

Bale Grazing for Soil Health

Hay-feeding strategies can build soil health and improve forage production.

Oftentimes, we think that one goal of regenerative ranching is to manage grazing to eliminate feeding hay. Yet, just like any other tool that we have in our toolbox, hay feeding can be a useful strategy, especially if you're trying to rebuild soil health in areas that are extremely deficient.

There are several reasons to bale graze with soil health in mind. Typically, we see it employed most effectively when a grazing plan is used to pre-identify locations where bale grazing can do the most good for soil health and forage production. If inclement weather or other factors call for hay feeding, then we know our feeding locations in advance and can even pre-place the bales and fence them off until needed.

Choosing effective sites

Typically, look for a site that is low in nutrients and could use the organic matter and nutrients that would be deposited from feeding hay. You get your biggest bang for your buck at sites that should be productive, but for whatever reason, they've been neglected, or they are so depleted of nutrients that there's not much production.

Another area to target, especially if you ranch where you could have wet conditions during the wintertime, is a well-drained location, perhaps with sandy or rockier soil that would hold up better under those types of conditions. These areas may not be overly productive, but they tend to have more bare ground, and you know

that they will hold the cattle up and let you get in and out of the area during wet spells. Build up these areas while you're feeding your cattle.

If it's a really dry year, bale grazing can be used to encourage animals to get out and utilize parts of pastures that normally would escape grazing, perhaps farther away from water, where the cattle don't want to roam as far during the growing season.

Another place to plan bale grazing is a location where you want to be able to keep a closer eye on bred heifers or growing animals that need higher nutrition and a little extra attention during inclement weather or less-than-optimal grazing conditions.

Plan and place hay in advance

If you know you will be feeding hay (based on your growing season) and know you want to build up an area, or because you know inclement weather is going to force you to feed hay at some point, plan ahead, and even place hay ahead of the winter-feeding season. This is called *in-place* hay feeding. Don't wait until the last minute.

Once you've decided where you need and want to place hay and you've either baled it at the optimal time during the growing season or acquired it, go ahead and set up your feeding area. Know that you're going to avoid using that area until the winter feeding season.

At Noble Research Institute ranches, we oftentimes go ahead and space large round bales *in place* within the targeted area, typically 30 to 40 feet apart in a checkerboard pattern.

We use temporary electric fences to allocate the hay we want to utilize for a day or two of bale grazing at a time.

When applying *in-place* hay for bale grazing, you may consider using a lower-quality hay because it serves three purposes:

- to provide rumen fill and some nutrition through selective consumption
- to leave a significant amount of litter to help build organic matter in the soil
- to concentrate livestock manure and urine deposits to build soil nutrients

There are benefits to letting cattle work through the bale to get what they want, pushing it around, pulling out the hay they don't want to eat, and providing cover and nutrients to build up these targeted areas.

If you're feeding bales of higher quality (and higher value), you probably want to feed it more efficiently by using a bale ring. Less hay material will be distributed across the soil surface, but *in-place* hay feeding with higher quality hay still serves to concentrate the manure and urine on targeted areas.

In northern and northwestern states where the climate is usually dry but with snow cover, windrow grazing is another type of *in-place* hay feeding. The last cutting of a hay field is cut and windrowed prior to winter and left on the field in windrows. When hay feeding begins, allocate a portion of a windrow to the herd every day or two, using temporary electric fences. Cattle work through the snow to consume the

hay, and you don't have to move hay bales to feed the cattle. The benefits are similar to *in-place* hay feeding. Some hay is left to provide additional organic matter to the soil surface. It concentrates cattle manure and urine to a hay field, returning nutrients to the soil where the hay was harvested.

Current and future benefits

The benefit of bale grazing during the winter in multiple strategic locations is that we get the nutrients and organic matter from the hay, nutrients from the cattle manure and urine, some soil cover, and better water infiltration. All of these benefit plants in the targeted area during the next growing season. Keep in mind that feeding cattle in the same spot time and again results in a buildup of nutrients, which have little opportunity to begin cycling. Therefore, it is best to move feeding sites rather than use one area too often.

We want to try to create the natural process where plants grow up through the deposited organic material and eventually have a functional ecosystem with all four processes working together: energy flow, water cycle, nutrient cycle and community dynamics. We want to see a lot of the deposited material begin to break down so that plants can grow through it within the first growing season. Occasionally, it may take two good growing seasons before the material decomposes enough to generate additional forage production, especially at sites lacking nutrients.

In areas where the ground is somewhat bare, hoof action of

cattle bale-grazing helps stimulate ecosystem dynamics the following year. The trampling incorporates deposited nutrients, breaks up the manure and mixes the plant-based material from the hay into the soil. This enables significantly more biotic activity in spring soil microbes and stimulates new plant growth.

Snares to avoid

The most common pitfall to bale grazing is trying to use it as substitute feed to increase carrying capacity. Most of the time, feeding hay is going to cost money, time and effort. It can be expensive when you add in equipment costs (maintenance, fuel and depreciation). So, the ideal approach to bale grazing is to be very targeted and limited in duration.

If you bale graze in an already-fertile area, excess hay residue may slow the early growth of forage production. If the forage stand was already thin, when it does come in, it may take off in the last half of the growing season and produce more than it would have for the entire year if you hadn't been bale grazing.

Another potential pitfall is the risk of introducing non-native grasses and other undesirable plants into your native pastures. If you are bale grazing in a native forage environment, it's best to feed native-grass-type hay. If you're not baling your own hay, try to source hay locally from a known supplier.

I encourage doing a cost-benefit analysis to see if using bale grazing to improve the soil health and forage production in certain areas of your ranch makes sense for your operation. If you have some hay that matches your forage system and you have a site that could use more organic matter and nutrients, consider giving it a try. **HW**

Editor's Note: This is part of a continuing series of articles about regenerative ranching from Noble Research Institute, long trusted by beef cattle producers for supporting the industry with research, education and consultation. Follow the series in future issues of *Hereford World* and *Baldy Advantage*, as well as in special "1881" podcasts, at Hereford.org. Additional regenerative resources and past articles in the series are also at Noble.org.

Hugh Aljoe is director of ranches, outreach and partnerships at Noble Research Institute.

Photo courtesy of Rob Mattson/Noble Research Institute



Place bales in advance in a checkerboard pattern across a planned hay feeding area.