



Researchers at Michigan State University say they can boost crop yields in sandy soil under irrigation by burying sheets of plastic below the crop's root zone.

## Buried Plastic Under Crops Boosts Yields

Sheets of plastic buried in fields are boosting crop yields in Michigan. The new technique involves using contoured, engineered membranes placed below the root zone. According to Alvin Smucker, professor, Michigan State University and developer of the concept, it works regardless of weather.

"It worked well in 2012 when we had record heat and drought, and it's working well this year with record rainfall," says Smucker. "Last year it held moisture and nutrients, and this year it held nutrients, but let excess moisture drain through while nutrients were retained. Most nutrients were leached below plant root depths in other fields."

SWRT (short for "subsurface water retention technology") is intended for use in sandy soils under irrigation, increasing water use efficiency by as much as 20 times. The membrane spacing traps needed moisture while leaving room for roots and excess drainage. It works so well that during the 2012 drought, crop yields with the membranes exceeded production in normal years and far exceeded control plots that year. Corn on conventional 30-in. spacing increased by 135 percent, and corn on 15-in. row spacing increased by 174 percent. Cabbage and cucumber yields were doubled, and potato yields increased by 50 percent. Increased yields recovered the full cost of the membrane installation in the first year.

This year Smucker is working with SWRT on corn, soybeans and sweet corn in Michigan and cotton in Texas.

The barrier installation implement places one layer of membrane spaced on 24-in. centers at a 22-in. depth with a second layer of membranes at an 18-in. depth and offset between the deeper membranes. Membranes are projected to last at least 40 years. Each membrane is laid in an upward open U-shaped position.



Plastic membrane traps needed moisture while leaving room for roots and excess drainage.



Corn grown with use of plastic membrane (left) and without.

"We have USDA funding to expand our research and take it to 50 farms around the country," says Smucker. "We are having membrane installation equipment fabricated in the U.S. and Canada. We are looking for farmers currently irrigating crops on coarse sand."

Contact: FARM SHOW Followup, Alvin Smucker, Department of Crop and Soil Sciences, Michigan State University, East Lansing, Mich. 48824 (ph 517 355-0271, ext. 1251; smucker@msu.edu; www.msu.edu/~smucker).

## Pipe Wrench Steadies Smaller Fence Posts

Rudolph Lehmann uses a big 36-in. long pipe wrench to steady small wooden fence posts as he hammers staples into them. He just clamps the pipe wrench onto the top of the post and lets it hang there until he's done driving in the staple.

"I use this idea whenever I'm fixing fence. It's more difficult to drive a staple into a bouncing post, and the staple bends more. The weight of the pipe wrench makes the post a little more solid and keeps it from bouncing back as much as I hammer staples into it," says the Rocky Mountain House, Alta., cow calf operator. "The posts I use are 3 to 4 in. in diameter. If you have bigger posts you might not need the extra support."



The weight of the clamped-on pipe wrench keeps post from bouncing as Lehmann hammers staples into it.

Contact: FARM SHOW Followup, Rudolph Lehmann, RR 1, P.O. Box 2, Site 12, Rocky Mountain House, Alta., Canada T4T 2A1 (ph 403 729-2388).



"Tiger Tiller" is a 10-in. wide curved steel tiller blade that bolts onto the original blade mount on a riding mower. It's designed to loosen dirt in small areas.

## Turn Your Lawn Mower Into A Cheap "Rototiller"

You can convert an old riding mower or push mower into a low-cost "rototiller" with this new attachment invented by Craig Jackson of Tampa, Fla.

His "Tiger Tiller" is a 10-in. wide curved steel tiller blade that bolts onto the original mower blade mount. The tiller blade slants downward on both sides and then curves inward.

He sells it online in 2 different sizes, one for push mowers and one for riding mowers.

"It works great for grinding up dirt in small areas and will even cut down through weeds and grass," says Jackson. "I use it a lot in my landscaping business to scuff up small areas before putting down new sod. It makes short work of small jobs that would otherwise require manual digging. And, in most cases your mower has more power than a rototiller which makes the job easier."

"Because of liability, I don't want people to go out and spend hundreds of dollars for a new mower and then stick a Tiger Tiller blade on it. But old push mowers are a dime a dozen and sell cheap. I think Tiger Tiller blades would work great on them."

He got the idea for the Tiger Tiller a few years ago when he worked for a lawn and landscaping business. "An employee accidentally installed a lawn mower blade upside down so that the curved part of the blade faced down. It dug up the next yard he cut."

He has contacted several different lawn mower manufacturers to see if they'd help him market the Tiger Tiller. However, none have shown much interest because of warranty and liability issues.

"No one wants to ruin an \$8,000 riding mower, and I understood that from day one," says Jackson. "But the Tiger Tiller doesn't affect the mower deck's balance at all because it's small and you're just adding a small amount of weight that's center balanced. I've never bent a mower crankshaft. If you get into hard clay, you can adjust. Just raise the mower deck and till more shallow."

If your mower has more than one blade, you could use more than one Tiger Tiller but Jackson doesn't recommend that. "The Tiger Tiller is meant for small jobs, not for tilling the ground before you lay down 10,000 sq. ft. of sod."

Both sizes sell for \$29.99 plus \$7.85 S&H. "We can drill the center mounting hole in the blade anywhere from 1/2 to 3/4-in. diameter," says Jackson who adds that he wants to license the idea.

You can watch the Tiger Tiller in action on Jackson's website.

Contact: FARM SHOW Followup, Craig Jackson, 9324 N. Highland Ave., Tampa, Fla. 33612 (ph 813 361-0490; craigjac2@hotmail.com; tillerz.com/).

## Pronged Hoe A Better Garden Digger

Karen Bryant, Hope Hull, Ala., recently sent FARM SHOW photos of a pronged garden hoe she invented called the Wonder Hoe.

The hoe's blade angles downward and is equipped with a series of 2-in. prongs.

"I made this hoe because I wanted something that worked more aggressively than a regular garden hoe. I thought it was about time someone improved the design," says Bryant. "Openings between the prongs allow weeds to work through as you make seed furrows. The hoe is 8 in. wide at the bottom, which is a little wider than an ordinary hoe. So after you've placed seeds in the furrow, you can pull the hoe back toward you and wiggle it back and forth to cover the seeds from both sides at the same time. Dirt will fall through the grooves and cover the furrow evenly. The angled blade makes it easy to pull dirt toward you."

"This hoe also works good in flower gardens. The prongs grab briars and long grassy material as well as straw, so you can push it up around the flowers for use as mulch."



Pronged garden hoe's blade is equipped with a series of 2-in. prongs.

The "Wonder Hoe" sells for \$19.99 plus \$10 S&H.

Contact: FARM SHOW Followup, Karen Bryant, 5465 Felder Rd., Hope Hull, Ala. 36043 (ph 251 714-3104; karenjennifer1@gmail.com).