Low-Moisture Blocks: A Tool to Promote Uniform Utilization by Cattle?

Learn how to achieve uniform utilization across pastures that are partially burned.

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Grazing Distribution Challenges Land Managers

Perhaps one of the most difficult tasks rangeland managers and ranchers face regarding cattle grazing is improving or influencing cattle distribution to promote grazing in under-utilized areas while minimizing overgrazing in other areas. Several landscape-level factors, including slope, topography, distances to water and shade, and forage quality and availability influence where cattle graze. With these factors in mind, managers focus on improving cattle distribution through strategies that alter pasture attributes or strategies that capitalize on animal grazing behavior.[1]

Fire, whether prescribed or natural, alters pasture attributes, including vegetation growth patterns and forage quality, which can either positively or negatively influence cattle distribution across the altered landscape. Plant regrowth after fire is often more attractive to grazing animals than plants in unburned areas because of less dead plant material and higher palatability of new growth. Cattle often prefer areas altered by fire for up to 2 years postfire compared to unburned areas.[2,3] Consequently, preferential grazing of burned areas can cause overutilization and can inhibit reestablishment of desirable vegetation. Research has demonstrated that strategic placement of low-moisture blocks (Fig. 1) is one tool that can encourage cattle to use areas that have been under-utilized, resulting in more even distribution on moderate terrain[4] and more uniform utilization across pastures with varying topography and vegetation.[5] Low-moisture blocks are a free-choice animal feed supplement, manufactured with a patented dehydration process that removes the water from molasses ingredients. Dry ingredients, that provide additional protein, energy, vitamins, and minerals, are then thoroughly combined with the dehydrated molasses for the completed supplement. In addition to influencing animal grazing behavior, these low-moisture block supplements more accurately deliver nutrients to the targeted grazing animals.

Figure 1. Cattle on summer range consuming low-moisture blocks.

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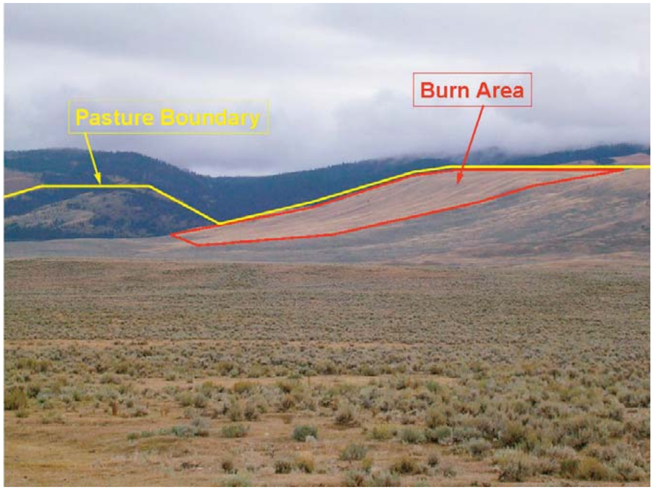


Figure 2. The 2,240-acre pasture in the Castle Mountains of central Montana that was partially burned in 2000.

To assess the influence that low-moisture blocks have on promoting more even levels of cattle utilization, both inside and outside of a burned area, low-moisture blocks were placed outside a burned area located within a 2,240-acre pasture in the Castle Mountains of central Montana. The fire, which occurred in 2000, covered approximately 240 acres within an area of gently rolling sagebrush hills at lower elevations. The remainder of the pasture consisted of gently rolling sagebrush hills with steep, coniferous mountain slopes at higher elevations (Fig. 2). Adequate water developments and springs were available throughout the pasture. Average annual precipitation for the area between 1978 and 2001 was 13 inches, with 57% falling from April through July.[6]

Block Placement and Utilization Measurement Strategies

Block placement sites were selected by ranch personnel within the unburned portion of the pasture to reduce the likelihood of cattle concentrating in the burned area during the grazing period. Each block placement site was about 7.5 acres and included areas that had historically been under utilized, as well as areas that typically received some use during the grazing period. Blocks were placed in pairs about 165 feet apart and the distance between each pair of blocks averaged 650 feet. Four pairs of blocks were used to accommodate the 200 cow–calf pairs present throughout the grazing period, resulting in 1 block for every 25 head of mature cattle.[4] During the 8-week grazing period, from August 6 to September 30, 2002, blocks were successively placed at 3 different unburned sites. When the blocks at 1 site were completely consumed, new blocks were placed at a different site. On August 5, the day before cattle entered the pasture, blocks were placed at the first block placement site (Site A), which was farthest from the burned area (Map 1). Cattle were herded to the first block placement site to familiarize the animals with the blocks. Blocks were subsequently placed at the second block placement site (Site B), which was adjacent to and southwest of the first block placement site (Site A), on August 25, and at the third block placement site (Site C), which was closest to the burned area, on September 18. The cattle were removed from the pasture on September 30.

Forage utilization was characterized by collecting plant heights along transects located throughout block placement sites and also in key grazing areas both inside and outside of the burned area during 4 sampling periods. Height–weight forage curves were then used to determine forage utilization levels by converting plant height to percent utilization.[4,7] Period 1 occurred prior to cattle turnout to account for any previous wildlife utilization that might have occurred. Periods 2 and 3 occurred immediately prior to placing blocks at sites B and C, respectively, and Period 4 occurred after cattle were removed from the pasture. During each sampling period, plant height and the grazed/ungrazed status of 60 plants were recorded along a 1,040-foot transect. Transects were sampled on each block placement site both prior to and after the blocks were moved. Four transects were also completed within the burned area prior to grazing and after cattle were removed from the pasture to characterize grazing season utilization in the burned area.

Impacts on Forage Utilization

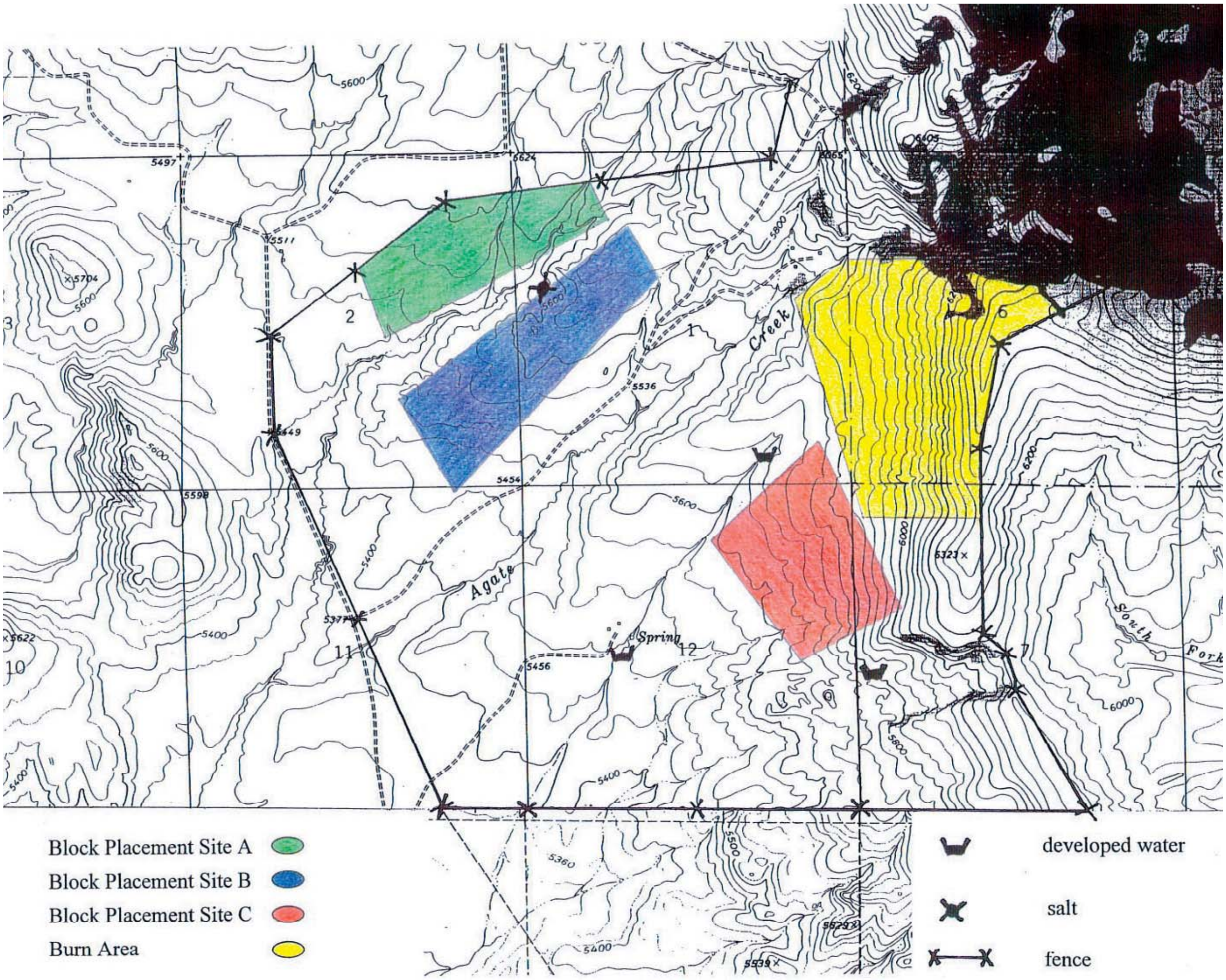
Periods 1 and 2

Utilization during Period 1, which occurred just prior to cattle grazing, was < 1% in both burned and unburned areas and was likely due to the observed presence of elk and mule deer. During Period 2, which occurred almost 3 weeks later, utilization data indicated that cattle were attracted to the areas around the blocks. The first block placement site (Site A) received 8% more utilization than unburned areas of the pasture and utilization on the site increased by almost 19% between Periods 1 and 2. The rancher indicated that the portion of the pasture in this block placement site historically received very little use and that cattle were not observed in that area after blocks were moved.

Periods 3 and 4

Period 3 occurred on September 18, slightly more than 3 weeks after the second sampling period and 6 weeks after cattle were turned into the pasture. Utilization on the second block placement site (Site B), which was located on a ridge in the pasture, was approximately 20% during Period 3. An increase from 11% to 20% utilization on this site between Periods 2 and 3 indicated that the blocks attracted and held the cattle on the ridge between sampling periods. Utilization levels on the block placement site were similar to the unburned key areas sampled (20%), which suggests that both block placement and water developments on unburned key areas highly influenced cattle distribution patterns during Period 3. As with the previous sampling period, very few cattle were observed on the site after the blocks were moved.

The final sampling period occurred immediately after cattle were removed from the pasture. Percent utilization on



the final block placement site (Site C), which was closest to the burn, increased from 19% to 31% between Periods 3 and 4 and total utilization in this area was < 35% for the entire grazing season. The final block placement site had the most diverse and challenging terrain in the pasture and had typically not been used by cattle when adequate forage was available in other areas of the pasture.

Uniform Grazing Distribution Is Achieved

Overall, forage use across the entire 2,240-acre pasture was relatively light. At the end of each sampling period, utilization averaged 23% across block placement sites (Table 1). Utilization on unburned key areas that were sampled away from block placement sites averaged 8 percentage points less than block placement sites throughout the experiment. Percent utilization in the burned area of the pasture was also 23% at the end of the grazing period, which mimics the level of use that occurred on block placement sites and exceeds the level of grazing that occurred on unburned key areas throughout the experiment.

Table 1. Average percent utilization on block placement sites before and after block placement

	-------- % Utilization --------	
Block placement site	**Before**	**After**
A	0.0	19.2
B	11.0	20.3
C	19.3	30.7

These results indicate that low-moisture blocks attracted cattle away from the burned area to the unburned portion of the pasture, creating uniform utilization across the pasture. Utilization was relatively low across the pasture among burned and unburned sites and areas that did and did not have blocks present on them. Placement of low-moisture blocks, in conjunction with available water, discouraged cattle from concentrating on sensitive forage within the previously burned area, enhanced use of under-utilized forage in topographically challenging portions of the pasture, and, ultimately, encouraged more uniform use of available forage across the pasture.

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