

Rangeland Health Brochure 13

The Four Principles of Range Management



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It isn't rocket science, but....

There is an old saying, "it isn't rocket science", and this is true of range management. However, range management does require levels of observation and "common" sense that are uncommon.

Domestic livestock graze throughout the world from moist environments with long growing seasons, to harsh, dry climates and landscapes with short growing seasons. In areas that cannot be cultivated or grow forests, grasslands and shrublands are common and provide suitable grazing for wild animals and domestic stock, and support pastoral societies that are highly adaptable to change. Successful range management is adaptive management in practice.

Range Branch evaluations over the years have shown that we must never forget the basics. There are four basic principles of range management that have stood the test of time. When they are followed, there are good outcomes; when they are ignored the results are predictable and bad.

What are the principles?

1. Distribute livestock over the range.
2. Graze to the right use level.
3. Allow enough rest during the growing season.
4. Graze at the right time (and for the right duration).

The principles have not changed, but our understanding of the science and the elements behind them has improved over time. I like to use the acronym DURT as a quick reminder of the principles.

Distribute livestock use over the range

Livestock are creatures of habitat and will not typically distribute themselves uniformly over the range, even if topography is not an issue. Bull's-eye grazing patterns are typical on most range areas, with water sources, flat terrain and shaded areas receiving disproportional use. These are referred to as primary range. Unless effort is taken to distribute use through water development, strategic fencing, herding and the use of attractants, these areas of primary range tend to be overgrazed and overused.

Range managers in the Cariboo-Chilcotin have successfully used the attractant crystallyx¹ to get better distribution of cattle and use of pinegrass. Managers in the Yahk and Westwold-Monte Hills Range Units are achieving better cattle distribution using range riders.

Use level

In the past, 50% of annual forage production was seen as the safe level of use. Recent analysis has shown that this is a poor rule of thumb. On average, late-seral range should be used at no more than 40% of production, mid-seral at 30% and early-seral at 17-25%. Some domestic forages can be used at a higher level because they are adapted to grazing and usually have growing points that are low to the ground and not easily removed by the grazing animal. We have also learned the importance of leaving

¹ Crystallyx is a brand name. Reference here does not constitute MFR endorsement.

plant residue to protect the soil from erosion and the evaporative effects of sun and wind. Plant residue is the first step to recovery on early-seral and damaged range.

In addition to grazing at the right levels, it's important to have high enough livestock numbers to get even use of grass plants. Studies of rest-rotation grazing (RG) have shown that plant communities respond best with higher stock densities² (but lower overall stocking rates³), because cattle will not graze as selectively. This translates to more even access to soil moisture and nutrients and an equal opportunity to grow roots, leaves and store food reserves for all plants.

Rest

Overgrazing and overuse are not the same thing. Overuse happens when more of the annual growth is removed than is recommended, for example if 40% use is considered safe, and 60% is actually removed. Overgrazing happens when a plant (and a range) is grazed so severely and so frequently that it does not have an opportunity to recover. A plant might be overused, but if it has a long recovery period during active growth, it's not necessarily a harmful thing.

Specialized grazing systems are typically designed to allow plants planned periods of time where they are free from grazing.

On bunchgrass range we find that rest-rotation grazing, where portions of the range are rested for one entire year in and 3 or 4 year cycle work best. Research in British Columbia has also shown that native bunchgrasses cannot be grazed in a twice-over rotation or in a spring and fall pattern during the same growing season. Most native grasses need from 110 to 200 days of actual growth to recover from a single severe grazing. In some cases, range should be grazed only once in two years. This is especially true at high latitude and at high elevations where the growing seasons are short but intense.

Time and duration

Graze the range at a time when plants and soil won't be harmed and there is enough forage to sustain the grazing animal. There needs to be at least 15 cm of new growth for cattle to graze efficiently. Also it's best not to graze the same fields at the same time each year. Spring turn-out pastures that are grazed and rested in alternate years will provide a more predictable forage quantity and quality than those grazed early every year.

It's also important to control the length of time (number of days) cattle have access to the pasture unit. During very rapid plant growth, it's possible for animals to regrow new leaf material within as few as 3 to 15 days. During slower plant growth animals can be left longer on a pasture unit without the risk of regrowing new growth provided the use level is not exceeded. This (along with rest) is a key principle of time-controlled grazing (TC) and short-duration (SD) grazing systems.

² Stock density is the number of animals on an area of land at a moment in time. For example, 100 animal units (cows) on 20 ha.

³ Stocking rate is the number of animals or animal units on an area of land over a time period typically a 30 day month. For example 0.25 AUMs/ha or 4 ha/AUM

Dormant season (winter) use might be a better choice on some lower elevation bunchgrass range. Research shows that dormant season use is less damaging to grass plants and soil. Biological soil crusts (nitrogen fixing lichens) are not damaged by winter use and provide the benefit of evenly distributing and releasing cost free nitrogen at the time when range grasses are ready to grow.

Conclusion

Remember it's not okay to treat your range like dirt. But the correct application of DURT makes for healthy range.

Suggested Readings

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