

INNOVATIVE PROPANE FLAME WEEDING SYSTEM: AN EFFECTIVE, COST-EFFICIENT WEED-KILLER FOR ORGANIC FARMER

A PROPANE CASE STUDY

Larry Stanislav, of Abie, Nebraska, is continuing a tradition started by an ancestor more than 140 years ago. In 1872, Stanislav's family purchased a 480-acre tract of farmland from Union Pacific Railroad. The farm, which now encompasses 300 acres, survived bad times, including drought and grasshoppers, and was passed down through the generations. In 1988, the farm was certified organic and produces corn, soybeans, hard red spring wheat, oats, and alfalfa.

INNOVATIVE WEED CONTROL SOLUTION

While conventional farms rely on fertilizers and herbicides to improve productivity and control weeds, most organic farmers rely on tillage and manual labor to keep weeds at bay. Over the years, Stanislav has experimented with alternative methods of weed control that were less labor intensive, but the methods were ineffective at driving out weeds.

In 2010, Stanislav's farming partner, Elizabeth Sarno, was an extension educator and organic research project coordinator conducting organic research for the University of Nebraska-Lincoln. The Propane Education & Research Council worked with UNL researchers to fund a study aimed at increasing the effectiveness and efficiency of propane flame weeding systems in organic cropping systems. Stanislav agreed to participate and put the unit to work on his farm.

Researchers experimented with methods to improve propane flame weed control.

Results from the study showed that a hooded propane system increased heat concentration on weeds while reducing fuel use, which improved the effectiveness and efficiency of propane flame weeding. Study participants reported weed control levels as high as 95 percent. The research led to the development of a training manual for the practice in corn and soybeans and the commercialization of a four-row banded/full propane flame weed control system marketed under the name Agricultural Flaming Innovations. The system has now become an essential tool in Stanislav's weed control strategy for a 50-acre plot of organic corn.



COMPANY

Stanislav Farms
Abie, Nebraska

CHALLENGE & SOLUTION

Stanislav Organic Farm has tested many organic-approved mechanical weed control systems on its 300-acre crop rotation of corn, soybean, spring alfalfa, and cover crops but found them ineffective. In 2010, Larry Stanislav participated in a research study and tested a propane flame weed control system. The new technology helped Stanislav Farm control more than 95 percent of its weeds, while reducing labor and fuel costs.

RESULT

- Controls 95 percent of weeds, with reduced labor and fuel costs when compared with time-intensive cultivation and tillage.
- Is an effective, efficient method of weed control approved for organic operations.
- Doesn't disturb soil micro life or organic matter, resulting in healthier soil with improved moisture retention.
- Can be used when soil conditions are wet and windy weather conditions, which allows for weed control at the proper time.

“Using a propane flame unit to control weeds eliminates disturbance of the soil. Plus, I’m getting more of those weeds, which translates to increased yield.”

— Larry Stanislav
Stanislav Organic Farm



EFFECTIVE SOLUTION FOR ORGANIC OPERATIONS

Prior to using propane, Stanislav’s weed control efforts relied on labor-intensive cultivation and tillage. Stanislav would rotary hoe his fields up to two times and then cultivate up to three times per season.

“Now I’m doing one cycle of flame weeding, followed by one or two cycles of cultivation,” Stanislav said. “With propane flame weeding, I’m saving a lot of time and fuel, which saves a lot of money.”

He estimates that flame weed control of his 50-acre plot requires 30 fewer hours of labor than traditional weed control techniques. Even with less time in the field, Stanislav is seeing up to 95 percent weed control. The reduction in fuel and time translates to less input costs, and Stanislav is happy with the improvements to his farm’s bottom line.

Another benefit that Stanislav discovered is his unit’s ability to work when field conditions are either too wet for mechanical control or when conditions are too dry and tillage will result in soil moisture loss. His propane system helps

him stay on track with his weed control schedule, even during seasons of wet or erratic weather.

“Timeliness is paramount with organic farming,” Stanislav said. “You have to be there at the right time to control weeds. With propane flame weeding, I can go out when the soil conditions are not perfect, before the weeds start getting away from me.”

According to Stanislav, propane flame weeding also has one benefit that’s so important, he can’t put a price on it — the improvement of the soil’s overall health and quality.

“The more I till the soil, the more I disturb microbial life and destroy organic matter. The less I till, the better off I am. Organic matter affects soil’s ability to retain moisture,” Stanislav said. “Using a propane flame unit to control weeds eliminates disturbance of the soil. Plus, I’m getting more of those weeds, which translates to increased yield.”

Stanislav says that even though farmers have to purchase new equipment at the outset, the investment pays off immediately.

“You might spend more on the equipment at the outset, but in the long run, soil health and increased yield are big benefits. By not tilling the soil, I’m not losing soil moisture and structure — you can’t put a dollar amount on that.”

LONG-TERM ENVIRONMENTAL SUSTAINABILITY

As a certified organic farmer for over 26 years, environmental sustainability is a cornerstone of Stanislav’s operation. He likes that the propane flame weeding unit is safe to use, benefits the environment, and is approved for organic cropping systems.

“When I am using propane, I am controlling weeds, reducing trips across the field, decreasing soil compaction, saving soil moisture, and increasing profit,” said Stanislav.

In addition to reducing farmers’ dependency on chemical applications, the alternative fuel is nontoxic, insoluble in water, and a safe alternative fuel that poses no threat to aquifers, streams, or soil.

FOR MORE INFORMATION

To learn more about propane applications in agriculture, including weed flaming, visit propane.com/agriculture.

Propane Education & Research Council / 1140 Connecticut Ave. NW, Suite 1075 / Washington, DC 20036
P 202-452-8975 / F 202-452-9054 / propanecouncil.org

The Propane Education & Research Council was authorized by the U.S. Congress with the passage of Public Law 104-284, the Propane Education and Research Act (PERA), signed into law on October 11, 1996. The mission of the Propane Education & Research Council is to promote the safe, efficient use of odorized propane gas as a preferred energy source.