Beef up your forage intake rates on pasture

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Pastures in Ontario usually consist of a mix of bunchgrasses and sod-forming grasses. This diversity in plant structure encourages livestock to sort through the pasture, spending grazing time seeking the most palatable plants instead of maximizing forage intakes. Increased forage intake leads to increased animal production. Pasture management strategies should aim to provide livestock with forage that is both palatable and easy to eat.

Wallau and colleagues wanted to better understand how the amount of forage and types of plant structures within a pasture influenced intake rates by grazing cattle. Their experiment took place in Brazil on long-term research pastures which had been managed using a "put-and-take" method of continuous grazing since 1986. The "put-and-take" method involves adding or removing livestock from a pasture throughout the grazing season to match animal demand with forage supply. Forage dry matter was allocated on these pastures at either 4%, 8%, 12%, or 16% of animal bodyweight per day. Stocking rate was adjusted to align with the assigned allocation every 28 days. This long-term method of management created native pastures with different proportions of bunchgrasses and different plant structures.

In 2010, Wallau and colleagues calculated short-term forage intake rates of heifers in the different research pastures. The heifers were beef crossbreds weighing 275 kg (~600 lb). They were fitted with bags to collect urine

and feces, weighed, and then allowed into the research paddocks for 45 minutes while the researchers observed their behaviour. When time was up, the heifers and the contents of the bags were weighed. The difference in weight before and after grazing and the amount of time the heifers spent searching, grazing, and chewing was factored into the intake rate.

Pre-grazing covers ranged from 850 to 5100 kg DM/ha (765 to 4590 lb DM/acre), with the lowest covers in the 4% BW/day, moderate covers in the 8% and 12% BW/day pastures, and the highest cover in the 16% BW/day pastures. Intake rates peaked when pre-grazing cover was around 2200 kg DM/ha (1980 lb DM/acre). This amount of cover keeps grasses mostly in a vegetative growth stage while still being large enough that each bite is a mouthful. Covers below 1400 kg DM/ha (1260 lb DM/acre) tend to be very palatable, but the plants are too small for animals to grab a mouthful with each bite, which requires longer grazing time and may still reduce their total forage intake.

The researchers also estimated the proportion of each stand that was bunchgrasses. Pastures that had been stocked at 4% BW/day consisted of 0%-20% bunchgrasses, while those that had been stocked at 16% BW/day contained 20%-60% bunchgrasses. Proportion of bunchgrass was intermediate in the 8% and 12% BW/day pastures. Forage intake rate was maximized when bunchgrasses made up 7% of the stand. When bunchgrasses made up less than 15% of the stand, the heifers tended to graze them. As the prevalence of bunchgrasses increased, the heifers would avoid grazing bunchgrasses. More bunchgrasses were associated with lower stocking rates. These grasses tended to get more mature and have more dead leaves around the base of the plants. Mature stems and dead leaves are less palatable and more difficult to bite off. Forage intake of these unpalatable plants tends to be less, and livestock will spend more time searching through the pasture for palatable plants. This shift to searching behaviour reduces forage intake rate.

Based on this work, the researchers concluded that a pre-grazing target cover of 2200 kg DM/ha (1980 lb DM/acre) and a stand consisting of about 7% bunchgrasses maximized short-term forage intake rates. This target cover also aligns with recommendations for tame species in humid temperate climates. Common bunchgrasses in Ontario pastures include orchard grass, timothy, tall fescue, and meadow fescue. Moderate stocking rates kept bunchgrasses from becoming over-mature and tussocky, which maintained their appeal to livestock. Pasture managers can mimic these conditions on their own farms to maximize forage intake rates and drive animal performance.

References:

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