**Grazing Systems**

Grazing systems are controlled grazing management practices that manipulate livestock to systematically control periods of grazing, deferment, or rest. An extremely important concept in creating grazing system is to select the appropriate season of grazing or rest:

* + 1. Grazing during dormant season is least damaging (except for shrubs).

At this time, the plant is not actively photosynthesizing and plant does not try to regrow after being grazed. However, grazing during this time may be detrimental to shrubs that are maintaining and forming buds which are accessible to herbivores.

* + 1. Grazing when plants initiate growth has intermediate negative effect.

The plant is actively growing and has significant demand for photosynthetic products. However, the conditions for growth are optimal (i.e., plenty of soil moisture and nutrients). This active photosynthesis can provide the carbohydrates (CHO’s) necessary for growth. During drought years this period of effective soil moisture may be limited and grazing may be detrimental until the plant becomes senescent.

* + 1. Grazing during flower initiation through seed development is most damaging.

During this time, the plant’s demand for soluble CHO’s is considerable as the plant is near peak biomass (i.e., has a lot of biomass to support) and is using CHO’s for seed development. Defoliation can also be detrimental during this time because the conditions for active photosynthesis are less favorable (i.e., less soil moisture, higher temperatures) and there is less time in the growing season to recover from defoliation

**Terms use to define Grazing Systems:**

* + **Grazing Systems =** planned effort by rangeland managers to leave some grazing areas unused for at least part of the year.
	+ **Grazing period** = the season and number of days during which a pasture is grazed.
	+ **Deferment** = A delay of grazing (or a period of non-grazing) in a pasture until the key forage species set seed and seeds mature.
	+ **Rest** = A period of non-grazing for a full year (or a full grazing season)
	+ **Stock Density** = the number of animals that graze a specific unit of land at a specific time. Usually described as AU/acre or acres/AU.

**How can grazing systems affect the following?**

 **Livestock production?** (i.e., animal weight gain)

* *Can increase forage production or quality over time*
* *Can improve forage quality by grazing regrowth*
* *Make better use of greater area of forage resources*
* *Increase opportunities to observe livestock and reduce health problems, distribution problems, or other sources of lost animal gains*

**Livestock distribution?**

* + *Create smaller pasture to increase uniformity of use by grazing animals*
	+ *Increase stock density (i.e., greater number of animals per acer at any specific time)*

 **Plant community condition and composition?**

* *Affect evenness of grazing intensity among plants*
* *Even out competition between plants*
* *Provide a specific season of rest or deferment to benefit a specific group of plants*

**Wildlife populations?**

* *Leave biomass for cover or forage* *and remove excessive biomass when necessary*
* *Change composition of plant community (i.e., favor shrubs over grasses)*
* *Improve forage quality by removing dead material and promoting regrowth*
* *Grazing systems determine where livestock are on the landscape so they can also provide for areas where livestock are absent*

**Grazing systems cannot rectify mismanagement:**

* Wrong species or class of animal
* Incorrect stocking rate
* Major distribution problems because of water availability or topography
* Achieve range improvement landscapes that are dominated by long-lived woody plants.

**Major Grazing Systems**

* **Continuous Grazing** = *grazing the whole grazing area for the whole grazing system.*
	+ Affect on Livestock Production
		- Usually improves animal gains because animals have maximum opportunities to select high quality forage and use plants when they are most palatable.
		- Low stress system because animals are not moved from pasture to pasture.
	+ Affect on Rangeland Condition
		- Can reduce desirable plants because of repeated selection by herbivores.
		- Affect depends on stocking rate and species of grazing animal.
		- Livestock have preferred grazing areas (i.e., riparian, near cover, preferred forage plants) these areas may be overgrazed because livestock are not restricted from using them.
	+ Possibilities for Recreation?
		- If all sites are available all the time the campers and hikers are usually happy.
		- However, the favorite sites will get used the most and the best sites can be overused and degraded.
* **Deferred Rotation Grazing** = *Don’t graze at least one pasture every year until after it has set seed. In subsequent years change the pasture is deferred so that the deferment is rotated among all the pastures.*
	+ Affect on Livestock Production
		- Often reduces animal gains a little bit over continuous systems because it limits animal selection. Plus, deferred pastures will have older, more mature forage that will be less nutritious.
		- Over time improved range condition could lead to better forage supply and improved livestock gains.
		- Deferred systems are often implemented with increased stocking rates that can reduce livestock weight gains
	+ Affect on Rangeland Condition
		- Creates a period of non-grazing when plants are most sensitive to grazing. This can improve plant vigor.
		- Allows a period for seed-set.
		- Maintains balance between species a greater variety of plans will be grazed the same period and not as many plants will be grazed twice during the season.
	+ Possibilities for Recreation?
		- A recreation manager set aside specific hiking or camping areas in the spring on a rotating basis. In spring recreation can often have a great impact in areas because wildlife are rearing you and the soils can be moist and easy to compact.
* **Rest Rotation Grazing** = *Don’t graze at least one pasture on a range (or grazing unit) for a whole year. In subsequent years change the pasture is rested so that the rest is rotated among all the pastures.*
	+ Affect on Livestock Production
		- Lower animal gains because animals are not consuming most nutritious forage. Livestock always graze a pasture after rest or deferment when there is dead material built up in the plant.
	+ Affect on Rangeland Condition
		- Improves range condition because plants have time to set seed and recover from grazing.
	+ Possibilities for Recreation?
		- Because specific areas are closed or a full year, it may put more pressure on other sites and campers and hikers may be frustrated that they cannot use the areas they want to. However, the sites that are rested will get time to recover for damage.
* **Short-Duration** = Each pasture in the unit is grazed for a short time and animals are rotated through all available pastures so that each pasture is grazed at least 2 times per year.
	+ Affect on Livestock Production:
		- System designed to maintain or improve animal performance by consistently allowing animals to graze new growth or re-growth plant material. However, research has shown that animal performance is usually lower than other systems because animals are not given opportunity to select preferred forages and need to use a large proportion of all plants available to encourage regrowth which will be available in subsequent grazing periods.
	+ Affect on Rangeland Condition
		- Generally, maintains condition. This system requires that stocking rate be high enough to even out utilization among plants. Therefore, it is designed to reduce animal impact on some plants more than others. Also, because high stock densities are achieved, livestock distribution is usually improved.
	+ Possibilities for Recreation?
		- The short duration system could be used in dispersed backcountry sites where any individual site can be used for only a few days and then be rested for several weeks. May be difficult to administer, but could be effective.