

GIS

Wacom Interactive Pen Display and ESRI Software Map Aerial Imagery at Ste. Michelle Wine Estates



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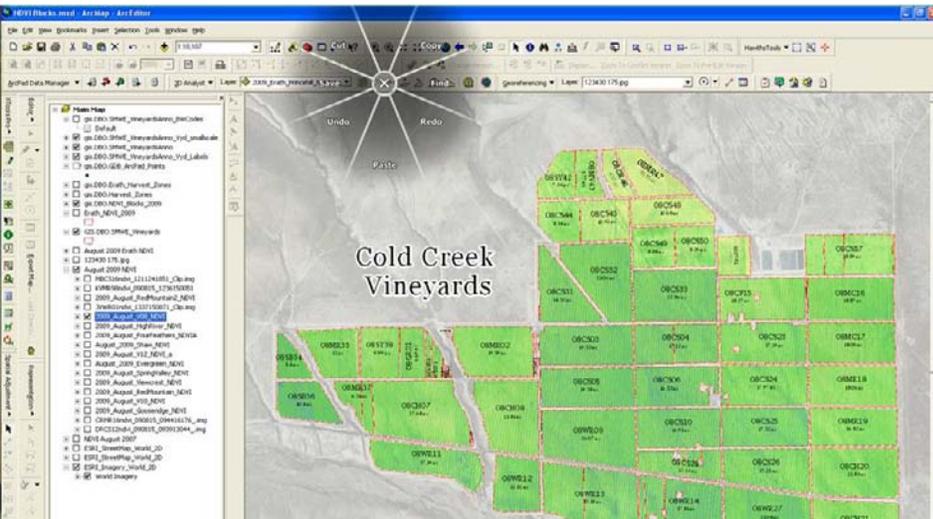
Precision Ag

Specialist

Every year at harvest time, a plane with a multispectral camera flies over the vineyards of the award-winning Ste. Michelle Wine Estates to capture detailed images of 3,500 acres of grapes in Washington and Oregon. This aerial imagery is delivered in hundreds of 20-acre blocks and then georeferenced in ESRI's ArcView software, using a Wacom DTZ-2100 interactive pen display.

Viticulturists, managers and winemakers use the digital aerial imagery to analyze grape canopy density prior to harvest, leading to more efficient operations and ultimately, better wine. In order to show real-time vineyard conditions, the entire process -- from imaging to georeferencing, mapping and geodatabase updates -- must be completed in just one month's time. Because of the short time frame, a rapid and accurate workflow is imperative for the winery's Precision Ag Specialist, Jennifer Smithyman.

The combination of the Wacom DTZ-2100 interactive pen display with ESRI software has proved to be the ultimate method for Smithyman to manipulate this aerial imagery. The DTZ-2100 enhances many of the features included in the ArcView software suite. Smithyman can move quickly through editing sessions to select coordinates, snap vertices, or place points, drawing directly on the Wacom 21-inch LCD screen. The interactive pen provides a natural feel with pen-point accuracy as images are snapped into place. Prior to obtaining the Wacom pen display two years ago, Smithyman used a trackball, which was not only tedious, but lacked the DTZ-2100's precision.



Georeferencing with a Wacom interactive pen display is easy, fast and highly accurate.

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“I can complete a typical georeferencing project 20 percent faster with the Wacom pen and monitor, compared to the trackball method,” Smithyman notes. “When I georeference these images, I’m basically rubber-sheeting them using Ortho and our vineyard outline data. I’ll take approximately 14 points to get each image georeferenced, and with the DTZ-2100 in my workflow, I get a lot more accuracy. These performance benefits are invaluable, especially during our massive crunch time right before harvest.”

The Wacom pen display’s precision is crucial for identifying differences in canopy density in the vineyard that are revealed when the aerial imagery is converted to the NDVI format (Normalized Difference Vegetation Index). The NDVI format displays the photosynthetic output of plants, based on their spectral bands in aerial imagery. The DTZ-2100 pen’s accuracy makes it possible to pinpoint specific plants easily, so their fruit can be picked separately to take advantage of certain flavor characteristics.

“We’ve found a correlation between the size of the canopies and the grape flavors,” Smithyman says. “Many of our winemakers have preferences, such as grapes with more vegetal characteristics and others prefer more fruit flavors. Because the Wacom display allows our georeferencing to be so accurate, we can divide the vineyard into different zones for separate picking to give the winemakers what they want.”

Smithyman also speeds up her georeferencing workflow by employing user-assignable ExpressKey™ buttons, located on the bezel of the interactive pen display, to create shortcuts for frequently used tasks. “I’ve got Undo, one of my favorites,” she says. “But I think the shortcut I use most is the Display Toggle feature for snapping between monitors while keeping an uninterrupted flow from my pen.”

As she toggles between displays in her three-monitor setup, Smithyman is able to edit and create content on any of the monitors while using the pen on the DTZ-2100 surface. “I like to do all of my mapping on the Wacom display,” she says. “I just spread my GIS attribute tables and everything else across the extended display.”

With the Wacom pen technology, the winery’s use of georeferencing data has increased steadily. Field crews now use Trimble units to gather information year-round to track frost problems, plan new vineyard sites and identify pest infestations. “The capabilities of the DTZ-2100 with aerial imagery have impressed everyone here,” Smithyman concludes. “My overall workload has grown steadily. At harvest time particularly, there’s no way I could get it all done in such a short time frame using a standard monitor and a trackball. The DTZ-2100 has been a lifesaver.”

