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Basics of Pasture Management

Introduction:

Pasture management must emphasize utilization of all feed grown.

Productivity of livestock as individuals and productivity on a per unit area basis both originate from the combined effects of (i) efficient capture of solar energy (sunlight), (ii) efficiency in forage harvested by the animal(s), and (iii) efficiency in conversion of the forage into animal growth or production. The first two of these will be discussed in more detail below. Feed grown does not benefit the animal or become profit until it is utilized by grazing animals.

Sufficiently high stocking rates are necessary to graze the whole area of a paddock.

Poor utilization results in selective overgrazing of the most palatable species, wasted feed, poor regrowth, and opening up of the sward with establishment of weeds. Continuous heavy grazing may cause a reduction in legumes because of reduced energy reserves for regrowth. High producing pasture species, on productive soils, have highest production with rotational grazing that allows a resting period for forage growth, and full recovery of reserves for regrowth. When growth is slower, the recovery period between grazings is lengthened.

The length of the rest period between grazings must be varied.

The rest period may be only 12-15 days after grazing in mid-April, but should be lengthened to 30-36 days after grazing in late August (Table 1). To be able to manage pastures and to provide animal-free rest periods there must a sufficient number of paddocks. This is illustrated in Table 2 with the number of paddocks required at the season's end. Earlier in the season when rest periods are shorter fewer paddocks would be needed to complete one rotation of grazing. Surplus forage from paddocks not included in this first grazing may be harvested as haylage or hay, thus conserving feed for winter. Too often dairy farmers in New England adopt a modified version of set stocking or lax form of rotational grazing. With set stocking there is difficulty in matching feed supply to animal requirements and as a result many farmers under-stock continuously grazed areas. Figure 1 shows the effect of grazing pressure on animal productivity.

Pasture Tip:
Dairy, beef and sheep farmers in New Zealand and the UK use a simple 'workboot' measure to evaluate pasture mass available pre- and post-grazing. With practice they become proficient at estimating pasture mass from the pasture height on their boot.

Table 1. Length of Rest Period.

Mid-Apr to mid-May	12-15 days
June 1	24
July 1	24
August 1	30
September 1	30-36

Productivity of pastures is influenced by the availability of a soil nitrogen source.

This most economically can be provided by legumes fixing atmospheric nitrogen in root nodules. Fertility and grazing management must be designed to promote the growth and persistence of legumes in mixed grass and legume pastures. Other nutrients also must be in balance and are best checked by using a soil test.

Table 2. Number of paddocks needed for a 36 day rest period.

Days Grazing	Number of Paddocks
½	73
1	37
2	19
3	13

Correct height of grazing of varies with species.

Continually grazing tall growing species such as orchardgrass to one inch will depress yield and cause a decline in plant vigor because of low residual leaf area and because tillers that store energy for regrowth are also partially grazed. Such management of alfalfa, which depends on the root

reserves for regrowth, would soon lead to a stand decline, both in vigor and number of plants. Shorter growing species such as white clover, Kentucky bluegrass and perennial ryegrass can withstand grazing to one inch. For legume-grass mixtures, light grazing over a prolonged period may lead to a reduction in legumes because of competitive growth of the grass. Continuous heavy grazing may also cause a reduction in energy reserves in roots that are needed for regrowth. Rotational grazing, with a short grazing period followed by an adequate regrowth between grazings, will promote persistence of legumes, and increase growth and quality of grasses. It may also increase profitability of the farm enterprise.

Table 3. Guide for managing forage species and mixtures.

Species	Continuous grazing average height of pasture	Rotational grazing heights Before	After
	---------- inches or stage ----------		
Bluegrass-white clover	2 to 3	4 to 6	1 to 2
Perennial Ryegrass	2 to 3	4 to 6	1 to 2
Orchardgrass-ladino clover	3.5 to 5	7 to 10	2 to 4
Alfalfa	N/R[1]	bud[2]	2 to 3
Alfalfa-grass	N/R	bud	3 to 4
Red clover	N/R	bud	2 to 3
Red clover-grass	N/R	bud	2 to 4
Birdsfoot trefoil	3.5 to 5	bud[3]	3 to 4
Birdsfoot trefoil-grass	3.5 to 5	10 to 12	3 to 4

N/R - not recommended to graze continuously
[2] Allow alfalfa to go to first flower at least once during the summer
[3] To replenish the stand, allow trefoil to go to seed once every two years

Maintaining an adequate quantity of available pasture will influence animal performance (Fig 1). If overgrazed animals cannot consume sufficient forage while undergrazing leads to much wasted feed through plant avoidance and trampling.

Other Considerations:

Adequate fencing is needed to control animals being managed particularly for rotational grazing. The animal type and temperament will dictate the style and needed strength of the fence. There are many fencing options including permanent multi-strand high-tensile boundary fences, with or without being electrified, where reliability in containing animals is essential. The other extreme is a temporary single electrified polywire fence which is movable depending on size of paddock needed for grazing. Electrified tape and rope are sometimes used for making fences more visible.

Animals also need access to water. On average a dairy cow requires 20 gallons of water daily, a horse 10 gallons and one sheep 2 gallons. Research has shown that as the distance to the water source increases above 900ft the amount of pasture forage decreases. Access to water is needed in each pasture. If animals have to travel back to a centralized water tank near the barn then they are less likely to return to the pasture to continue grazing. Nutrient transfer is also influenced by location or portability of water.

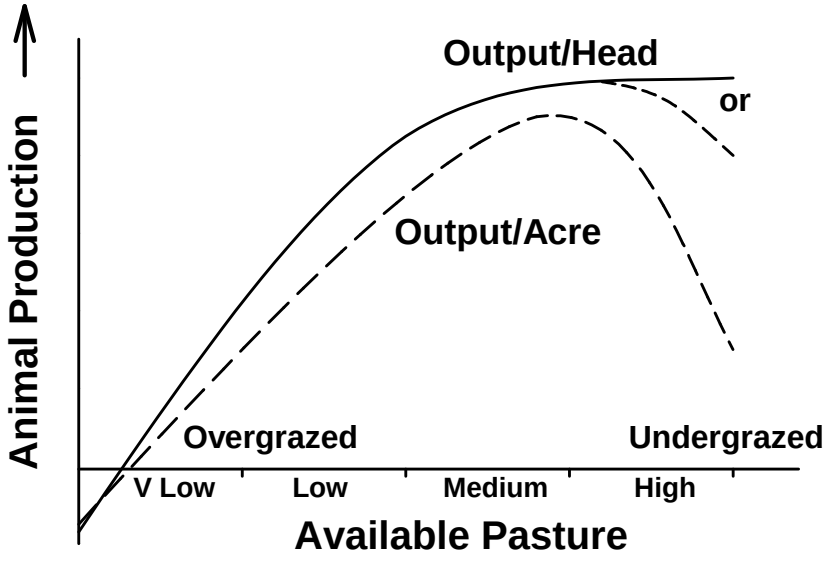

Figure 1. Influence of available pasture on animal production.

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