

Flat Fold Marker For Field Cultivators

“Our patent-pending, retractable field cultivator marker makes planting your field boundaries a much easier job,” says David Maach, LDM Ag Services, Grand Junction, Iowa.

The retractable marker consists of a 16-in. notched disc and gauge wheel attached to a steel arm that mounts on back of the cultivator. The marker leaves a 2-in. wide furrow in the ground. A hydraulic cylinder extends the marker out and also retracts flush with the rear of the cultivator for easy backing and storage.

The marker is mounted at a distance of one half the planter width, from either the left or right side of the cultivator, depending on which direction you go around the field. Pivoting parallel arm mounts keep the base level when mounting to pitched harrows, and a telescoping arm allows for infinite arm length settings.

Mounting brackets are available for all cultivator makes and models, including ones equipped with rolling baskets or coil tine

harrows.

“The idea is to place a furrow around the perimeter of the field on your final cultivator pass, leaving a center mark for you to follow while planting,” says Maach. “With today’s wide planters it can be hard to see if you’re planting too close or too far from the fence line. Some farmers have built their own cultivator markers, but usually the operator has to get out of the tractor to flip the marker up or down. Or, the marker is mounted far up the cultivator frame which requires a very long mounting arm that gets in the way when folding the cultivator. Our marker is small and compact, and you don’t have to get off the tractor to flip it up or down.”

He says a lot of farmers will use the marker furrow to help them make straighter rows. “Even if you don’t cultivate in an exactly straight line leaving a wavy furrow, it gives you something to aim with and helps make your first pass straighter,” says Maach.

The mounting bracket for a cultivator equipped with a rolling basket bolts onto



Retractable field cultivator marker places a furrow around the field perimeter on your final cultivator pass, leaving a center mark for you to follow while planting.

the square tube on top of the basket. On a coil tine harrow, the bracket bolts onto 2 of the harrow bars. “Each bracket has its own pivot point which allows the harrow bars to rotate individually, while at the same time the marker’s base will always remain level,” notes Maach.

The marker has a list price of \$1,100.

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Government researchers have come up with a new process that simplifies the conversion of lignin biomass, such as switchgrass, into biofuel.



“One Pot Process” Simplifies Cellulosic Biofuel Production

Government researchers have demonstrated a new “one-pot” process for making biofuels out of cellulose. It is cheaper, easier and more versatile than existing processes. They used an ionic liquid (a salt solvent that is liquid at room temperature) to break down the plant material for microbes to ferment.

“We’ve been working on it for 9 years and now have a process that is cost competitive, can be scaled up, and can be varied to produce a variety of biofuels and chemicals,” says Blake Simmons, chief science and technology officer, Joint BioEnergy Institute (JBEI). JBEI researchers are from the Department of Energy’s Lawrence Berkeley National Laboratory and Sandia National Laboratories.

Simmons says the JBEI process simplifies the conversion of lignin biomass into a fuel. Instead of multiple steps with pretreatments, hydrolyzation, and fermentation to produce a biofuel, it does everything in a single “pot” in one step. Feedstock and process components, including the ionic liquid and microbes, are added to the pot during the process. The ionic liquid breaks down the cellulose into basic sugars. The microbes then convert the sugars into the final product. When the process is finished, only the desired output fuel or chemical remains with no byproducts. Even the ionic liquid can be captured and reused.

Simmons explains that success with the project came when they turned away from searching for a solvent that would produce the highest sugar yield. Too often the solvents were toxic to the microbes and

required a complex system to overcome toxicity. Instead, the JBEI team looked for a solvent that was friendly to the biology and less complex. They also discovered that introducing carbon dioxide during the deconstruction phase neutralized the toxicity of ionic liquids.

“We not only lowered operating costs, but also the capital expense for a facility,” says Simmons. “Different outputs require different pathways, but the system remains the same.”

Existing biofuel plants are usually limited to one feedstock for one process and one product. The JBEI process works with grasses, hardwood, softwood and even biowaste.

“It could run on mixed streams or vary with the season,” says Simmons. “I think our approach will give a biorefiner more flexibility to use the feedstock that is most reasonable in cost at any time of the year.”

Simmons has relatives farming in Nebraska and realizes how important ethanol production has become. He suggests the process could be a “bolt-on” addition to existing ethanol plants. It could convert existing byproduct (dried distillers grains) as well as other biomass to fuel.

“Our job is to develop it to the point where someone else can build a turnkey system,” says Simmons.

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Gene Boehler cut the top off a 50-gal. water heater and installed an electric sinker-type tank heater, converting the unit into an insulated livestock waterer.

Livestock Waterer Made From Water Heater

“I needed a waterer for one of our animals and had to replace our Marathon 50-gal. water heater anyway, so I converted it to a livestock waterer,” says Gene Boehler of Farmersville, Ill.

The water heater’s inner tank is made of plastic mounted in a heavy fiberglass housing, followed by a layer of foam insulation and an outer plastic shell. Boehler used a circular saw and an electric chainsaw to cut the top of the water heater off, just above the heater’s top threaded opening.

“The heater’s inside diameter is just the right size for installing an electric sinker-type tank heater. Also, it won’t rust out and is easy to cover,” says Boehler.

He attached a garden hose fitting at the top of the heater to provide an overflow, and he plugged the access hole at the bottom for the heat element. He installed a gravity float valve and guard in the drain hole fitting, then welded a metal stand onto the heater’s legs to raise the unit high enough to accommodate a water pan.

Cutting through the water heater left it with raw edges on top, which Boehler covered with a peel and stick roofing product. “Using a heat gun, I was able to apply just enough heat to make it stick good. Then I used a small roller to work the material down,” says Boehler.

Boehler offers a note of caution: “Cutting through a water heater’s fiberglass housing like I did will make you itchy from all the



He attached a garden hose fitting at top of heater to provide an overflow and installed a gravity float valve in drain hole fitting at the bottom.

fiberglass dust. I suggest that you cover yourself up well, or use a large fan to blow the dust away from you.”

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