

Welcome back eric.brennan@ars.usda.gov [Logout](#)



- [Home](#) |
- [Contact](#) |
- Welcome back

Visit Our Sites

- [CFBF](#)
- [California Bountiful](#)

- [Archives](#)
- [Subscribe](#)
- [Advertise](#)
- [Classifieds](#)
- [About Us](#)

Hoe made of recycled parts works well near mulch

Issue Date: [March 16, 2016](#)

By Bob Johnson



U.S. Department of Agriculture research horticulturist Eric Brennan, far right, discusses the merits of his newly designed hoe with Salinas Valley strawberry farmer Roy Fuentes.

Photos/Eric Brennan and Jim Leap



A close-up photo of the hoe is shown here.
Photos/Eric Brennan and Jim Leap



U.S. Department of Agriculture research horticulturist Eric Brennan says the hoe he is holding will prove to be a great asset for organic growers in assisting them to eliminate weeds in their fields.
Photo/Eric Brennan

Using materials normally consigned to the trash bin, a U.S. Department of Agriculture organic researcher based in Salinas has devised a homemade hoe suitable for use near plastic mulch.



Eric Brennan of the USDA Agricultural Research Service fashioned a lightweight, flexible hoe out of metal strapping, a piece of bamboo and an old bicycle inner tube because none of the tools available could remove weeds at the edge of a furrow without cutting the plastic mulch.

"We needed a way to control the weeds from the plastic edge over to where the cover crop was growing in the furrow," said Brennan, a research horticulturist at the USDA Salinas Station. "We tried a standard hoe, which was pretty useless. We also tried hula hoes, and we often would cut the plastic. The only hoe that kind of worked was a wire weeder or a wire hoe. But it's got a point on one end, which can easily poke into the plastic. Also, because it's asymmetrical, it works well on one side of the furrow but not the other."

The business side of Brennan's tool, which he calls a "recycle strap hoe," is the metal strapping hardware stores throw away.

"For our blade, we use a piece of steel strapping," Brennan said. "This is steel strapping that comes from hardware stores; you don't have to buy it because this is what they throw away. I used a half-inch-wide strap and a three-quarter-inch strap to make our blades. It has a very sharp surface for cutting weeds."

The steel strapping has the advantage of being springy, which makes it flexible but with a sharp, weed-cutting edge. Galvanized steel is not flexible enough for the job, Brennan said, and plastic strapping is not strong

enough.

The flexible steel strapping, and its ability to take a curved shape, is a major advantage in avoiding damage to the plastic mulch that is the standard in strawberries and is frequently used for weed control in organic vegetables.

"When you work parallel to the mulch, the blade slips alongside the plastic without cutting it," Brennan said. "When you cut up to the mulch, the whole blade hits the plastic. It's flexible, and doesn't have a protruding area that would cut the plastic. All the other tools cut the mulch, because they are rigid."

The strapping, available in various widths for free, is attached to a long bamboo or bamboo-like handle.

"The first thing you need is a large piece of invasive grass," Brennan said. "I used *Arundo*, which is invasive and very common here in California. It makes a great handle."

He cut a length of this lightweight, flexible, bamboo-like plant to serve as a handle as long as the distance from his feet to his hand extended above his head.

Although *Arundo* is a widely available plant, bamboo makes for an even stronger, lightweight handle, Brennan said.

"I think of it as two different models," he said. "The bamboo handle has the lifetime warranty, while the *Arundo* has a one- or two-year warranty, because eventually it will crack. If you don't have access to bamboo or *Arundo*, you could also use a wooden dowel."

The flexibility of the bamboo represents a big advantage in keeping the blade in contact with the soil, Brennan said, and its light weight reduces the drudgery factor in hand weeding.

"It's very lightweight, which makes it easier to weed for a longer period of time," he said. "The flexibility helps to keep the pressure on the soil. You can also adjust the shape of the flexible blade, and then adjust it back."

He cut sections of an old bicycle inner tube and slipped them over the ends of the bamboo handle, to hold pieces of the sharp strapping in place. Brennan then wrapped inner tube around the ends of the handle, to secure the blades in place and cover sharp edges on the handles.

The blades may also be attached using ring clamps, a slightly more expensive option, he said.

Brennan originally designed his homemade hoe as an answer to the problem of removing weeds near the mulch in strawberry furrows planted with a cover crop to encourage stormwater infiltration, but the tool has wider uses.

"This is the best weeding tool for our strawberry operations, and it will also work well for our vegetables, where we need to get very close to our broccoli, lettuce or whatever we're growing," Brennan said.

The one shortfall of the new tool, he said, may actually turn out to be an advantage: It is not rigid enough to remove large weeds.

"The only disadvantage I know of is it's not really great on big weeds, but for the most part we don't let weeds get big on our farm," Brennan said. "We don't need a hoe that will handle large weeds. We just need one that will take out small weeds when they are very vulnerable. Once they get big, they're setting seeds, and we don't want that. This encourages you to deal with the weeds when you should: when they're very small."

Brennan has posted online an eight-minute [tutorial](#) on making and using the hoe, plus a [longer](#) version of the tutorial. Both may be found at www.youtube.com; search for "recycle strap hoe."

"It's the only tool I'm using now for hand weeding, and I've gotten good feedback from several growers," Brennan said.

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

Permission for use is granted, however, credit must be made to the California Farm Bureau Federation when reprinting this item.