

Mitigating Weather Damage & Saving Crops: Smart Yields at 5,500 Feet in Colorado

Smart Yields and the Rocky Mountain Farmers Union (RMFU) launched a state-of-the-art program in spring 2018 to monitor crops using wireless sensors and data analytics. It is the first program of its kind in Colorado, currently spanning nearly 1 million acres of land along the Western Slope.

The program involves farmers, growers and ranchers throughout the state who are working with Smart Yields and the RMFU to implement a network designed to protect crops and optimize operations. Hundreds of remote sensors and low-power, long-range wireless networks are being deployed to provide real-time crop monitoring, weather alerts, trends, forecasts and recommendations via the Smart Yields multi-lingual mobile solution. Smart Yields is working with RMFU to gather feedback and explore other sectors where these systems may serve a role.

The program follows the successful implementation in 2017 of Smart Yields systems at the Colorado orchards of **Leroux Creek Foods**, which saved a key apple crop during a late-season frost.



Situation

Apple, cherry, peach and other growers in high-altitude areas of Colorado face early- and late-season frosts that kill these high-value crops.



Solution

Smart Yields wireless monitoring stations alert farmers to issues in real time, allowing them to activate heating systems in the most critical areas.

Edward Tuft founded Leroux Creek Foods more than 30 years ago in Western Colorado, in what today spans nearly 500 acres of certified organic orchards in the heart of the snow-capped Rocky Mountains. He's no stranger to the early- and late-season frosts that can cost growers here millions in losses of high-value crops such as apples, cherries, peaches and plums.

A pioneer in flavored apple sauce products, Leroux Creek Foods processes and packages millions of pounds of apples each year for Leroux Creek and private-label snacks and baby foods. The company has up to 70 employees throughout its operations.

In this area around Hotchkiss, Colo., orchards start at nearly 5,500 feet in elevation, with nearby growers producing crops up to 7,600 feet.

"A spring frost can kill the blossoms and make it hard to compete with orchards in mellower climates, such as Washington State," Edward said. "I had been looking for an effective, affordable crop monitoring system for nearly a decade when I found Smart Yields."

Edward wirelessly tracks variable conditions such as humidity and temperature throughout his highest-value crops. This system reports temperature in real time at various altitudes, which is critical due to inversion. Farmers can then activate heating and fan systems to regulate conditions. During a late-season frost in 2017, the system saved his Honeycrisp crop, worth hundreds of thousands of dollars.

"It can cost \$500 an acre to heat an orchard through frost season, so this system, which I can easily monitor in one platform on my mobile devices, reduces my expenses by allowing me to operate more efficiently," Edward said.

"When Smart Yields technology is used in coordination with other farmers, it ceases to be solely about what is important at your farm, and it shows you what is important about conditions across many farms."

*Harrison Topp,
Director of Membership
at the Rocky Mountain
Farmers Union;
grower of peaches,
plums, cherries
and apples*



Impact

By comparing anonymized data, Smart Yields produces solutions that help farmers better predict their yield, reduce risk and save valuable resources.

Harrison Topp, director of membership at the Rocky Mountain Farmers Union, said members have been eager to test the grower-centric technology on their crops. Smart Yields is deploying monitoring systems at Colorado orchards ranging from 10 acres to 500 acres.

While growers have used various temperature-monitoring technologies for decades – ranging from marginally effective hardware-store sensors to WiFi systems, an added value in Smart Yields technology is detailed data collection, which allows farms to work together to improve overall operations.

“The region becomes the data set,” Harrison said. “Regardless of the size of the farm, this helps us understand these conditions on a larger scale.”

Fourth-generation farmer Steve Ela of **Ela Family Farms**, which has operated in Colorado since 1907, uses five wireless temperature sensors across his 80 acres of peaches, apples, pears, plums and sweet cherries. Radio-frequency communication significantly cuts costs over installing cellular WiFi hotspots, and having a variety of sensors allows him to monitor with additional accuracy – critical in freezing weather.

Steve can set an alarm to turn on his 11 wind machines, which allow warmer air to circulate and help regulate crop temperatures: “They allow you to micromanage a bit more, so you don’t miss turning them on when you should, but you don’t run them excessively,” he said.

“Climate change is going to shake up what we know as normal,” he said. “Every year adds another data point.”

“With Smart Yields I can quickly update key factors, like my temperature threshold for turning on wind machines, right from my mobile device – having that ability provides me another valuable way of monitoring my crops.”

Steve Ela,
Ela Family Farms;
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