

Organic herbicides becoming more effective, experts say



By Bob Johnson

The next generation of weed control with organic herbicides will rely on a combination of improved materials, a performance

boost from adjuvants and the use of precision application technology to bring down the cost.

Specialists say there are finally organic herbicides that perform adequately in trials on most common weeds. But they add that these materials must be applied in high volumes, so the cost remains too high to be a viable option in commercial organic farming.

"These are not cheap materials; it's still \$400 to \$600 a broadcast acre. You would want to use these materials with broadcast application. We see these eventually being used with precision application systems," said Tom Lanini, University of California Cooperative Extension weed specialist.

Lanini made his remarks as he showed the results of his latest organic herbicide trials to the growers and researchers who came to Russell Ranch outside of Winters for the University of California Sustainable Agriculture Field Day.

University of California, Davis, agricultural engineers Dave Slaughter and Ken Giles say they are making progress in the development of camera-based precision applicators that will deliver herbicides only to the weeds, not to the crop or bare ground.

This system has the potential to make organic weed control economically via-

ble, they said, and it also has the potential to dramatically improve application of conventional herbicides.

"It's real, and it's pretty slick," Lanini said of the next generation of precision applicators that will use cameras to see weeds and deliver herbicides with pinpoint accuracy.

Precision application will be particularly important for organic herbicides, Lanini said, because he has discovered in his trials that the organic materials need to be applied in high volumes because they only work on weeds they contact directly.

"We found that high gallonage was an important factor. You need to use 70 gallons an acre, not the 20 or 30 gallons an acre you would use with a synthetic herbicide. These are all contact materials, so good coverage is essential," Lanini said.

Lanini said he got acceptable results on common



Tom Lanini, University of California Cooperative Extension weed specialist, discussed organic weed control methods at a recent field day at the Russell Ranch in Winters.

broadleaf weeds like pigweed and black nightshade if he got there early enough with a range of organic materials including GreenMatch, Matran, Weed Pharm and WeedZap. The control ranged from better than 60 percent to 100 percent if these weeds received high volumes of these materials when they were just 12 days old.

But the effectiveness dropped significantly when these materials were applied to grass weeds or to older broadleaf weeds.

"The younger the weeds were, the better control we got. But grasses and perennials have a tendency to come back. They are hard to control," Lanini said.

When broadleaf weeds were 26 days old, even high volumes of these materials gave at best less than 40 percent control, he said, and the best control on even young, 12-day-old grass weeds was only around 40 percent.

The trials have also shown that adjuvants can make a difference with organic herbicides.

"In addition to high volume, we learned the adjuvants can really help with efficacy," Lanini said. "Adding an organically acceptable adjuvant has resulted in improved control. Among the organic adjuvants tested thus far, Natural wet, Nu Film P, Nu Film 17 and Silwet ECO spreader have performed the best."

Temperature and light also influence the effectiveness of these organic weed-control materials, he said.

"If you do these applications in the winter, you don't get very good control. But if you apply them in the summer, they work pretty well," Lanini said.

But cost remains an issue, he said.

"These materials all work if you have enough volume and concentration," Lanini said. "But can you afford it? Hand labor is cheaper. I think in the future we will be able to make the applications more precise and it will be cheaper than hand labor."

The one material that might be affordable is acetic acid, more commonly called vinegar.

Acetic acid may be the single most promising organic weed control material, he said. It is as effective as anything else, continues to control weeds at temperatures as low as 55 degrees and could become the most economical material. And acetic acid does not seem to harm the soil.

"We have measured pH at the surface an hour after applying acetic acid at 70 pounds an acre and not seen pH change even .1," Lanini said.

"Fleischman's vinegar at 30 percent would cost you about \$50 to treat an acre. That makes it affordable. I don't know why the U.S. Department of Agriculture hasn't registered it. You can use it on your salad," Lanini said.

(Bob Johnson is a reporter in Magalia. He may be contacted at bjohn11135@aol.com.)