

# Drought Lingers in Plains

Moderate stocking rates improve rangeland production after drought.

by Mary Lou Peter-Blecha

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Parts of western Kansas received much-needed rain in late August and early September, but many areas were still suffering from drought as the month of September progressed. Some rangelands missed the showers altogether. Others did not get enough rain to end drought conditions, a Kansas State University (K-State) scientist said.

## Drought, precipitation effects

How well livestock operations get through and recover from such stressful periods doesn't depend on weather alone, however. It also strongly relates to producers' management skills, said Keith Harmony, a K-State Research and Extension forage production specialist, based in Hays, Kan., at the university's Agricultural Research Center.

"Grasses in our native rangelands primarily respond to drought by reducing leaf growth and production — which, in turn, reduces forage yield," Harmony said. "Low moisture and less leaf growth also mean less carbohydrate production and storage, less root growth, and reduced new-tiller recruitment."

Studies at the Hays center and in northeast Colorado found that several years of near-normal precipitation, followed by one year of severe drought, reduced forage production from 25% to 60% of normal. The size of the reduction depended on the rangelands' management in previous years, he said.

When compared to those for heavily used pasture, the drought-year yields from new rangeland growth on moderately and lightly utilized pastures at Hays were 220 and 800 pounds (lb.) per acre greater, respectively.

The study's pastures received above-average precipitation during the year after the drought. During this recovery, the pastures with light and moderate grass use both

before and during the drought year resulted in 600 lb. and 1,490 lb. more forage per acre, respectively, than the heavily utilized pasture.

"In these studies, the moderate utilization was similar to the concept of 'take half, leave half,'" Harmony said. "If grass was not heavily utilized during the drought year, moderate stocking could resume in the year following, since the main determinant of annual forage yield is current-year precipitation.

"In case precipitation did not return, however, producers would need to be ready to reduce stocking rates early in the season to avoid heavy grass utilization," Harmony said.

Overgrazing reduces leaf area and mulch accumulation, which together lower rainfall infiltration rates, he said. The problem of lower water infiltration is then compounded since heavily-used pastures have less root volume to absorb soil moisture. That's how pasture management, not climate, can create an artificial drought situation.

## Sensible stocking

Harmony encourages producers to use moderate stocking rates to maintain vigorous rangelands with the greatest opportunity to remain environmentally sustainable and economically productive.

"Under moderate rates, individual animal gain is near maximum, and production per acre is near optimum for economic returns," he said. "Furthermore, forage not utilized during one growing season is carried over into the next year and is available in case drought conditions limit new growth."

Moderate stocking rates vary by precipitation zone, range site and vegetative composition, he said. Producers should investigate the recommended rates for their area.

Harmony advises producers in drought-prone areas to prepare for the future by thinking about diversifying their cow-calf herd with stocker animals. The cow herd size can remain consistent. But, producers can make adjustments to reduce overall stocking rate and prevent pasture overuse during a drought by selling stocker animals early and reallocating those acres to their cow-calf herd.

This approach would also avoid the low cow prices typical during a drought dispersion and the high cow replacement costs usual during a drought recovery.

Improving animal distribution with fencing, water developments, burning, or supplement and mineral tubs can also help limit any overused and low-vigor areas in pastures, he said.

Under repeated heavy use, the vegetative composition of Kansas' western rangelands will shift toward high proportions of buffalo grass, Harmony added.

Other grasses — such as big and little bluestem, sideoats and blue grama, and western wheatgrass — are more productive than buffalo grass. So, management that reduces buffalo grass composition and increases other desirable grasses is an indication that grazing practices are improving pastures' composition, vigor and production.

The shortgrass rangelands of western Kansas are resilient and have survived numerous droughts, the scientist said. Even so, preventing heavy utilization prior to and during drought can help curb production losses during years of low rainfall. It also can improve the rate and extent of recovery once more abundant precipitation resumes.



**Editor's Note:** Mary Lou Peter-Blecha is the news coordinator for K-State's Agricultural Experiment Station and Cooperative Extension Service, which supplied this article.