To save the cost of a new vertical tillage tool, Robin Miller modified this Deere 230 disk at a cost of about $6,000.

Made It Myself Disk "Works Like A $40,000 Tillage Tool"

Spending $40,000 or more for a Great Plains Turbo-Till vertical tillage tool wasn't in the cards for Robin Miller. Instead, the Indiana farmer modified a 230 Deere disk at a cost of $6,000. While he admits he can't go as deep in hard ground as the Great Plains unit, it does the jobs he needs.

"Last fall I ran it with rolling baskets on the rear over corn stubble," says Miller. "That stubble can tear up tires, and it makes it harder to combine beans the next fall. This disk really chopped the stubble up."

This spring he used his home-built tillage tool again when wet ground kept him from no-till seeding soybeans. He also used it to break a crust on planted soybeans hit by a heavy rain before they could emerge.

"I never run it more than an inch and a half deep, but it dries out the heavy ground," he says. "I run it about a day and a half before planting, and it dries out the surface just enough."

Modifying the disk was a trial and error process. Miller admits that he and his brother Tim and father Les tore apart the first gang they worked on about four times before they were satisfied.

"We straightened the gangs out and put straight/wavy coulters on them front and back," says Miller. "We also had to modify the shanks that connect the outside ends of the gangs to the frame. They were designed to match the original concave disks, not our straight disks."

Miller left the pivot ends of the gangs in the center of the disk in place. To straighten the gangs, he disconnected the outer ends from the mounts that held them at an angle. He used two steel plates with bolts to clamp the gang end perpendicular to the frame.

He straightened out the gangs and put straight/wavy coulters on them, both front and back.

"We could have cut the old mount off and moved it, but we weren't sure it would work," says Miller. "This way we could change it back or adjust the gangs as needed."

Adjusting the shanks from the gang beam to the bearings on the gangs turned out to be relatively easy as well. The shanks had a long spool on one side and a short one on the other. By swapping them, the angle shifted enough to provide room for the straight disks.

"We set the gangs so the rear gang disks center on the 9 1/2-in. space between the disks on the front gangs," says Miller. "That way we are getting vertical tillage every 4 3/4 in."

Contact: FARM SHOW Followup, Robin Miller, 2111 W. Perry Rd., Ligonier, Ind. 46767 (ph 260 894-1573).

Road-Hardening Solution Turns Gravel Into Solid Surface

North Dakota ranchers, farmers and township road supervisors have started using a new enzyme – based road treatment to harden up gravel roads. Molasses based, fermented Permazyme from Pacific Enzymes turns compacted earth hard like shale in hours. What's more, it even works in ponds to seal up leaks and to eliminate vegetation.

"It sounds like snake oil, which is what I called it before I tried it," says Bob Johnson, Pacific Enzymes. "Even with all the engineering tests that have been done on the product, it sounds too good to be true. I put it on a road in 1998. When I checked it three years later, I was amazed at how hard it still was."

At the time, Johnson was a county roads superintendent in California. Today, he demonstrates the product and trains users.

Permazyme was developed after a farm family noticed that the hog feed they were using would compact the ground around the feeder. Since then, it has been marketed in California and surrounding states for nearly 40 years. It was only recently introduced into the upper Midwest.

"We treated a section of road last year, and even after being under water this spring, it's still hard as a rock," says Maureen Clemons, sales representative for North Dakota and Montana. "After 6 months, you will be hard pressed to drive a screwdriver through treated dirt."

Very little product is needed to harden the soil. Johnson warns against anything less than a 500:1 ratio of water to Permazyme. Depending on soil types and climate, the ratio can be as high as 3,000:1.

How much to apply and how deep it needs to be mixed in again depends on soil type, climate and use. One gal. of Permazyme in solution treats about 150 cu. yds. of soil.

Packing is key, adds Johnson. However, once packed and allowed to set for a few days, the ground becomes hard. Johnson warns that the treatment should be considered permanent.

"If you try to grade a surface that has been hardened properly, you'll see sparks fly," says Johnson. "However, it's easy to reactivate the enzyme to make the soil pliable down an inch or two. It requires as little as a pint per 1,000 gal. of water sprayed on the surface."

He recommends reactivation as a way to coat the hardened surface with gravel or other material. Once reactivated, the surface can be worked over for a day or so, before it hardens again.

"Spread a thin layer of gravel over a reactivated surface and roll it to bind it with the soil," suggests Johnson. "You'll have a surface that looks like it has a foot of gravel on it."

Another effective use of the product is to seal ponds. Johnson says he waded into a pond a year ago that had been treated in 1970, and the bottom is still rock solid, though now covered with a couple inches of organic material.

Johnson advises treating a pond before filling it to get a good seal around the upper sides. However, an existing pond can be treated. Simply stir up the pond, pour the Permazyme into the pond and wait for it to settle.

"As it reacts to the particles and they settle out, the weight of the water compacts it," says Johnson. "It won't bother fish at all, though it will get so hard that plants can't grow through it."

Permazyme is only available directly from the company or through an approved distributor. While the application process is simple, a mistake can cause failure. The company requires users be trained in proper application.

"Farm equipment is all that is needed to prepare the soil and mix the solution," says Johnson. "An industrial roller or packer will do the best job compacting, though we have used a carry-all loaded with dirt."

Johnson is based in California and only recently began marketing the product in the Midwest. On a recent trip to Minnesota and North and South Dakota, he made applications at grain elevator yards, farm equipment yards, livestock silage pits, feedlot bunker areas, livestock auction areas and rural roads.

At $1,750 per 5 gal., Permazyme isn't cheap. However, seeing is believing. After a recent on-farm presentation for a dozen farmers, each one took home a container to use, says Johnson.

Contact: FARM SHOW Followup, Bob Johnson, Pacific Enzymes, Inc., 2015 Rockwood Dr., Sacramento, Calif. 95864 (ph 530 526-1213; cell 530 586-0567; bjohnson@pacificenzymes.com; www.pacificenzymes.com) or Maureen Clemons, Sales Rep for North Dakota, South Dakota and Eastern Montana (ph 818 407-0951; cell 818 414-2180; mclemmons@trans4mations.com).

Cooling System Saves Money on AC

"I use an everyday lawn sprinkler to keep the roof of my house cool during the summer. I got the idea because my air conditioner wasn't big enough to keep up," says Roger Altman, an engineer/inventor who lives in rural New York.

Altman calls his system PERC, which stands for Perimeter Evaporative Roof Cooling. "My concept will let the average handyman build a house roof cooling system for under $100," Altman says. "Better yet, the person doing the work doesn't have to climb on the roof to install it."

PERC uses conventional lawn sprinklers that are anchored to roof gutters and connected through garden hoses to a spigot fitted with a conventional on/off watering timer. A thermostat mounted on the top of roof shingles triggers water flow when the roof temperature reaches 110 degrees. Water is sprayed across the roof for 20 to 25 seconds so all of the shingles become completely wet.

"PERC is basically an external air conditioning system," Altman said. "As the water evaporates from the roof, the temperature of the shingles goes down 40 to 50 degrees and remains below 110 degrees for about 20 min. Then the system triggers the sprinkler so the cycle can start again."

Altman says that for every gallon of water that evaporates from a roof, about 8,000 btu's of heat are "sucked away". That evaporation reduces the air conditioner's workload by 50 percent, which saves quite a bit of money on electricity. If a new AC is purchased to work alongside the PERC, capital costs are reduced by about 40 percent.

"This isn't like watering a lawn, where the sprinkler stays on for a long time to put an inch of water on the grass," Altman points out. "The concept here is to just get the shingles wet enough so water begins to trickle down the roof. That only pumps a few gallons of water, then the system is off for 20 min. It doesn't take hardly any power to operate, and the savings are substantial. He figures the net savings on a 1,000 sq. ft. roof would be around $220 annually if the PERC system was used for 50 days.

"I got the idea because my air conditioner wasn't big enough to keep up," says Roger Altman, who uses an ordinary lawn sprinkler to keep the roof of his house cool during the summer.

"Keeping the exterior of a roof at 110 degrees or less lowers the attic temperature by 20 to 30 degrees. That in turn keeps the house cooler, because heat isn't radiating through the ceiling into the home," Altman says.

People can learn how to build Altman's system by going to his website and then downloading plans. "This system works well for homes, and should be adaptable for buildings with livestock," says Altman.

Contact: FARM SHOW Followup, Roger Altman (ph 315 215-4013; BPRIBPRI@gmail.com; www.tips4toughtimes.com).