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Smart orchard technology catches on in Central Washington

By DAVE LEDER For the Capital Press
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An array of instruments collects data about the orchard block to produce a map showing its status.
Dave Leder/For the Capital Press

Growing fruit can be a guessing game from one year to the next. But what if growers had the ability to predict their crop yields and manage labor resources based on scientific data instead of just a hunch?

The founder of innov8.ag, a Walla Walla, Wash.-based agricultural technology startup, believes he may have a solution to all of this grower uncertainty: smart orchards.

Owner Steve Mantle has partnered with Washington State University and the Washington Tree Fruit Research Commission to develop a high-tech system of collecting data points in select orchard blocks. Innov8.ag then compiles that data and provides its clients with a detailed, holistic report about how specific sections compare with the rest of the orchard.

“Our focus is on bringing together the data sourcing — yields, soil, nutrients, water, labor — and repackaging that data digitally for growers so it can be more impactful on their operations,” said Mantle, a former Microsoft mergers and acquisitions strategy director who founded innov8.ag in 2019.

“We bring in data from many different sources so we can empower growers with new insights that will ultimately help their business,” he added.

The company introduced its first smart orchard at Chiawana Orchards in Pasco in 2020, and began working with Washington Fruit and Produce Co. in Grandview earlier this year.

The company partners with imaging and sensor providers like Tuctronics, SoilOptix, Dynamax, ThingyIOT and GreenAtlas to place high-tech instruments throughout the orchards, allowing Mantle and his team to monitor everything from soil nutrients and moisture levels to the size of an individual tree trunk or piece of fruit.

The team then drives through the orchard blocks on a four-wheeler, using camera and LiDAR imaging technology to collect the data. Servers inside a portable trailer store the information, which is presented to the client in a report that can easily be understood — and used.

“Maps are something that every grower can relate to,” Mantle said. “So, when we bring them a soil-mapping report, for example, they just get it. We can reduce all of the data down to a granular level, and they can use that data to decide where they need to make up for

deficiencies in nutrients or water."

Once growers understand why a certain orchard block has been underperforming, they can make the necessary adjustments to increase crop yields in those blocks during future years.

"What concerns growers most is their yields, so if we can show them in detail some of the things happening around their orchard, they will have a better idea of what the risks are before the next growing season," Mantle said.

Another key benefit to the smart orchard concept is that it can potentially save growers a significant amount of money on labor. Instead of sending workers into the fields to arbitrarily hand-trim branches in random orchard blocks, growers can use the data derived from the orchard sensors to send their workers to specific areas that need more attention.

Mantle explained that the goal is not to replace human labor but to augment it. Smart-orchard technology is merely a tool that gives orchardists and viticulturists an opportunity to maximize their yields — and, ultimately, their profits.

"Having this data lets growers converge on the zones that are outside the norm and then move on to the next block," Mantle said. "This new information can help them be even more efficient. This all comes down to helping growers decrease risk and improve their bottom lines."