Bumper Crop Of Grain Storage Ideas

We recently searched back through FARM SHOW's 22 years of story archives to find these "classic" low-cost grain storage ideas. They might come in handy if grain storage is tight again this fall. ***Mark Newhall, Editor***

Jim Noram's temporary grain bin has no permanent roof or floor, which saves greatly on cost.

Low-Cost Temporary Grain Bin

The combination of a bumper corn crop and low corn prices prompted Jim Noram, Currie, Minn., to build his own temporary grain bin that has no permanent roof or floor and cost thousands of dollars less than a permanent conventional bin.

"I didn't want to pay our local grain elevator to store my corn. I spent only about $600 to build it," says Noram.

The bin measures 36 ft. in diameter and 12 ft. high and holds 10,000 to 13,000 bu. The roof is simply a layer of plastic stretched tight over a peaked steel frame, while the floor consists of a layer of plastic on top of a gravel and clay base. The sides consist of four 3-ft. high rings of corrugated steel bolted together.

Noram laid down a 6-in. deep layer of gravel on top of a 2-ft. layer of clay, then staked a layer of heavy-duty plastic down over it. After bolting the four rings together, he used 1 by 2-in. steel tubing to build a frame for the roof and bolted it to the top ring. To provide aeration, he places a length of 12-in. dia. tile on top of the plastic in a circle that's about 6 in. from the bin sides. A section of tile runs to the center of the bin where it makes a 90 degree bend and goes vertically up to the top of the bin. An 18-in. dia. electric fan blows air down through the tile.

Noram dries corn down to 15 percent moisture in a nearby bin, then transfers it by auger onto a "splash cone" at the top of the temporary bin. Once the bin is full he puts a big sheet of plastic over the top and uses a nylon rope to pull it down tight onto the frame. The rope is woven through eyelets along the edge of the plastic. After pulling the plastic tight against the roof frame, Noram ties the bottom end of the rope to a series of I-bolts spaced at intervals around the the bin wall. Noram places several short lengths of 6-in. dia. tile on top of the corn to keep the plastic from sagging down against it and causing condensation.

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Build Yourself A Plywood Grain Bin

Curtis Hemstad, grain farmer near Stanley, N. Dak., has been using plywood bins with plastic covers on his own farm for several years. He willingly passes on what he's learned to FARM SHOW readers who may need extra temporary grain storage.

Basic parts of the bin are 4 by 8-ft. sheets of 3/8-in. plywood which are overlapped 6-in. and bolted together with 1 1/4 by 1/4 in. bolts at each joint. A circle of 12 sheets makes 3,000-bu. Bin; 14 sheets make a 4,000-bu. size.

When the last sheets are bolted together into a full circle, Hemstad loops a 5/16-in. cable around the bin and tightens it with a turnbuckle.

The bin must be set up on well-drained soil, he says, and sod makes a good base that won't give problems with stones and gravel. Hemstad starts the pile of grain before he sets up the bin, which makes it easier to form the plywood sheets into a perfect circle. When the paneling is in place, he fills the bin with a standard grain auger, letting it cone up naturally until the base of the pile is almost to the top of the plywood.

After the grain is safe from heating, Hemstad puts a 6-mil plastic cover over the top of the pile. He lets it lap over the plywood 6-in., then fastens it in place with wood lathes.

Curtis Hemstad bolts sheets of plywood together into a full circle and uses plastic to cover the grain.

Hemstad cautions that the grain must be dry before it is covered because the plastic forms an airtight seal and damp grain will heat. He recommends 14% moisture or lower. He has stored wheat for up to 8 months in one of these bins.

Final touch is to lay a ring of about 30 tires on the plastic, lash them together with rope, and anchor the rope in about three places. A 4,000-bu. bin should have two rows of tires.

To open a bin, Hemstad takes out a few bolts at a seam and it usually bulges open enough to insert his auger. Or, he cuts a hole with a keyhole saw.

"They seal themselves tight so grain doesn't leak out," says Francis Kinze about the straw bale "grain bins" he erected to store a bumper crop of barley and oats.

Straw Bale Grain Bins

"I got the idea from my dad," says Francis Kinze, about the straw bale "grain bins" he erected to store a bumper crop of barley and oats on his farm near Pike Lake, Sask.

"They seal themselves tight so grain doesn't leak out and they're flexible enough not to break apart when they bend," he says. "We don't have to line the bales with anything and they hold well enough so we can put them up on both flat and uneven ground."

Kinze first dumps 300 to 400 bu. of grain on the spot he chooses for his grain bin. He then lays the first row of bales around that grain, lying end to end on their sides. He wraps the bales with two strands of barbed wire, pulling it tight. More grain is then loaded into the bin, filling to the top of the first row of bales. A second row of bales is laid on top and tied with two strands of wire, and then the rest of the grain is augered in. Kinze says the wire should be pulled as tight as possible because the circle of bales will push out somewhat as it's loaded. He doesn't connect the two rows of bales top to bottom.

"We made several bale rings to store grain. Most were about 20 bales around, and either 2 or 3 bales high. The 2-bale rings hold 8,000 to 9,000 bu. of grain while the 3-bale rings hold 12,000 to 15,000 bu. They could be built smaller or larger," says Kinze.

Underground Grain Storage

An Australian grain farmer who needed long-term storage but couldn't justify construction of new structures went underground to come up with reliable storage at 1/5 the cost.

Wally Thorn, who farms near Glen Alice in New South Wales, dug a 79-ft. long pit that's 14 ft. wide to store about 5,500 bu. of small grains. He figures he can store grain indefinitely in the underground bin at an initial cost far below the cost of above ground permanent structures.

"It cost about $600 to dig the pit and get to the point where it's ready to hold grain. To cover it over will cost about another $200," says Thorn. "It's a cheap form of long term storage. I don't anticipate any insect damage or moisture problems."

In-ground storage of grain is not a new idea in Australia. Many farmers recall underground storage pits built years ago during severe droughts that were opened after 10 years or more with no sign of damage.

Alan Andrews, researcher at the Agricultural Engineering Center at Glenfield has researched the underground storage idea.

"It's certainly quite a lot cheaper than traditional methods of storing grain and, if done well, can make the grain very secure. It's fairly important to place the pit correctly. It must be on a well-drained site where water is not going to lie around," Andrews cautions.

Wally Thorn dug this 79-ft. long, 14-ft. wide pit to store 5,500 bu. of small grains.

He recommends that farmers only store small grain with a moisture content of 13% or less. He says completely wrapping the grain in plastic is probably unnecessary and recommends just a sheet extending over the top and down the side of the pit part way. He says the layer of soil over the top of plastic - as much as 20 in. - keeps out most pests. Pits are emptied from one end, which is left open, by tractor loaders and augers.

Grain Bin In Machine Shed

One option for storage-short farmers is putting up a "roofless" grain bin in their pole barn or machine shed.

"What you can do, for example, is buy a 6-ring bin, minus the roof, take the top 3 rings and set both of them side by side in your shed. After emptying the bins, you can put the two halves together outside, set them on a concrete pad and add a roof," says Max Tate, district manager for York Mfg., York, NE. Other advantages of this idea, Tate adds, is that now it's easier to get rings than a complete bin, you don't need to install a concrete pad, and you can quickly put the bin up yourself.

Lee Chedester, territory manager for Stormor, Fremont, NE, points out that by putting the bin inside, you're protecting the grain from the weather plus you don't have the added expense of putting in extra wall supports that you'd have if you used the shed for flat storage.

Chedester says that a 3-ring bin (about 8 ft. high) and 48 ft. in dia.would hold about 14,000 bu.

Both Chedester and Tate stress the importance of having aeration systems in the bin to keep the crop in condition.

Quotes for bin-in-a-shed storage costs range from 20 to 30 a bu.

For more information, contact your local grain bin dealer.