



Using Time-Saving Technology

A grower in California uses the latest guidance systems and rebuilds equipment to create more efficiencies.

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SRAEL Morales has been growing vegetables for more than 30 years in the Salinas Valley of California, and he has seen it all. He's spent countless hours in the field preparing the soil for the plants, and he has modified existing equipment to make the planting and growing process more efficient.

Much has changed over the years with respect to technology. With experience being a good teacher, Morales has capitalized on that technology in order to do his job better and faster. An 18-year veteran of American Farms in Salinas, CA, Morales, director of farming operations, also worked the farm before it was

known as American Farms and had different owners.

The ownership of the farm may have changed hands, but what was being produced did not. Morales grows spring mix, spinach, lettuce, cauliflower, broccoli, and mixed lettuce. The total crop acres tops 6000, and about 1300 acres are devoted to organic production.

Another change is the addition of one of his sons to the farm roster. Israel Morales Jr. now works with his father on in the fields.

Even with the help of his son, Morales has a lot of ground to prepare, so he has turned to the latest technology from AutoFarm and Eco-Dan to get the job done more efficiently. The AutoFarm technology is used to steer the tractors, and get

Israel Morales and his son, Israel Morales Jr., use a modified minimum-till ripper to increase efficiencies on the farm.

all the information to do the land leveling, says Morales.

The Latest Technology

One of the latest developments in land leveling technology is AutoLevel from AutoFarm, a division of IntegriNautics. Consisting of a base station, GPS mast for the scraper, and an in-cab touch-screen display, AutoLevel uses GPS satellites to control the scraper. The system is unaffected by fog, dust, and other environmental conditions and can operate 24 hours a day, according to the company. The technology brings sub-inch accuracy to the scraper blade for field leveling or grading without spinning lasers.

Morales also uses AutoFarm's AutoSteer, which is GPS guidance for tractors. AutoSteer is said to deliver sub-inch accuracy for tractor steering when preparing fields, laying beds, or listing, planting, and cultivating. The technology gives exact row spacings at low and high speeds.

At American Farms, the technology is used in organic production as well as for minimum tillage. The main benefit of this technology, says Morales, is its precision. "We do a lot of minimum till and by using GPS, we can go back to the exact place where we were," he says. "That's the advantage. When you work the ground, you might make crooked beds and the equipment can move all over the place, but when you work with GPS you can find the rows and it's a perfect match."

AutoFarm technology also is used to help install a solid-set irrigation system. According to Morales, using this technology cuts the time involved in half. Instead of breaking out the tape and ruler to get exact measurements, the GPS system is used to quickly mark the lines where the valve, risers, and sprinkler lines will go.

The farm also uses technology from Eco-Dan, a Danish company. The core technology of Eco-Dan's guidance system is a digital color camera. According to the company, the camera takes about 30 pictures per second of the plant row.

That information is streamed to the

computer's main board. In a nutshell, this information determines the presence of a row structure and its centerline. The system controls a hydraulic cylinder which shifts implements from side to side so they stay centered on the plant row, regardless of the position of the tractor.

According to Morales, the camera can be used for many different things. American Farms uses it for plants, but it also can be used on soils. When used to center on a plant row, the camera guides the cultivator to the exact place where the grower wants it to go. If it is following a furrow or ridge in the field, it can be used to guide transplanters or seeders.

"You can cultivate your crop a lot faster than a normal cultivator can by using the camera," he says. "Using the Eco-Dan camera, the driver just has to keep the tractor in the middle portion of the furrow. It doesn't have to be precise. The system does all the work."

Because the industry is going to a wider bed and multiple rows to increase production per acre, this technology will become more valuable, says Morales. "We plant five lines of head lettuce and romaine lettuce on a bed and we've even



By creating his own cultivator (left), Israel Morales, director of farming operations at American Farms, can now cultivate 40 acres a day. The cultivator makes three, 80-inch beds in one pass.

The revamped minimum-tillage ripper (below) includes big rippers on the center of the beds and shovels on the back to reform the beds, ultimately minimizing the tillage passes through the fields.

Photos by John Inman

planted the spring mix 14 lines to a bed," he says. "So it's tough to cultivate three beds of 14 lines each with the cultivator. With the camera, though, you are allowed to do that. You can be pretty close to the plant."

Whipping Up Equipment

To make things more efficient on the equipment end, Morales modified a cultivator, enabling him to cultivate 40 acres instead of the 25 he was able to do previously. The cultivator makes three, 80-inch beds in one pass.

"We can take a big chunk of ground in one pass," says Morales. With a regular cultivator, the driver probably would need the cultivator in front of him where he can look at the plants. The driver also would have to be moving slowly to keep the cul-



tivator centered on the rows, he adds.

Morales has modified more than a cultivator. He has also revamped some minimum-tillage equipment. The minimum-till ripper he uses includes two big rippers on the center of the beds to rip the ground. At the same time, the shovels on the back reform the beds. The idea is to break the hardpan in the furrow bottoms and minimize the tillage passes through the field, he says. "The reason we minimize the tillage is to maintain the organic matter in the soil," adds Israel Morales Jr.

Down The Line

In the past, Morales says he would plant and cultivate two, 40-inch beds which are equal to one 80-inch bed at a time, and it would take him 10 hours to do between 5 and 7 acres. That was about 20 years ago. "Now with the technological advances, if you invest in a camera and a tractor, you can do 40 acres a day," explains Morales. "You have invested more in equipment, but you are still able to keep costs down."

Other uses for the technology may include using software to help with nutritional levels in soil, he adds. "This is new technology and we are barely breaking into it. So far, with the way I have things set up, I am really happy with it." **AVG**

Direct comments or questions about this article to rosemary_gordon@meister.net.

System Suppliers

THE companies listed below supply GPS and guidance technology designed to help growers do their jobs faster and more efficiently.

AutoFarm, a Division of IntegriNautics
650-833-5600; www.gpsfarm.com

The AutoSteer delivers sub-inch accurate tractor steering for field preparation. The technology gives exact row spacings at low and high speeds, and eliminates guess rows and skips.

The company's AutoLevel also brings sub-inch accuracy to the scraper blade for field leveling or grading without spinning lasers.

Beeline Technologies
303-457-9333; www.beeline.ag;
infoUS@Beeline.ag

The company's latest technology is its high-performance hands-free ag steering system

that is said to offer improved accuracy and increased productivity. Called Arro, the system helps growers steer farm equipment and decrease the cost of overlap.

Eco-Dan
Local Positioning Systems, LLC,
U.S. distributor
831-424-1355; www.lps-usa.com

Eco-Dan's camera-based guidance system for vegetable growing increases speed and working capacity up to 50%. The camera can be mounted on equipment and it works by following plant rows, tracks, or ridges.

Trimble Navigation Ltd.
913-495-2700; www.trimble.com;
precision_ag@trimble.com
The AgGPS FieldLevel uses GPS technology to help farm operators record topographic data and perform land leveling. Growers increase productivity by improving surface drainage and water infiltration, leading to improved crop yield.