

Strip till methods get good look in California silage corn

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California farmers may be known for many things; early adoption of conservation tillage practices is not one of them.

Drought could be changing all that for some as there appears to be interest in growing silage corn using strip-till methods. California's reliance on silage corn to feed its large dairy herd requires significant acreages, and with it, ample water.

Though California growers have adopted other water saving measures, including drip tape and micro sprinkler systems, conservation tillage is getting a renewed look as silage corn is typically flood irrigated.

Steve Belo, farm manager for Charles Ahlem Farms in Hilmar, Calif., said the main motivation behind using conservation tillage was to save water used to farm 5,600 acres of land; 2,000 of that is planted in corn to support Ahlem's dairy operation that supplies milk to nearby Hilmar Cheese Company.

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"This is our first year to try this," Belo said at a recent field day hosted by California Ag Solutions and Sustainable Conservation, two different groups promoting the practice of conservation tillage in California.

According to Belo, strip-till is just one of several different ideas Ahlem Farms is experimenting with to cut costs. Ahlem has also been an early adopter of certain dairy technologies.

While the field day happened mid-season for the corn crop, Belo was pleased with what he saw to date. Belo estimated his planting costs were over 40 percent lower than conventional planting methods in a similar-sized adjacent field he is using as a side-by-side comparison of the two methods.

Without factoring in water costs, Belo realized early the financial benefit of running a tractor over the corn ground twice would have when compared to six passes with conventional tillage. Belo expects labor, fuel and equipment savings to be significant.

Belo was also impressed early on by the strip till corn, which he said “took off about two weeks after planting.” He planted the same corn variety for his strip till and conventional comparison.

Motivated by water

Mikel Winemiller, customer account manager for the Madera-based California Ag Solutions (CAS), said the majority of water savings in such a conversion is realized in the pre-irrigation dust-up to planting. That tends to be because deep ripping and heavy soil work removes soil moisture, which must be recaptured in the pre-irrigation process.

Belo is working with CAS on the project to see if strip-till methods can be incorporated with more of the farming operations at Ahlem Farms.

According to Winemiller, soil moisture losses can be equivalent to a half-inch of irrigation or rain every time a plow tills the ground. Deep ripping, as Ahlem did prior to planting his corn using conventional tillage, creates a huge soil moisture reservoir that must be filled to rebuild the soil moisture profile.

The balance of the water savings in Belo’s field has not fully been determined; Winemiller did say that post-planting irrigations can be stretched to longer intervals throughout the growing season.

On a nearby farm also in its first year using strip till methods, the grower indicated to Winemiller that he saved enough water with his silage corn to plant an additional crop on his land.

Winemiller said the first irrigation under strip till needs to be a week ahead of the typical schedule, but thereafter irrigation schedules can be stretched out over time based on crop needs.

“It’s easy to over water if you’re not careful,” Winemiller said.

Under strip-till methods there is no deep ripping. Soil disturbance is limited to a six-inch depth under the strip till system.

Based on Belo’s 30-inch corn rows an 18-inch row of untilled soil covered in residue from the last crop sits between each 12-inch row where corn is planted.

Under the strip-till method Belo reduced total soil disturbance by 60 percent. Soil moisture issues aside, California regulators looking to cut dust emissions are said to like the idea of less soil disturbance. The Natural Resource Conservation Service says there may be programs available for growers to cover some of the costs related to converting to strip till.

Because of Hilmar’s sandy soil profile Winemiller says pre-irrigation, strip-till and planting needs to happen within five days to maintain proper soil moisture levels. In heavier soils this process can take 10-12 days as conditions are somewhat different.

In heavier soils strip tilling happens in dry soil before irrigation. A second pass called “strip finishing” prepares the planting zone ahead of running the planter is needed.

California Ag Solutions

California Ag Solutions (CAS) began working with growers about 10 years ago to adopt minimum till techniques in cotton. That has since evolved into other crops, including silage corn, a popular Central Valley crop because of the large number of dairies in the state.

The company works with growers by providing equipment and consultation services.

“Our focus is to help the producer become successful with conservation tillage,” Winemiller said.

Winemiller said their work to retrofit commonly-used implements with precision planting technology and other useful additions to the John Deere 1720 8-row, 30-inch planter and Orthman’s 1tRIPr has helped growers effectively use the conservation tillage technology in California.

Corn plants can be negatively impacted by high soil temperatures, according to Mike Petersen, lead agronomist with ANP, an Illinois-based company that supplies fertilizer products to CAS.

Soil temperature readings in Hilmar’s sandy soil can easily reach 140 degrees in the summer. This is particularly troublesome for developing corn plants.

Private-sector studies suggest bovine digestibility of corn silage can be improved by planting in cooler soil temperatures. Strip tillage methods aid in this as California’s Mediterranean climate sometimes does not cooperate with cooler temperatures at corn planting time.

Strip till conservation has been shown to keep soil temperatures from spiking as high during the critical early growth phase when root establishment is vital.

Petersen said early root establishment is important to promote good plant growth. Soil moisture and nutrient levels can aid in this.

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According to Winemiller, plant spacing in the strip till system is also important.

“The planter is the most important piece of equipment in this system,” Winemiller said.

Beyond that the effort remains creating a sustainable soil profile that favors deep root development in corn to help pull moisture and nutrients into the plant, Petersen says.

Early indications with trial projects in Central California look good. CAS and participating growers still have data to study as corn was being chopped as this story was written.

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