About Washington State Department of Agriculture

Washington State’s rich soil produces more than 300 different crops per year. The Washington State Department of Agriculture (WSDA) supports the state’s $38 billion agricultural industry through management, regulation and resource protection services. From animal health and product inspection to crop analysis and resource protection, the agency’s programs are designed to ensure success for the producers, distributors and consumers of Washington’s agricultural and food products.

Situation

The WSDA’s pest control and hops quality monitoring programs employ a mobile workforce operating directly in the forests and agricultural processing facilities. In the pest program, rapid reports on when and where invasive gypsy moths are found are key to locating and stopping infestations. Analysis of hops quality helps farmers adjust harvest methods to maximize crop value. Yet workers were relying on cumbersome and outdated reporting methods, including pen and paper. Manual, disconnected data entry processes slowed communication between field and office. These programs needed an updated technology solution.

Solution

The WSDA developed an integrated solution to improve field operations and communication. Initiated in the pest program, the solution runs TeleNav Track™ from AT&T on Blackberry® Bold™ smartphones, over the AT&T wireless network. Tracking and reporting processes once done on paper are now done via wireless forms with the data entered right on the mobile device. The data records are stamped with time and GPS location to ensure pinpoint accuracy in tracking invasive species. Later adapted for the Hops Program, the TeleNav Track solution transmits hop sampling inspection data directly from the farm or warehouse to the lab. With timely access to the uploaded field information, farmers can optimize their harvest methods to increase crop profitability.

Helping a Major Industry to Grow

Washington State’s rich and diverse landscape provides the right conditions for producing a variety of high-yield crops. The state ranks first in the country for apple, pear, sweet cherry and hop production. The Washington State Department of Agriculture helps this diverse industry to produce everything from safe food and healthy forests to high-value harvests and good beer.

WSDA supports the industry through multiple divisions that provide services including food supply protection, pest and pesticide control, crop evaluation and animal health management. Working in the field, the warehouse, the forest and the lab, WSDA employees gather, share and analyze critical program information, such as where a pest trap has been set or how much moisture a harvested crop contains.

“We have always been forward thinking,” said Jeff Painter, IT Specialist in the WSDA Plant Protection division. Early in 2009, the agency began to develop a wireless solution to streamline the flow of data from its field workforce. The WSDA Pest Program initiated the solution to help track invasive insect species across the state. Seeing the benefits, the Hop Program adapted the same solution to help manage the quality of the state’s renowned hops, which add aroma and zest to many of the world’s finest beers and ales.

Washington State Department of Agriculture Facts

- **Business Needs**
  - Connect with mobile workforce for faster, more complete reports on field conditions
- **Networking Solution**
  - Smartphones with TeleNav Track from AT&T to communicate location and activity data through the AT&T wireless network
- **Business Value**
  - Rapid delivery of condition reports helps WSDA protect forest resources and enhance crop values
- **Industry Focus**
  - Supports Washington State forestry and agriculture
- **Size**
  - WSDA employees work in every county in the state
Looking for Efficiency in the Field
The WSDA Pest Program tracks and prevents the spread of invasive species, including the damaging gypsy moth. “It’s an introduced population that is transported to the state when egg masses attach to shipping containers or to the motor homes, trailers or cars of people who move from infected states,” explained Painter. Without natural predators in Washington State, these and other non-native plant and insect species can destroy local habitat, resources and crops.

The gypsy moth is one of the worst. “They just devour leaves,” said Painter. The Pest Program works to prevent infestations through early detection and eradication. The program’s seasonal employees work outside, setting traps in a precise grid pattern to track the moth’s location. Trappers return throughout the mating season to check their traps, recording and communicating trap location and species findings to in-office staff, who then map further tracking routes.

The program’s success depends upon rapid response when moths are found. “Time is of the essence,” Painter explained. “Once we identify a moth, we can see how bad the situation is by setting a larger grid in the same area. If we catch even more, we set out a tighter grid to try to pinpoint it.” Designed to locate the exact area of an infestation, the program’s trapping method requires quick communication of detailed data collected in the field, including each trap’s specific latitude and longitude. If spraying is needed to control the infestation, precise data as to where the moths are makes it possible to spray less, yet maximize success.

A few years back, the Pest Program switched from pencil and paper forms to a combination of handheld communication and global positioning devices. But the integration of technology was less than ideal. “Employees had to type in the file, and then email it. Somebody else would have to go up to the emails of these different sites, pull those files down and manually import them into Filemaker,” said Painter. The disconnected system was slow; the program needed a better solution.

Solution Found
Painter started looking for a cost-effective way to streamline the information processes. “Dr. Brad White, the department head of the Pest Program, challenged me to come up with a real-time wireless solution. It’s the form and the data that are key to us,” said Painter, “transferring that information to the office with the least amount of hurdles to jump over at the lowest cost possible.”

The WSDA teamed up with AT&T and TeleNav Track to integrate communication, in-field wireless forms and data exchange in one mobile device. They chose the Blackberry Bold smartphone to run TeleNav Track mobile workforce management software over the AT&T wireless network. The WSDA also employed TeleNav to build a dedicated TES server to host, manage and store Pest Program data.

The Pest Program implemented the solution in early 2010, rolling out 34 phones to employees trapping the gypsy moth. Reporting forms are digitized, accessed and filled out through the Blackberry Bold, streamlining the tracking process. Completed wireless forms are uploaded directly from the field to a central web portal, enabling faster response when moths are found. By accessing trap information electronically, office staff can rapidly plan new tracking grids. “Landon Udo, our GIS specialist, was a pivotal key to our success in taking the information and streamlining the overall process. We are able to do within hours what used to take days and weeks,” said Painter.

The Blackberry Bold features advanced GPS location, built-in camera, cellular phone and email capabilities. Together these features locate traps with pinpoint accuracy, making it easy to check all traps throughout the season. “We needed a way to get back to the traps with the phone,” Painter explained. Employees both in the field and in the office can see when and where traps were placed by each trapper. One click provides automated turn-by-turn directions to each trap’s location. Should a trapper be unable to complete the job, the detailed record makes it easy for another to take over.

In addition, the technology is user-friendly. “Training this year was the simplest it’s ever been,” said Painter. “We had a lot of employees that don’t know technology, but they got it.” Seasonal and temporary, the trapper’s job must be learned quickly. With the TeleNav Track solution in place, sharing the technology is easy.

“We are able to do within hours what used to take days and weeks.”
–Jeff Painter, IT Specialist, Washington State Department of Agriculture

Shared Information
Painter was talking to Royal Schoen, the manager of the Hop Inspection Program, who mentioned he was looking for a better way to track the mileage of his field workforce. “I told him you need to look at what I’m working on,” said Painter, who then shared the AT&T and TeleNav Track solution with him.

The WSDA Hop Inspection Program supports Washington’s large hop industry. In a 90 square mile stretch of land near Yakima, the state grows 25 percent of the world’s hop supply. “We ship to Vietnam, Belgium, Germany,” explained Painter. “Our job is to make it easier for the farmers in Washington State to get their products out and sold.” The Hop Inspection Program supports both the producers and buyers of the hop crop by reporting the quality of harvested hops and certifying their value for market.

Hops give beer flavor. Too much stem, leaf or seed in harvested hops decreases its market value. Factors such as moisture content also determine the profitability of the crop. Visiting farms and warehouses, Hop Inspection Program employees take samples from up to 270,000 bales of hops per season. Turning the test results around quickly is critical.

For decades, the Hop Inspection Program’s information gathering processes had been completed with pen and paper. Information was compiled in the field and taken to the office to be manually entered into a computer. Once test results were completed by the lab, the information was then uploaded to an online database and certificates of value were mailed out to the farmers. It was inefficient, slow and wasteful.

Now with the TeleNav solution sampling inspection information is wirelessly sent to WSDA labs for further analysis and market-value certification. “They do brewing quality tests,” said Painter. “How good a crop it is, how bitter it is, how good a beer it will make.” Test results from the hop inspection are electronically reported back to the farmers and buyers, who use the information to adjust their harvest methods for maximum value.
Increasing Value

The TeleNav Track solution was adapted for the Hop Inspection Program in just three weeks. “It really took off because there wasn’t any customizing,” said Painter. “We could use it right out of the box and it opened up a whole new world. With the supplied API calls from Telenav track, our programmer Bonni Johnson was able to create a routine that downloaded the data and imported it to our lab database before testing even started on the samples.” With digitized wireless forms, the in-field data entry process ensures efficient exchange of information. From warehouse or crop-field, the Hop Inspection Program’s mobile workforce electronically transmits hop sampling inspection data directly to the lab.

The goal of the Hop Inspection Program is to report laboratory testing results to the farmer and buyers within 24 hours. Before, it could take days to begin testing. Now, it can take just hours. “They are able to get the samples in, get some testing done and get the results back out to the farmers, often within the same day,” said Painter. The farmers are able to make rapid adjustments to their harvesting methods, increasing crop value.

In addition to ensuring greater profitability for the farmers, the Hop Inspection Program itself has experienced impressive savings since the implementation of the solution. “They feel that they saved roughly 25 percent gross overall by doing this,” Painter said. The virtualized forms cut paper waste and excessive manual data entry, saving on material and labor costs.

“Based on what we did in the first year, I feel that both programs will have great success,” said Painter. “I’m getting a lot of inquires from other departments.” The WSDA has a mobile workforce solution that can be reproduced to serve a variety of programs – innovative strategies to help keep Washington a leader in world agriculture.

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