Stocking Rate Practice Problems

Answers Attached Below

Use animal unit equivalents from "DETERMINING YOUR STOCKING RATE" by (Mindy Pratt and G. Allen Rasmussen) when necessary.

Problem 1: You are considering renting some grazing land on the shortgrass prairie in eastern Colorado. The range is gently rolling and no part of the pasture is over a mile from water. Based on information from the Natural Resources Conservation Service and your own estimates, production of the Key forage species averages 700 kg/ha of dry matter per year. The range is 2000 ha in size and you are planning to use it for 90 days. How many 400 kg-cows can you graze on this land?

Problem 2: You have been asked to assess a friends 100-acre pasture near Twin Falls. The recommended stocking rate for the particular vegetation type is 10 acres/A.U.Y. (i.e., Animal Unit Year) according to "the experts". Your friend currently grazes 10 animal units for 8 months each year.

1) Is the pasture currently stocked properly (or is it understock or overstocked)?

2) If your friend's pasture is not properly stocked, determine what could be done to properly stock this land. (Increase or decrease the number of animals or grazing time).

Problem 3:

Given the following:

1000 acres of land grazed by

100 sheep for 10 months (.2 AUE)

70 goats for 12 months (.15 AUE)

50 range cows for 6 months (1.2 AUE)

Calculate:

1) The number of A.U.Y's currently being grazed.
(Determine AUM's then convert to AUY's)

2) The stocking rate (in acres/AU) of this piece of land.

Problem 4:

What is the stocking rate of a 500-acre pasture stocked year-long with 25 mature cows (1.0 AUE), 1 bull (1.35 AUE), 40 sheep (0.2 AUE), 30 goats (0.15 AUE), and 25 deer (0.2 AUE)? Express stocking rate as acres/AU and AUM's/acre.

Problem 5:

A 750-acre pasture has a recommended stocking rate of 1.2 AUM's/acre. It has 25 deer on it. Calculate the number of cows and sheep required to properly stock this pasture for an 8 month grazing season and still leave enough forage for the deer. Calculate stocking rate for a flerd with 30% of forage used by sheep and 70% of forage used by cattle.

Answers to Stocking Rate Problems

Problem 1:

Available Forage = 700 kg/ha × 2,000 ha = 1,400,000 kg of forage
Usable Forage @ 40-50% allowable use according to guidelines
= 1,400,000 kg × 45% = 630,000 kg of usable forage
Forage Demand per Day = 400 kg cow @ 2.5% intake/day = 10 kg of forage/cow/day
Forage Demand per Season = 10 kg/cow/day × 90 days = 900 kg/cow
Stocking = 630,000 kg of forage ÷ 900 = **700 cows**

Problem 2:

Proper Stocking = 10 acres/AUY ÷ 12 months = .83 ac/AUM
Current Stocking = 100 acres/(10AU × 8 mo) = 1.25 ac/AUM

1) Pastures is currently **understocked**

2a) Increase stocking rate by increasing grazing season:
100 acres ÷ 10 ac/auy = 10 AUY of forage × 12 months = 120 AUM's
120 AUMs of forage ÷ 10 AU currently on land = 12 months
Therefore, one could graze the 10 animal units all year (12 months) instead of 8 months

2b) Increase stocking rate by increasing animal numbers.
120 AUMs of forage ÷ 8 months - 15 AU needed to use forage
Therefore, increasing number of animal units from 10 to 15 would increase stocking rate to recommended level.

Problem 3:

	→ Num × AUE = AU Num = AUE ÷ AU ←			→ AU × Mon = AUM AU = Mon ÷ AUM ←	
Critter (Animal Type)	**Number**	**AUE**	**AU**	**Month**	**AUM**
Sheep	100	.2	20	10	200
Goats	70	.15	10.5	12	126
Cows	50	1.2	60	6	360
				Total AUMs = **686 AUMs**	
				Stocking Rate in Ac/AUY:1,000 acres/ 52.2 AUY = **1.46 acres/AUY**	

Problem 4:

Critter (Animal Type)	Number	AUE	AU	Month	AUM
Cows	25	1.00	25	12	300
Bull	1	1.35	1.35	12	16.2
Sheep	40	0.20	8	12	96
Goats	30	0.15	4.5	12	54
Deer (mule deer)	25	0.20	5	12	60
		Total =	43.85		526.2

Stocking Rate: 500 ac ÷ 43.85 AUY = 11.4 ac./AUY
or 526.2 AUM ÷ 500 ac ≈ 1 AUM/ac.

Problem 5: (I used white-tail deer for this problem)

Forage Available: 750 acres × 1.2 AUM/ac = 900 AUMs of forage

Deer Require: 25 deer × .15 AUE = 3.75 AU × 12 months = 45 AUM

900 AUMs - 45 AUM for deer = 855 AUMs of forage remaining for cows and sheep

Sheep: 855 AUM × 30% = 256.5 AUM for sheep

256.5 AUM ÷ 8 months = 32 AU ÷ .2 AUE = 160 sheep

Cows: 855 AUM × 70% = 598.5 AUM for cows

5985 AUM ÷ 8 months = 74.8 AU ÷ 1 AUE = 75 cows