

Portable Greenhouse Built On Wagon Running Frame

When Dave Capen's wife Liz said no to the construction of a wooden-framed greenhouse on their property, he decided to build one on wheels.

"We use it to grow plants that we start in our house and then move out when they get too big. Later on we transplant them to our gardens. Our total cost was only about \$100," says Dave.

He started with a flatbed wagon with a pressure-treated wood floor. He bought four 20-ft. lengths of 1/2-in. rod and cut them in half. He bent five 10-ft. long pieces into a hoop shape, by marking the middle and then bending the rods over a barrel. He then drilled five 5/8-in. dia. holes on each side of the wagon floor and pushed the hoops into place.

Capen left the other 3 rods straight and zip-tied them lengthwise to the underside of the hoops, placing one rod on top of the hoops and the other 2 about halfway down the sides. He then cut out 2 pieces of scrap plywood and attached them to the upper half of the frame at both ends. The ends of the rods run through holes drilled into the plywood, which helps hold the plywood in place. Cross wires help stabilize the frame.

Once the frame was finished, he bought

a roll of 6-mil. plastic for \$30 and cut it into thirds. One piece is attached permanently to the top of the hoops. The other 2 pieces form the sides and are attached to the top piece between pairs of slat boards. The bottom of each side is covered by duct tape to help keep the plastic from ripping, and grommets run through the taped plastic. Bungee cords that run through the grommets attach to the wagon frame.

"By removing the bungee cords, we can flip the sides up for easy access to the plants inside," says Capen. "We use the same idea on the front and back sides of the frame."

The portable greenhouse contains 60 square feet of usable space. "Since we don't need room to walk through, we can use the entire floor of the wagon to grow plants," says Capen. "If it gets too cold or windy, we just push the greenhouse into our barn. We can also move the greenhouse to a shady or sunny area, depending on conditions. I use a thermometer to keep track of the temperature inside the greenhouse."

Contact: FARM SHOW Followup, Liz Capen, 588 Shaftsbury Hollow Rd. N., Bennington, Vt. 05257 (ph 802 447-4993; lizcapen101@outlook.com).



Portable greenhouse was made on a flatbed wagon with a pressure-treated floor. The sides can be flipped up for easy access to plants inside.



Capen cut 20-ft. lengths of 1/2-in. rod in half and bent them into a hoop shape. He then drilled holes on each side of the wagon floor and pushed the hoops into place.



Ground-driven manure spreader is designed to be pulled by a single light buggy horse.



One-Horse Manure Spreader

Farmer's Equipment and Repair's horse-drawn manure spreaders' popularity surprised company owner Vernon Hershberger. Buyers like the powder-coated sides, the triple beater design and the ground drive clutch. The 25 and 35-bu. spreaders are equipped with either shafts for a single horse or a tongue and shaft for a team. It is the one-horse option for both spreaders that really grabs today's market.

"When I first went to market with my 25-bu. spreader, I figured I would be lucky to sell 15 to 20 of them," says Hershberger. "Instead I sold 65 in the first year and a half. With the price of draft horses being sky high, people are looking for ways to do more with buggy horses."

Hershberger's 25-bu. spreader is designed for use with a single light buggy horse. Demand quickly developed for a larger spreader that could be pulled by a team of buggy horses or a single draft horse.

Changes included making the box 2 in. narrower and adding 5 in. to the length. While he kept the poly floor, he replaced the poly sides with powder-coated metal.

"The biggest change was the gear drive," says Hershberger. "Ground drive spreaders usually use an arm to lift the chain off the sprocket or lower it to put the spreader in gear. We use a clutch system, so the chain

stays on the sprockets. It eliminates a major wear point."

Another big change in design that makes the use of a light horse possible is the raised tongue/shaft hitch. Conventional tongues and shafts usually connect to the vehicle at the axle. This puts all the weight of the hitch on the horse.

The raised design has them connecting to a tube hitch that rises 12 to 14 in. from the axle where it is welded to a 36-in. cross member.

"With the raised hitch, the horse carries half the weight of the hitch. The rest is transferred to the spreader," says Hershberger.

The 3-beater design also helps facilitate the single horse draw. Hershberger explains that a single beater or even 2 beaters tend to chew up the manure and pitch out chunks.

"Three beaters spread straw and manure pack much better and unload easier," says Hershberger.

Both spreaders are available in 2 and 4-wheel rubber or steel wheel designs. The 25-bu. spreader with 4 steel wheels is priced at \$3,850, and the 35-bu. model is available for \$4,050.

Contact: FARM SHOW Followup, Farmer's Equipment and Repair, 3589 State Route 643, Baltic, Ohio 43804 (ph 330 897-1106).



One-horse mower is patterned after the classic IH #9 mower, but has an improved lifting mechanism to make raising the bar easier.

I.H. #9 Mower, Now Improved

A new one-horse mower based on the classic IH #9 mower was recently introduced by Farmer's Equipment and Repair. The mower is in field-testing with planned introduction for the 2020 season.

"We developed this mower for Amish and non-Amish who prefer mowing without the sound of an engine," says company owner Vernon Hershberger. "It also fits the growing number of smaller acreages that can't afford an expensive team of draft horses. Our mower can be pulled by a team of light horses or a half-draft horse or Haflinger type."

Hershberger patterned his mower after the #9, but improved the lifting mechanism to raise the bar easier. He notes that the lift kit is available separately and can be used with original #9 mowers.

In keeping with his goal of a one-horse mower, Hershberger limited the bar length to 42 in. The #9 was available in 5 to 7-ft. models.

"We were unable to duplicate the axle going through the gearbox," says Hershberger. "Instead, we mounted the gearbox behind the axle with a chain drive off the axle."

Hershberger also limited the mower to a single gear. The #9 had 3 speeds - high, regular and trailer gears.

"Trailer gear was for use in heavy hay, as it has a lot more torque," says Hershberger. "With only one horse, we went with the trailer

gear for more torque and easier cutting."

Hershberger also designed the mower with the high tongue/shaft hitch he uses on his manure spreader. By attaching them farther back on the main beam of the mower, he shifts more weight to the mower wheels. Less weight hangs on the horse or light team of horses.

Unlike the spreader, there is no clutch to engage and disengage the ground drive. The mower uses a more conventional in-gear/out-of-gear gearbox. While technically still under development, Hershberger is satisfied with the current design.

"We worked on the mower this past winter and pulled it into a field this spring, and it worked great," says Hershberger. "It does take a horse with a bit of draft blood. It would be too much for a single light buggy horse."

One way to use the mower with a single, larger buggy or all-purpose horse is to order it with a 5 1/2 hp. Honda engine. The motorized version also comes with a 5-ft. bar for a wider cut.

Hershberger is sharing the prototype with other Amish farmers this summer to get their input. He hopes it will be just the first of a line of hay handling equipment for small farmers.

Contact: FARM SHOW Followup, Farmer's Equipment and Repair, 3589 State Route 643, Baltic, Ohio 43804 (ph 330 897-1106).