



# Adjusting stocking rates to forage production can add profits

By John Ritten

Annual precipitation in Wyoming is quite variable, which can have a large impact on the state's livestock producers.

Adjusting stocking rates by utilizing expectations of weather and knowledge of existing range conditions can affect profitability. As much of the state's rangelands consist of cool-season grasses, annual forage production can be closely estimated early in the spring.

Yearly forage production is heavily affected by both early growing season precipitation and the state of the range from previous grazing decisions. Adapting herd requirements to forage expectations in a given year can improve overall ranch profitability.

Producers who utilize a variable stocking rate across years are more likely to be able to take advantage of forage in all years but especially wet years due to the flexibility of their operations. The ability to take advantage of forage production can allow producers to increase average profitability and potentially decrease variation of net returns across years.

## Fremont County Forage Production Model

For example, researchers at UW studied a forage production model based in Fremont County. Results show producers who utilize a variable stocking operation as compared to a fixed stocking rate set at moderate levels can increase average profitability by 42 percent while decreasing variability across years by 6 percent over a 100-year planning horizon.

The results of this study show the optimal forage utilization rate, economically speaking, is fairly close to the traditional range management rule of thumb of "take half, leave half." It is economically optimal to be slightly more conservative than this rule and take 45 percent while leaving 55 percent. While desirable to leave this amount, variable precipitation often affects forage production, affecting a producer's ability to obtain this level.

When variable precipitation was modeled in the forage response model, producers who practiced variable stocking, aiming to utilize 45 percent of forage production, ended up utilizing 48 percent of production on average. Producers who stocked at a fixed rate equivalent to a moderate stocking level for the study area were only able to utilize 40 percent of forage on average, with 50 percent more variability in forage utilization as compared to adaptive stocking rates.



## Cow/Calf Producer Insights

While this study looked exclusively at comparison of operations consisting only of stocker cattle, there are some insights for cow/calf (C/C) producers as well. For example, some research has been done that compared alternative operational strategies for C/C producers given drought in Wyoming. This research suggests producers who utilize a Cow/Calf/Yearling (C/C/Y) operation can be more profitable as compared to a C/C operation. The main difference in the operations studied is that C/C/Y operators carry less breeding stock while keeping similar Animal Unit numbers over the year (AUYs) by carrying over all steers until the following year.

In the C/C/Y scenario, if forage production looks to be scarce by the end of spring, the producer has the option to sell yearlings to get herd requirements in-line with expected forage production. While not optimal to sell any short yearlings under normal conditions, it was more profitable to sell them early rather than purchase additional feed during dry years to cover forage shortages.

The C/C/Y option improved overall profitability by nearly 50 percent. While variability in

returns slightly increased, it was skewed upward during wet years. Variability was decreased in dry years, but the option to take advantage of wet years resulted in higher variability in these years as profits were increased over average profits. C/C producers were unable to take advantage of these wetter years as there is a lag required in the restocking of breeding stock.

## Match Herd Needs to Forage Availability

Regardless of strategy, matching herd needs to forage availability is important. Cattle producers can think of themselves as marketing grass in the form of beef. Forage production, which is dependent on precipitation and range condition, may very well be their most important input. While tempting to take advantage of years with higher cattle prices by stocking at higher rates, our research shows stocking decisions should be based on expected forage production and not cattle prices.

In the long run, it is better to keep forage in good condition to ensure future productivity rather than risk range degradation by chasing high prices.

Here are some useful links when analyzing your grazing system:

A useful discussion regarding how to estimate yearly forage production can be found in "Recognizing and Responding to Drought on Rangelands," available at [http://ces.uwyo.edu/PUBS/MP111\\_09.pdf](http://ces.uwyo.edu/PUBS/MP111_09.pdf).

"Monitoring: A Tool for Effective Rangeland Management" can help producers get a better feeling for actual range utilization on their ranches, available at [http://ces.uwyo.edu/PUBS/MP111\\_02.pdf](http://ces.uwyo.edu/PUBS/MP111_02.pdf).

Some options to improve utilization through better livestock distribution can be found in "Livestock Grazing Distribution," available at [http://ces.uwyo.edu/PUBS/MP111\\_05.pdf](http://ces.uwyo.edu/PUBS/MP111_05.pdf).

And, some ideas for flexible strategies that allow producers to take advantage of wet years while still planning for dry years can be found in "Flexible Grazing Livestock Management Systems for Good and Bad Times," available at [http://ces.uwyo.edu/PUBS/MP111\\_03.pdf](http://ces.uwyo.edu/PUBS/MP111_03.pdf).

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