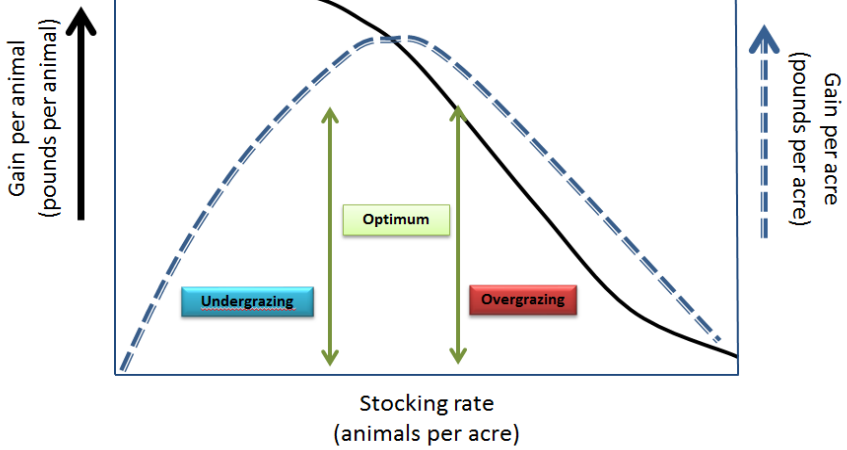
Agriculture & Natural Resources
TIMELY INFORMATION
ANIMAL SCIENCE SERIES

Understanding Stocking Rates in Grazing Systems

What is stocking rate?

Stocking rate is defined as the total amount of land allotted to each grazing animal during the grazing season. Establishing stocking rate is the most critical management decision for the grazier, and it enables animal requirements to be more closely matched with forage production potential. Stocking rate has a large impact on both plant and animal production over time. The amount of available forage declines under a high stocking rate or overgrazing situation, and may negatively affect stand persistence.

Figure 1. Relationship between stocking rate and animal performance (pounds of gain).



Adapted from Mott et al., 1973

In this situation, animal forage intake declines, and animals are less able to select plants or plant parts that are high in nutritive value, decreasing individual animal performance. The amount of gain per acre may still be high due to a large number of animals per unit land area; however, this is a less-than-optimum use of land because both plant and animal performance are compromised. Undergrazing will likely reduce total animal performance per acre, but forage production per acre may be increased. Individual animal performance may be improved because animals have the potential to select an adequate quantity of forage relatively high in nutritive value. However, as the number of animals per acre is lowered, potential animal gain on a per-acre basis also decreases, and excess forage is available that is underutilized. Proper stocking rates more closely optimize forage production, persistence, and animal performance on a per-acre basis.

How do I determine my stocking rate?

Stocking rate is calculated as the number of animals to be grazed divided by the total acreage available for grazing. The amount of acreage needed depends on the following factors influencing forage supply and demand:

- **Forage Supply - Plant Considerations**
  - Forage mass [Pounds (lb) of forage dry matter (DM) per acre]
  - % of the DM utilized by grazing

    - Number of acres to be grazed
- **Forage Demand - Animal Considerations**
    - Average weight of animals to be grazed
    - Dry matter consumed per animal (% of body weight per day)
    - Number of animals
- **Time**
    - Days on pasture

The following scenarios illustrate potential stocking rates in a cow/calf production system using the information above:

Scenario 1

Cow-calf pairs, 1,200 lb cow + growing calf (300 lb)*
Cool-season forage system
130 grazing days
Fall-calving system

	Forage Utilization Rate (%)			
	20	40	60	80
Forage DM (lb/ac/yr*)	Stocking Rate (cow-calf pairs/acre)			
2,000	0.1	0.2	0.3	0.4
4,000	0.2	0.4	0.6	0.8
6,000	0.3	0.6	0.9	1.2
8,000	0.4	0.8	1.2	1.6

*Assume 27 lb DM (65% TDN, 14% CP) per day for 1,200 lb cow producing 20 lb milk/day (2.25% of BW)
Assume 4 lb DM per day for growing calf (average 1.5% BW across grazing season) – Boggs et al. (1980)

Scenario 2

Dry, pregnant cows – 1,200 lb
Warm-season forage system
150 grazing days
Fall-calving system

	Forage Utilization Rate (%)			
	20	40	60	80
Forage DM (lb/ac/yr*)	Stocking Rate (animals/acre)			
6,000	0.3	0.6	0.9	1.2
8,000	0.4	0.8	1.2	1.6
10,000	0.5	1.0	1.5	2.0
12,000	0.6	1.2	1.8	2.4

*Assume 24 lb DM (55% TDN, 12% CP) per day for 1,200 lb dry, pregnant cow (2.0% of BW)

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