



Dome building system uses a lightweight cement mixture with poly beads and an inflated “balloon” form. Air-filled beads reduce mixture’s weight and improves insulation.

New Way To Put Up A “Dome”

You can put up a 20-ft. dia. dome building in a day if you do it the Dave Pennington way. He developed a system using a lightweight cement mixture with poly beads, and an inflated “balloon” form. The air-filled beads reduce the weight of the mix and enhance insulation.

The larger the dome, the thicker the walls need to be to support the roof. “I started the one in the photos with blocks 10 in. thick, which turned out to be way more strength than was needed,” explains Pennington. “I switched partway up to a 6-in. thick wall, which was more than enough.”

Before starting the dome itself, he laid down a base ring to which the inflated “balloon” form could be attached. At around \$5,000, it was the most expensive component in the entire process.

Once the air form was inflated, block was laid against it and mortared together. “It took about 4 hrs. after we finished before the partially finished dome walls are strong enough to stand on their own without the form,” says Pennington. “The mix cures pretty quickly, even in the rain.”

Pennington uses shredded paper with polystyrene beads and cement for his “structural mix”. The polystyrene and paper provides 80 percent of the bulk and produces a material that is water resistant, fire proof, and can be pounded with a hammer. It holds screws and nails like wood without cracking. Like the blocks he uses, it’s light.

“Concrete runs around 140 lbs. per cu. ft. depending on the mix,” says Pennington. “My structural mix is about 35 lbs. per cu. ft.”

After the first course of blocks is laid, he installs a door form, which he then works around as he lays up additional blocks. The form was specially designed to fit the curvature of the dome.

“You can install forms for doors and windows as you go or simply cut them out as needed after the dome is up,” explains Pennington.



Scaffold is supported by steel pole at center.

One of the keys to fast dome work is his unique scaffold. Working up and over the developing dome requires a freestanding support for the person laying the block, especially as the walls curve over the top half of the dome.

“I needed a scaffold that could be moved around to access the entire dome,” explains Pennington.

The key to the scaffold is a pipe that comes up the center through a hole in the balloon form. A curved ladder attaches to the top of the center point and extends down to the ground. The ladder pivots freely around the outside of the dome.

Once he was finished, Pennington had a 20-ft. dia. dome with a 315 sq. ft. base. With its door and eventually windows, this dome will serve as a small cabin. It could be equally useful as a storage building or workshop.

Pennington is confident his dome success can be repeated. He plans to begin producing lightweight blocks for people interested in building a dome themselves. He will produce the blocks, the air form, scaffold ladder, mortar mix and expertise. With a base ring in place and four helpers on site, he says a 20-ft. dome can be constructed in a day.

“You would have a high-performance building for around \$10 per sq. ft.,” he says. “Multiple domes can be connected to form a larger building.”

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Dome is shown here partially completed with scaffold and air form inflated.



“They look realistic and stop people in their tracks when they first see them,” says Ernie Hoffman who makes mini farm machines out of landscape logs and treated lumber.

Mini Farm Machinery Made Out Of Wood

These new mini farm machines are made out of landscape logs and treated lumber, lag-screwed together, and painted with popular brand colors.

So far, inventor Ernie Hoffman has made tractors, wagons, disks and moldboard plows. He has orders for a disk and manure spreader.

“They look realistic and stop people in their tracks when they first see them,” says inventor Ernie Hoffman of Elk River, Minn. “The wheels don’t turn. In fact, there are no moving parts at all on them. However, I try to design the controls and steering system to look as real as possible.”

Hoffman says he got the idea for the toys one day when he was putting around in his shop. “I remembered a photo I had seen of a tractor someone made out of plywood. Before long, I was building an IH tractor and then a Deere. Then I started making wagons and moldboard plows. Now I’m working on building a disk and a Massey Harris 44



So far, Hoffman has made tractors, wagons, disks and moldboard plows.

tractor. A lot of city people buy my toys for their dads who have retired from farming.”

He says it takes about 3 days to build and paint each model. Prices start at \$275 for a small 48-in. long, 30-in. high tractor, any color.

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They’re Fertilizing Crops With Milk

Is it possible that milk could find a new market as a liquid fertilizer? Anecdotal evidence from producers and one small university study indicate that spraying milk on pasture and crops has benefits.

David Wetzel of O’Neil, Neb., accidentally discovered the power of raw milk in 2002. He made cheese and butter from his milk and dumped the remaining 600 gallons of skim milk on a field every other day. He noticed that his cows always headed to that area of the pasture to graze, and the grass seemed greener.

Soil samples confirmed that the milk had an effect. The milk-sprayed area was packed with nutrients not found in the rest of the field.

Wetzel mentioned the results to Terry Gompert, a University of Nebraska extension educator, who asked colleagues to do a study.

“In 2005 we did replicated trials applying 2 to 32 gal. of milk on irrigated pasture,” Gompert says. “The dry matter yield increased by 1,200 lbs./acre (26 percent).”

In addition, soil compaction testing with a penetrometer indicated the soil had 18 percent less compaction than untreated soil, providing a better ability to absorb water and air.

More studies need to be done, Gompert says, to prove milk’s affect on the soil and to come up with best application rates and other details. Meanwhile, he has received at least 100 testimonials from farmers who are applying milk.

Bob Bernt, an organic dairyman, took it a step further. Like Wetzel, he has skim milk left from his cheese production. Besides spraying the milk on pasture, he mixed it with fish emulsion during planting and then side-

dressed crops with milk. In 2009, through his own testing, a blend of 3 gallons of milk and 3 gallons of fish emulsion per acre followed by 10 gallons of side-dressed milk per acre provided the best combination.

“The size of my corn was almost double,” he says. “I’m seeing a big response this year. The weed pressure seems to be less. Maybe the calcium level is holding them down.”

He adds that his grass production also improved 30 percent in sandy soil and 50 percent in clay soil.

Though it needs more study, Gompert says it makes sense, because raw milk is food for bacteria and other components to make soil healthy. He isn’t recommending eliminating fertilizer, but milk may be an effective way to restore soil health.

Milk’s high protein, sugar, enzymes and vitamin B levels offer other benefits. A New Mexico beef producer runs 2 gallons of milk/acre through his irrigation and improves the Brix level (sweetness) of the grass. Because insects don’t have a pancreas, they can’t tolerate sugar. Producers have observed insect numbers are down in areas that have been doused with milk. Bernt notes that this year his organically grown watermelons and honeydew melons were noticeably sweeter. His wife ran milk with the water when she sprayed the plants.

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