

## Management Practices Contributed to Last Summer's Herbage Reductions

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Traditional grazing and haying management practices contributed at least as much as low precipitation levels to last summer's herbage production shortfalls, says a North Dakota State University range scientist.

"During growing seasons with below-normal precipitation, traditional management practices intensify the problems caused by water stress in plants and add to the economic hardships created by reduced precipitation levels," says Lee Manske, a range scientist at NDSU's Dickinson Research Extension Center.

The average peak herbage biomass in late July has a direct relationship with the long-term mean precipitation of an area, Manske explains. Percentages of herbage reduction in healthy plants are proportional to the levels of precipitation reduction below the normal range. Reductions in last season's January through July precipitation levels generally ranged from 0 percent to 26 percent below normal. Estimates of reduced herbage production in the Northern Plains during the 2002 growing season were much greater, ranging from 25 percent to greater than 60 percent.

"The additional reductions in herbage biomass were caused by the ineffectiveness of traditional management practices in meeting the biological requirements of the plants and by the resulting deterioration of plant health status," Manske says. "Plants with diminished health status are affected more severely than healthy plants during periods of below-normal precipitation and recover more slowly when conditions improve."

According to Manske, traditional grazing and haying management places priorities on animal husbandry practices rather than on plant health. Traditional management also places priorities on harvesting greater amounts of forage dry matter weight rather than on harvesting a greater portion of the produced nutrients, which are the more valuable resource.

"Because of the emphasis on these priorities, traditional practices capture only a small portion of the value potentially available from the land resources," he says. "Traditional management practices have provided forage dry matter to livestock for generations of beef producers, but the biological inefficiency of the practices leads to reduced herbage and nutrient production and to lower profit margins, results that producers in an increasingly competitive market can ill-afford."

Northern Plains beef producers can minimize the impacts of drought conditions and improve profit margins by implementing management strategies that place priorities on meeting the biological requirements of the plants and ecosystem processes, Manske says. Effective pasture-forage management strategies that improve the quality of the natural resources and increase the value captured from the land are based on three scientific premises:

- Coordinating livestock grazing with specific plant growth stages and seasons of the year beneficially manipulates plant biological processes, stimulates soil organism activity, and enhances the biological, geological and chemical cycles responsible for the flow of nitrogen, carbon, and water through ecosystems. This practice increases the biological effectiveness of management strategies and results in improved plant health and increased herbage production and nutrient flow in grassland ecosystems.

- Harvesting by grazing or mechanical haying of forage plants at the growth stage with the greatest nutrient weight per acre rather than the greatest dry matter weight per acre yields more nitrogen as crude protein and carbon as energy per acre. This practice improves the efficiency of nutrient capture and results in a reduced cost per pound of nutrient and in turn a reduced cost for that forage type as livestock feed.

- Meeting the daily nutritional requirements of modern high-performance livestock all year maintains animal production levels at genetic potentials. This practice improves the efficiency of nutrient conversion into saleable

commodities like calf weight and results in stronger animal performance and lower annual pasture-forage costs than practices that overfeed or underfeed nutrients.

“Implementing effective 12-month pasture-forage management strategies will result in increased livestock weight gain per acre, reduced livestock production costs, reduced economic impacts during dry growing seasons, increased profit margins from beef production, and an enhanced regional agricultural economy,” Manske says.