By Anowar Islam

Good forage stand establishment involves several important facts; for example, returning to forage production, increasing forage yield and desirable species, and improving sustainability and profitability.

Establishment success involves an understanding of the needs of forage and of several proven seeding methods. The basis for several years’ production is determined within two to three weeks after planting. Forage seeding is costly, especially perennial forage stand establishment, it is a high-risk investment. Considering all these negative consequences along with the risk of failure rate of forage seedings is substantial.

There are a few key factors that need to be considered for successful forage stand establishment.

**Good Planning**

Remember, “Half the job is planning.” Good, thoughtful pre-planning is the number one key for successful stand establishment. A number of activities that need to be completed well in advance before establishing a new forage stand include site selection, weed management, adjusting soil pH, fertilization, and species and variety selection. Once the forage is seeded, there is limited option for controlling weeds. Soil pH adjustment is extremely important. Many forage species can grow at a pH below 6.0; however, they will grow best and yield most at near neutral soil (pH closer to 7.0). Forage forage species or varieties to the characteristics of the soil is very important. Type of soil, soil texture, soil pH (e.g., acidic, alkaline, sodic), soil fertility, water holding capacity, drainage, and cold tolerance all have effects on the selected forage species or varieties.

**Planting Depth**

Planting too deep is the most common reason for forage seeding failure. The rule-of-thumb in agronomy is not to plant a seed deeper than five times its diameter. This means most forage seeds should not be planted deeper than ⅜ inch. Greater than ⅜ inch will greatly increase the risks of poor emergence and thin stands. A firm seedbed is critical to assure accurate seeding depths. Fluffy seedbeds interrupt the function of the depth band wheels of a seeder, and, as a result, seeds are frequently planted too deep.

**Seed-to-Soil Contact**

Forage seeds require ample amounts of water (about 100 percent of their own weight) to initiate germination process. This water must move from soil to the seed. So, it is crucial the seed is in contact with soil as much as possible. Good seed-to-soil contact will result in good and uniform germination and increase the number of productive forage plants in the seeded stand. A well-prepared seedbed without clods will ensure good seed-to-soil contact.

To determine whether the soil is firm enough to plant, the following measures can be used: a footprint of an adult should not be deeper than ¾ inch on a well-prepared seedbed; about 10 percent of the planted seeds should be on the surface of the soil after planting. No seeds visible on the surface indicate the planting was too deep.

**Seeding Method**

There are many methods for forage seeding including broadcast, drill, and no till. There has been a long debate over which seeding method is best. It is really not a concern as long as each method is properly done. This includes the right seeding rate, appropriate seeding depth, and, most importantly, good seed-to-soil contact.

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By Anowar Islam
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 variation in forage utilization as compared to adaptive stocking rates.

Returns were calculated for the model’s output with expected forage production. 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 operations carry less breeding stock while keeping similar Annual 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

Calves and yearlings are available for purchase through the Price Cooperative Extension Service.

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 operations carry less breeding stock while keeping similar Annual Unit numbers over the year (AUYs) by carrying over all steers until the following year.

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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 profitability 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 conditions, may vary 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/MPII_01.pdf.


Some options to improve utilization through better livestock distribution can be found in “Livestock Grazing Distribution,” available at http://ces.uwyo.edu/PUBS/MPII_03.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/MPII_04.pdf.

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