

# Seasonal Suitability Grazing in the Western United States

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A recent review of grazing system literature in the *Journal of Range Management* (32:250) by A. Van Poolen and J. Lacey shows that a stocking rate reduction will generally contribute more to range improvement than implementation of a specialized grazing system. However, one type of specialized grazing system that can lead to improvement in livestock production and range vegetation under certain conditions was not considered. Kenneth Valentine of New Mexico State University (*JRM*, 1967, 20:395) first described this system, and named it "Seasonal Suitability" grazing. Similar principles apply to the use of complementary tame pastures in conjunction with native range.

Seasonal suitability grazing involves partitioning a ranch or grazing allotment into separate units on the basis of vegetation types. These vegetation types are then fenced and integrated into a grazing strategy based on vegetation and livestock requirements. These fenced units may or may not be contiguous depending on the location, size, and specific ownership of the land parcels involved. In some cases control of livestock access to water rather than fencing can be used to manipulate where livestock graze. Seeded pastures are often but not always an important part of the grazing system. Terrain, ranch operation requirements, range condition, and range site differences are all considered when pastures are delineated and fenced. Seeded pastures are fenced separately from native range, and are an important tool for promoting native range improvement as well as increasing livestock production. Seeded pastures often provide highly nutritious forage earlier and later than native range, and can withstand more intensive grazing.

It is important to recognize that a seasonal suitability system will probably not be superior to continuous or season long grazing unless a ranch contains a diverse forage resource. The productivity of individual forage types must be high enough that separate fencing or control of water to force livestock use is practical. We will discuss seasonal suitability grazing systems for the major grazing regions of the western United States.

## The Great Basin

This region includes the intermountain country of Washington, Oregon, northern California, Nevada, Idaho, Utah, and Colorado. Precipitation occurs primarily in the winter and spring; summers are dry. Vegetation types associated with this region are native cool-season bunchgrass, sagebrush-grassland, salt desert shrubland, pinyon-juniper

woodland, coniferous forest, mountain grassland, and mountain meadowland. Much of this region has traditionally been grazed under a seasonal suitability system because weather conditions dictate that high elevation, mountainous areas receive use in the summer while low elevation areas receive winter use.

Crested wheatgrass has been useful for seeding deteriorated ranges in the sagebrush grass and bunch-grass zones receiving 8 or more inches of precipitation. On saline areas of the salt desert type tall wheatgrass works well for seeding if the site receives at least 8 inches of annual precipitation and salinity is not excessive. Both crested and tall wheatgrass provide good early spring forage and can be used to defer grazing of native bunchgrass. Crested wheatgrass provides good fall forage if summer rainfall occurs. The wetter portions of the Great Basin region receiving 12 or more inches of precipitation can be seeded to intermediate wheatgrass. This grass provides excellent late spring/early summer forage.

Much of the native bunchgrass range in the Great Basin is dominated by a mixture of bluebunch wheatgrass, Sandberg bluegrass and various species of needlegrasses. This type of range provides high quality late spring/early summer forage. Bunchgrass ranges on higher elevation/higher precipitation sites typically support Idaho fescue when in good condition. Idaho fescue is well suited for late summer/early fall use because it retains fine, green leaves that are high in crude protein in this period unlike the other bunchgrasses.

Lowland shrub ranges comprised of species such as winterfat, shadscale, bud sage and black sage occur over vast areas of the Great Basin region. These ranges are most



Bluebunch wheatgrass ranges in the Great Basin provide high quality late spring and early summer forage. Above scene is in central Idaho.



Lowland shrub ranges dominated by winterfat are most efficiently used in winter in the Great Basin because of milder weather and the fact winterfat retains high nutritive value. Photo—central Nevada.

efficiently used in the winter because of milder weather than upland ranges and the fact these shrubs retain their nutritive value much better during dormancy than grasses.

Pinyon-juniper ranges occur at intermediate elevations between mountain and lowland shrub ranges. Traditionally they have been used in the spring and fall when livestock are being moved to and from mountain range. Important forage plants in the pinyon-juniper type include bitterbrush, various bluegrasses, and wheatgrasses. The shrubs associated with pinyon-juniper ranges hold their value well during dormancy and provide excellent forage in the late summer, fall, and winter. Heavy spring grazing is quite detrimental to most of the grasses associated with this type.

Mountain range is an important part of the forage resource in this region. It is used in the summer and early fall because it is green and nutritious in the summer when lowland ranges have matured. Logged areas on mountain range are usually seeded to cool-season grasses such as timothy and orchard-grass that provide good summer-early fall forage (R.F. Miller and W.C. Krueger, *JRM* 29:367). Research conducted by the senior author and Martin Vavra in northeastern Oregon (*J. Animal. Sci.* 35:291) has shown that mountain grasslands should be used from June to early July, at which time cattle should be moved to forested areas. Mountain meadows will give gains equal or superior to upland grassland or forested



Mountain grassland provide excellent forage for livestock during the summer in many parts of the western United States. Photo taken in northeastern Oregon.

range in the latter part of the grazing season in September and October (Holechek and Vavra, *JRM*, 35:745). Late use of mountain meadows results in concentration of livestock on low areas where they are easily gathered. Separate fencing has the additional advantage of permitting early deferment of meadows. Unless use of mountain meadows is carefully controlled, excessive grazing frequently occurs because of their convenience to livestock.

Deteriorated ranges in the Great Basin support an overstory of big sagebrush with an understory of cheatgrass. This kind of range should be used in the early spring before the cheatgrass matures and becomes unpalatable. Early use of cheatgrass range permits deferment of native bunchgrass range.

### The Southwest

Arizona, the western two thirds of New Mexico, and southwestern Texas comprise the Southwest. Most of the growing season precipitation occurs in the summer. Spring is often dry and windy. The grasses are primarily warm-season in growth. Important native vegetation types include black grama grassland, alkali sacaton grassland, tobosa grassland, mesquite shrubland, creosote bush shrubland, and pinyon-juniper oak woodland. Lehmann lovegrass has been effectively seeded on some sites. This introduced grass provides good summer and early fall forage.

Creosote bush and mesquite shrublands generally have little perennial understory. However, they often support fourwing saltbush and cool-season annual forbs. Therefore, these areas can be most efficiently used in the winter and early spring.

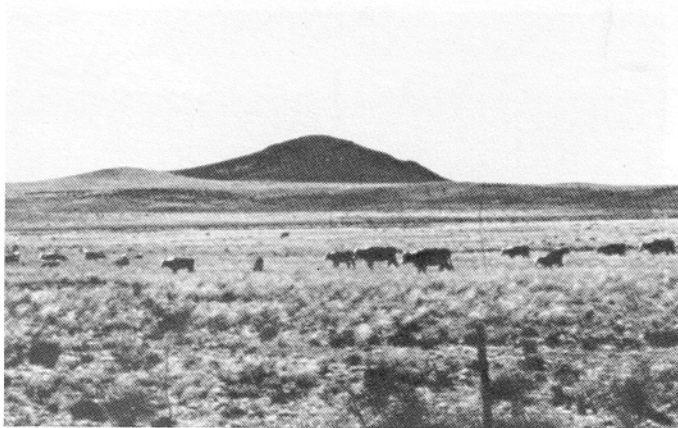
Tobosa and alkali sacaton ranges are best used in July and August when they are actively growing, and in the spring if there is cool-season moisture. Both tobosa and sacaton are relatively unpalatable and are low in nutritive value when dormant. Seeded Lehmann lovegrass pastures can be used to relieve pressure on these two grasses in late summer.

Black grama ranges should be saved for winter if possible. It is well known that stands of black grama can be easily



Alkali sacaton occurs in lowland areas with poor drainage in the Southwest. Ranges dominated by this plant should be used in spring and summer because plants are coarse and unpalatable. Photo taken in southeastern New Mexico.

damaged by summer grazing. However, moderate grazing is not detrimental to black grama during the winter when it is dormant. Black grama has green stems in the winter that make it more nutritious and palatable than any of the other desert grasses. Fourwing saltbush and winterfat are com-



*Black grama ranges in the Southwest provide high quality forage for livestock. This grass is easily damaged by summer grazing but withstands winter grazing fairly well. Photo—southcentral New Mexico.*

mon shrubs in the Southwest that provide nutritious and palatable forage to livestock in the winter.

Pinyon-juniper oak woodland ranges are interspersed through other vegetation types throughout the Southwest. These ranges typically have a high component of mountain mahogany, silktassel and various evergreen oaks that are high in nutritive value when desert grassland ranges are dormant. Although weather conditions are mild enough to permit yearlong grazing on most of these ranges, it is advantageous to save them for fall, winter and spring use if the operator has access to coniferous forest and/or desert grassland for summer use. Gambel's oak occurs at intermediate elevations in the Southwest. This species is highly toxic to livestock in the budding and leafing stages in the spring, but can be safely used in the summer and fall when the leaves mature.

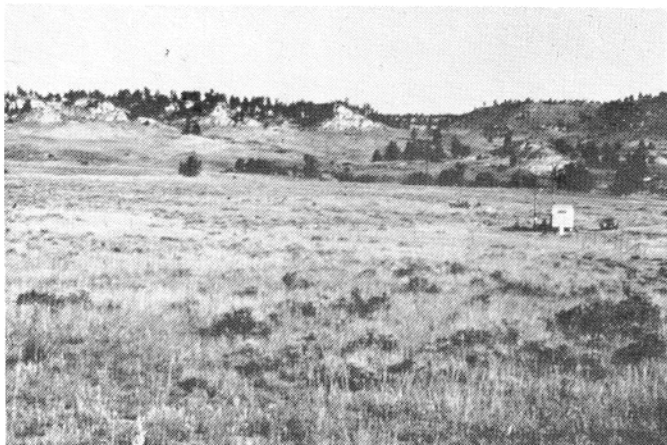
### The Northern Great Plains

This large grazing region includes the southern portions of the provinces of Alberta and Saskatchewan in Canada, eastern Montana, western North Dakota, western South Dakota, western Nebraska, eastern Wyoming, and eastern Colorado. Precipitation in this region comes primarily in the spring and summer. From a nutrition standpoint, native range of this region is superior to all others because it is dominated by a mixture of warm- and cool-season grasses coupled with a moderate component of forbs and shrubs. Important cool-season grasses include western wheatgrass, green needlegrass, and needle-and-thread. Blue grama and buffalograss are the dominant warm-season grasses. Big, silver, and fringed sagebrush dominate local areas.

Cool-season introduced grasses are usually used in seedings. These include crested wheatgrass, intermediate wheatgrass, smooth brome, and Russian wildrye. These grasses provide high quality spring forage and allow deferment of grazing on native range. Russian wildrye and crested wheatgrass can be effectively used for fall forage. Areas dominated by western wheatgrass, needle-and-thread and green needlegrass are most efficiently used in the late spring and early summer. Buffalograss and blue grama ranges provide nutritious forage in the summer months of July and August. Blue grama retains its nutritive value quite well in the winter.

Ranges with a high shrub component are reserved for winter because snow often makes herbaceous forage unavailable whereas the shrubs remain readily accessible.

Shrubs provide important emergency feed until snow melts or a hay feeding program can be implemented. Important forage species include silver sagebrush, serviceberry, greasewood, chokecherry, and western snowberry. Greasewood and chokecherry can both be poisonous to cattle and sheep if consumed in large amounts. Therefore, livestock should have access to other forages when placed on ranges with these two shrubs.



*Ranges with a high component of shrubs in the Northern Great Plains are well suited for winter use because they remain accessible for livestock during periods of snow. Photo—southeastern Montana.*

### The Southern Great Plains

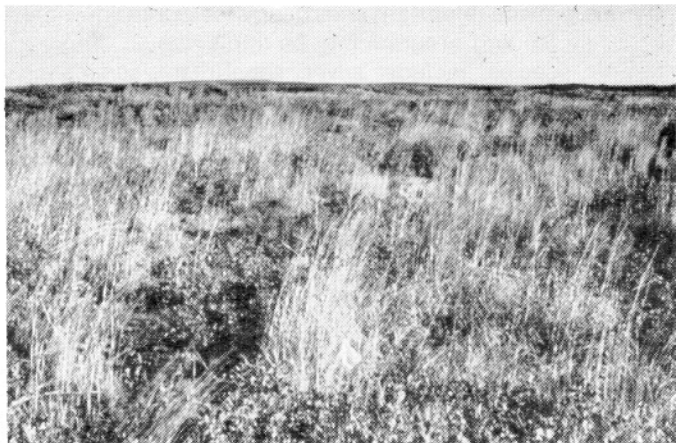
From the standpoint of livestock production, this is the most important grazing region. It includes western Kansas, western Oklahoma, northwestern and central Texas and extreme eastern New Mexico. The Southern Great Plains has almost entirely warm-season grasses. One important cool-season grass, Texas wintergrass, does grow in much of Texas. Ranges dominated by this grass provide high quality forage in the winter and spring when other forage species are dormant.

Several introduced warm-season forage species have been highly productive when seeded in this region. In Texas Kleingrass works well on medium-to-fine textured soils in the warmer areas. Weeping lovegrass provides good late spring and summer forage on sandy soils in both Texas and Oklahoma. Old world bluestems have given good results on a wide range of soils in Texas and Oklahoma. Buffelgrass provides excellent spring forage in south Texas.

Important native warm-season mid and tall grasses associated with good condition range include sand bluestem, little bluestem, switchgrass, Indiangrass, and sideoats grama. These species all provide excellent summer forage and cure out well for winter use.

Medium and heavy textured soils throughout the region usually support blue grama, curly mesquite, and buffalograss. These three short grasses are more palatable and nutritious than the mid and tall warm-season grasses in the winter. Overgrazed ranges with a high component of annual forbs, threeawns, and annual grasses are best used in the spring because these forages are mature and unpalatable by early June.

During the winter, wheat fields provide a valuable grazing resource in many parts of the Southern Great Plains. Wheat fields can be grazed without damage in the winter through early spring and are a very high quality forage resource.



*Shinnery oak is found on sandy soils in the Southern Great Plains. Ranges with a high amount of this plant should not be grazed in spring because new leaves and buds are poisonous. Photo taken in eastern New Mexico, south of Clovis.*



*Tall grass ranges dominated by big bluestem provide excellent summer forage for cattle. However, many of the tall grasses cure out poorly and do not furnish good winter forage. Photo—big bluestem in eastern Kansas.*

Oak-dominated ranges are very important in many parts of the Southern Great Plains. Shinnery oak, common in eastern New Mexico, western Texas, and western Oklahoma, should not be used in the spring because new leaves and buds are poisonous. However, shinnery oak provides high quality forage during the rest of the year particularly if a good grass understory is present. Liveoak is a very important forage species in southcentral Texas (Edwards Plateau). Goats, sheep, and white-tailed deer consume this plant in large amounts on a year long basis. Cattle will use it heavily during periods when other green herbaceous growth is unavailable. Both shinnery oak and liveoak provide dependable forage during drought periods. Thus, the beneficial aspects of these shrubs should be considered when brush control projects are designed.

### The Tall Grass Prairie

Central South Dakota, the Sandhills of Nebraska, the Flint Hills of eastern Kansas and the Osage Hills of northeastern Oklahoma comprise most of the remaining tall grass range. Much of this region is in good condition supporting warm-season tall grasses which include big bluestem, sand bluestem, switchgrass, and Indiangrass. Little bluestem and sideoats grama are the primary warm-season mid-grasses. These grasses all provide excellent summer forage.

Heavy clay soils in the western part of the tall grass region generally support good stands of western wheatgrass, which is excellent spring forage. Lowland, saline areas where water accumulates, support inland saltgrass. These areas, if over 50 acres, should be fenced for spring and early summer use because inland saltgrass is quite low in palatability by mid summer. Inland saltgrass flats occur in all the range regions, and the previous recommendation is applicable to them.

Overgrazed tall grass ranges are often dominated by Kentucky bluegrass. Although this grass is much less productive

than the warm-season tall grasses, it does provide excellent spring forage. Spring use of Kentucky bluegrass ranges and non-use during the summer can improve livestock performance and benefit the warm-season tall grasses. Areas where blue grama and buffalograss are dominant should be saved for late fall and winter use if bluestem ranges are available for summer grazing.

All the warm-season tall grasses previously discussed can be successfully seeded on tall grass ranges. However, seedings usually involves cool-season, introduced grasses because spring forage is more limiting than summer forage. Smooth brome grass, orchardgrass, intermediate wheatgrass, and Russian wildrye are cool-season introduced grasses commonly used in seedings.

### Conclusions

Seasonal suitability grazing takes a different approach to grazing methodology than the standard specialized grazing systems such as deferred rotation, rest rotation, or rapid rotation. Emphasis is placed on grazing vegetation resources when nutritional qualities are highest, but care is taken to remove animals in time to allow plants to complete their growth cycles and store food in the form of carbohydrates. Separate fencing of deteriorated range is desirable for prevention of further degradation, and because these are areas that will receive treatments such as brush control and seeding when monetary resources permit. Seeded pastures are usually more productive than native range but require higher monetary inputs because of costs associated with initial brush control, tillage, seeding, fertilization, and fencing. They can be a very effective tool for improving native forage resources and livestock production. This is because they often provide high quality forage before native plants start growing and allow reduced use of native range during critical growth periods.