

Prescribed Grazing Plan Design Worksheet 2-A

Needed Information: Total lbs of animals 1,000 lbs = 1 animal unit (au) Hay/pasture forage yield Desired time in a pasture/rotation	Example: 20 cow/calf units (1000 lbs each) Excellent pasture Intense management 18 acres to graze Fields 1 - 4ac, 2 - 4ac, 3 - 6ac. 4.- 2ac,
--	---

EVALUATE AND IMPROVE AN EXISTING SYSTEM
Step 1. Determine animal forage needs per herd by:

A. **Determine Animal Units (AU)** (from Table 4)
 Number X Animal Unit value (Tables 4) = Total Animal Units
 20 X 1.0 = **20 Animal Units (AU)**

B. **Determine intake rate** for that kind of animal (Tables 2) **26 lbs.**

C. **Total Forage Demand per day** = Intake rate X Animal units
 26 lbs x 20 AU = **520 lbs**

Table 1 - Grazing Efficiency includes minimum stubble

Number of Paddocks	Approx. Days on each Paddock	Grazing Efficiency
Continuous	----	.35
4 to 6 paddocks	7 to 9 days	.40 to .55
8 to 10	4 days	.55 to .70
24 to 45	1 day or less	.70 to .80
Hay	----	.70 to .80

Step 2. Determine Days on a paddock based on production: Field 1 is 4 acres.

DM AC (Table 5) X Acres in paddock X % utilization (Table 1)

$$\frac{\text{Total Forage Demand (Step 1C)}}{\text{DM AC (Table 5) X Acres in paddock X \% utilization (Table 1)}} = \text{Days}$$

$$\frac{520 \text{ lbs}}{2000 \text{ lbs} \times 4 \text{ Acres} \times .55} = 8.5 \text{ Days}$$

Adjust days on for horses due to animal impacts.
 For horses multiply these days by: .6 for new grazers
 .75 for experienced grazers
 1.00 for advanced grazers

Table 2 - System Intensity

Rotation Frequency: Livestock	Intake Rate (lbs dry matter/au)	Recommended Rotation Days	Number of Paddocks	Herd Density while grazing
Lactating Dairy	35 lbs	.5 to 1 day	15 - 45	40000+ lbs/ac
Stocker cattle, dairy heifers	30 lbs	1 to 3 days	6 - 45	20000+ lbs/ac
beef/cow/calf, swine, or horse	26 lbs	3 to 7 days	3 - 16	10000+ lbs/ac
Sheep, goats	37 lbs	3 to 7 days	3 - 16	----

Step 3. Determine if there is adequate production for 30 day rest for grass regrowth. Calculate and add all paddocks up, and subtract average field in days to account for paddock livestock are in.

Total is 33.9 days
 Average field is 33.9/4 = 8.5 days
 8.5 + 8.5 + 12.7 + 4.2 + = 33.9 days - 8.5 days = 25.4 days

Table 3 - Rest Periods

Use 30 days for a basic design while using half of the fields for one cutting of hay due to cool season grass growth rates. If no hay is harvested use a 15 day return cycle during peak growth for cool season grasses. Always use plant growth heights from the pasture stick to determine return time. Rotations may be as short as 15 days for warm season grasses.

Step 4. Resize paddocks for optimum management.

Recommended considerations:
 Splitting larger paddocks will increase utilization and cause more even grazing on all species present. (Tables 2)

Optimum management occurs with:

$$\frac{\text{herd animal units X 1000 lbs}}{\text{recommended herd density (Table 3)}} = \text{Recommended Paddock Size}$$

$$\frac{20 \text{ animal units X 1000 lbs}}{10000 \text{ lbs/ac (Table 3)}} = 2 \text{ acres}$$

Resize fields to be close to this number.
 In this example:
 2 acres for the example will give optimum growth.

Table 4 - Animal Weight Estimates or use farmer estimates

Animal units (au) = weight/1000 or 1 au = 1000 lbs

Use known weights in pounds or select from this list or other reliable sources for livestock being grazed.

cow dry .920 au	cow calf 1.000 au	Dairy milking Holstein 1.50 au	Dairy milking jersey .900 au
Bull mature 1.350 au	Cattle, 1 yr old .600 au	Cattle 2 yr old .800 au	Horse mature 1.250 au
Sheep mature .200 au	Lamb 1 yr .150 au	Goat mature .150 au	Kid 1 yr old .100 au
Deer .150 au	Elk mature .600 au	Bison mature 1.000 au	

For horses due to animal impacts always add another paddock as a heavy use area and don't count it for forage production.

Table 5

From the soil survey, or the NRCS technical guide, or from the farmer; determine the average hay yield for the soil that is predominant in the grazing system. Use a weighted average due to soil yield differences. For warm season grasses fine tune the system by season by multiplying this number* by 1.7 for likely yield per 30 day rotation. Warm season grasses will need to be rotated into more frequently than every thirty days, but yield estimates are based on 3 rotations for warm season grasses. Always rotate in and out based on grass heights from the pasture stick. Use the table below to estimate forage production in pounds/acre/rotation

Tons/Acre/Year	Pounds/Acre/Rotation*
6.5	2600
6.0	2400
5.5	2200
5.0	2000
4.5	1800
4.0	1600
3.5	1400
3.0	1200
2.5	1000
2.0	800

Step 5. If acres available are inadequate additional acres need to be added or the number of livestock reduced.

Animal time on a pasture needs to be reduced proportional to short fall. Prescribed grazing exists only if recommended grass heights from the pasture stick are maintained. To determine forage shortfall multiply total days less than 30 by Total Forage Demand and divide by expected loss to determine additional acres or hay needed per rotation.

30 days - average rest = days short
 30 days - 25.4 days = 4.6 days

Either some hay can be feed at all times or added grazing acres. Calculate additional needed forage per rotation:

$$\frac{\text{Days short X lbs DM/day total}}{\text{Feeding Efficiency (Table 1)}} = \text{lbs of hay needed per Rotation}$$

$$\frac{4.6 \text{ Days short X } 520 \text{ lbs DM/day total}}{.70 \text{ Feeding Efficiency (Table 1)}} = 3417 \text{ lbs needed per Rotation}$$

OR

$$\frac{\text{Days short X DM/day total}}{\text{Grazing Efficiency (Table 1)}} = \text{additional acres needed per Rotation}$$

$$\frac{4.6 \text{ Days short X } 520 \text{ lbs DM/day total}}{.55 \text{ Grazing Efficiency (Table 1)}} = 4.3 \text{ acres needed per Rotation}$$

