

# Farmers adopting minimum tillage

By LEN RICHARDSON

**W**ITH asthma and economic challenges plaguing the Central Valley, local farmers are simultaneously clearing the air and reducing their costs, according to a new study published recently by a group of academic, farming and environmental leaders. Between 2004 and 2008, Central Valley farmers switched to “reduced tillage” practices on nearly 20% of land used to grow row crops like corn and wheat silage.

These tillage practices cut the number of tractor passes needed to prepare fields for planting, which means lower fuel and labor costs for farmers, and less dust and diesel pollution in the air. Local farmers save money while they protect the air for their neighbors.

“My philosophy is that good environmental stewardship must be profitable to be sustainable,” says Hanford dairy farmer Dino Giacomazzi. “Our conservation tillage program has been helpful to our family business during these hard economic times. Not only have we dramatically reduced inputs, but we’ve also increased yield and the quality of our crops as a result.”

## Practices expand

In 2008, Central Valley farmers cultivated more than 416,000 acres using reduced tillage practices. Conservation tillage, which involves leaving crop stubble on the soil and replanting over the top, increased from 2% to 10% of acres under cultivation.

“These effective cultivation techniques are good for everyone — not just farmers,” says Ashley Boren, executive director of Sustainable Conservation, who co-

## Key Points

- Farmer have switched to low till on 20% of Central Valley row-crop land.
- Statewide, low till may cut dust by 85%, and diesel pollution in half.
- Farmers report reductions in operating costs of 30% to 40% per year.

thored the study. “They help reduce dust and diesel pollution in the Central Valley so local residents breathe cleaner air.”

Statewide, reduced tillage practices like conservation tillage and minimum tillage could cut dust pollution from agriculture by up to 85% and diesel pollution in half. That’s good news for the San Joaquin Valley, which, according to the American Lung Association, ranks in the top 25 most-polluted regions of the U.S. and experiences air quality that hovers at levels dirty enough to endanger lives.

“Breathing in particle pollution increases the risk of early death, heart attacks, strokes and emergency-room visits for asthma and cardiovascular disease,” says Janice Nolen, assistant vice president for National Policy and Advocacy at the American Lung Association. “Particle pollution also may affect how children’s lungs grow and function.”

## About the survey

The survey, led by the Conservation Tillage and Cropping Systems Workgroup, was conducted as an ongoing comparison of annual row-crop acreage farmed under a variety of tillage methods in nine Central Valley counties: Fresno, Kern, Kings, Madera, Merced, Sacramento, San Joaquin, Tulare and Yolo.



**LOW-TILL TREND:** Daniel Mountjoy and Jolene Lau in Monterey County, Calif., check on conservation tillage systems. A new sustainable conservation survey shows the trend is growing in the Central Valley.

## The minimum tillage trend

Acres	2004	2006	2008
<b>Total</b>	2,567,022	2,129,316	2,210,372
<b>Conventional</b>	2,509,917	2,060,151	1,982,575
<b>Minimum Tillage</b>	64,613	318,006	416,035
<b>CT</b>	57,105	69,165	227,797
<b>CT % of Total</b>	2	3	10

Download the complete survey at [www.suscon.org/news/2004-2008\\_california\\_conservation\\_tillage\\_survey.xls](http://www.suscon.org/news/2004-2008_california_conservation_tillage_survey.xls).

Crops surveyed included silage, grains, tomatoes, cotton, dry beans and melons.

The survey received input from area farmers, ag specialists from the University of California and experts from the Natural Resources Conservation Service, which supports landowners in natural resource conservation and enhancement. Results were based on acreage totals from 2008 County Agricultural Commissioner assessments, and were compared with similar surveys conducted in 2004 and 2006.

Conservation tillage involves leaving at least 30% of crop residue (such as cornstalks) on the surface of the soil and planting a new crop on top. The remaining crop residue protects the soil from erosion and prevents wind from blowing it into the

air. Minimum tillage includes practices that reduce the overall number of tractor passes over fields by at least 40%. Farmers report reductions in operating costs between 30% and 40% per year. Reduced tillage practices also produce beneficial organic material which improves the soil’s ability to retain water and its quality.

Founded in 1993, Sustainable Conservation’s effectiveness lies in building strong partnerships with business, agriculture and government — and establishing models for environmental and economic sustainability that can be replicated across California and beyond.

Learn more about the California Conservation Tillage and Cropping Systems Workgroup at [groups.ucanr.org/ucct](http://groups.ucanr.org/ucct).

# Flagging alfalfa stem nematode problems

## Key Points

- State growers have yearly alfalfa stem nematode losses of \$50 million.
- “White-flagging” is a sign alfalfa may be infested by stem nematodes.
- A new plant-resistant label, “very high resistance,” is needed.

By DELANEY BOLING

**P**RODUCER’S Choice Seed and Cal/West Seeds recently hosted a seminar to discuss the 2009 and 2010 stem nematode outbreaks in the northern San Joaquin Valley, the Sacramento-San Joaquin River Delta and the lower Sacramento Valley. It was noted that alfalfa growers have been hardest-hit with estimated losses of more than \$50 million a year.

## Watch for symptoms

Dan Putnam, agricultural productivity and Extension agronomist, and Rachael Long, Extension farm adviser in pest management and field crops, both of the University of California, Davis, kicked off the seminar



**POTATO DAMAGE:** Saad Hafez, Extension nematology professor, University of Idaho, shows nematode damage on the surface of a potato. These lesions can be described as dry, corky rot.

by giving an overview of the stem nematode problem in California and symptoms growers should watch for: stunted, patchy growth; uneven crop height; circular stunted areas; and yield reduction. All are signs that you may have nematodes.

Another noticeable symptom, “white-flagging,” may occur when a stem nematode attacks the alfalfa host, resulting in an albino stem. Don Miller, Producer’s Choice



**EQUIPMENT SPREADS:** Don Miller, Producer’s Choice Seed product development director, shows how equipment can spread nematodes that leave stunted and patchy growth areas.

Seed product development director, uses white flags as indicators that a field may be infested. “While doing in-field alfalfa consultations, I can tell there are stem nematodes just by seeing white flags,” he says. Another sign to watch for is swollen crown buds.

## Stem nematode biology

Emphasizing the importance of soil sampling before planting, Saad Hafez, Extension

professor of nematology, University of Idaho says, “Test when the soil’s moist, because nematodes are aquatic creatures. Dry soil may contain millions of eggs, but unless the soil is irrigated, you won’t find evidence of a nematode infestation. Take two or three samples from the root zone per acre in a zigzag pattern.”

Next, Miller talked about advances being made in breeding nematode-resistant alfalfas, and the rating system used to label resistant strains. The current rating system for labeling a plant’s resistance is on a scale of 0% to 100%: 0%-5% is classified as susceptible (S); 6%-15%, low resistance (LR); 16%-30%, moderate (M); 31%-50%, resistant (R); and 51% and above, high resistance (HR). That means growers facing infestations should choose a variety with at least an “R” or an “HR” rating for stem nematode. One limitation is that an HR rating is any seed above 51%, meaning you might get a seed performing at only 51%, or as high as 100%. Miller addressed the concern: “I wouldn’t be opposed to a new rating system — possibly an additional category, ‘VHR,’ meaning very high resistance,” Miller says.

*Boling writes for Boling Associates.*