

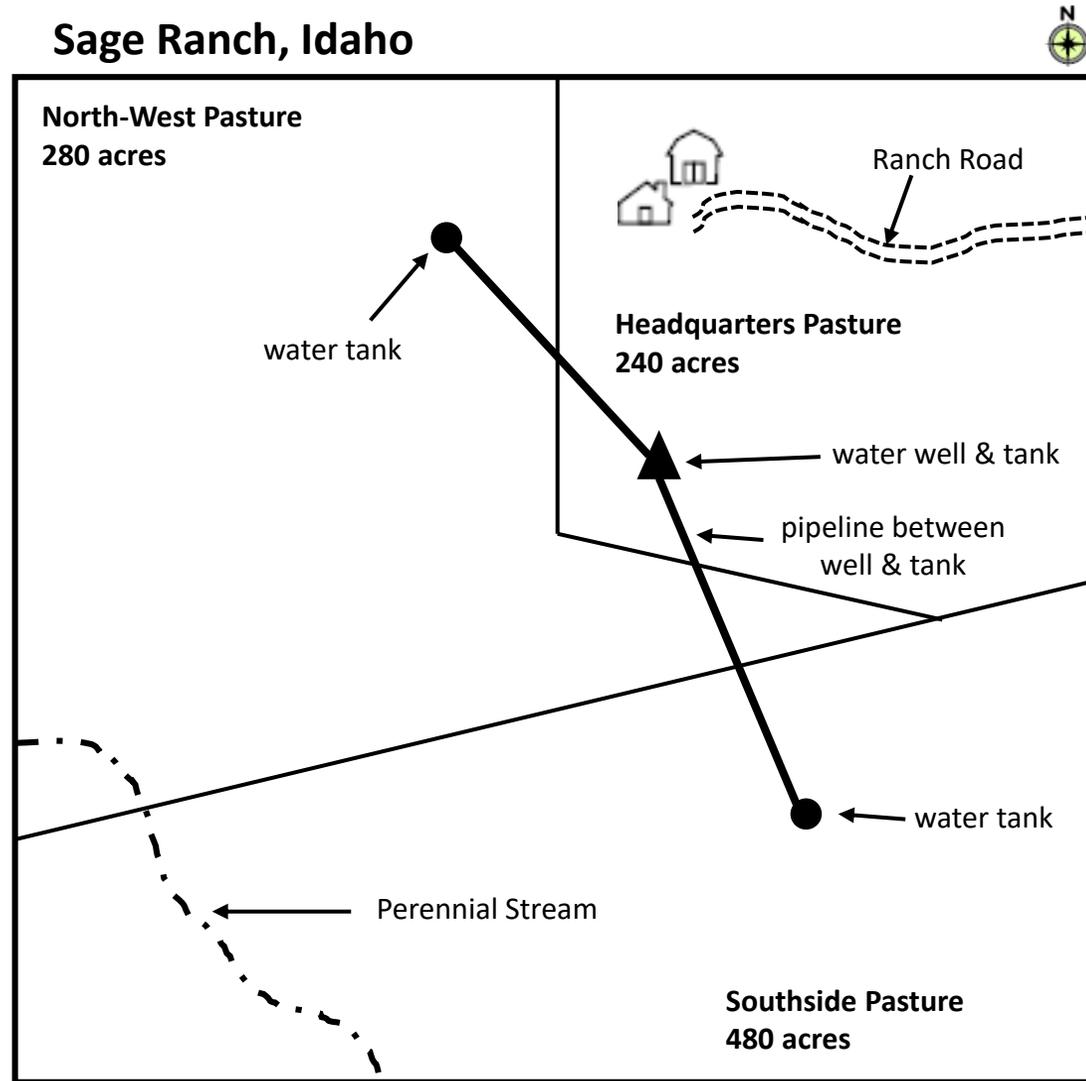
Sage Ranch, Idaho

The Sage Ranch located in Southern Idaho was homesteaded in the 1860s. It covers 1,000 acres of rangeland. The ranch is split into 3 pastures (see Map), each one producing different amounts of forage and having different proper use percentages. The ranch is a commercial Angus steer operation, and implements a deferred-rotation grazing system between all three pastures. The ranch runs 180 head with an average size of 600 pounds. The pastures are grazed under a moderate intensity for 3 months (90 days) of the year (June 1 through August 29) and then sold to a feedlot to finish.

Your job is to calculate the **FORAGE SUPPLY, FORAGE DEMAND,** and **determine if the stocking rate is appropriate for the site** (should the Sage Ranch increase the number of cattle on the ranch? Decrease the number of cattle on the ranch? Or keep the rate the same?).

Use the worksheet, the map, and the ranch description above to answer the questions!

Sage Ranch, Idaho



North-West Pasture

Mix of bluebunch wheatgrass and crested wheatgrass. Produces about 1,100 lbs/acre of forage with a proper use of 50%

Headquarters Pasture

Native bunchgrasses (60%), Forbs (35%), and native shrubs (5%). Produces about 750 lbs/acre of forage with a proper use of 40%

Southside Pasture

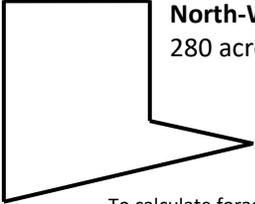
Bunchgrasses (50%), Forbs (30%), and native shrubs (20%). Produces about 600 lbs/acre of forage with a proper use of 30%

Stocking Rate Calculations Worksheet

Stocking rate is the balance between forage supply and forage demand. For the Sage Ranch, we need to calculate both to determine if the current stocking rate is appropriate for the ranch. This worksheet (and the description of the ranch) will guide you through the process. We will start by calculating the forage supply for each pasture, then calculate the forage demand of the ranch, and finally, use those numbers to determine if our stocking rate is okay or if we need to change it (increase or decrease). Follow the step-by-step guide for the North-West Pasture and then do it for the Headquarters and Southside Pasture. To calculate forage demand you will need to know what types of animals are grazing, the size of the animals, and the grazing period (or number of days they spend on the ranch). The Sage Ranch has 180 cows that weigh on average 600 pounds. They graze EACH pasture for 1 months (or 30 days).

FORAGE SUPPLY

North-West Pasture
280 acres (ac)



To calculate forage demand, you will need the following numbers from the information provided:

- Size of pasture: _____ acres
- How much forage is produced: _____ lbs/acre of forage
- Proper use: _____ %

Step 1: Calculate the total amount of forage (supply) in the pasture (multiply the size of pasture by how much forage it produces).

_____ ac X _____ lbs/ac = _____ lbs of forage

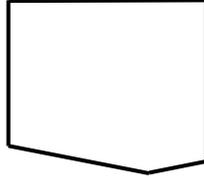
Step 2: Calculate the forage supply for the livestock (multiply the forage calculated above by the proper use percentage).

_____ lbs of forage X _____ % = _____ lbs of available forage.

Step 3: Convert the forage supply to AUMs (Remember that 1 AUM = 750 lbs).

_____ lbs of available forage / 750 lbs = _____ AUMs

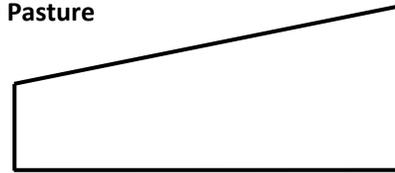
Headquarters Pasture
240 acres



- Size of pasture: _____ acres
- How much forage is produced: _____ lbs/acre of forage
- Proper use: _____ %

Use the space below to calculate the available forage for the Headquarters Pasture

Southside Pasture
480 acres



- Size of pasture: _____ acres
- How much forage is produced: _____ lbs/acre of forage
- Proper use: _____ %

Use the space below to calculate the available forage for the Southside Pasture

FORAGE DEMAND

To calculate forage demand, you will need the following numbers from the information provided:

- Number of cows at the ranch: _____
- Average weight of each cow: _____ lbs
- % of body weight eaten daily: _____ %
- Number of grazing days: _____ days

Step 1: Calculate how much each cow will each per day (multiply the weight of one cow by the % of body weight it will eat in one day).

_____ lb cow X _____ % = _____ lbs/day

Step 2: Calculate how many pounds of forage all the cows on the ranch will eat in one day (multiply the amount for one cow X number of cows on the ranch).

_____ lbs/day X _____ cow = _____ lbs forage demand for one day.

Step 3: Calculate how much forage is needed for 90 days (multiply total forage needed by 90 days)

_____ lbs forage demand for one day X _____ days = _____ lbs total forage demand for the entire grazing period.

Step 4: Convert the forage demand to AUMs (Remember that 1 AUM = 750 lbs).

_____ lbs of forage demand / 750 lbs = _____ AUMs

Total forage available for livestock grazing at the Sage Ranch (add together forage supply for each pasture)
Forage supply = _____ pounds, which is _____ AUMs

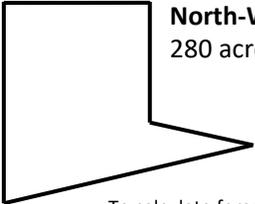
Total forage demand at the Sage Ranch
Forage demand = _____ pounds, which is _____ AUMs

Stocking Rate Calculations Worksheet

Stocking rate is the balance between forage supply and forage demand. For the Sage Ranch, we need to calculate both to determine if the current stocking rate is appropriate for the ranch. This worksheet (and the description of the ranch) will guide you through the process. We will start by calculating the forage supply for each pasture, then calculate the forage demand of the ranch, and finally, use those numbers to determine if our stocking rate is okay or if we need to change it (increase or decrease). Follow the step-by-step guide for the North-West Pasture and then do it for the Headquarters and Southside Pasture. To calculate forage demand you will need to know what types of animals are grazing, the size of the animals, and the grazing period (or number of days they spend on the ranch). The Sage Ranch has 180 cows that weigh on average 600 pounds. They graze EACH pasture for 1 months (or 30 days).

FORAGE SUPPLY

North-West Pasture
280 acres (ac)



To calculate forage demand, you will need the following numbers from the information provided:

- Size of pasture: 280 acres
- How much forage is produced: 1,100 lbs/acre of forage
- Proper use: 50 %

Step 1: Calculate the total amount of forage (supply) in the pasture (multiply the size of pasture by how much forage it produces).

$$\underline{280} \text{ ac} \times \underline{1,100} \text{ lbs/ac} = \underline{308,000} \text{ lbs of forage}$$

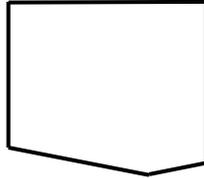
Step 2: Calculate the forage supply for the livestock (multiply the forage calculated above by the proper use percentage).

$$\underline{308,000} \text{ lbs of forage} \times \underline{50} \% = \underline{154,000} \text{ lbs of available forage.}$$

Step 3: Convert the forage supply to AUMs (Remember that 1 AUM = 750 lbs).

$$\underline{154,000} \text{ lbs of available forage} / 750 \text{ lbs} = \underline{205} \text{ AUMs}$$

Headquarters Pasture
240 acres



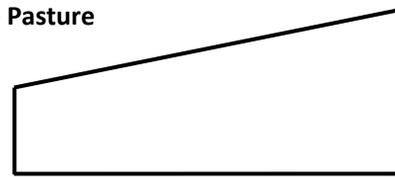
- Size of pasture: 240 acres
- How much forage is produced: 750 lbs/acre of forage
- Proper use: 40 %

Use the space below to calculate the available forage for the Headquarters Pasture

Answer:

$$240 \text{ acres} \times 750 \text{ lbs} \times 40\% = 72,000 \text{ pounds OR } 96 \text{ AUMs}$$

Southside Pasture
480 acres



- Size of pasture: 480 acres
- How much forage is produced: 600 lbs/acre of forage
- Proper use: 30 %

Use the space below to calculate the available forage for the Southside Pasture

Answer:

$$480 \text{ acres} \times 600 \text{ lbs} \times 30\% = 86,400 \text{ pounds OR } 115 \text{ AUMs}$$

FORAGE DEMAND

To calculate forage demand, you will need the following numbers from the information provided:

- Number of cows at the ranch: 180
- Average weight of each cow: 600 lbs
- % of body weight eaten daily: 2.5 %
- Number of grazing days: 90 days

Step 1: Calculate how much each cow will each per day (multiply the weight of one cow by the % of body weight it will eat in one day).

$$\underline{600} \text{ lb cow} \times \underline{2.5} \% = \underline{15} \text{ lbs/day}$$

Step 2: Calculate how many pounds of forage all the cows on the ranch will eat in one day (multiply the amount for one cow X number of cows on the ranch).

$$\underline{15} \text{ lbs/day} \times \underline{180} \text{ cow} = \underline{2,700} \text{ lbs forage demand for one day.}$$

Step 3: Calculate how much forage is needed for 90 days (multiply total forage needed by 90 days)

$$\underline{2,700} \text{ lbs forage demand for one day} \times \underline{90} \text{ days} = \underline{243,000} \text{ lbs total forage demand for the entire grazing period.}$$

Step 4: Convert the forage demand to AUMs (Remember that 1 AUM = 750 lbs).

$$\underline{243,000} \text{ lbs of forage demand} / 750 \text{ lbs} = \underline{324} \text{ AUMs}$$

Total forage available for livestock grazing at the Sage Ranch (add together forage supply for each pasture)
Forage supply = 312,400 pounds, which is 416 AUMs

Total forage demand at the Sage Ranch
Forage demand = 243,000 pounds, which is 324 AUMs