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LOW-TILL FORAGE PRODUCTION

Situation

California dairies require year-round availability of inexpensive and locally produced forages. During the year, producers typically plant and harvest a series of forage crops – small grains, corn for silage, milo, sorghum sudan – requiring considerable tillage

Professional + Producer Grant

Title: Conservation Tillage Forage Production in California's San Joaquin Valley

Project Number: FW06-308

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Hanford dairyman Dino Giacomazzi, at right, addresses strip-till field day participants.

— Photos by
Jeff Mitchell

and seedbed preparation ahead of each successive crop

These production systems lend themselves to a variety of conservation tillage (CT) approaches developed in other production regions. Adoption of conservation tillage practices in dairy forage systems could:

- Reduce the time between the harvest of one crop and the planting of the next
- Lower costs
- Lessen dust by as much as two-thirds

Objectives

- Evaluate and refine strip-till and no-till planting systems for corn forage



production and no-till drill winter forage planting at the San Joaquin Valley dairy of Larry and Daniel Soares in Hanford in terms of crop establishment, weed control, and profitability

- Determine whether the conservation tillage production practices enhance the quality of life of dairy producers in the region as measured by the net profitability and the extent to which the alternative management systems ease time and labor constraints at the dairy
- Disseminate information, experience, and knowledge resulting from these evaluations to other Central Valley dairy farmers

Actions

The project team evaluated strip-till silage corn production following wheat forage on a 600-cow dairy in Hanford.

In 2006, the trials evaluated conventional, no-till, and strip-till in replicated strips,



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The Western Region, one of four SARE regions nationwide, is administered through Utah State University.

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LOW-TILL FORAGE PRODUCTION

each 10 acres in an 80-acre field used to produce forage. After the 2005-06 winter wheat forage crop was chopped in April 2006, a 6-row 30-inch Case DMI Ecolo-Till strip-tiller was used to subsoil to 12 inches and clear soil for planting. The traditional tillage strips were disked and listed before planting.

In 2007, because of irrigation pump challenges, the demonstration was moved to two fields. An 8-row 30-inch Schlagel strip-tiller was used for the strip-till comparison.

Results

In 2006, because an irrigation pump failed, the first irrigation was delayed, and all stands suffered, especially the no-till strips, and were taken over by weeds. Adequate stands were achieved initially, but the late irrigation, coupled with weed pressure, made the no-till planting unsuccessful.

In the 2007 demonstration, corn plant populations were higher in the strip-tilled fields. Weed populations and yields were roughly equal in both fields.

On the whole, results from the strip-tilled corn production were positive and encouraging. Because the producer does some of his own planting, converting to strip-till will be difficult until a new implement can be acquired. But because he contracts some of his farm acreage to custom planters, it may be feasible to move toward strip-till gradually.

From the time the project started in 2005, interest in conservation tillage has increased markedly in the San Joaquin Valley.

Potential Benefits

Strip-tillage involves less intercrop tillage normally employed following winter wheat



Several field days on the project educated participants about the particulars of strip tillage for producing forages.

chopping in preparation for spring corn silage planting. A typical dairy producer could eliminate 4-5 tractor passes by converting to strip tillage.

It has also been shown that strip-tillage and no-tillage for forage production can reduce particulate matter emissions by 50-90% compared with traditional tillage.

We estimate a reduction in costs of \$50 an acre by using strip-tillage instead of traditional tillage. However, it is important to understand that strip-tillage may not work in all soil types; heavier soils may be more difficult than coarser soils.

With high fuel costs, fewer passes across the field are better not only for the field but also for the dairy producer.

Recommendations

- When strip-tilling, having some moisture in the soil precludes bringing up

large clods

- Timely weed management is needed – time herbicide applications close to planting (within a week)
- Using the same GPS system for both the strip-tilling and planting operations will keep the planter on the strip-tilled area

Improved strip-tilling could enable legitimate triple-cropping – the sequential growing of three crops in a year – which could provide a means for San Joaquin dairy producers to efficiently manage manure nitrogen with minimal risk of losses. (A subsequent Western SARE funded project, SW08-060, *Triple-Cropping Dairy Forage Production Systems Through Conservation Tillage in California's San Joaquin Valley*, is exploring the efficacy of triple cropping.)