

## Unit Fifteen

## Range And Pasture Management

## Roll Call

What is one thing you might find on the land where you graze your cattle?

## The Stocking Rate

One part of good range and pasture management is having the right stocking rate on the land. The **stocking rate** is the number of animals which should graze on the land to make it most productive. If the stocking rate is too high, the animals will overgraze the plants and the land quality will be reduced. If it is too low, you are not making the best possible use of your resources.

Let's look at how we can determine the stocking rate for your range or pasture.

- Measure the forage production on the land where you want to put your cattle.
  - Mark off a circle with a 56 cm radius using a 56 cm piece of string with a large nail on each end.
  - Inside this circle, clip all the forage at ground level.
  - Let the forage sample dry for one to two weeks. Weigh it in grams.
  - Determine the amount of forage in kilograms per hectare (2.47 acres) by multiplying the weight in grams by a factor of 10.

For example, if the forage you collected weighed 85 grams, there would be  $85 \times 10(\text{factor}) = 850$  kilograms of forage on one hectare of this land.

A standard livestock unit, called an animal unit (**AU**), is used to calculate the stocking rate. One animal unit is considered to be a 450 kg cow. A bull, because of his larger size, is considered to be 1.5 AU. A weaned calf is considered to be only 0.5 AU.

- Determine the **AUM** or **animal unit month** or how much forage each animal unit will graze in one month.

A mature cow needs about 12 kg of forage each day. Multiply 12 kg by the number of days in the month, say 30.

$$12 \times 30 = 360$$

Add in a factor of 25% to allow for trampling and waste.

$$360 \times 25\% = 90$$

$$90 + 360 = 450$$

Therefore, 450 kilograms of forage per AUM is needed.



## Factors Affecting How The Land Is Grazed

Many factors affect how the animals will graze the land. Some of the most important factors are

### Type of Vegetation

Cattle naturally graze first the plants they like best. They change their grazing preferences as nutritional value and palatability of plants change.

### Location of Water

The distance from the water supply to the grazing area will affect where the cattle will graze. They will overgraze the land closer to the water supply.

### Size and Shape of the Pasture

A long, narrow pasture running north and south would be grazed in the most travelled area, and less grazed farthest from the entrance to the pasture.

### Climatic Conditions

The direction of the prevailing winds will affect where the cattle graze. Land with little protection from the weather will be less grazed.

### Number of Animals

As we have already learned, the number of animals will affect how the pasture is grazed.

## Forage Values

Range managers need to know whether their cattle like the plants growing on their land. They also need to know the nutritional value these plants can supply.

We classify plants according to their value to the cattle or their **grazing value**. They can be **good, fair or poor**. The grazing value depends on:

- palatability (how well the cattle like them)
- nutrient content
- volume of the forage
- whether or not the plants are dangerous.

Keep in mind that the value of any plant differs for each type of grazing animal such as cattle, horses, sheep, and so on.

A good range manager determines if a range site has been properly grazed. The following table describes the degrees of land use.



**Range Use Guide**

Degree of Use	Description
Unused	<ul style="list-style-type: none"> <li>no evidence of any use by livestock</li> </ul>
Light	<ul style="list-style-type: none"> <li>only the most palatable plants are used and they are only slightly grazed</li> </ul>
Moderate	<ul style="list-style-type: none"> <li>about half of this season's growth of good and fair forages are grazed</li> </ul>
Heavy	<ul style="list-style-type: none"> <li>land has a clipped or mowed appearance; more than half of the good and fair forages are eaten</li> </ul>
Destructive	<ul style="list-style-type: none"> <li>range appears to be stripped of vegetation; trampling is obvious; even the poor forages have been grazed.</li> </ul>

**Range Review**

Using each of the words on the left only once, fill in the blanks in each sentence with the correct word.

varies

pasture

units

rate

palatability

trampling

range

good

month

animals

- \_\_\_\_\_ land grows native plants, those which naturally grow in that area.
- \_\_\_\_\_ is land which grows plants put there by man.
- The grazing value of land can be \_\_\_\_\_ fair or poor.
- How well the animal likes the plants is the \_\_\_\_\_.
- If there are too many \_\_\_\_\_ grazing the pasture, it is sure to be overgrazed.
- The amount of forage produced and available to your cattle \_\_\_\_\_ each year.
- A bull is considered to be 1.3 AU or animal \_\_\_\_\_.
- The stocking \_\_\_\_\_ is the number of cattle which should graze on the land.
- An AUM is the amount of forage one AU will graze in one \_\_\_\_\_.
- When figuring your stocking rate, allow 25% for \_\_\_\_\_ and waste.

**Unit Sixteen**

**Record Keeping**

**Roll Call**

What is one record you keep on your (or a neighbour's) farm?

**Where and How Do You Keep Farm Records?**

It is important to keep your farm records in a way which works for you and your operation. On a small operation, records can be accurately and completely kept by hand. Larger operations often find computer programs more useful. With computers, you must have someone with interest and knowledge in computers and the program to run it.

No matter how you keep your records, it is important for you to decide

- **Where** you will keep your books and important farm information. It is important to keep your information organized and all together in a place where you can easily access it (office, desk, filing cabinet).
- **When** you will update your records. One farmer routinely records all of his information in his computer every Sunday afternoon. During the week, he jots notes in a small book he carries in his pocket.
- **Who** will record the information. If more than one person is recording, it is important that both or all of you do it the same way.
- **How** you will use your records. Will you use them to make farm decisions or just for income tax purposes?
- **What** information you want to be able to get from your records. You can use your information and prices to find out profit per animal, how much you can afford to spend per calf purchased next season, or almost anything else you want to know. Decide in advance how you want to use the information and store it in a form which you can use.
- **Why** your records are valuable to you. A farm is a business and good farm records are one of your most valuable assets.

Tell about your (or a neighbour's) farm. Answer the questions where? when? who? how? what? and why?

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## Performance Records on Beef Cattle

Performance records on an animal are most valuable when you use them to compare animals - animals which are the same age, have had performance measured at the same location and under the same management conditions (nutrition, health, etc.).

An animal's performance is determined by

- its genetic composition - half of which is inherited from the dam and half from the sire
- the environment (health, climate, nutrition, care)

**Weaning weight** can be used to evaluate the differences in milk production between cows and the genetic potential for growth of the calves. Usually, calves in a group are all weaned and weighed the same day. Therefore, they will all have slightly different ages. To allow for this, weaning weights are adjusted to a 205 day weaning weight.

$$\text{205 day weaning wt} = \frac{\text{actual weaning wt} - \text{birth wt}}{\text{age of calf in days}} \times 205 + \text{birth wt}$$

The age of the dam affects the milk production and also the weaning weight of the calf. Therefore, you may need to adjust the 205 day weaning weight to account for this.

Adjust the 205 day weaning weight as follows:

If the dam is this old at the time of birth of the calf		Add this weight to the 205 day weaning weight	
		Male	Female
2 years	21-33 mths	27 kg	24 kg
3	34-46	18	16
4	47-59	9	8
5-10	60-128	0	0
+10	over 128	9	8

These adjusted 205 day weaning weights can now be used to compare calves within your groups. Calves with higher adjusted 205 day weaning weights will be those which have the genetic potential for optimum growth in your herd. The larger the group size, the more valuable your comparisons will be.

Let's look at an example.

Allie is a heifer calf born to a four-year old cow. She was born 200 days ago with a birth weight of 30 kg. Today we weaned her at a weight of 190 kg.

To determine her adjusted 205 day weaning weight:

$$\begin{aligned} 205 \text{ day wt} &= \frac{(190 - 30)}{200} \times 205 + 30 \\ &= \frac{160}{200} \times 205 + 30 \\ &= 164 + 30 \\ &= 194 \text{ kg} \end{aligned}$$

Now we need to adjust for the age of the dam. Since she was four years old at the time of birth of the calf, we need to add 8 kg to our 205 day weight. Therefore, Allie's adjusted 205 day weaning weight is  $194 + 8 = 202$  kg.

Now, it's your turn.

May, born 220 days ago at 25 kg, is a heifer calf born to an eight year old cow. We weaned her today at a weight of 202 kg. What is her 205 day adjusted weaning weight?

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Now, let's compare May and Allie to the other animals in the same group. There are 40 calves in the group. The average 205 day adjusted weaning weight of these calves is 185 kg. The range is from 160 to 215 kg. What can you say about May and Allie?

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## Using Beef Performance Records

Productivity and profitability of beef production can be improved by using performance records. You can then identify and cull the lower producing animals, and concentrate on breeding using the top quality animals. There are many programs which offer performance programs to producers. Your local agricultural offices can give you more information on the programs currently available.

Cattle are produced under conditions which vary greatly from one farm to the next. Housing, feed, labour and marketing are determined by the individual producer. Because the conditions are so variable, each producer must determine which cattle perform best in the farm conditions.

Performance programs attempt to eliminate the environmental influences by comparing animals which are raised under the same conditions. By doing this, genetically superior and inferior animals can be accurately identified.

Beef herd improvement programs often include this information

- weaning index (index value is determined for each animal in the group; average is 100 and more desirable animals have higher indexes, less desirable have lower indexes)
- gain index
- composite index
- birth weight
- calving ease
- adjusted weaning and yearling weights
- calving interval.

These performance evaluation programs vary for bulls, heifers, steers and commercial producers. Each producer should use the system which is best suited to the individual's need.









**Unit Seventeen**

**The Beef Carcass**

**Roll Call**

Name a beef cut.

What do you think of when you hear the word “carcass”?

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The carcass is the end product you market. The purchaser is most interested not in your live animal, but in the carcass which results.

A 450 kg (1000 lb) animal will yield about 197 kg (435 lb) of beef. This beef includes the steaks, roasts, ground beef, stewing meat and other cuts of beef.

What happens to the rest of the animal which is not considered to be part of the carcass? This includes the feet, horns, internal organs, and so on.

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Products from the beef animal go into making many materials. Using an “X”, mark the items which you think contain some part of the beef animal.

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|--------------------------------------|--|--|
| <input type="checkbox"/> margarine   | <input type="checkbox"/> explosives      | <input type="checkbox"/> sausage         |
| <input type="checkbox"/> candles     | <input type="checkbox"/> fertilizer      | <input type="checkbox"/> toothpaste      |
| <input type="checkbox"/> glue        | <input type="checkbox"/> leather         | <input type="checkbox"/> buttons         |
| <input type="checkbox"/> ice cream   | <input type="checkbox"/> marshmallows    | <input type="checkbox"/> violin strings  |
| <input type="checkbox"/> insulation  | <input type="checkbox"/> medicine        | <input type="checkbox"/> piano keys      |
| <input type="checkbox"/> ink         | <input type="checkbox"/> cough medicine  | <input type="checkbox"/> make up brushes |
| <input type="checkbox"/> lipstick    | <input type="checkbox"/> sand paper      | <input type="checkbox"/> crayons         |
| <input type="checkbox"/> camera film | <input type="checkbox"/> fabric softener | <input type="checkbox"/> tires           |

## About Consumers

Consumers are those people who buy your product. Circle one of the following which might be a beef consumer.

- a) you
- b) your school cafeteria
- c) drug companies
- d) a Japanese restaurant
- e) the local grocery store
- f) feedlot
- g) all of the above.

Consumers are a complex lot. There are so many of them out there and they differ in many ways. They have different requirements, tastes, preferences and perceptions.

When choosing a beef product, the typical Canadian consumer looks at many things. Some of these are:

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Consumers perceive many things to be true about beef. Sometimes marketers use consumer perceptions to their advantage when designing their marketing strategies. For instance:

The “Natural Beef” label claims that this beef is more wholesome, healthy and environmentally friendly than the beef which is not “natural”. In fact both must pass exactly the same tests and standards for quality.

Understanding the consumer is very important for your success as a beef producer. You must know what he/she wants in beef. This is reflected in the grading system which rewards the producer for producing a product which is Canada Grade A. Theoretically, this is the lean, quality product the consumer wants.

How can you, as a producer, make sure you produce Canada Grade A beef?

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Keep in mind, that in order to produce the ideal market animal, you must feed it with the aim of finishing it as Canada Grade A1 - the highest priced grade. Your steer must be adequately finished, without excess fat through the brisket and twist, and a thin layer of fat covering the ribs. He should be widest through the stifle, and have superior muscling throughout.

Let's calculate the rate of gain your steer must have to reach the desired weight on your achievement day.

Present weight of steer	kg
Desired weight on Achievement Day	kg
Amount of weight needed to gain (desired wt - present wt)  _____ - _____ =	kg
Days to Achievement Day	days
Desired rate of gain (weight needed ÷ number of days)  _____ ÷ _____ =	kg/day

Do this calculation several times before your achievement day. Each time, adjust your feeding program to achieve the desired rate of gain. By doing this, you will make sure that your steer weighs the desired amount on achievement day.

For example:

Suppose your steer is actually gaining 1.1 kgs/day (2.5 lbs/day). Your calculations show that you should be feeding him so he gains 0.82 kgs/day (2.5 lbs/day). Therefore, you are feeding him too much. You need to adjust your feeding program to slow down his rate of gain or else he will be too fat on achievement day.

On the other hand, if he is actually gaining only 0.5 kgs/day (1.1 lbs/day), then you will need to increase your feeding program to make him gain weight more quickly.

Keep in mind that as a successful beef producer, you want to produce the most profitable beef carcass. That is, the one which brings the greatest return with the lowest cost of input.

Do you want your steer to gain weight more quickly or more slowly for achievement day? How will you do this?

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If you were a beef producer preparing your steer for market what would you do differently?

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## Making The Grade: The Factors Involved

Beef is graded and federally inspected to protect consumers and to give producers guidelines which they can follow to maximize productivity. Many factors affect the quality of a grade.

Following are some interesting scientific findings about factors which can affect the quality of grade.

### Genetics

When the effects of breed on the carcass quality were studied, researchers found

- If fed to the same age, heifers will have more marbling than steers.
- The type of breed affects the quality of the grade.

Heritability is the portion of a trait which is carried on from ancestors. Carcass characteristics vary in their heritability.

Characteristic	Heritability	%
Rib eye area (per carcass weight)	medium	25-40
Fat thickness (per carcass weight)	medium	25-40
Marbling score	high	40-60
Quality grade	medium high	35-45
Yield grade or lean yield	medium high	25-50
Lean tenderness or palatability	high	40-70

### Age or Weight at Castration

Calves castrated at nine months have been shown to have less marbling than calves castrated at either two or seven months of age.

### Health and Nutrition

- The time of year in which the animal is slaughtered can affect the quality of the grade.

Animals slaughtered in the winter months were found to have lower marbling and lower quality grades than those slaughtered in the summer. This is likely due to the stressful weather conditions which can be experienced in the fall and winter.

- Grade quality can be improved by increasing the energy in the diets of the animals at equal carcass weights.

Think about this. It is said that grain fed cattle are more tender than grass fed cattle. Have you ever noticed a difference?

- There is no proof that any of the growth enhancing substances currently on the market affect the quality of the grades.
- Implants help the animal reach market weight at a younger age and reach physiological maturity at a later age.
- There is no evidence to suggest that implants increase the chances of dark cutting.

Dark cutting is caused by increased stress levels created by stressful handling of the animal prior to slaughter. More dark cutters are found in the fall and winter months, likely because of the extreme temperatures.

You can avoid higher stress levels, and therefore dark cutting.

- Don't mix animals before slaughter.
- Avoid excessive noise, overcrowding and use of prods or whips when handling cattle.
- Protect the animals from extreme weather conditions.
- Don't hold the animals off feed and water for more than 24 hours before slaughter.
- Avoid dietary changes prior to shipment.

### **Post mortem handling**

Proper handling of the carcass after slaughter can also improve the grade. The carcass should be properly chilled to allow full development of the marbling. Wait 15 to 20 minutes between ribbing and grading for the freshly cut muscle to bloom or pick up oxygen and optimize the grading characteristics. This supply of oxygen to the muscle gives the meat its desirable red colour.

**Activity:****The Beef Carcass - A Quick Review**

To review some of the concepts mentioned in this unit, unscramble each of the following words. Each word was mentioned in this unit and is considered to be an important part of understanding the beef carcass.

smluec \_\_\_\_\_

estre \_\_\_\_\_

ccssaar \_\_\_\_\_

nmcsroue \_\_\_\_\_

cntpreions \_\_\_\_\_

eadrg \_\_\_\_\_

yuiatql \_\_\_\_\_