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## Wireless frost alarms prevent berry damage



### Outdoor Applications



**Application:** Frost Alarm Monitoring  
**Industry:** Agriculture  
**Organization:** Oregon Berry Packing Company

#### Wireless frost alarms prevent berry damage

iPods, laptops, and BlackBerrys® - everywhere you turn - computers have become a major part of daily life and business, including the "simple life" of working on a farm. Recent advances in technology have helped make crop management become easier and more efficient.

While technology continues to evolve, so too do the devices that monitor environmental conditions. Growers now have access to tools that closely track air temperature and soil conditions. They can use this information to predict when plants should be protected from frost or to modify an irrigation system for optimal yield.

Oregon Berry Packing Company, an Oregon-based, family-owned, commercial berry farm, is one example of a commercial grower leveraging the power of new sensing technology. To produce the highest quality fruit, Unger relies on a variety of tools and technologies in their business, including wireless environmental sensor technology to monitor air temperature and soil moisture conditions in the field.

Will Unger is the field-manager overseeing the 240-acre farm. "We were looking for a way to cut the time and money we spent going out into the field to manually download our data," explains Unger. "It would take one of our farm managers several hours to go to nine different field locations and download the information necessary to access the environmental conditions affecting our blueberry and blackberry crops."

According to Unger, the farm manager would go out into the field every couple of weeks to download the data. "We wanted a system that would automatically download the real-time data directly onto a PC at our office."

As part of their monitoring strategy, Oregon Berry Packing chose HOBOnode™ wireless temperature and soil moisture sensors from Massachusetts-based Onset Computer Corporation.

The HOBOnode sensors, which are roughly the size of a small flashlight, transmit high-accuracy air temperature and soil moisture data to Unger's PC several miles away without cables.

"Installing the sensors was easy," explains Unger. "We installed 24 sensors to the wireless sensing network with three repeaters that transmit signals a half-mile apart."

All of the farm's environmental data is transmitted from the HOBOnode repeaters directly to a HOBOnode receiver, which interfaces with Unger's PC via a USB cable.

"Since installing the sensors, all we have to do now is look at our computer to get the data," says Unger. "For the first time, we are able to view conditions on the farm as they happen."

The accompanying HOBOnode Utility viewer – a free software download from Onset's website - displays real-time graphs of the farm's environmental conditions, and provides Unger with alarm notifications via text messaging and email when conditions exceed a set temperature threshold.

"The software is straightforward and allows us to easily view our data," says Unger. "For a more detailed analysis, we export the data to Onset's HOBOWare® Pro software which allows us to quickly readout and plot data, and export the information to a spreadsheet."

Unger emphasized the importance of the system's alarm notifications. "We had a frost event take place in April," he explains. "The weather reports indicated that there would be frost so it wasn't a big surprise when it occurred. We were prepared for it and waited for the text message to be sent to my phone to wake us up so that we could turn on the irrigation pumps. However, a few nights later, an unexpected frost event hit the area. We were woken up by the text message and were able to respond fairly quickly and get the irrigation pumps working to shield our blueberry crop from the cold temperatures."

According to Unger, the alarm notification helped protect the farm's 15-year old blueberry plants. "During the bloom period, blueberry plants are susceptible to frost. If the blossoms get damaged, berries won't be able to grow."

Unger concludes, "Not only does the wireless system save us time and money – the alarm notifications tell us whether we need to irrigate for frost control or heat control. We have peace of mind knowing that we will be notified when situations occur - giving us one less thing to worry about."

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