COLLEGE OF AGRICULTURAL, CONSUMER AND ENVIRONMENTAL SCIENCES

Department of Extension
Animal Sciences and Natural Resources

COOPERATIVE EXTENSION SERVICE • VOLUME 35 • June, 2018

## Burning Giant Sacaton – Emergency Drought Forage

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Typically, burning rangelands in the midst of a drought is not recommended. The reason being increased potential for grass mortality. Although many rangeland grasses in New Mexico are generally tolerant of fire within the context of a historical fire regime (for example, blue grama), during drought conditions, the added stress of radiant heat to root crowns can be lethal. Dry soils contribute to this effect because they offer less insulation as compared to wet soils. In addition to mortality concerns, there is also the uncertainty as to when wetting precipitation will return following a prescribed fire given drought conditions. However, giant sacaton (*Sporobolus wrightii*) is no ordinary range grass (after becoming well established).

In New Mexico, giant sacaton can be found between 3100 and 7000 feet growing on low alluvial flats and bottomlands that are subject to flooding. Moreover, wide floodplains are commonly known to have monotypic stands of dense sacaton. These floodplains generally have sandy loam to silty clay loam soils. As its name suggests, this native bunchgrass can grow quite tall – anywhere between 2 to 6 feet (commonly 5 and occasionally as much as 8 feet), and up to 3 feet in diameter. Given its stature, it is not surprising that production can range between 3000 and 6000 pounds per acre. Historically, lightning ignited fire would have burned these tremendous fuel loads in the spring and early summer. Sacaton resprouts following fire. Monsoon storms and floods recharge shallow water tables in floodplains. Sacaton provides moderate livestock forage and excellent wildlife cover. It is moderately grazed throughout the year when preferred grasses are not available. Forage quality is highest in the spring. Sacaton, by virtue of its tall stature and dense biomass, plays an important role in floodplains by slowing down runoff, increasing infiltration, and trapping sediments during high runoff events. Likewise, it has an extensive root system that can extend down 13 feet. As such, during drought conditions, it may be the only grass that is green during the dry spring (e.g., April to May) (see picture below following fire).

This was the case on a ranch outside of Roswell this spring. Due to the notably dry winter, there were no other forage grasses (besides giant sacaton) that were greening up at the onset of the growing season. Given this scenario the ranch owner was interested in utilizing prescribed fire to remove decadent sacaton grass. Coarse grass material on sacaton may be 2-3 years old and have poor forage quality. We dug down in the soil profile and determined soil moisture was at 6 inches. Given that the bottomland pasture was characterized almost entirely by sacaton and the surrounding uplands did not have any significant fuels (due to the dry winter), we felt confident that fire would impact only the monoculture stand of sacaton (see picture below).

While native perennial grasses growing on adjacent uplands remain dormant until the summer growing season, sacaton begins to green up in early spring in part thanks to its extensive root system (sacaton also produces small amounts of green forage year around). However, this green forage is difficult for livestock to utilize because of the density of old, coarse, and dead forage (often described as “wolfy”). Moreover, it is generally unpalatable with crude protein measuring between 3-6%. Fire removes this old growth and stimulates new and palatable green growth. Following spring fire, sacaton crude protein on green herbage ranges between 8-12% from late spring to mid-summer (six week increase). The ability to access this “emergency” forage is the objective of spring drought burning – that is, to enhance immediately livestock gains. By mid-summer livestock prefer upland forage due to higher crude protein. This natural shift is beneficial for sacaton as it allows for a recovery period during the height of the growing season.

This practice is not recommended for annual or semiannual use, but rather during drought conditions (given available soil moisture) when the alternative is feeding. Sacaton burning can also be used every 5-10 years as necessary to set back woody encroachment and as desired for forage objectives. According to numerous sources, sacaton rangelands were historically common across the Southwest. However, intensive grazing practices at the beginning of the last century may have negatively impacted these once common grasslands.

Historically, ranchers across New Mexico frequently utilized prescribed fire to burn giant sacaton (see picture below). However, this practice and skill set has largely been lost over the years due to any number of reasons including a change in culture in regards to burning, concerns about liability, and ultimately through time, a loss of prescribed fire skills and equipment.

Fire is a useful management tool, but understanding when, where and how to use it takes practice. Unlike other management tools such as an axe for tree cutting or a sprayer for brush control, burning cannot simply be turned off once the match has been struck. This increases the complexity of using fire. To address this challenge, NMSU Cooperative Extension and NM Prescribed Fire Council have collaborated to create an opportunity for landowners to practice using fire. Annual hands-on training is typically conducted between February and April. To facilitate training, the NM Prescribed Fire Council recently purchased a burn trailer that individuals can rent with all the tools landowners would need to burn. This unique training opportunity is set to be repeated annually.  Contact Doug Cram (dcram@nmsu.edu) at NMSU or the NM Prescribed Fire Council to learn more about this hands-on training.