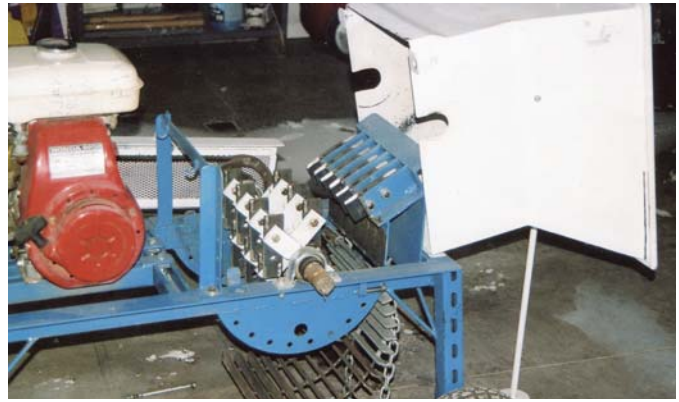




Ron Hein's homemade mini hammermill can be moved around by hand using drop down handles.



Hammers in the mill are made from 2 by 6 by 14-in. hard-surfaced steel plates.

## Mini Hammermill Chops Up Garden Nutrients

Ron Hein's homemade mini hammermill makes great plant food. It grinds up horse manure and other material so it's easy to spread and breaks down fast in the soil. The 35-in. long, 16-in. wide hammermill is easy to transport with a tow bar on it, and can be maneuvered around with drop down handles.

"When we clear out a garden bed in the fall, we run the material through the hammermill along with horse or cow manure, spread it and till," says Hein. "By spring it's ready to plant, and in our dry climate, that organic matter helps hold moisture, too."

Hein fabricated a frame out of unistrut channel and 2 by 2 3/16-in. angle iron. The 1 5/8-in. unistrut channels are pre-drilled with holes every 2 in. The C-shaped channel has special fasteners designed to slide inside the channel, making it ideal as a subframe for mounting the drive engine.

"Unistruts make it easy to slide the engine sideways or back and forth," he says.

Hein also used unistruts for the legs. Angle iron was used for the long frame members

to mount the engine subframe and the hammermill with hopper.

The 14 hammers in the mill are 2 by 6 by 1/4-in. mild steel plates that Hein hard-surfaced with a surfacing compound. The half-pound hammers are mounted to a 1 1/4-in. square shaft. The shaft is mounted to the angle iron frame with pillow block bearings.

Each hammer is bolted to a set of steel "ears." As they wear, they can be turned and flipped to expose new edges.

"Welding the ears and balancing the hammers was the trickiest part of the building process," says Hein. "They have to be perfectly balanced or the shaft will torque out of shape. Each hammer was punch pressed and jigged to be exactly the same size."

The hammers pass through a set of 6 knives cut from worn out tillage blades. Hein used a hydraulic press to flatten them and then sharpen them. The knives are fastened to a steel plate base with Grade 8 bolts and nylon lock nuts to secure knives and hammers alike. As the knives wear, like the hammers, they

can be turned three times to expose fresh corner edges.

A 5 1/2 hp Honda engine with a centrifugal clutch powers the hammermill. The go-cart style engine and clutch simplifies controls and operation. At idle, the hammers hang in place. As the throttle advances, the clutch engages, and the hammers begin to spin.

The 14 by 16-in. hinged hopper made with 16-ga. sheet metal widens to a 16 by 20-in. mouth. It fits over the top of the hammers. The hopper mouth has a pipe rim rail around it. A piece of sheet metal was fabricated to slide onto the rim and cover up to half the hopper mouth. A rubber flap attached to it hangs down into the hopper, keeping material that is bouncing off the hammers and knives from being thrown back out of the hopper. The hopper is hinged at the rear end of the frame. When tipped open, a free-swinging leg hinged to the side of the hopper serves as a support.

Hein used a hydraulic press to form grates with various spacings for different levels of

grind from fine to coarse. For a first pass with extremely clumpy material such as cow manure, he will often remove the grate entirely.

The grate profiles bring them to within 3/8 in. of the hammers. Grates are hinged at the rear of the frame and easily removed. Two chains fastened at the rear of the frame pull the grates into place and secure them to the frame.

"The second hand engine and clutch cost about \$300, but most of the rest was scrap left over from other projects or given to me," says Hein. "I spent about a month and a half just drafting the plans."

All moving parts on the unit are shielded for safety. Hein emphasizes the importance of wearing safety glasses and hearing protectors when working with a hammermill like his.

Hein may offer a "do it yourself" info packet for a fee if there's enough interest.

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Ronnie Pfeiffer and his sons blend daily rations for their calves using an ordinary cement mixer.

## They Blend Feed In Cement Mixer

Ronnie Pfeiffer and his sons use an ordinary cement mixer to blend daily rations for their calves.

The mixer is belt-driven by its original electric motor.

"We keep the mixer in our cattle barn and use it every day to make rations for our show calves. It really does a good job," says Pfeiffer. "We use it to mix feeds such as corn, oats, cottonseed hulls, beet pulp, molasses, and soybean oil, and unload the feed into 5-gal. buckets. We already had the mixer and hardly had to modify it at all. We just

unbolted 3 baffles from inside to get more of a tumbling action."

Pfeiffer says in the past they used a local feed mill to mix feed. "The problem was the feed mill required mixing a minimum of 1 ton, so some of the feed would get stale before we could use it all up. By mixing a fresh batch every day the feed always stays fresh. And, we save money."

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Float is made up of three 2-ft. long metal tubes welded together, with a fourth tube at the center that pivots on a metal pin so tube can move up and down.

## Floating Intake Pipe

"It saves a lot of frustration when we need to suck water out of a farm pond," says Chad Travis, Drasco, Ark., who made a floating suction hose intake pipe. He came up with the idea after struggling with various ways of keeping his suction hose free from debris.

"I pump water from my pond into a tank that I use to irrigate my garden. Unfortunately, the suction hose laid in mud at the bottom of the pond and eventually the debris plugged up the drip hoses and sprinklers that I use in my garden," says Travis.

The float is made up of three 2-ft. long metal tubes welded together with a fourth tube at the center that pivots on a metal pin, allowing the tube to move up and down.

The suction hose hooks up to a 2 1/2-in. dia. female adapter. The suction tube has multiple rows of holes drilled into it, creating a built-in screen. The float holds the suction hose about 4 in. from the top of the water, so that Travis never has to worry about the screen plugging.

A nylon cord tied onto the unit is used to pull the float back.

"It works great and cost almost nothing to build. I used the center tube off a Deere combine bean head to make all the tubes on the float," says Travis.

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