



Tom Culp attaches black drainage pipe to side of grain bin.

## Money-Saving Grain Drying Ideas

Even if you've never had much interest in the idea of using solar energy, you'll want to take a look at these simple money-saving ideas for grain drying.

Tom Culp, Lexington, Ohio, boosts intake air temperatures up to 5° with his amazingly simple solar-assist design using black drainage pipe.

He fastened 11 runs of solid, 4-in. black plastic pipe to the south side of his 18-ft. dia. grain bin, which has a capacity of 3,200 bu. It took three 250-ft. rolls of the pipe, which would cost about \$300 at current prices. Both ends of the pipes are open, allowing heated air to be pulled into the bin through the ends fastened to the fan's shroud.

It's been 10 years since Culp first attached the pipe to the bin and the system is as effective as ever. While he hasn't calculated the energy savings, Culp is sure he's met his goal with the idea: "To save just a little bit of propane."

Lowell Schroeder had a similar idea but went about it a different way - using stacks of aluminum irrigation pipe painted black.

Schroeder says he shoots for an air-temperature increase of 6 to 8° to speed the natural air drying in his 8,000 bu. bin. During the growing season, the irrigation pipe is used in the field to irrigate corn.

He first tried the idea in 1990, stacking lengths of pipe 4-high between metal fence posts. With one helper, it took just 2 hrs. to set up the pipes, stacking them slightly off vertical for better solar exposure. A 10-hp., 24-in. bin fan draws heated air through the pipes then pushes it into the grain.

Last fall, before stacking the pipes, he



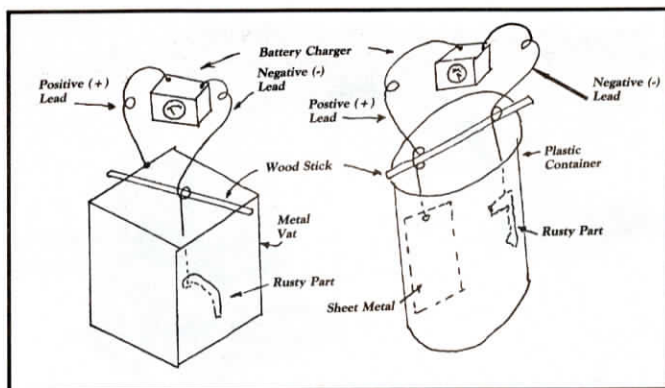
Schroeder paints irrigation pipe black and then stacks it by grain dryer.

laid them flat on the ground and painted them black, then built a simple wooden manifold to channel heated air through the fan. He joined two 30-ft. sections at each "leg" of the manifold. He laid 52 pipes over a 60 by 21-ft. area.

"I have the pipes anyway. For \$30 in enamel paint, I get a temperature rise that speeds up drying," he says.

Schroeder limits corn going into the bin to about 21 percent moisture. He adds layers of corn over a period of days to minimize drying time, using intake air that's generally under 100°. He figures electricity for the fan, a single stirring auger, and unloading costs less than \$300 per year.

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## Simple Way To Remove Rust

Here's an idea developed by a group of tractor restorers in California that might come in handy for anyone who's got to clean rust off old metal parts.

The idea comes to us courtesy Engineers & Engines Magazine (1118 N. Raynor Ave., Joliet, Ill. 60435), a publication for enthusiasts of antique power equipment. Don Ross, an aerospace engineer in California recently devised this method for the group in California.

The accompanying illustration shows two different methods, depending on the type of vat you use. A 15-ampere battery charger is preferred. Fill the vat to the desired level with tap water. Plug in or turn on the battery charger, switch to 12-volt output and note the current flow on the battery charger meter. Unless your tap water is extremely hard, the current should read "zero" (water is only a good conductor when you're standing in it). To conduct electricity between the two electrodes, you need to add a salt or acid solution to serve as an electrolyte. You can

use either common table salt or crystal-type toilet bowl cleaner. You're better off with toilet bowl cleaner if you're working in an area where salt water could get splashed onto grass.

In either case, dissolve a pound in a gallon of water and start to add the solution slowly to the vat water until the current flow becomes excessive for your particular battery charger, then add more tap water.

After the rusty part has "cooked" for about an hour, remove it, hose it off, and then scrub with steel wool or a wire brush. Continue "cooking" until all rust has been removed or until you see that the process starts pitting the metal. If one side of the rusty part becomes "derusted" early-on, you can turn the part around to expose the remaining rust to the positive electrode.

When the "cooking" is finished, hose-off the part and swab it with a diluted solution of phosphoric acid.

(Submitted by Menno L. Kliever, 43138 Road 52, Reedley, Calif. 93654)

## Nurse Cows Save Baby Calves

Howard and Dale Thome, Viola, Kan., buy 3 to 7 day old calves from local dairy producers, growing the cattle to 1,150 to 1,200 lbs. to sell direct to consumers in their local area.

The problem was that they were raising about 100 baby calves per year with about a 15 percent death loss, after starting them on milk replacer. "When weather turned wet, calves just couldn't develop or maintain immunity to diseases," Howard says. "Probiotics helped, but not enough."

Recently they solved the problem by switching to the real thing by using two low-producing Holstein cows to raise 60 calves and lost just two calves (less than a 4 percent loss).

Calves remain on the cows for about 6 wks. and nurse morning and evening until starting on grain after about 3 wks. After that calves are with cows once a day. At that

point one cow can nurse up to 8 calves per day - one group of four in the morning and four more in the evening. Getting milk just once a day encourages calves to eat more grain, promotes faster growth, and keeps per-calving production costs down by increasing the number of calves produced per cow annually, Howard reports. Calves are healthier and faster-growing, and even if they get sick they're easier to keep alive.

He figures the two nurse cows saved some \$2,400 in milk replacer bills last year while consuming no more than \$800 in feed (15 lbs. grain per day and haylage).

Protein supplements stop once calves are 3 months old. Straw is fed free-choice to older steers on full feed. He reports gains of up to 3 lbs. per day on free-choice whole shelled corn and alfalfa. (**Sensible Agriculture**)

## Sex Education For Heifers

Horse breeders learned a long time ago that increased social contact can make a lot of difference between success and failure. A "shy" or maiden mare will often cycle earlier in the season or show heat more readily if she has a chance to get acquainted with a stallion first.

Some cattlemen have felt the same ought to be true in cattle - in getting young heifers bred, for instance. Now researchers have proved this to be true.

University of Nebraska studies have shown that well-fed heifers will reach puberty and start cycling 50 to 75 days sooner

when exposed to sterile bulls. The social stimulation (and seeing other heifers come into heat and interacting with the bull) speeds the process and gets heifers ready to breed much sooner than if they are isolated from the opposite sex.

For cattlemen who are pushing heifers nutritionally to get as many of them as possible to breed early in the season, the use of a sterile bull could help cut total feed costs, by stimulating heifers to become sexually mature sooner. And the early stimulation can result in more heifers bred and settled earlier in the season.