They're Using Hot Water To Clean Up Weeds

Mike Shuter is putting his money on hot water to clean up weeds. The Indiana farmer, along with his sons Brian and Patrick, needed a non-chemical weed control. Longtime no-till soybean and strip-till corn producers, they are transitioning about 20 percent of their 3,200 acres to organic.

"We tried a flamer, but we rely on crop and cover crop residue to help with weed control," says Shuter. "The flamer starts fires if residue is present."

Shuter considered electronic weed control, but was concerned about the impact the electricity would have on microorganisms in the soil. In addition, he wanted to be able to hit late emerging weeds below the plant canopy.

"We considered steam, but we would need a pretty long hood to keep steam on the weed long enough to kill it," says Shuter. "Our research indicated boiling hot water would burn the plant quicker than steam. It blisters the plants so they dehydrate and die."

The Shuters got busy building a diesel-fired system with water heater, water tank and 7 stainless steel hoods and nozzles to attach to a Miller Nitro sprayer. While many components are off the shelf, the hoods were designed by the Shuters and have been patented.

The entire system is pressurized to maintain the water at temperatures above the boiling point. Hydraulic hoses carry the pressurized water to the nozzles.

"We are hoping to get the water temperatures up to 220 to 230 degrees Fahrenheit," says Shuter. "The hoses handle the pressure and the heat, as well as insulate the water. We can't lose too much heat getting it to the nozzles."

Completed in late summer of 2018, tests with the prototype went well. The Shuters are fine-tuning their system for extended use on several sprayers in 2019. They also are considering tractor-mounted options. One possibility is to mount the spray hoods to a standard row-crop cultivator. A pull-type trailer could supply water with a tank hooked to the cultivator or with saddle tanks on the tractor.

Shuter acknowledges that the hot water system won't be cheap to put together. Components for a 12-row system could run $50,000 to $60,000.

"Most of the components are stainless steel, and hydraulic hoses aren't cheap either," says Shuter. "The biggest expense will be fabricating the stainless steel."

Shuter Farms uses hot water to kill weeds on contact. Their diesel-fired system includes a water heater, water tank, and 7 hoods and nozzles attached to a Miller Nitro sprayer.

The Shuters are in the process of building 12-row machines and will be working with them on Miller Nitros and Oxbo's new sprayer.

"We will be testing the process on weeds at different stages of growth," says Shuter. "We will be comparing travel speed, nozzle types, pressure levels and the amount of water needed. If we get the right answers, we will start manufacturing."

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Wagon-Mounted Bale Feeder Reduces Waste

Mounting a round bale feeder on a wagon frame saves a lot of hay, says Peter Donnelly, Newark, N.Y., who mounted a conventional round bale ring on a wooden platform that he bolted to an old wagon running gear.

"It cuts waste to a minimum. It always annoyed me to see all the feed our cattle were wasting around the outside of our conventional slant bar bale feeder. After much thought, I came up with the idea of mounting the bale feeder on a wagon that I already had," says Donnelly.

He started with an 8-ft. dia. commercial bale ring and a 10-ft. wagon running gear. To make the platform, he first placed a pair of 10-ft. long, 4 by 8 wooden beams lengthwise onto the running frame, one on each side. The beams set inside angle iron brackets welded to the wagon frame and are bolted to the frame. He then screwed a series of 2 by 6's across the beams, spacing them 3 in. apart. He wrapped short lengths of chain around the bottom of the ring and bolted them down to the platform.

"There is virtually no hay waste compared to feeding bales on the ground," says Donnelly "because with the bale up on the platform cattle have to work harder for the hay so they waste less. The 3-in. spacing between boards allows water and snow to drain. The angle iron brackets allow the beams to flex as I move the wagon."

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Feeder mounts on an old wagon running gear, attached to a wood base.

"On-Board" Charger Keeps Tractor Ready To Start

"My 2015 Deere 5550E 4-WD tractor was always hard to start, especially in cold weather, which was hard on the battery. To solve the problem I hooked up a NOCO Genius on-board battery charger to the tractor's battery box, which is located on one side of the tractor just below the cab. I also added an oversize expanded metal safety cage over the charger so there's room to store the charger's 6-ft. cord.

"To charge the battery I just pull out the pigtail on the charger cord and hook it up to an extension cord that runs to my barn. Now my tractor always starts right up, even on the coldest mornings, and I never have to remove the tractor battery to charge it," says John Jett, King George, Va.

Jett drilled 4 holes in the battery housing, then bolted the 6 by 8-in. charger onto the housing. He also drilled a hole in the battery cover to connect the charger's hot and ground leads to the battery. The safety cage extends about 2 in. beyond the battery cover, providing a 2-in. opening which Jett uses to pull out the charger cord.

"I bought the NOCO charger on amazon for about $60 (https://no.co/). It's the only one I know of that's waterproof, which means it works great for many outdoor farm applications," says Jett. "NOCO chargers come in different models that can charge up to 4 batteries at a time, and they can be used on any kind of battery including 6 and 12-volt batteries found on older tractors. The one I use on my tractor is a 1-bank model. I also bought 2 other NOCO chargers - a 3-bank model that I use on my boat and a 2-bank model for my lawn tractor and 4-wheeler.

"These chargers are safe for anyone to use. They don't generate sparks and they're protected against reverse battery hookup so if you hook them up wrong it won't short circuit anything. They also won't overheat or overcharge the battery."

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On-board charger hooks up to tractor's battery box and is covered by a metal cage. To charge the battery, Jett pulls out charger cord pigtail and hooks it up to an extension cord.