



Forage  
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# A Better Way to Feed Hay

*Bale grazing offers options for cutting costs and chores.*

by Kindra Gordon

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It may sound peculiar, but Neil Dennis of Wawota, Saskatchewan, Canada, starts putting out bales for winter feeding in the fall – long before the snow and winter weather sets in. He may position 600 bales in a pasture, each about 20 feet apart.

Months later, when winter arrives and cattle need to be fed supplemental hay, Dennis will move the cattle into the pasture and allow the herd access to a section of the bales that are fenced off with electric tape or polywire fence. After two to three days, when they've cleaned up the area, he'll move the herd to a new fenced off area with bales and so on.

Dennis points out that this is a much easier method of feeding hay than starting the cold tractor each morning – and it saves on fuel costs and time.

But the primary reason Dennis and many other beef producers are advocates of this process of bale grazing is because of what it can do for soil health and the future productivity of the pasture. Namely, nutrients from manure and urine are distributed across the pasture and the hoof action helps impact the soil – it's a means to fertilize next year's grass crop naturally.

## Focus on the forage

Dennis tells that he grew up on a family livestock operation that did things conventionally: "We looked after the animals and not the land." But difficult financial times during the 80s and 90s forced Dennis and his wife to look to alternatives to help their farm's sustainability and profitability and their quality of life.

This led them to learn about holistic management and to take several classes that have shifted their focus on soil and forage management. Dennis says he now has the philosophy that, "The only way to heal the land is with animal impact." Dennis explains, "Healthier sod equals healthier plants, equals healthier animals; and healthier animals and plants for food, equals healthier people."

Whether he is utilizing mob grazing in the summer or bale grazing in the winter, Dennis says his goal is to impact the soil and then allow for ample recovery for the land. "When I leave a paddock, I want every square inch to have a footprint. Then I allow adequate recovery time for that area."

He also notes that on his ranch he only receives an average of 12-13 inches of rainfall, but he believes "It's not how much rain you get; it's how much you hold in the soil."

Through their year-round grazing management, the Dennises have transformed unproductive pastures into pastures with increased carrying capacity – as much as 300%.

## Research results

Bart Lardner, Western Beef Development Centre research scientist at Lanigan, Saskatchewan, has been conducting bale-grazing trials and believes the process has merit. He estimates expenses at 10-20% less than feeding in feedlots.

He notes that it takes time to organize the bales for restricted feeding and it takes time to remove bale strings

or nets. After that, the rest is managing consumption.

Additionally, bale grazing generates up to three times more nitrogen than the site would gain from cleaning out a feedlot.

"All the nitrogen is captured on the feed site and available for next year's growth," he points out. "That's a huge deposition of nutrients a producer can manage."

## Be willing to experiment

Dennis acknowledges that much of what he has learned about grazing management has come through trial and error, and he encourages other cattle producers to do the same. He suggests, "Try something new on 10 acres and see what happens."

For instance, with bale grazing you might just try it on a small pasture with a few bales for a week or a month. Then watch and see how the land recovers next summer and spring.

Or, Dennis suggests "massage grazing" to renovate pastures is also a good experiment. He says, "A deep massage isn't as good [for the soil] as bale grazing, but it's the next best thing."

Massage grazing entails rolling out a bale on an acre at a time in the spring and having a large group graze that area that is fenced around it. The next day the fence is moved over and a new bale is rolled out.

The advantages of massage grazing over bale grazing are that you can cover more land in a shorter period of time, and massage grazing spreads the benefit of the manure and litter cover more uniformly across the paddock, making the regrowth

more even than after bale grazing, Dennis explains. The disadvantage is that you have to start a tractor every day to roll out the bales.

Here's how Dennis massage grazed: He treated a 10-acre crested wheat paddock over a period of 10 days using 800 yearlings. The paddock had been grazed once the year before, then stockpiled for spring grazing.

The massage treatment began with Dennis calculating the feed requirements and then rolling out brome-alfalfa bales on one acre. The hay was placed in strips, leaving a bale width between each strip. When that hay was cleaned up, he went back and rolled bales into the alternating strips.

"This way, you get more tramping and better spread of urine and manure because they go back and forth over the treated areas to get to the water," he explains. "When you're done, you want it to look like indoor-outdoor carpet with lots of manure tramped in. The forage has to be in contact with the ground so the soil micro-organisms can break it down."

He doesn't recommend using straw bales because the animals would leave too much litter cover behind. His preference is hay bales made from any mix of forages mature enough to have some seed in the heads. The seeds shell out or pass through the digestive tract, ultimately increasing the diversity of species in the stand.

It's best to carry out this treatment first thing in the spring so that the paddock will have lots of time to recover and



Bales are in place and ready to be "grazed." Cows are allowed access to a new group of bales when they clean up an area.

PHOTOS COURTESY OF SASKATCHEWAN MINISTRY OF AGRICULTURE

## Bale grazing benefits

- Self-feeding of animals
- Reduction in chore time
- Reduced wear and tear on tractor, which is reduced to one period
- Lower operating costs
- Less manure to manage in the corral, meaning lower haul-out costs
- Reduced greenhouse gas emissions from manure piles/packs and diesel burning
- Less wear and tear on corral fencing
- Improved land fertility
- Better distribution of manure nutrients, which increase future forage production

regrow that same season, Dennis explains. The plants shut down for about 21 days after being grazed, so short. regrowth has to come from the root reserves because there are no leaves left for photosynthesis to occur. If you get rain, it could be ready to graze again in 80 or 90 days — if not, it could be a year.

His general rule of thumb is to avoid grazing the pasture again until the forages are budding or starting to set seed. At this stage of maturity, the root reserves will have been replenished and the stems will have firmed up enough that the cattle will tend to eat the tops of the plants, leaving six inches or so behind to trap snow during the winter.

The crested wheat pasture massaged in May was left to rest for 123 days and grazed again on Aug. 24. In previous years, the crested wheat paddock had yielded 20 to 25 animal days per acre (ADA) — that is, one acre had the capacity to carry 20 or 25 animals for one day. After the deep massage treatment in the spring of 2007, the second pass in late August produced 111 ADA.

In 2008 the paddock produced 123 ADA grazing on the first pass in August. The increase in plant diversity was already apparent — 40-plus forage species were identified in the paddock that had predominately been crested wheat the year before. This benefit came from the new seed introduced from the bales as well as the hoof action of the animals, which disturbed the top layer of soil enough to promote germination of seeds lying deeper below the surface.

Dennis notes that a deep massage using a lower stock density would work — just not as quickly.

He concludes that there's no magic number that defines high stock density grazing whether the animals are grazing bales or pastures. He emphasizes that it is a matter of trial and error, grazing the plants and impacting the area and then allowing ample time for the plants to regrow and recover before being grazed again. **HW**

**Editor's Note:** Neil Dennis spoke at the Nebraska Grazing Conference this past August. The 11th annual Nebraska Grazing Conference will be Aug. 9-10, 2011, in Kearney, Neb.



This photo shows the manure and leftover material following bale grazing at a density of 25 bales per acre (40-foot centers). At this rate, the overall average nutrient deposition from urine and manure is considered environmentally safe and economically optimal.



Intensive bale grazing on a selected site. Electric fencing controls livestock access to the bales.

## Bale grazing basics

Bale grazing proponents note that the system will only work with feed testing and good planning. Here are some guidelines:

- Put bales out in fall, when weather is still nice and there is no snow to plow through.
- Bales should be placed 15-20 feet apart in rows that are at least 20 feet apart to allow adequate space for electric fence between the rows. (The outside row of bales can be used to hold up the fence.)
- To determine how many bales to allow access to, you'll need to test the hay to know the quality, and you'll also need to factor in bale weight and cow size and nutritional need. As a rule of thumb, Dennis estimates that a two-day supply of hay is about one bale per 20 cows. Some trial and error is needed to determine how many bales to allow access to. And, depending on hay quality, you may need to include a mix of alfalfa grass hay and straw bales and/or sometimes supplement with protein.
- Based on hay quality and number of animals you will be bale feeding, you may want to consider separating cattle into different groups — cows, bred heifers and yearlings or calves — to minimize competition between older cows and younger cattle and to target nutrition to the group that needs it most.
- Portable electric fence is an essential tool for controlling the cattle movement and access to bales. He recommends moving the fence every couple days to keep the cattle actively eating the hay in front of them in order to reduce waste. He typically starts a long narrow row with the water source at one end and then moves the fence out from there to include a new row of bales, while still allowing cattle access to the water. Dennis notes that cattle won't clean up all the hay, but 80% usage is a good target.

- Consider bale placement for distribution of manure. For example, Dennis especially likes to bale graze in areas with low soil fertility. The strategic placement of bales in those areas encourages more cattle activity and additional nutrients/manure. Or you may bale graze one pasture one winter and a different one the next.
- Because some of the areas Dennis grazes offer little wind protection, he does utilize some portable windbreaks in pastures that don't have natural shelter.
- You may need to cut the bale strings as you allow cattle access to the bales. Plastic bale strings can be removed by hand. Sisal twine tends to be preferred because the strings disintegrate into the soil eventually.
- Dennis notes that bale grazing may lead to dead spots where the bales have been placed if a thick layer of forage is left uneaten. But he says that these dead spots are usually only temporary. A year or two later a dead spot often ends up growing taller than the rest of the grass in the pasture.
- If he plans to be gone for more than two days, Dennis says he just gives the cattle access to more bales and no one has to do chores for him. **HW**