



Holborn has successfully dried a line of bales 150 ft. long. Tarp is only needed as protection from rain.

In-Field Bale-Drying System

There are a lot of benefits to big square bales but one drawback is that they're packed so tight that hay must be really dry to make quality bales, says custom operator Bob Holborn, Palmerston, Ontario, who worked together with a farm equipment manufacturer to come up with a new in-field drying system that lets him bale at moisture contents of up to 30 percent.

Holborn started experimenting with the idea several years ago but it wasn't until last summer, when a customer had problems with heat buildup in high-moisture bales, that he put the idea to the test. It worked so well on problem bales, he used the system the rest of the summer.

The idea is to stack big square bales into "stooks" of the kind sometimes used for small square bales. He stands the stooks tightly together, side by side so there's an open tunnel underneath. Then he puts a standard grain drying fan at one end of the tunnel and blocks off the other end with a couple extra bales. Air (unheated) blows through the tunnel and is forced up through the bales.

Holborn says a 100 to 150-ft. line of bales needs to be aerated periodically for about three weeks, depending on the initial moisture level.

He worked with Oscar Frey at Horst

Welding in Listowel, Ontario, to develop a "stooker" to handle the bales. It makes a stook of five bales so that the stack only touches the ground along the edges of the two bottom bales. The unit attaches to a tractor 3-pt. or can be towed behind by a pickup or tractor. It has two support wheels on back. Hydraulic cylinders drop the side arms to the ground. Bumper bars pack bales tightly end to end as each stack is added to the line of bales. Bales are placed on the stooker by a front-end loader. Horst Welding plans to build a limited number of units this year. They sell for \$3,500 (Canadian).

Holborn notes that he has used both electric and pto-powered dryer fans. He says you can also use a silage blower to create the air flow. He recommends keeping tarps handy in case of rain. Otherwise, the bales do not have to be covered.

This year Holborn and Frey plan to do additional testing of the system to identify what moisture contents work best, how long it takes to dry a certain number of bales, what length of stack works best, etc.

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A grain drying fan or silage blower is used to blow air through the tunnel under the bales.



A front-end loader is used to place bales on this "stooker". Side arms lower hydraulically to the ground to unload.

Dryer Boosts Profits For Commercial Hay Growers

The old saying says, "Make hay when the sun shines," but two Barrhead, Alberta brothers with a commercial hay operation decided they didn't want to wait for perfect weather any more.

Ken and Arnold Assenheimer have 600 acres of hay, 400 of which are used to grow timothy for the export market. Last year they designed and built their own hay dryer, devoting 1,000 man hours to the project.

After one season using their home-built hay dryer, the Assenheimers say they're pleased with the results of their \$100,000 investment. They expect the coming season to be even more successful.

"The gross return on export timothy is up to \$370 per acre, which we think is better than anything else you can do on the farm," Ken explains. "We're paid up to \$190 per ton which works out to \$5.25 for a 60-lb. bale."

The brothers' drying system is housed in a 40 by 60-ft. metal building with a concrete floor inset with metal grates made from oilfield pipe. They based their design on another dryer they went to look at near Toronto, Ontario, but made some of their own modifications. In addition to farming, Arnold is an engineer.

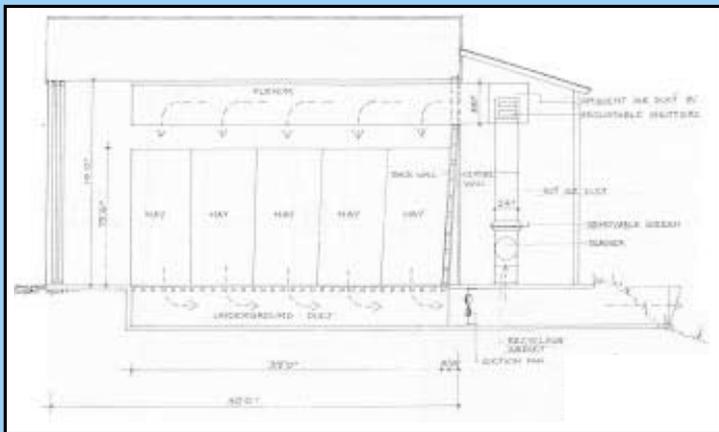
The building houses twin dryers capable of simultaneously drying 800 bales each (a total of 10 160-bale wagon loads). It's also



Building houses twin dryers capable of simultaneously drying 800 bales each.

possible to operate only one dryer at a time.

A bale wagon unloads the stacks onto the floor grates, and when the unit is filled to capacity, tarps are lowered along the sides of the stacks. A vacuum is created by a 15 hp axial fan in the pit below each of the 800-bale stacks and this pulls the tarps tightly against the stack. A 3 hp axial fan and a 1.2 million BTU natural gas heater are turned on to supply 140 degree F air to the plenum above the stack. Heated air is drawn down



Vacuum is created by a 15 hp axial fan in pit below each 800-bale stack. A 3 hp axial fan and 1.2 million BTU natural gas heater supply heated air to plenum above stack.

through the nine-layer stack, effectively drying it at a cost of \$10 to \$12 per ton.

"Depending on the ambient air temperature, we can bring hay that was at 20 percent moisture down to 12 percent in 16 to 20 hours of drying," explains Ken. "Then we turn the heat off and blow ambient air through for a one to two hour cooling down period. At this rate, the dryer can be filled every day, effectively drying 40 tons of 20 percent moisture hay each day."

The Assenheimers say the dryer allows them to produce a larger amount of consis-

tently high quality hay.

"In the world of export timothy, color is everything and by using the dryer, we have less sun bleaching, plus the hay is dust-free. The dryer allows us to increase the amount of premium hay we produce from 35 percent of our production to 60 percent," Ken says.

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