Self-limiting Feeds for Beef Cattle

► An intake limiter allows cattle free-choice access to feed while also controlling consumption. It is a useful tool for producers needing reduced-labor feeding options.

Labor can be a limiting resource in the daily management and supplemental feeding of beef cattle during forage production gaps. Reducing the frequency of feeding or using self-limiting feedstuffs can help producers meet cattle nutrient requirements during those times.

Self-limiting feed contains one or more ingredients (an intake limiter) that when added to a feed blend or product help to control cattle feed consumption to a desired target level. Common ingredients used as limiters include salt, organic acids, by-product oils, and meals. Selecting the appropriate feedstuff for an operation requires an understanding of the self-limiting feeds available, feed composition, and the expected consumption level relative to animal nutrient requirements.

Common Commercially Available Self-Limiting Feeds

"Hot" Mixes

A hot mix often consists of a feed commodity and salt mixed together to limit intake. Salt is effective because there are practical limits to the amount of salt that cattle can eat each day.

In general, cattle will consume 0.1 pounds of salt per 100 pounds of animal body weight per day. Based on this estimate, a 1,300-pound cow should consume 1.3 pounds of salt per day when blended with feed(s) for which intake is to be limited. If a producer wants to target consumption of 2 pounds corn and 1 pound cottonseed meal per head per day, mixing 1.3 pounds of salt with these feeds will limit daily consumption of the total mixture to 4.3 pounds.

Intake of salt-limited feeds may fluctuate significantly during the feeding period depending on environmental conditions, individual cattle preference for salt, and animal competition at the feeder. Feeds with relatively small particle size, such as cottonseed meal and soybean meal, mix better with salt and provide more consistent feed delivery than bulky feeds such as pellets.

Mix only plain, white salt with commodity feeds to limit consumption. Trace mineralized salt should not be mixed with feeds; it may cause toxicities in cattle due to overconsumption. The addition of salt to feeds increases water intake of cattle and may double daily water consumption under some environmental conditions.

In the Southeast, hot mixes generally are used to provide supplemental feed to cattle during the transition period from summer to fall when protein may be limiting in beef cattle diets. Use of a hot mix during this period may increase forage intake and encourage cattle to consume remaining warm-season forages in pastures before fall dormancy. Cattle may overconsume salt-limited supplements if forages are restricted. These supplements should not be fed under conditions of low forage availability. Feeding salt-limited feeds also may negatively affect mineral product intake due to limitations in the daily salt consumption expectations of cattle.

Tubs and Blocks

Tubs and blocks can vary widely in cost, ingredient and nutrient composition, and consumption characteristics. These products generally can be categorized as cooked or pressed tubs and pressed blocks.

Commercially available tubs or pressed blocks usually are formulated as protein and/or mineral supplements. They vary in moisture content depending on the manufacturing process. Cooked products usually target lower levels of consumption and are more concentrated than pressed tubs because they contain less moisture.

Products containing more moisture generally are less expensive than cooked tubs, although the overall cost per pound of nutrient provided by the product may be greater. Tub-based supplements often are molasses-based or include a three-to-five-way blend of commodities, such as corn, corn gluten feed, distillers grains, and soybean hulls. Protein tubs generally deliver supplemental crude protein in the form of natural (i.e., plant-based) protein or a combination of natural and nonprotein nitrogen sources, such as urea.

Many tubs weigh between 150 and 200 pounds but can weigh as much as 500 pounds. Mature cattle may consume 1 to 4 pounds of product daily depending on the product formulation, physical hardness, and feeding location in the pasture area.

Liquid Feed

These feeds offer a combination both of protein and energy supplementation for beef cattle. Liquid feeds often are formulated to deliver 1 to 3 pounds of product per head per day.

Molasses is generally the base of liquid feeds, although additional sources, such as corn syrup or condensed solubles, can be added to formulations. Fat contribution may range significantly in these feeds (from 4 to 15 percent inclusion) and is included to increase liquid feed energy value.

Because these compounds are low in protein, they are fortified with a protein source that can be dissolved or suspended in the liquid during feeding to increase the protein value (range of 10 to 40 percent crude protein in commercially available products). Urea often is added to liquid feeds to increase the protein value. It also can be used as an intake limiter because of its bitter taste. Natural protein sources, such as soybean meal or cottonseed meal, can be added to liquid feeds as well to increase protein value of liquid feeds.

General Considerations for Using Self-Limiting Feeds

Read and follow label directions when using self-limiting feedstuffs as a supplement for beef cattle. Forage must be available in adequate quantity and quality in order for any supplement to produce the desired results. Producers should weigh the cost benefit and convenience factor of products when making a purchasing decision regarding self-limiting feeds.

In general, energy rather than protein is the most limiting nutrient in beef cattle diets in the Southeast. This is because the forage base in beef cattle diets in the region tends to be relatively low-to-moderate quality.

While many self-limiting feeds will provide adequate protein supplementation for beef herds, these supplements may not provide adequate amounts of supplemental energy for lactating beef cows. Conduct a forage analysis to determine if self-limiting supplements will provide adequate energy and protein to overcome forage nutrient deficiencies.

Producers should be aware that some manufacturers use nonprotein nitrogen (NPN) such as urea to meet this protein requirement. As a rule, no more than half of the crude protein in self-limiting feedstuffs should come from NPN. Natural protein, or plant-derived protein, should make up at least half of the formulation. Monitor cow body condition scores throughout the feeding period to help assess if self-limiting feeds are meeting cattle nutrient requirements.

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New October 2020, ANR-2669

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