

Extending the Grazing Season with Low-Moisture Blocks

Why should I supplement?

1. Improve livestock distribution
2. Improve intake and digestibility of low-quality forage
3. Maintain or improve body condition of cows grazing low-quality forage
4. Provide minerals that are deficient your forage

What are low-moisture blocks (LMB)?

LMB are high-energy cooked molasses blocks. Depending on the block, they contain added protein, fat, minerals and vitamins. They are low in moisture (typically 2% to 5%), and do not contain non-nutritive binders or fillers.

When should I consider using molasses blocks?

Low-moisture blocks make economic sense during the *dry season* for producers who:

1. can extend the grazing season by improving livestock distribution;
2. are grazing their animals on public lands, have ample forage in the uplands but need to limit grazing in the riparian areas to prevent a reduction in their AUMs;
3. are grazing their animals on low-quality forages, need to supplement their cows to maintain body condition and are not willing or able to supplement on a regular basis.

How does LMB affect forage utilization?

LMB supplementation can increase forage utilization up to 300 acres around the block. In studies on rangelands in Montana, the average was about 212 acres. LMB can increase and focus grazing in moderate terrain and attract cattle to steep and difficult terrain that is typically not grazed.

How does LMB compare with other attractants?

Range cake vs. LMB – Cows stay near LMB longer than range cake sites. In one study, the day the range cake was delivered, cows spent about 5 hr within 100 yards of LMB compared to cows that spent about 1.5 hr within 100 yards of range cake sites. Two days after range cake was delivered, cows spent only about 0.5 hr near the range cake site.

Salt vs. LMB plus salt - Cows used higher elevations and travelled farther from water using LMB compared to salt. They also spent more time near LMB than salt. When LMB were compared with a dry mineral, LMB was more effective at improving cattle distribution.

Will LMB improve distribution earlier in the grazing season?

Not really. Studies show cattle distribution is fairly uniform early in the growing season. In certain cases, cattle even prefer upland areas. During late summer and fall, cattle typically spend most of their time in riparian areas and away from uplands when forage is more mature. LMB will lure cattle into the uplands late in the season and improve distribution.

How can an expensive supplement save me money?

1. LMB extends the grazing season. It replaces expensive hay with cheap forage. Low moisture block costs \$6.83 plus cost of forage per AUM to feed versus \$30 to \$50 per AUM for hay.
2. LMB prevents overgrazing riparian areas so cows can stay longer in a pasture. Riparian areas had longer stubble height in allotments where cows were fed LMB in the uplands compared with allotments where cows were not fed LMB and remained in the riparian areas.
3. LMB improves intake and digestibility of poor-quality roughage and provides adequate nutrients for rumen function. Molasses supplements improved intake of low quality forage by 29% and digestibility of plant fiber by 21% but did not improve intake or digestibility of high or medium quality forage.
4. LMB can improve cows body condition scores (BCS). Cows with lower BCS have lower conception and calving rates. *Remember if produces want to supplement daily and aren't worried about cattle distribution, there are much less expensive ways to supplement than LMB.*

Are there other advantages of using LMB?

1. Feeding LMB is not labor intensive.
2. It doesn't require expensive infrastructure.
3. It lessens impact on sensitive areas - riparian, meadow, etc.
4. It may change cattle behavior to prefer uplands especially in future generations.
5. If herding skills are marginal, LMB helps place and hold cattle.
6. It's environmentally friendly and weather resistant.
7. It may improve detection of invasive species (weeds) by getting producers out in area they would otherwise not see.
8. Elk don't eat it. At Utah State University, researchers have tried to train elk to eat LMB to improve distribution with no success.

How can I determine if molasses block is right for my operation?

Whether or not you need to supplement depends on the nutritional requirements of your livestock and the nutritional value of your forage. First, determine the nutritional value of your forage either by 1) lab analyses (best); or 2) estimate it from feed tables (*see folder: Is my forage too low in nutrients?*) in the Resources Folder. Next determine your cow's nutritional requirements (*see folder: Do I need to supplement?*). Nutritional requirements depend on an animal's age and stage of production. Lastly, use the worksheet entitled **LMB versus Hay** in the Worksheets and Tables Folder to compare costs of feeding hay rather than supplementing with molasses blocks.

What products are available?

Check with your local feed dealers. These website below sell molasses blocks. We don't endorse any of these products and there are likely other products available.

Forage Star - <http://www.foragestar.com/index.htm>

Land O'Lakes - http://www.beeflinks.com/pasture_products.htm#Minerals

Kay Dee Feed - http://www.kaydeefeed.com/livestock_supplement_energy_tubs.html

Crystalyx - <http://www.crystalyx.com/index.cfm>

Sweetlix - <http://www.sweetlix.com/>

The Feed in a Drum - <http://www.feedinadrum.com/>

After I checked a number of these sites, many of them state forage is deficient most of the year. In most cases, green growing forage is adequate in nutrients for beef cattle. If your forage is too low in certain minerals, feeding an appropriate mineral mix or individual minerals may be needed. Most mineral mixes are less expensive than LMB. If you're concerned about animal distribution, then LMB is the right supplement to use.

How do I evaluate different blocks or decide which block is the best value?

The worksheet entitled *Nutrient Cost and Need* in the Worksheets and Tables Folder will enable you to compare the cost of nutrients in different molasses blocks. It also helps you calculate the minimum amount of a nutrient needed to meet your animals' nutritional requirements considering the nutritional content of your forage. You may also want to read *Pricing Nutrients* in the same folder.

There are so many choices. How do I decide which product is right for my cows?

The correct block depends on the nutritional value of your forage and the cost of the block. In general, green growing forage is adequate in nutrition for mature cows regardless of their stage of production. Minerals may or may not be adequate depending on the forage and the location where it is growing.

How do protein sources differ for each product?

Protein sources vary with the manufacturer but most use either plant protein or hydrolyzed feathermeal. Hydrolyzed feather meal is an adequate protein source. In addition, most blocks contain non-protein nitrogen (NPN) often as urea. NPN should not make up more than 30% of the total protein in an animal's diet. As a rule of thumb, the block you use should have no more than half its protein from NPN. Manufacturers are required to state the non-protein nitrogen content of the block. *NPN is toxic to horses.*

Summary: An Economic Model Investigating LMB

Here's one economic summary that compares LMB to hay: The benefits of using LMB to improve distribution and extend the grazing season were determined using a linear programming economic model. The model was originally developed to evaluate ranch

level economics of changing grazing policies on BLM land to protect wildlife. The optimal model solutions are the average for 100 different price scenarios and generated for a 40-year planning horizon. The model is based on a herd of 300 cows. A complete description of the ranch operation used in the model and its results are published in the file *Rangelands 2007 Economics.pdf* and can be found in the Publications Folder

The major benefit of improving livestock distribution with LMB was to replace feeding expensive hay with inexpensive mature forage. Overall, the model projected that the net economic benefit for feeding LMB in the fall to improve animal distribution was \$4,407/year. The increase in revenue was due to increased hay sales, less hay purchased and an increase in herd size by eight cows.

Another benefit of LMB in addition to extending the grazing season might be increasing calf crop. The ranch used in the economic model had an average calf crop of 84%. If calf crop were increased to 90% by improving cow body condition, 82% of the time it was profitable to feed LMB. Profitability depended on cattle prices. The average increase in revenue due to an increase in calf crop was \$15,780/year.

The chart below compares pregnancy rates and calf weaning weights for cows at body condition 3 & 4 and 5 & 6.

Performance of cows in good body condition (BCS 5 or 6) and thin body condition (BCS 3 or 4).

BCS	Pregnancy rate (%)	Calf weaning wt. (kg)	Performance ratio	Lost income / cow (\$)	Cost of reconditioning / cow (\$)	Lost net income / cow (\$)
5 & 6	96	508	1.00	0	0	0
4	76	463	0.74	108	44	64
3	51	442	0.48	215	91	124

Economic losses from thin cows are substantial. Productivity of the cow herd should not be allowed to deteriorate to greatly from poor nutrition.

Performance and economic data from Wikse et al. 1995.