MIXING AND MATCHING: GRAZING WET MEADOWS AND DESERT RANGE

Raymond Angell

SUMMARY

Southeast Oregon livestock producers manage two very different forage resources. The majority of grazing lands in southeast Oregon are sagebrush rangeland. These desert ranges are capable of producing excellent forage for livestock. However, the growing period is short because soil water is quickly depleted. The second forage resource is found in lowlands where runoff from high elevation snowpack provides irrigation during spring. These meadows are crucial in the annual livestock production cycle because they are managed to produce hay for the winter feeding period. Because they receive added water, they can produce ten times or more forage than desert rangeland, and they have a longer period of forage growth.

The highly productive meadows provide several alternatives to the traditional hay-only management. Growing cattle can graze these meadows in spring and summer and can gain over 2 pounds per day through August, with no supplementation. This provides the benefit of added pounds of gain as well as freeing up desert range for other uses such as fall grazing with mature cows. A second option is to utilize native meadows in an early-weaning program wherein calves are placed on hay meadow regrowth after weaning in September. These calves can gain an additional 20 pounds per head compared to calves weaned on the desert in October. Additionally, their dams will do better on the lower quality range forage because they are not nursing a calf. A third option is to bring in cow/calf pairs in August and allow them to strip-graze rake-bunch hay through September. In a 2-year study, we found that calf gains during September were increased by 50 pounds compared to pairs grazing desert range during that time. As part of that study, calves were weaned in late September and kept on meadow forage, while their dams were returned to graze native range during winter. An economic analysis of the study found that winter grazing on desert range was more profitable than feeding baled hay, although much more influenced by severe weather than other methods.

INTRODUCTION

"In this day of high investment, high cost, and narrow economic margins in livestock operations, it is not enough to increase the forage quantity and quality. The livestock rancher must increase the efficiency of his livestock in the job of converting forage to pounds of saleable product." That's a pretty fair assessment of the situation today isn't it? Actually those words were penned by Art Sawyer in 1961, while he was the superintendent of the OSU Experiment Station in Burns Seems that some things in the livestock business never change.

As land managers, one of our goals is to obtain the greatest net income we can from the land that are consistent with sound land management practices. We want these practices to maintain or enhance the use of that land. Additionally, we would like to improve hay quality, enhance animal performance, and have the option to rest portions of native range to improve its condition, as well as stockpile forage for later use, or even prepare for a prescribed burn.

Within that context, we are constrained by two things: the 12-month production cycle of forage and livestock and the productivity of the lands which we control. Ranchers operate within the constraints of the annual forage and livestock production cycles. Any change in one of the components of the system effects all the others. Eastern Oregon livestock producers often work within a forage production system centered around the annual production cycle of native hay meadows. These meadows are under private ownership, and are the base property for most ranching operations. Native meadows can produce anywhere from 2,000 to 6,000 pounds per acre of dry forage. Compare that to forage yields on sagebrush range; they're typically one tenth, or less, of meadow production.

Traditionally, native wet meadows have been hayed in July, continuing through early August, in some instances. In this context, one crop of hay is produced, and any regrowth is stockpiled for use by livestock in fall when they return from summer ranges. Traditionally, livestock spend half of the year on meadows grazing residual forage or being fed hay. Recently, interest has increased regarding alternative uses on native meadows. I will review three alternative management ideas in this paper, which are summaries of previous research at this station. They illustrate the potential for innovative management using two very different forage resources.

Livestock producers in eastern Oregon have access to three broad categories of grazing land. First, native or improved meadows provide an abundance of forage, which has historically been harvested for hay. These are the most productive forage resources available for our use. Second, sagebrush range is utilized as spring and early summer range, although some utilize it for the entire spring and summer grazing period. These lands are limited by water availability for forage production and livestock drinking water. These lands constitute the largest acreage in southeast Oregon. Finally, forested grazing is provided at higher elevations. These lands provide green feed during the period when forage is mature and dry on the lower elevation sagebrush ranges. This paper will discuss a few ideas for integrating meadows and desert range to enhance both forage and livestock production.

On average, meadows consistently produce much more forage per acre than desert rangeland (Figure 1). Actual production will vary across sites and years. As the figure shows, growth begins at about the same time in both systems, based on soil temperature and water availability. We can use the high level of productivity on native meadows to our advantage to develop new grazing and haying combinations. Three options we have investigated are spring grazing with yearling steers or heifers, early-weaning of calves, and placement of cow/calf pairs on rake-bunches during September and October.

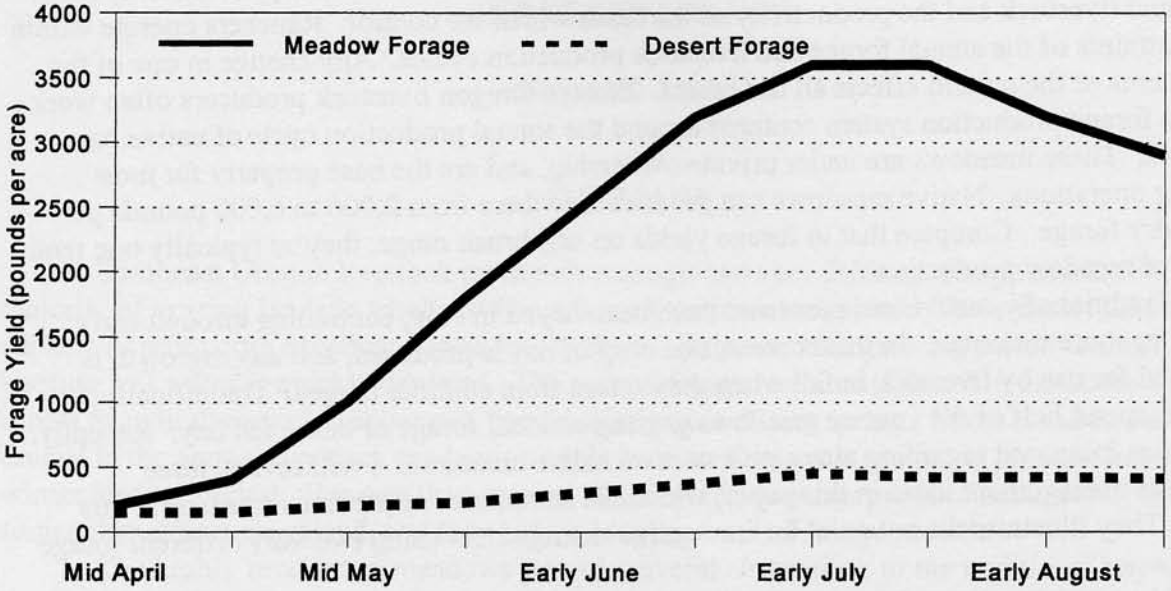

Figure 1. Generalized forage growth curves for native meadow vegetation and desert rangeland in eastern Oregon. The difference in production between the two systems allows flexibility in management. Actual yields can vary by 50 percent or more, based on site and precipitation.

METHODS

Meadow Grazing

Eastern Oregon native meadows were historically dominated by rushes and sedges, along with grasses like Nevada bluegrass, and forbs such as annual white-tip clover. However over the last 20 years meadow foxtail, an introduced grass, has increased in density and coverage on many meadows. While it is nutritious and productive, it tends to mature earlier than associated native species. Because length of flooding on these meadows is not easily controlled, hay quality can suffer from delayed cutting. We investigated spring and summer grazing as an alternative to haying. In two studies, we grazed yearling cattle on meadow forage beginning May 1 through late July or mid August. In both studies, cattle were allowed free access to all parts of the pasture, which included areas flooded to a 24 inch depth. Higher elevation loafing areas were available in several locations. Most of the pasture we used is dominated by meadow foxtail, with reed canarygrass in lower areas and saltgrass on higher ground.

Early Weaning

Forage quality on desert range decreases quickly in summer, and by late August growing animals cannot perform up to their potential. If regrowth is available on hayed meadows, calf

performance can be improved by weaning in early to mid-September and placing them on these meadows to graze the higher quality regrowth and hay aftermath. The mature cows can remain on desert range, and without the suckling calf will do well, entering the winter in better body condition than if weaning is in mid-October. In a study at Eastern Oregon Agricultural Research Center (EOARC), cattle were separated into two groups. One group was early-weaned in mid-September, and the other was weaned at the traditional mid-October date. Early weaned calves were placed on meadow regrowth and received 2 pounds of barley and 1 pound of cottonseed meal daily. Late-weaned calves remained on desert range with their dams. After weaning in October, all calves were placed together and fed the barley and cottonseed meal supplement. Hay feeding began in mid-November.

Rake-bunch Grazing

Placing meadow hay in rake-bunches rather than baling has been practiced for many years. The usual practice is to rake-bunch a field in July, then place cattle on the field in early fall as they are brought in from the range. Feeding efficiency can be quite low under this system, because cattle pick the highest quality forage from each bunch and leave the rest, often lying down on it, increasing wastage. Earlier work at this station demonstrated that restricting animals to about a seven-day rake-bunch supply at a time greatly enhanced the efficiency of utilization. Cattle performance was excellent, and labor costs remained less than conventional hand feeding.

This idea was combined with the early weaning concept. During a 2-year study, cows with suckling calves were brought off the desert in August and placed on rake-bunches. After about eight weeks on rake-bunches and meadow regrowth, the calves were weaned in late September, and their dams returned to the desert to graze through the winter. Calves received 1 to 1.5 pounds of a 85:15 cottonseed meal/barley mix each day. Cows remained on range all winter during the 2-year study. Objectives were to improve calf gains in late summer, and to decrease the winter feeding requirements by placing dry, mature cattle on desert range after weaning. The hay that was not consumed by cattle was then available for sale.

RESULTS

Meadow Grazing

Cattle gains on meadow forage were at least as good as gains on desert range during spring (Figure 2). During our studies, unsupplemented cattle gained 2 pounds per day or better through the end of July. In one study, season-long (May 1 to Sept. 4) daily gain on meadow forage averaged 2.6 pounds per day (Blount et al. 1991). A second study found similar gains during the May- to July-period. Based on historical data, yearlings grazing sagebrush rangeland can be expected to gain about 1.6 pounds per day between May and August. For the cattle used here that represents an additional gain of up to a pound per day for yearlings on meadow forage. In one year (1989) strip grazing was compared to continuous grazing. Initial cattle performance was similar on both systems. However, later in the summer performance declined under strip grazing because the rotation interval was too long and forage became overly mature.

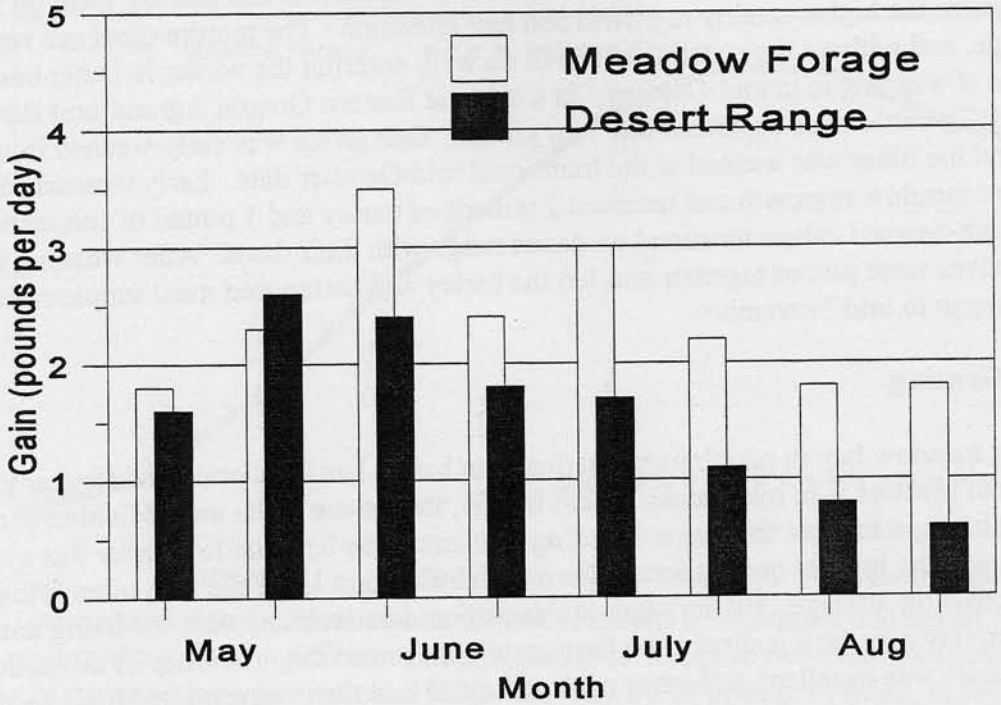

Figure 2. Typical daily weight gains for yearling cattle grazing sagebrush rangeland or meadow forage at Eastern Oregon Agricultural Research Center, Burns.

In our experiments at the Research Center, we we have utilized between 1.5 and 4.2 animal unit months (AUMs) per acre on unfertilized native meadow. Over the long haul, 1.5 to 2.0 AUMs per acre is probably most appropriate and would provide a good starting point. Compare that rate of harvest with a typical value for sagebrush rangeland of between 0.1 to 0.2 AUMs per acre. This example demonstrates how a small portion of native meadow can be used to free up a sizeable portion of desert rangeland for resting or late season use. One acre of foxtail meadow will free ten acres or more of typical sagebrush rangeland for other uses. Alternative uses for this rangeland could include fall grazing by dry cows after weaning, rest until the next growing season, or a build up fine fuel loads for a prescribed burn.

Early Weaning

In studies at EOARC, early-weaned calves were removed from their dams on September 12, and put on meadow aftermath and regrowth (Raleigh, et al. 1970). Conventionally managed calves remained on desert forage with their dams until October 12. Early-weaned calves gained 20 pounds per head more than conventionally managed calves between the September and October weaning dates (Figure 3); about 0.7 pounds per day of increased gain. The performance of early-weaned calves remained greater than late-weaned, even after the calves were brought

together and managed in one group. Between September 12 and November 12, early-weaned calves had gained about 50 pounds per head more than conventionally managed calves.

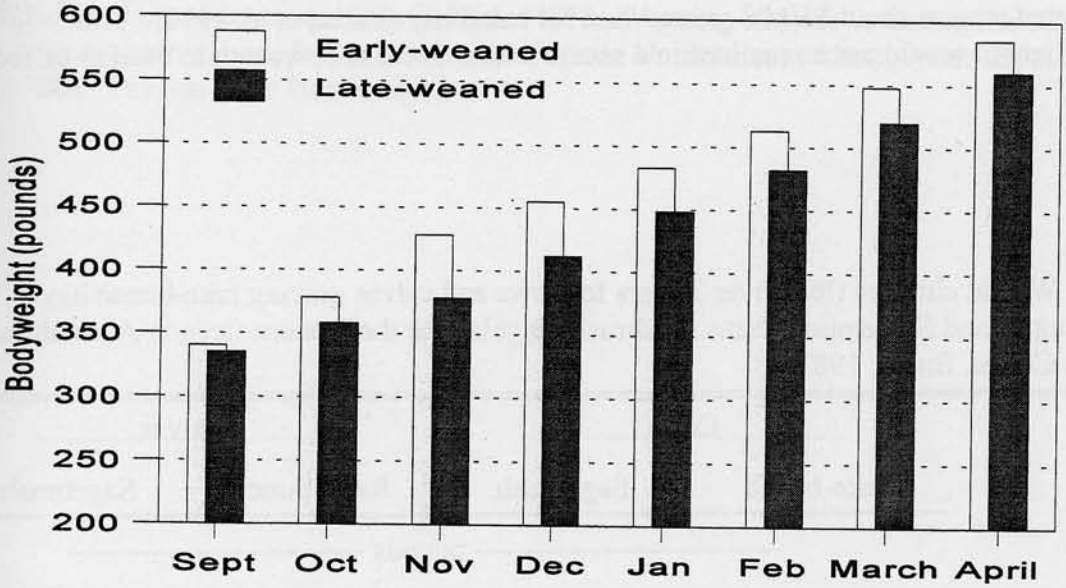

Figure 3. Typical weight of early-weaned (September) versus late-weaned (October) calves at the Eastern Oregon Agricultural Research Center, Burns, Oregon.

These results demonstrate another way that meadows can be used to enhance performance and improve management flexibility. Here, mature animals with lower requirements were left on rangeland, while growing animals were placed on higher quality meadow forage. In some cases other options, such as good quality high-elevation range or rake-bunched hay, are present. In all cases the final decision will be based on the quality of feed resources available and the costs associated with each option.

Rake-bunch Grazing

Cows managed under this system utilized rake-bunch hay for two months, and then returned to sagebrush range in late September after calves were weaned. During the 2-year study, cows were able to remain on range the entire winter. We are on the edge of the area where winter grazing is feasible, but occasionally it was necessary to feed baled hay. Cow/calf pairs grazing on rake-bunches significantly outperformed pairs that had remained on sagebrush range (Table 1). Cows maintained their weight while cattle on sagebrush range lost weight. Calf performance was significantly improved by being given rake-bunch hay, with average daily gains about 70 percent greater than calf gains on rangeland (1.1 vs. 1.9 pounds per day). In this management strategy, cows gained body condition during August and September, prior to returning to sagebrush, and calves put on an additional 50 pounds of body weight prior to winter. This study did not extend on through November, however if it had, differences between the two groups would have been even greater.

Primary expenses incurred with this type of management are fencing for rake-bunch feeding, and labor for moving the cows from sagebrush range to rake-bunch and back. Fencing cost is minimized by using polywire electric fencing with step-down style posts. An economic analysis of winter feeding alternatives showed that winter grazing was economically feasible, with expected returns about $50.00 greater than for baled hay (Bates, et al. 1990). This economic benefit would not be realized in a severe winter because cows would need to be fed baled hay.

Table 1. Weight changes (lbs.) over 2 years for cows and calves grazing rake-bunch hay during August and September versus sagebrush rangeland at the Eastern Oregon Agricultural Research Center, Burns, 1987-88.

	Cows		Calves	
	Rake-bunch	Sagebrush	Rake-bunch	Sagebrush
Weight	pounds			
August	1002	1014	315	310
September	1026	935	400	351
Avg. daily gain	0.5	-1.7	1.9	1.1

Returning cows to sagebrush range is not feasible for everyone. However, these data point out that even a short 6- to 8-week period can be used to put additional gain on calves and improve cow body condition. After early-weaning in September, cows could be put on meadow aftermath to graze free choice until winter conditions require feeding either baled or rakebunched hay. The key is to remain flexible and develop a specific plan tailored to your operation.

LITERATURE CITED

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