Bale Grazing Project

Mary Berg, Chris Augustin, Fara Brummer, Jackie Buckley, Sheldon Gerhardt, Penny Nester, Ashley Stegeman, Kevin Sedivec, and Dennis Whitted

Background

Bale grazing is a winter feeding practice that allows cattle access to a limited number of bales for a specific period of time in a field such as improved pasture or hayland. Timing, spacing and methods depend on the producer's goals. Bale grazing is not recommended on native range because cool-season invasive species or weeds may be introduced.

A two-year project focusing on hay bale grazing began in the fall of 2015 on four North Dakota beef operations in Burleigh, Kidder, Logan and Morton counties. NDSU Extension initiated the project in response to producer interest in this feeding method in North Dakota (it is a more common practice in Canada). The North Dakota Grazing Lands Coalition financially supported the first year of sampling.

Potential benefits of bale grazing include cost savings in terms of time and labor and nutrients added to the field or pasture as manure and urine, resulting in improved forage quality and increased biomass.

The goals of the bale grazing project were to validate the effects of bale grazing on soil health, forage production and cattle performance. The project team will share information related to management of bale grazing with producers.

Methods

It is a common practice for ranchers to use poor production areas for bale grazing in an effort to add nutrients as soil amendments. Most of the soils at our treatment (feeding) sites was very poor with gravelly components. At each of the sites, four bales were randomly selected as treatment sites. Controls were adjacent (non-grazed) areas on the same ranch with the same soil type and plant diversity.

Soil samples were collected in the fall of 2015 (pre-grazing) as well as in the summer of 2016 (post-grazing). Core soil samples were collected from the edge of the bale site, as well as 5 and 10 feet from the center of the bale. Samples were collected at 0-6 inches and 6-24 inches for traditional soil analysis as well as 0-6 inches for the Haney soil test.

Core samples were taken from the four treatment bales and analyzed for nutrient content. Any supplemental feed sources were also collected and analyzed.

Body condition scoring occurred on 30% of the grazing herd at each location both before and after bale grazing.

Forage and residue samples were collected during the summer of 2016. Forage was clipped to bare ground from the center of the treatment bale area as well as 5, 10 and 15 feet from the center using ¼ meter frames. Any remaining bale residue from the treatment bales that fell within the ¼ meter frame was also collected.

Current Results and Discussion

Among the four ranches involved, there were various management differences. Bale spacing ranged from 15 feet to 40 feet. Grazing periods ranged from 14 days to 96 days. Acres that were grazed ranged from .75 to 40. Producers were not expected to standardize their practices in order to gather a variety of measures from actual working beef operations. Despite management differences, the producer objectives were similar in the following areas: all producers wanted to feed out of a confinement situation; all producers wanted to improve soil quality; all producers wanted to operate equipment fewer days during the winter feeding period; all producers fed a low quality hay with a better quality hay or supplement.

Body condition scores did not change during the grazing period for any of the sites.
Residue collected six months after grazing was heaviest in areas where animal numbers were low and bale numbers were high. Residue amount depends on animal numbers, hay quality and bale spacing, with each producer expressing a different ideal amount of residue. At all of the sites, the 5-foot perimeter from the center of the bale consistently had the highest percentage of residue.

Three of the four sites had an increase in forage biomass the year following bale grazing (summer 2016). We will be measuring forage response in 2017 as well and expect to see a difference at all four sites at that time.

Soil samples are still being analyzed.

More information will be available after final sample collection during summer/fall of 2017. Interim and complete project data and recommendations will be presented at winter programs.

Bale grazing is a winter feeding practice that allows cattle access to a limited number of bales for a specific period of time in a field such as improved pasture or hayland. (Photo by Penny Nester)