

Baled Soybeans Make Great Silage

When Chris Nelson, Menlo, Iowa, looked over a short stand of low-yielding soybeans last year, he began wondering if they wouldn't be worth more as feed for his father's beef herd than if harvested normally.

"Because it was a no-till field that we had drilled into sod, they were shorter than our other beans and not as mature as we got close to harvest time. I started looking into the nutritional value of soybean forage," says Nelson.

A senior at West Central Valley High School, Nelson put together a science fair project in which he compared the value of ensiled soybean bales with ensiled alfalfa bales and dry alfalfa hay.

He cut and windrowed soybeans with a MacDon windrower. When the moisture content had dropped to 60 to 70 percent, he baled the crop in large round bales and wrapped them in airtight plastic.

One of the first things he noticed was the volume of the crop. "We harvested more than 10 tons of forage per acre in just one cutting," he says. That was more than twice the average for the Nelson's hay crop that year.

He tested the three forages and found the alfalfa silage and soybean silage were similar in nutritional content, but the soybean silage was higher in total digestible nutrients and

net energy value. The dry hay was lower in nutrition in all areas.

He selected 15 calves from the family herd and put five on each of his three forages for a 20-day test. "Dad was a little concerned about putting good calves on the soybean silage," he admits.

Nelson measured the amount of feed consumed by each group and also took fecal samples and measured the amount of energy excreted.

The cattle fed soybean silage consumed more of it than those eating alfalfa silage. And those on the dry hay ate the least and also lost 0.1 lb. per day, or a total of 2 lbs., during the 20-day test. Cattle on the soybean silage gained 0.32 lb. per day, or a total of 6.4 lbs. Cattle on alfalfa silage gained the most, at 0.38 lbs. per day, or 7.6 lbs. in total.

Dry hay was the cheapest feed, at \$1.47 per head per day. Alfalfa balage was the most expensive, at a cost of \$1.67 per head per day. Baled soybean silage cost \$1.59 per head per day.

From this study, Nelson concluded that soybean silage is economically sound and nutritionally comparable to hay or haylage.

And the study had additional benefits for Nelson. It took him all the way to the International Science Fair in Louisville,



Faced with short, low-yielding soybeans, Chris Nelson decided to use them for feed. He baled the crop in large round bales and wrapped them in airtight plastic.

Kentucky. During the course of the competitions, he amassed about \$14,000 in scholarship and award money.

He's now a freshman at Iowa State University, where he plans to study

agricultural engineering.

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Hydraulically adjusted 3-ft. wing blades convert a standard 8 1/2-ft. snow plow into a 14-ft. wide model. For transport, the add-on blades fold up behind plow. Snow plow mounts on a Ford F-150 4-WD pickup.

Snow Blade Wings Boost Plowing Capacity

A pair of hydraulically adjusted 3-ft. wing blades allowed Dennis Lackender to convert a standard Western 8 1/2-ft. snow plow into a 14-ft. wide model. It mounts on his Ford F-150 4-WD pickup.

"This configuration allows a 4-WD pickup to reach its full snow moving potential. It provides a competitive edge to anyone who does custom snow plowing," says Lackender.

The wing blades are designed to swing forward at an angle and lock into a "scoop" position for pushing big loads of snow off to the sides of parking areas. Or the blades can be placed in a fully extended, straight-out position to clear a 14-ft. span.

For transport, the add-on blades fold up behind the plow. When extended, the blades are suspended by chains that can be adjusted up or down, allowing the wings to flex over uneven ground.

"In wet, heavy snow you can keep the wings folded up behind the plow until the area you're plowing has been opened up. Then, you can place the wings in the desired working position and control how much snow is pushed by how big a bite you take from

the unplowed area. The wide blades allow you to move snow well down into the ditch, without creating a snowpiled shoulder that will drift worse the next time it snows.

"Both wing blades together weigh about 210 lbs., but my 4-WD pickup was able to handle them without adding any extra suspension to the pickup."

He built stabilizer bars for the wing blades, drilling a series of holes into them that allow for different wing blade positions. A 3/8-in. bolt acts as a shear pin if the blade hits an obstruction.

Lackender says it took a lot of head scratching, cutting and fitting to get the wing blades properly positioned. "It's absolutely necessary to get the angles and hinges of the wings positioned correctly so they'll hinge and fold correctly - I cut and rewelded my wings three times before I got it right."

Lackender is willing to provide a do-it-yourself video if there's interest.

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Blade raises and lowers hydraulically and also V-angles for ward or back, thanks to a hinge in the middle where it pivots on a 1 1/2-in. dia. pin.

Self-Leveling Snow Blade Hinges In The Middle

"The entire width of this snow blade stays in contact with the ground, even on uneven terrain," says Mike Grace, Elberon, Iowa, who designed a 10-ft. blade for the front of his tractor that's like nothing on the market.

The 28-in. high blade raises and lowers hydraulically and also V-angles forward or back thanks to a hinge in the middle where it pivots on a 1 1/2-in. dia. pin. It can also be angled up to 25 degrees from side to side via two wing cylinders.

The blade is made from 3/8-in. thick steel plate and mounts on a bracket made from 1-in. plate steel. "Two 1,250-lb. coil springs allow the blade to pivot end to end 20 in. on uneven terrain. As a result, if the tractor wheels go over a bump both ends of the blade stay on the ground," says Grace. "There's no chance that one end of the blade will dig too far into the ground or come up off the ground."

He used 4 by 6-in., 5/16-in. thick box tubing to make a frame for the blade that pins onto the tractor. The wings are made from 3/8-in. thick steel plate reinforced with 2-in. sq., 1/4-in. thick tubing. The blade rides on two skid pads, 5 by 6 in. There's also a 5 by 15-in. center skid.



Blade can be angled up to 25 degrees from side to side via two wing cylinders.

"It'll move an incredible amount of snow," says Grace. "I use a dual hydraulic valve in the tractor cab to run each wing at whatever angle I want. I 'float' the lift cylinder so the blade doesn't gouge the ground. The blade and frame together weigh about 900 lbs. so the blade stays put on the ground. I've never had the blade ride over the top of the snow," says Grace, who notes that by pulling three pins and six hydraulic hoses he can remove the blade from the tractor.

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