bend of a river, surrounded by three sides. LeCompte said they knew the river was going to get high, but it reached higher than she ever expected.

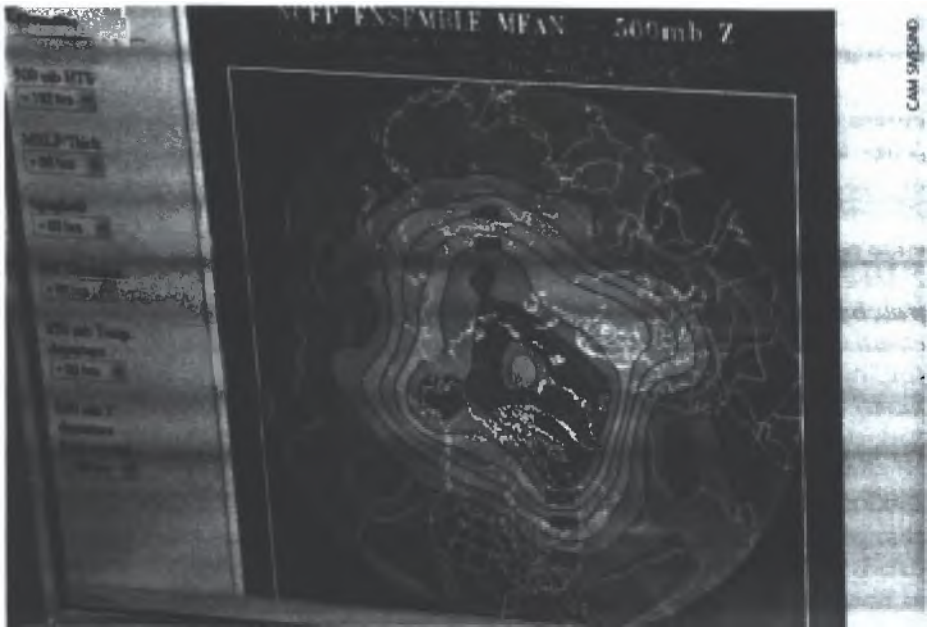
"Right away I called Phil, and he told me how bad he thought it was going to get," she says. "Phil stayed on the phone, on and off, for hours."

There were hour-by-hour assessments when Volker helped translate what was happening that led

LeCompte to move equipment, a horse and a worker's family to safety. They had a little more than seven hours to work with. There was still thousands of dollars of damage and lost product, but LeCompte says she couldn't have saved what she did without Volker.

"It was so helpful, and reassuring. He ended up going through this with us. Even if it's had news, it's better to know," LeCompte says.

"There's criticism of all the weather forecasting tools that they're too vague. They're not perfectly accurate, but that's part of the deal. I don't think anyone can predict where a cloud is going to go," she says. "I think they do the best they can, and given that they are fairly accurate, I use them knowing I'm not going to expect the reports to be perfect"



One NOAA mode! used by ERF Company takes more than 190 single data readings to produce a mean forecast If individual snapshot readings do not match the mean reading, Volker throws them out and follows the mean forecast

On *A very hot July* ***2006 will end with a few days of morning cloudiness and cooler temps for the entire PNW. Flow aloft will be from the SW through August 2 and then shift to a steady westerly direction. Therefore, marine influence will predominate for the next 2 weeks. Pleasant temperatures, patchy morning 'marine deck' clouds, and no real threat for rainfall.*** *-> Possible for a few* ***showers north of Seattle, esp this weekend. Yep, dust-busters, at best***

— RUFUS LA LONE, THE WEATHER CAFE

Computers and the Internet have changed dramatically how weather data is gathered and processed, as well as how it is disseminated.

Rufus La Lone, an entomologist from Silverton, Ore., who works for The J.M. Smucker Company, has been forecasting weather for almost 30 years but began "broadcasting" with the advent of the Internet. He provides a broad picture and overall trends to interested readers. There are no "high/low" forecasts, for instance, in his free messages and reports.

He stresses that his report supplements what's provided by private forecasting services and other sources, such as the National Weather Service, to give growers more information to aid in their decision-making process. He looks at progress charts, medium and long-range forecasts, weather models and other information to modify some of the assumptions about topography and other factors made by models to come up with more realistic assessments.

Part of the problem that is frustrating about the historical data used in Pacific Northwest models, he says, is that weather occurs in the atmosphere, and so it is best understood from balloons that go up and analyze its physics. But because there is an ocean, rather than cities, to the west of the Pacific Northwest states, "we don't have as many weather balloons going up in that area. We have ships for surface measurements and we have readings from airplanes at high altitudes, but nothing to measure in between," Rufus says.

Satellites provide pictures but no assessment of the dynamics of air, temperature and humidity. That's why growers still rely on private services. It takes crunching data and various models and databases to get at more accurate readings of what actually will happen with weather.

"I like to look out seven to 15 days," La Lone says. "It's not so much about being accurate as trying to offer a reasonable reality check six to 12 days down the road. I try to keep it informal and still enlightening."

Weather Café patrons, as La Lone likes to call them, can get their reports directly via Yahoo Group mail or online at www.nwipm.info. And by looking at information a few years back, La Lone can often help his patrons take steps to protect their crops.

During Oregon's two heat waves this slimmer, La Lone kept his readers ahead of the hot weather. "A lot of growers appreciated the advice to water up. We were able to give people a heads-up to water," he says.

O Synopsis...A surface ridge of high pressure poking east into northern Washington will turn light low level winds form the northwest to the northeast today and tonight. Higher up... an upper level trough of low pressure will move east today... with an upper level ridge replacing it by Sun. This will turn westerly winds aloft towards the north by Sunday morning

— SPECIAL WEATHER STATEMENT, NATIONAL WEATHER SERVICE, PORTLAND, OR, SAT., AUG. 12, 2006

Oregon State University has many intersections with weather forecasting and climate data. The Oregon Climate Service (www.ocs.oregonstate.edu/index.hunl), affiliated with the College of Oceanic and Atmospheric Sciences and the "state repository for weather and climate information," is located on the Corvallis campus. Online are forecasts, climate maps and other information from government sources.

And then there is the Integrated Plant Protection Center in the College of Agricultural Sciences, which collects research and provides online access to weather data and pest phenology models to help growers predict events and make decisions about timing of management activities, such as when

to first sample or to apply pesticides of fungicides.

Jay Pscheidt, professor at Oregon State University and an extension plant pathology specialist, works with plant diseases. To explain how weather forecasting helps to control disease and other pests, he starts with the Mills Table, developed as one of the first models for predicting the onset of disease by relating temperature and wetness to predict whether conditions are favorable to apple scab. The table helps forecast apple scab infections by looking at rainfall, moisture conditions and temperature, which in turn helps growers determine if and when to apply copper for disease control.

Pscheidt says the model was developed during World War II, when heavy metals were in short supply and conservation was a must.

It's based on logic. If a rain event comes through when the fungus is there, we don't have to worry about spraying," he says. "So, rather than spraying each and every week, they could hack off and conserve resources.

But Pscheidt laughs and mentions Lewis and Clark's detailed notes of Oregon's legendary rain to note that the model works well when there is variable weather, but there's no question of the rain in Oregon every spring.

"You can anticipate it each and every year," he says. "We're growing apples and crabapples and they're starting to bloom, and it's going to rain and the leaves arc wet for a long time."

So it takes understanding the biology of disease and pests and relating it back to weatherdata in order to implement a specific model in a detailed way.

"Once you understand the biology, you can fine-tune the spraying schedules," Pscheidt says. For instance, instead of spraying more, "you can look at the weather forecast, and if there's rain and it's going to he in the 30s and 40s for highs, you might say, 'I don't need to spray. I might be able to hold off.'"

Weather forecasting and its contribution to pest control is therefore not an exact science — it's as variable as the weather. But it's nonetheless possible to implement specific models in combination with an understanding of the biology of pests to reduce pesticide applications and to influence other management practices.

Pscheidt says one can work the models and still miss the predictions, but having the information is "better than what we're doing in the first place. The whole idea is not to waste pesticides. Use them if we need them, but don't if we don't need them. Too much fungicide, and resistance develops."

At www.ipmnet.org, real-time weather data, forecasts, phenology models and other data are available, as well as a degree-day mapping calculator — all in easy-to-use formats. Online models are available for more than 40 species, including apple scab, coddling moth, filbert worm and fire blight.

Degree-day calculations try to help flatten the fluctuations in estimating the developmental rates of pests for better forecasting of critical life stages and the timing of a grower's response. The online degree-day maps take into account elevation, terrain and local effects to show degree-day accumulations over a given time period. Seven growing regions in Oregon are on the Web site, which allows growers to estimate for their location by looking at the region with the most similar weather.

Tracy Ilene Miller is a freelance writer in Eugene, Ore.