Weeds have been “feeling the burn” at Scott Shriver’s organic farm for the past 8 years. Flame weeding has proven to be an effective part of weed management specifically in his corn.

“We’re only trying to get weeds close to the row and in the row - the weeds that the cultivator can’t get,” Shriver says.

Years of research at the University of Nebraska, Lincoln, helped develop flame weeding equipment now sold through Agricultural Flaming Innovations (“www.agriculturalflaming.com”).

The Jefferson, Iowa, farmer is on his second flaming season. He purchased the burners from AFI and mounted them on a 16-row cultivator bar stripped of its cultivating shanks.

“We put (4-ft. long) shields on this one to hold in the heat better and to keep wind from being a factor,” Shriver says.

The burners tilt down at a 30-degree angle, about a foot from the ground and 14-in. apart to burn 7 in. on either side of the corn.

“Ideally you have some height differential between the weeds and the crop,” Shriver says. He has good success when the corn is 12 to 14 in. tall and the flame is directed at weeds underneath.

The 1,500 F degree temperature from the propane burners doesn’t cause the weeds to catch on fire. The intense heat hits the leaves for a very short time and ruptures and boils water in the cells. Two or three hours later, the color of the weeds changes to a grayish green, and later they shrivel up. Shriver follows up with the cultivator, which throws dirt over the dead weeds.

“It might also flame (kill) the lower leaves of the corn. But that’s OK, because that makes more room for the dirt to go up against the stalk when cultivating,” Shriver says. The corn stalks can handle the heat.

“We start with a clean seedbed and typically flame once (a season),” Shriver says. “Last year we had a wet spring and it was hard to do weed control. We flamed twice in a couple of fields because the grass and weeds were so thick.”

Flaming works best on broadleaf weeds. Grass will grow back, so that’s why cultivation after flaming is essential.

Shriver tows a 500-gal. propane tank behind the flame bar and turns the gas on and off with a hydraulically controlled valve in the tractor. Usually the pressure is set at 3 1/2 and 5 mph. The flame can be set higher when weeds are larger in size or number. Shriver has auto-steer, but says that flaming could easily be done without it.

He typically uses between 5 and 7 gal. of propane per acre and estimates his costs run about $10 per acre. Combined with cultivating, it is less costly than chemicals. Flaming weeds is nontoxic, doesn’t affect groundwater and is an acceptable organic weed control method, Shriver notes.

A growing issue with herbicide-resistant weeds is making flame a viable option for conventional farmers as well, says George Gogos, an engineering professor at the University of Illinois.

Flame weeding soybeans, sorghum and sunflowers.

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