# Range Improvement

**Range Improvement**: Its aim is based on the ecological principles of competition/succession. It includes

1. Increase production (quality/quantity) of species.
2. Balance species by inducing succession towards desirable direction.
3. Effective utilization of forage production.
4. Increase productivity of range depended animals (both livestock and wildlife).

**How to improve rangeland**

1. Direct methods: (a) Seedling (b) Controlling undesirable/noxious plants (c) Cultural operation (Weeding, hoeing, pitting, furrowing, fertilizer application and irrigation)

2. Indirect methods (a) Fencing (b) Trail improvement (c) Water availability (d) Effective utilization of the herbage (e) Grazing management

## Grazing Preference of Vegetation with Grazing Animals

Different animals have different grazing behavior and dietary preference

| Types of animals | Grazing preference |
|---|---|
| Cattle | Less selective and less severe in pasture mainly eat grasses but browse any edible shrubs that appear in path |
| Buffalo | Long grasses |
| Sheep | Closer grazer ( remove tall grasses from top to bottom, select a diet much more nutrition |
| Goat | Browse mainly |
| Horse/donkey | Selective grazer, close to ground ignore browse |
| Elephant | Clumps of grasses, bark, branches of the tree |

Dietary Preference of different type of animals

| Types of animals | Dietary Preferences | | |
|---|---|---|---|
| | High | Medium | Low |
| Cattle | Ground grass | Shrubs/Forbs | - |
| Buffalo | Ground grass | Shrubs/Forbs | - |
| Sheep | Shrubs/grass | - | - |
| Goat | Shrubs | Forbs | - |
| Horse | Close grass | Forbs | Grass |
| Deer | Shrubs/Browse | Forbs | Grass |

By knowing animals' behaviors range vegetation can be manipulated. So we can combine different types of animals. If we want to control shrubs of

the range, we can keep goat. For control herbs of the rangeland horse/donkey will be best. Similarly, to utilize both shrubs and grasses: combination of goat and cattle will be best.

**Strategies of range improvement**

1. Balance the number of animals to be grazed with the carrying capacity of the area.
2. To allow the livestock which are best suited for the existing vegetation.
3. Proper distribution of the grazing animals over the entire grassland.
4. Reseeding the grassland with improved variety of grasses which have a higher yield, and nutritive and more palatable.
5. Application of manure and fertilizer and keeping the area weed- free.
6. Adopting the principles of grazing management and encouraging stall feeding and storage of grasses.
7. Adopting proper soil conservation measures needed for the improvement of the grassland.

**Grazing Management:** It consists of wise and skillful manipulation of two basic biological elements: (i) Pasture area (ii) Grazing animals

**The principal factors that are under the direct control of the manager includes**: (a) Choice of the species (b) Manipulation of agronomic practices (c) Selection of livestock feeding (d) Use of supplementary feeding (e) Choice of the grazing system.

**Objective of grazing system**: (a) To restore the plant vigour (b) To allow plants to produce seeds (c) To accomplish uniform utilization of forage (d) To maintain animal productivity (e) To maintain ecological stability

**Grazing System (TYPES)**

(a) Continues Grazing system (b) Rotation Grazing system (c) Deferred grazing system (d) Deferred- Rotation grazing system (e) Strip Grazing System (f) Controlled Grazing system.

- **Continuous Grazing System**

It is extensive grazing in which the stocks are grazed in the same grazing area over a prolonged period of time. After a long period of continuous grazing

with high stocking rate pasture deteriorates is the common. It changes the species composition /succession (favorable for thorn plants).

**Advantages:** (a) Requires less management (b) Capital costs are minimal

**Disadvantages:**

• Lower forage quality and yields
• Lower stocking rate and less forage produced per acre
• Uneven pasture use
• Greater forage losses due to crushing
• Animal manure is distributed unevenly
• Weeds and other undesirable plants may be a problem

- **Rotational Grazing System**

It is an intensive system of grazing in which stocks are grazed in the different area of the rangeland moving from one part to another in rotation. The aim of this system of grazing is to use the grassland when it is young and highly nutritious and then allow an adequate recovery period.

**Advantages:**

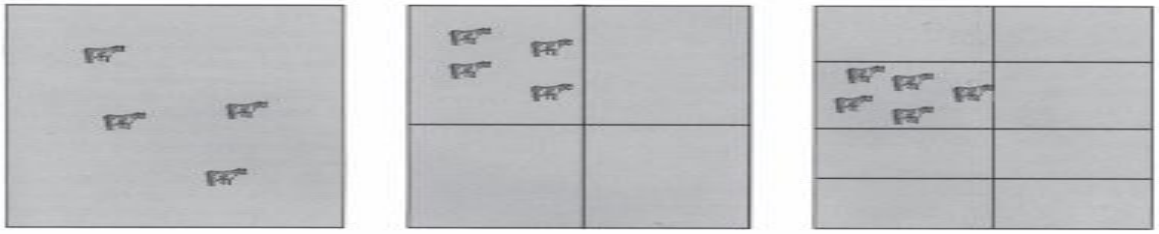
• Can increase forage production and improve pasture condition.
• Allows pastures to rest and allows for forage re growth
• Can provide a longer grazing season, reducing the need for feeding harvested forages
• Better distribution of manure throughout the pasture

**Disadvantages:**

• Costs for fencing and water systems can be higher than with continuous grazing
• Forage production and pasture utilization is not as high as deffered rotational grazing systems

- **Deffered Grazing System**

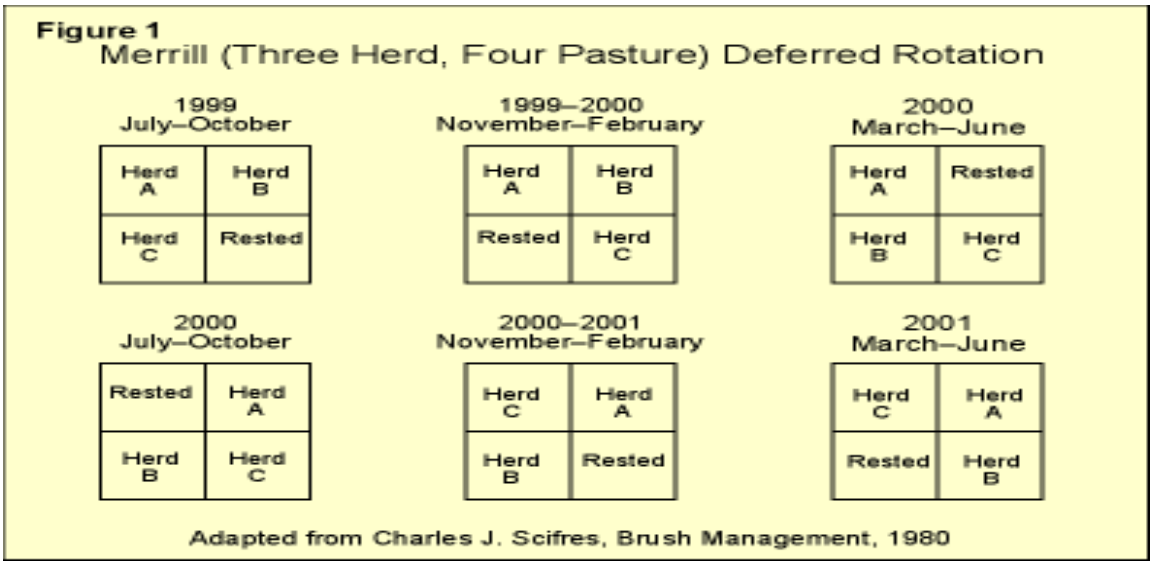
In this system, grazing is delayed until after the most important species have seed, rhizomes, etc for reproduction and propagation. Allows grazing land vegetation to grow fully, root systems are allowed to develop and self-sown seeds established. This practice is beneficial for improving degraded pasture and for the conservation of endangered range vegetation.



**Continuous** **Rotational** **Deffered**

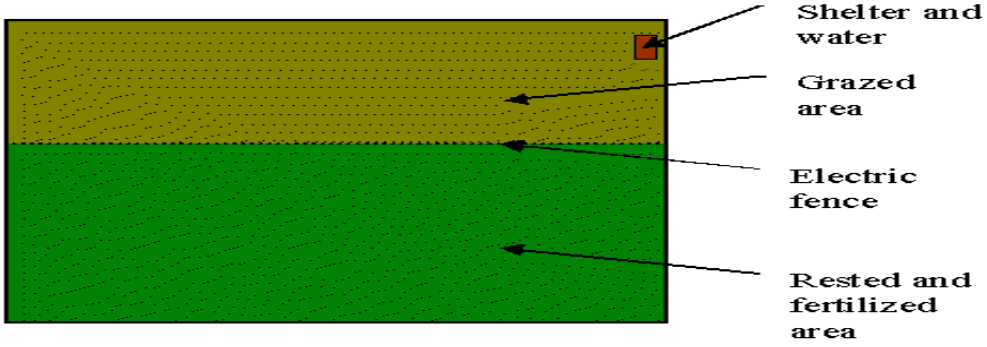
- **Deffered Rotational Grazing System:**

It consists of dividing the grazing land into several compartments, usually three compartments, and the animals are grazed alternatively into two while protecting the third compartment during the growing season. It will allow the palatable species to recoup their vigour. The animals are then allowed to graze the third protected compartment after grass has seeded. Protection of one section for once in three years.




- **Strip Grazing System:**

Strip grazing is more intensive and modified form of rotational grazing. In this case a movable electric fence is placed across the grazing paddock and will be moved forward once or twice in a day. This system is applied generally to high productive dairy animals. This will require a small outlay on suitable fencing (ie electric tape which will be highly visible to the horse), plastic stakes which can be moved, and an energizer.




- **Controlled Grazing System:**

In this system the number of animals that are allowed to graze per unit area of rangeland is fixed in accordance with the carrying capacity of rangeland.

Choosing a grazing system: Continuous grazing, however, have the benefit of low capital investment, since few fencing and watering facilities are required. Because livestock are rarely moved from pasture to pasture, management decisions are simple. Rotational (or controlled) grazing, on the other hand, increases Biomass of animal production per acre.