**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 chapped 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 coulers 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 discs, not our straight discs.”

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.

“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 slope on one side and a short one on the other. By swapping them, the angle shifted enough to provide room for the straight discs.

“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.”

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**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 roof becomes 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 btus 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.

“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.

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