Silage Solution

Using baled cornstalks and corn syrup from the ethanol milling process, this Missouri beef producer made his own unique mix of silage with relatively little cost.

After harvesting his corn last fall, Tim Luther mowed, raked and baled the cornstalks. He then ground 120 bales into silage-like pieces only 2.5 inches long. This made a large, loose pile of about 100 tons of roughage. [PHOTOS COURTESY OF TIM LUTHER]

The Luthers, Tim, Travis, Carson and Rhonda, stand and check on their experimental silage pile. [PHOTO BY MATHEW ELLIOTT]

Story by
KINDRA GORDON

Tim Luther of Lawson, Mo., faced a conundrum this past summer. A tough growing season due to an Easter weekend freeze, drought and then excess rain all in a matter of months left him with a shortage of stored roughage for wintering his 200- to 250-head commercial Angus cow herd.

Luther had a corn crop to harvest, but because corn was selling for such a good price, he didn't want to chop his crop for silage like he has in the past. Thus, he needed to come up with a cheap alternative for roughage to use as winter feed.

"I knew early in the summer we had a problem and would not have enough winter stockpiled forage without the silage," Luther says. "I told my family not to worry, we've always found feed for the cows."

Luther sold some cows and bought some hay from neighbors, but with hay averaging about $100

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per ton, he knew that wasn't going to solve his feed shortage.

"High-priced corn — as well as high-priced fuel — is rewriting all the rules of agriculture," Luther says. He recognized that byproducts of the ethanol milling process were changing the face of livestock feeding as well.

With those thoughts in mind, Luther began to do his homework, to try and come up with a solution for his lack of roughage. After asking many questions, visiting with nutritionists and noting how corn condensed distillers' solubles (CDS) from ethanol plants, or what Luther calls corn syrup, were being used in different operations in Iowa, he decided to try an experiment and see if he could have the best of both worlds.

The experiment

In late September, Luther combined his corn, which yielded about 100 bushels (bu.) per acre in the challenging growing conditions. He then immediately mowed, raked and baled the cornstalks, just as you would a hayfield. This yielded about three tons of forage per acre.

"There was a lot of moisture in the baled cornstalks because we took them right after the grain harvest; and, technically, if you were going to store the bales over winter with that much moisture, they would mold," Luther says.

But, Luther wanted the moisture in the bales because his next step was to use a commercial hay grinder to grind 120 bales of low-quality feedstuff into silage-like pieces that were only 2.5 inches (in.) long. This made a large, loose pile of about 100 tons of roughage.

Then, two semi loads of CDS were poured directly on and into the pile from the ethanol plant in Craig, Mo. A total of 12,000 gallons of liquid CDS, equivalent to about 50 tons, were added to the 100 tons of roughage.

After the liquid was applied, Luther let gravity go to work and allowed the CDS to soak into the roughage. The next day the pile was packed and shaped between two rows of hay bales to make an above ground silage pile.

"This removed as much air [as possible] from the pile and helped mix in the solubles. What had looked like a mountain was tamed into a lot of cow feed," Luther says.

The pile heated and fermented just like silage. After a month, nutrient value tests showed the crude protein (CP) of the "homemade" silage was running at 8%-9% with 57% total digestible nutrients (TDN), which will be sufficient for cow maintenance requirements when Luther feeds it to his herd in January and February. Cows will begin to calve mid-February.

Luther was pleased with the outcome

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A silver lining

In making his own silage pile out of cornstalk stubble and corn condensed distillers' solubles, Tim Luther has found only one negative: All of the crop residue was removed from his field.

"We took a lot of nutrients off the field when we baled it. So the most expensive part of this process is the nutrient removal," he says.

Moreover, the removal of more than 90% of the residue on the field took Luther out of compliance with the government programs he is enrolled in. To resolve those issues, Luther planted winter rye as a cover crop in the field the day after the cornstalks were baled. The rye crop was truly a silver lining, as it provided a fall grazing pasture for his cow herd.

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of his experiment. "We didn't turn cornstalks into alfalfa," he says, "but low-quality forage became a useable processed feed without a lot of cost."

All-around efficiency

Luther believes this process added several efficiencies to his usage of feed. For instance, he points out that cows don't need as much energy as true corn silage offers, so this alternative silage more efficiently matches their nutritional requirements. He does note that in feedlot settings where energy is a higher requirement by feeder cattle, this product may not be as effective.

Secondly, Luther says, "Rather than grazing the cornstalks and having waste, we were able to use all of the stubble by putting it in a pile."

He also points out that this process allows for using the CDS ethanol byproduct without the storage tanks they typically require. Luther cautions that working with the CDS the day they are applied to the pile can be tricky.

"The solubles are delivered from the ethanol plant in an insulated tanker, and they come out at about 180°-200° F. Ours was pumped on the pile with a hose, but you've got to be careful so you don't burn yourself."

Once the solubles are applied to the pile, packed and begin to ferment, Luther says there are no storage concerns. Another advantage, he adds,

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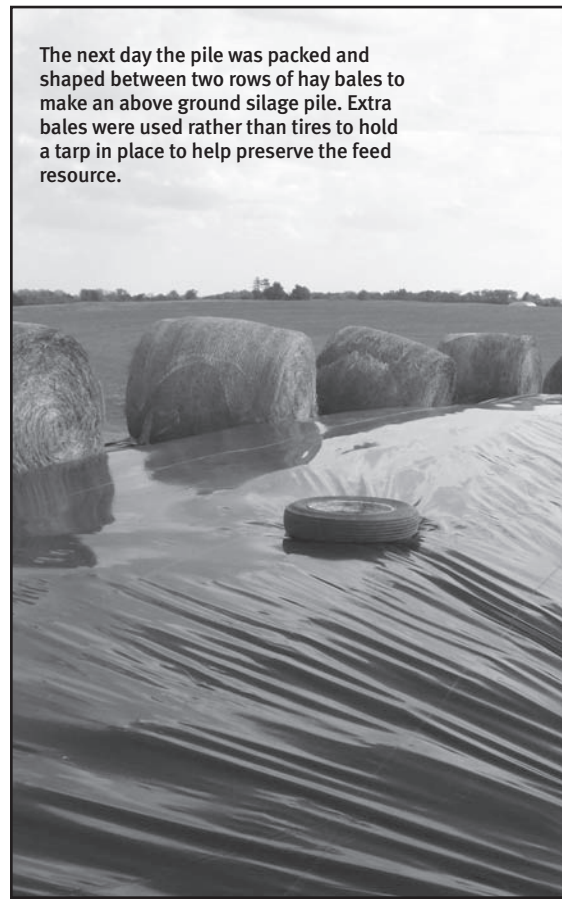

The next day the pile was packed and shaped between two rows of hay bales to make an above ground silage pile. Extra bales were used rather than tires to hold a tarp in place to help preserve the feed resource.

is that all of the mess from handling the corn syrup is done in one day.

Luther concludes, "This silage pile was truly an experiment. But it was well-planned, and what we did was actually very simple and inexpensive." And, most importantly, it is going to meet the Luther cow herd's nutritional maintenance needs through the winter.

A quick tip for covering the silage pile

Because of the windy and rainy weather typical of fall in his area, Tim Luther covered his silage pile with black plastic to help better preserve the feed.

But, Luther didn't want to use old tires to weight down the plastic. Instead, he came up with a better alternative. Luther had about 20 leftover round bales, and he used them to anchor the plastic on his silage pile. He set them on the pile with the tractor loader.

"That's the slickest idea we've ever come up with," he comments. His two children, ages 12 and 15, like it because they think it makes the pile look like a castle.