



The Growave Weed Killer system uses an intense but confined microwave field to quickly heat vegetation, creating internal steam that breaks the cell walls.

## Microwave Weed Killer Also “Cooks” Pests

Growave is a prototype microwave system that eliminates weeds, weed seeds, and pests. Australian inventor Graham Brodie describes it as a low-cost alternative to non-chemical

weed control, and soil treatments like steam or chemical fumigation.

“The microwave system is about 30 percent cheaper than soil fumigation with

chemicals and 40 percent cheaper than a soil steam treatment,” says Brodie, a researcher at the University of Melbourne. “As a treatment for emerged weeds, it is about 40 percent higher in cost than herbicides, but about 60 percent cheaper than either steam or flame weeding.”

Brodie began his research when it started becoming clear that more weeds were becoming resistant to herbicides. In 2007 the electrical engineer tore apart a microwave oven and started experimenting. Eventually he came up with a way to confine the energy to a small space.

Growave has been used over wheat, rice, and grasses in different soil types and climates. Unlike herbicides, it even works in the rain and wind. A particularly successful use is to kill weeds under vines without hurting the vines.

The system uses a slow-wave applicator to direct the electromagnetic waves to treat a strip about 6 in. wide. The design creates a very intense, but confined microwave field under the applicator. The microwaves heat up the vegetation, creating internal steam that breaks the cell walls. In demonstrations, crackling, popping and hissing can be heard as weeds are treated. It also kills pathogens near the surface.

Multiple applicators can be used for wider treatment swaths. The depth of soil

treatment depends on the applicator design and the operating frequency of the microwave system. The prototype units target a depth of about 1 1/2 to just under 2 1/2 in. Brodie reports that the applicator design can reduce the depth to about 3/4-in. or increase it to around 4-in.

He is currently working on 2 new applications to do spot weeding and also broaden the treatment strips.

“The new applicators are still in the early prototype stage, but are showing good promise,” says Brodie.

While the initial application of the technology is focused on high-value crops like vineyards, Brodie sees potential in other areas. Soil fumigation without chemicals is one. Another is urban playgrounds and footpaths where chemical use is being phased out due to public health concerns.

Brodie recognizes that challenges to adoption remain. The technology needs to be scaled up in terms of power levels and size. The Growave uses a 5 kW generator. Commercial microwave generators as large as 100 kW output can be purchased off-the-shelf.

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Wyndlow swapped the high-speed sprockets out for the lowest combination of gears he could find.

## Mower Conditioner Converted Into Low-Cost Compost Turner

A cousin’s offer of an 8-ft. Taarup rotary mower conditioner with a blown gearbox gave Ian Wyndlow a base machine he could turn into a compost turner.

“I got the idea from an article in FARM SHOW, ‘Low-Cost Compost Turner Great For Small Farmers’ (Vol. 44, No. 2),” says Wyndlow. “My dad and his twin brother had assembled a stockpile of parts from various machines, and I was fortunate to inherit the inventory. We had a salvaged Taarup gearbox from a 6-ft. wide mower in inventory, and I was delighted to finally justify having kept it.”

Wyndlow removed the rotary cutter head completely and dropped the rear conditioner flair bar to where the cutter head had been. He also replaced the damaged angle gearbox, reduced the speed, and increased torque with other modifications.

“I swapped out the high-speed sprockets for the lowest combination I could find in our inventory,” says Wyndlow. “I thanked the spirit of my dad for the large wooden box of gears, bearings, sprockets and chain.”

Wyndlow noticed that most compost turners had fairly large paddles arranged in a corkscrew pattern on the mixing shaft. He knew this design was key to drawing material in from the edges and toward the center. Eager to get the turner operational before fall rains, he opted to use the forked tines already on the conditioner flair bar.

“I cut off and repositioned about 20 of the tines to produce a similar effect of bunching material toward the center,” says Wyndlow.

He then reshaped the existing steel cowl from the mower and some leftover 1/8-in. steel fairings to fit the machine’s new purpose.

As he pulled the new turner into the compostables, he discovered that even running his 80-hp. tractor at an idle was too fast. Riding the clutch slowed the speed down just enough.

“It does a terrific job of mixing and aerating the windrow,” says Wyndlow. “I can straddle and mix a 4-ft. high, 8-ft. wide and 200-ft. long row in about 5 to 6 minutes.”

Wyndlow says the turner did tend to flatten the windrow and spread it out to about 9 to 10 ft. wide. He modified the cowl at the rear to help direct material into a narrower windrow. He also runs a front-end loader down the row to trim the sides back to about 7 ft. wide.

“I think bigger paddles at a lower speed will be the ultimate answer,” says Wyndlow. “However, I figure it is achieving about 90 percent of the job I had hoped for and doing it quicker than blending materials with the front-end-loader.”

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## Bucket-Mounted “Double Hitch” Locks Into Place Automatically

John Heinz put together this bucket-mounted “double hitch” so he can move wagons and gooseneck trailers with his skid loader without having to get on and off.

The hitch extends about 2 ft. past the edge of the bucket, making it visible from the cab. A 1-ft. length of square tubing bolted to the front lip of the bucket supports a pair of clevis-shaped steel brackets, one above the other. The top bracket holds a ball hitch, and the bottom bracket holds a spring-loaded “jaw” that opens and closes by pulling on a rope from the cab. A 3-pt. top link bolts on between the top of the bucket and the square tubing to provide reinforcement.

“It works slick and saves a lot of time,” says Heinz. “To hook up to a wagon I leave the tongue jacked up with a pin in the hitch, and then back up until the the spring-loaded jaws snap shut. To unhook it I just pull on the rope. Most of the time I can hook up to a gooseneck trailer without having to remove the jaws, but if they get in the way I can quickly unbolt them. I made a similar hitch for the back of my tractor, which I use to hook up to wagons and trailers out in the field.”

Heinz says the jaws came off the back of an old pull-type forage harvester that was used to make corn silage. “The jaws were mounted on back of the harvester and a rope



The top bracket holds a ball hitch and the bottom a spring loaded “jaw” that is operated with a rope from the cab.

ran up to the tractor. When the wagon was full the operator would pull on the rope to disconnect the wagon,” he notes.

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## Easy Fix For Noisy Hitches

If you’ve ever driven any distance with a noisy trailer hitch bouncing around in its receiver, you might like the Rattle Silencer invented by FARM SHOW reader Tom Brunson.

The patent pending Rattle Silencer is a simple peel-and-stick stabilizer for 2-in. drawbars that requires no tools to install. “It has a clean look and is always ready for use. Most of the anti-rattle devices on the market today require tools to install and have loose parts that you have to keep track of until the next use,” says Brunson.

Made from a high-performance polymer material, the sound-dampening material will outwear some metals and nylon and is corrosion-resistant.



The peel-and-stick Rattle Silencer is applied to the hitch ball mount.

The Rattle Silencer sells for \$16.99 US with free shipping. Their website shows product and installation videos.

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