

## Fewer passes mean Less Fuel Conservation tillage saves money and time

By Bob Johnson

Stockton-area corn grower Rich Rodriguez saves two or three tractor passes through his fields every year by using a tractor that efficiently combines numerous operations, and with the skyrocketing cost of diesel fuel, those eliminated passes equate to more money in his pocket.

While this machine, the Geringhoff header, harvests the crop, it also shreds and chops the residue as it makes a pass across the field 20 feet wide.

Rodriguez demonstrated his Geringhoff header during a conservation tillage field day on Roberts Island near Stockton last fall. Researchers discussed the benefits of conservation tillage and equipment dealers demonstrated the latest innovations at the well-attended event.

"There's a lot more equipment coming to California from the private sector," said Jeff Mitchell, University of California Cooperative Extension conservation tillage specialist. Most of these new tools come with fairly steep price tags. But they also come with the promise of paying for themselves through reduced labor and fuel costs, or reduced time between crops.

The header manufactured by Geringhoff of Minot, N.D., for example, lists for around \$60,000.

But with more conventional equipment, Rodriguez figures he would have to come back after harvest for an additional pass with a shredder and one or two additional passes with a disk. He already has used the machine on 6,000 acres of field corn without having to repair it or replace any of the parts.

Many new customized tools are available to help growers shift to reduced-tillage systems. Some of the new equipment enables tilling only a narrow strip or planting into residue from the previous crop, while other new equipment permits growers to consolidate three or four operations in a single tractor pass.

Orthman's One Tripper, for example, can manage residue in a specified zone, prepare the seedbed and apply fertilizer in a single trip across the field. This implement is designed to economize with any row crop by combining ripping, managing residue, firming up the seedbed and applying two types of fertilizer.

The Wilcox Eliminator likewise is designed to perform numerous tasks during a single pass through the field. It can mulch, incorporate, level and apply two types of fertilizer and one type of herbicide as it travels once across the field. In some systems the Eliminator can perform all of the tasks needed between harvest and the next crop.

Wilcox also has developed a rip lister for growers practicing reduced cultivation. While it reshapes the beds, the rip lister also rips a strip in the residue where the next crop will be planted. In addition to combining ripping and bed listing operations, this apparatus can rip across a 25-foot-wide path rather than a 13-foot-wide path.

Many of the reduced-tillage implements can perform preplant fertilizer applications, which are important in reduced-tillage systems.

"When you're into persistent reduced tillage, a number of studies have shown that up-front fertilizer helps," Mitchell said.

The John Deere no-till planter is capable of simultaneously applying one type of fertilizer on the seed line and a second type of fertilizer to the side, as it plants tomato seeds with minimum disturbance of the soil. This machine also has a depth wheel that enables adjustment of the pressure on the seed line.

"The style you use should change with your soil, and with the residue you have to manage," Mitchell said.

Most of the new conservation tillage implements cost \$50,000 or more.

"It's expensive to get into but I think in the long run it will save money and time," said Hal Robertson, a Tracy-area grower who recently began to experiment with reduced tillage in his tomato and bean rotations.

Robertson, who is combining minimum cultivation with installation of a buried drip irrigation system, figures that he also should invest in a Global Positioning System (GPS) to achieve best possible performance.

Robertson said he believes that the ability to turn his fields around more quickly could prove to be an even more important benefit than the savings that he derives from a reduced number of tractor passes. He advised growers who are contemplating a switch to minimum cultivation to first visit their neighbors who are trying conservation tillage. He suggests taking photos of conservation tillage plots to help them decide which tools and techniques would work in their operations.

The U.S. Department of Agriculture Natural Resources Conservation Service defines conservation tillage as crop cultivation operations that maintain at least 30 percent cover of the soil surface by plant residue at the time of planting.

The percentage of planted land in the United States managed in conservation tillage increased from 26 percent in 1990 to 37 percent in 2000, according to the Conservation Technology Information Center.

Experience in other regions where conservation tillage is more prevalent than in California has demonstrated that communication on the local level is an essential part of the trial-and-error process that eventually leads to success, Mitchell said.

"In Australia, Brazil, the Middle East and our own Midwest, they have more experience with conservation tillage than we do," Mitchell said. "In all of those areas it has been an evolutionary process involving trial and error. I would like to encourage you to develop a local conservation tillage network that includes all of the sectors."

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