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"IT PAID FOR ITSELF IN ONE YEAR"

Home-Built Dryer For Big Round Bales

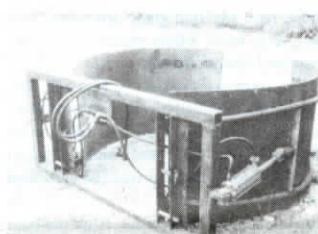
"My home-built round bale dryer saves a lot of good quality hay which might otherwise have been lost or badly weathered. It paid for itself in one year," says dairy farmer Allan James, Cobden, Ontario, who dries up to 168 round bales at a time on his bale drying platform.

The platform, 100 ft. long and 44 ft. wide, is designed to dry 6-ft. dia. "soft core" bales. It consists of a 44-ft. long plenum chamber with six 46-ft. long lateral tunnels that extend off each side of it. Each lateral tunnel has seven 4-ft. sq. bale-drying holes in it that are screened over with corn crib wire to keep the bale's soft core from collapsing. Two fans blow air out either end of the plenum, creating a vacuum inside the plenum and the lateral tunnels. James uses a front-end loader equipped with a specially-designed "clam" loader to set freshly-harvested bales onto the on-edge 2 by 4's on edge that form the perimeter of each hole. He puts a cap made out of 6-mil polyethylene across the top of each bale to protect it from rain and to pull air through the sides of the bales. Without the plastic cap on top, air would flow only through the soft core middle of each bale.

"I was fed up with the weather damage to my hay crop as it dried in the field," says James, who has been drying round bales for three years and feeding them to his 60 milk cows. "Artificial drying of round bales lets me beat the weather because I can cut hay earlier, at moisture contents up to 35%, without waiting for it to dry. The result is more leaves saved and higher quality hay. For example, during a period of rainy weather last fall, my neighbors had hay laying on the ground for a month before it was dry enough to bale. By then it was hardly worth as much as straw. I was able to bale my hay soon after it was cut."

James points out that if hay is valued at \$80 per ton, a 5% increase in total harvested dry matter is worth \$4 per ton. Also, the hay's higher protein content means less purchased protein is required to balance a ration.

It takes an average of 5 to 7 days to dry one batch of 30% moisture bales. "At first, we



The "clam" loader is built from 1 1/4-in. dia. pipe and an old land roller.

ran the fan continuously regardless of the weather," says James. "However, we discovered that during wet weather the outer layers of the bales swell enough to close the air passages. Now we operate the fans during fair weather only and use a humidistat to automatically turn the fans on and off. It costs about \$2 per ton for electricity to operate the fans. One 42-in. dia. fan is belt driven at 1,100 rpm. The other, a 26 in. dia. fan, is direct driven by a 3,500 rpm motor. Both fans move about the same volume of air."

The plenum and lateral tunnels, built from pressure-treated lumber, are both 4 ft. wide. However, the plenum is 4 ft. deep while the lateral tunnels are just 6-in. deep. The lateral tunnels slope to one side so the plastic on top of the bales sheds water. Soil overlaid by stone is banked against the sides of the lateral tunnels to prevent air loss. James notes that it's important to seal all joints in the wood tunnels with silicon caulk to prevent air leaks.

There are a total of 84 bale-drying holes. James can dry 84 bales at once or double-stack the bales to dry 168 at a time. He can also dry a smaller batch of bales by shutting down a portion of the plenum with a built-in baffle. "I can move the baffle anywhere within the plenum to shut off any lateral tunnel or use plastic fertilizer bags to block individual holes," says James.

The 4-ft. sq. holes are spaced 32 in. apart on each lateral tunnel. "If I could do it over, I'd space the holes further apart," says James. "I designed the holes for 6-ft. dia. bales, but my New Idea baler really makes 6 1/2-ft.



Ground-driven bale lift cradle at the rear lifts the bales onto the trailer's floor.

SELF-LOADING, UNLOADING TRAILER HAS A GROUND-DRIVEN LIFT MECHANISM

New "No Hydraulics" Round Bale Hauler

"Our new self-loading gooseneck bale trailer lets one man load and haul four round bales from the comfort of a pickup cab," says Dorian "Cowboy" Clawson, vice president of sales for Continental Belton Co., Belton, Texas, about the company's new "no hydraulics" bale trailer.

Key to success of the new trailer is a unique ground-driven lift mechanism at the rear that eliminates the need for hydraulics. It consists of a semi-circular "cradle" fitted with three 5-ft. long prongs with paddles on the end, and two 12-in. long, 14-in. dia. steel rollers.

To load a bale you back the trailer up to a point just ahead of the bale and lock the electric brakes on the trailer axle by flipping a lever inside the cab. Locking the brakes activates the bale lift cradle so that when you start to back up to the bale, the lift cradle rolls down onto the ground at the same time raising the trailer wheels off the ground. Once the cradle is rolled all the way down so that the bale prongs are flat to the ground, the trailer rolls backward on the two 14-in. roller wheels. When the prongs are all the way under the bale you pull forward, reversing the action of the lift cradle causing it to lift the bale up onto the trailer's floor. Then you unlock the brakes and the lift cradle will stay in the up position while you drive to the next bale and repeat the operation. "The trailer's floor is tilted forward so the bales move to the front. Siderails made from 1 1/4-in. round pipe keep the bales from falling off the sides of the trailer."

"Other pickup mounted round bale haulers require hydraulic hookup for lift cylin-

ders and conveyor chains. Some of them also require another tractor and a man to load and unload bales," says Clawson. "This trailer makes loading bales a one-man operation from the comfort of your pickup, and it lets you haul bales at highway speeds. That makes it more practical for long distance hauling than a tractor-operated trailer. However, you can use it with your tractor by installing a ball hitch on the drawbar."

The trailer's floor is built in three sections or "tables", each supporting one bale. The fourth bale is held in transport by the lift cradle. Each table is hinged at the middle of the trailer and is held in place by a spring-loaded latch on the driver's side of the trailer. To unload bales you back up 2 ft. or so and hit the brakes, which allows the fourth bale to roll farther back on the cradle and releases pressure on the other bales. You pull the latch which causes the bales to dump off the side of the trailer. Then pull forward to roll the fourth bale onto the table. Once the bales are unloaded, you reach up and pull the tables down by hand.

The 27-ft. long "Haymaster" mounts on a standard gooseneck ball hitch in the bed of any half ton or larger pickup. The trailer is equipped with 15-in. dual wheels with electric brakes. The electric brakes can be hooked up directly to the pickup's battery or to any 6-prong electric trailer brake plug-in mounted on the trailer.

Sells for \$5,895.

For more information, contact: FARM SHOW Followup, Continental Belton Co., Box 660, Belton, Texas 76513 (ph toll-free 800 634 3597 or 817 939-3731).

bales. As a result, the bales sometimes touch each other, reducing air movement and making it hard to get the plastic caps on."

James has had some trouble double stacking bales of third cut hay. "On some bales a layer of mold develops between the bales. The reason for the mold is that third cut hay is fine and the bales get very dense, so airflow is restricted. However, there's no problem double stacking bales of first cut hay."

James says he spent about \$3,000 to build the drying platform.

The "clam" bale loader is built from 1 1/4-in. dia. pipe and an old land roller. James bent two lengths of pipe into 6-ft. long semi-circles. Then he cut the land roller open and welded it to the pipes. A pair of 3

by 8 in. hydraulic cylinders open and close the clam. He built the mounting frame from 3-in. sq. tubing. Four pins, two on each side of the frame, serve as pivot points. A 3-spool control valve on the tractor operates the hydraulics.

Plans for the big bale drying platform are available in a paper presented to the American Society of Agricultural Engineers. They sell for \$5 (Ask for paper #88-1067). Contact: FARM SHOW Followup, American Society of Agricultural Engineers, 2950 Niles Road, St. Joseph, Mich. 49085-9659 (ph 616 429-0300).

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