

Unit C: Meeting Nutritional Needs of Animals

Lesson 6: Feeding Practices

Student Learning Objectives:

Instruction in this lesson should result in students achieving the following objectives:

1. Identify the feeding strategy for young stock.
2. Identify the feeding strategy for cows.

Recommended Teaching Time: 1 hour

Recommended Resources: The following resources may be useful in teaching this lesson:

Naseri, Alimuddin. *Animal Nutrition Training Manual*.

<http://www.atnesa.org/docs/Alimuddin-Naseri-Animal-Nutrition-Manual.pdf>

List of Equipment, Tools, Supplies, and Facilities:

- Writing surface
- PowerPoint Projector
- PowerPoint Slides
- Transparency Masters

Terms: The following terms are presented in this lesson (shown in bold italics and on PowerPoint Slides 2):

- Dry matter intake
- Dry period
- Growth
- Overfeeding
- Underfeeding

Interest Approach:

How do our nutrient requirements differ depending on our age? How does it differ based upon the type of job/work that we do? Because of these differences, how does our diet change? How does our nutrient requirements compare to those required of cattle? Use this discussion to transition into the first objective.

SUMMARY OF CONTENT AND TEACHING STRATEGIES

Objective 1: Identify the feeding strategy for young stock.

Anticipated Problem: What is the feeding strategy for young stock?

(PowerPoint Slide 3)

- I. Generally, the pre-weaning period is very critical because of the high milk costs and high quality concentrates. Calves require a lot of attention. For a calf to produce to their highest potential, it must be fed and cared for correctly. Management can determine daily growth rates.

(PowerPoint Slide 4)

- A. Development of growth
 1. **Growth:** the increase in size of vital parts of the body such as organs and bones and the development of the rumen. Slow growth cannot be reversed later in life and has a life-long negative effect.
 2. Development growth is indicated by the size and shape of the body.

(PowerPoint Slide 5)

- B. Condition growth
 1. This is necessary to give an animal sufficient body reserves, essential for attaining high production levels after calving.
 2. Condition growth is indicated by the amount of fat, deposited in the body and measured by the body condition scoring method.

(PowerPoint Slide 6)

- C. Set back during their first year of life can be caused by poor feeding and management of calves after weaning. In the calf's second year, they may recover, but it is likely the calf will have lower production.

Use TM: 6-1 to assist in discussion of feeding young stock. Provide specific examples of what is fed to local young stock. Show examples of feedstuffs if available.

Objective 2: Identify the feeding strategy for cows.

Anticipated Problem: What is the feeding strategy for cows?

(PowerPoint Slide 7)

- II. The calving interval is about one year, therefore the first three months after calving is the cow's peak production period. Then after 90 days, the cow should be pregnant and continue milk production until month 10 after calving. The next two months are a dry period before the next calving. A negative energy balance

in the first stage of lactation causes the calving interval (and lactation period) to be slightly longer. From a nutritional standpoint, the lactation cycle is broken down into three periods:

(PowerPoint Slide 8)

- A. Dry period
 - 1. **Dry period:** time when the cow is without milk production.
 - 2. Although the cow is not producing milk, it is imperative that she is still in good condition at the time of calving. This ensures maximum production during early lactation.
 - 3. The recommendation is to restrict feeding (withhold concentrates) one day prior to drying-off. This will assist the lowering of milk production and decreases the risk of mastitis.

(PowerPoint Slide 9)

- 4. This period allows the cow to recover from the previous lactation period and to form sufficient body reserves for the next one. Level of nutrition during pre-calving depends on
 - a. Overall nutrition level related to production during lactation: the condition of the cow should be good at the moment of calving. A pregnant cow in poor condition at the end of lactation needs more feed during the dry period than cows already in good condition.
 - b. The length of the dry period: The recommendation is two months of dry period. A long dry period appears to have a negative effect in the next lactation.
 - c. Demands of the cow and calf just before calving: during the last two months of pregnancy, the uterus and calf develop rapidly. Feed requirements depend on the condition of the animal.

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- 5. **Overfeeding** during the last month of pregnancy is costly in terms of money, potential production performance, health and fertility during the first lactation and will therefore affect the total lactation performance. It is wise to save on concentrates during the dry period.
- 6. **Underfeeding** during the dry period will result in low yield during the next lactation. This cannot be corrected during the lactation period. Underfeeding or unbalanced feeding can also disrupt the breeding cycle and influence the health of the animal.

(PowerPoint Slide 11)

- B. Early lactation
 - 1. The pattern of milk production corresponds to the pattern of milk requirements of the calf.
 - 2. The physiological drive of a cow to produce milk is strongest in early lactation due to biological reasons. Feeding during this period is important.
 - 3. Pre- and post-calving feeding affects the peak yield. Improved milk yield in the early lactation is associated with a proportionally greater partition of nutrients towards milk at the expense of body reserves.

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4. The DMI (**Dry Matter Intake**) is usually very much reduced just before and immediately after calving and is perhaps only 45-50% of normal DMI. Appetite after calving recovers gradually, reaching full level at about 10-12 weeks after calving.
5. Supplementation of concentrates with good quality roughage has the greatest effect on milk production when the cow is in early lactation.
6. If a cow starts to gain considerable weight or condition during early lactation, it is likely that she is expressing her milk production potential.

(PowerPoint Slide 13)

7. Some important aspects of early lactation include
 - a. Peak yield: the level of possible production is decided by the level of peak yield, which depends on
 - 1) Potential of the animal
 - 2) Body condition at calving
 - 3) Level of feeding during early lactation

(PowerPoint Slide 14)

- b. Prediction of lactation yield: the pattern of lactation is being established during early lactation. The milk yield rises to a peak around week 5 of lactation, persists for 3-4 weeks, and then begins a slow decline.
- c. Fertility status: Fertility status is reduced during periods of weight loss. When the average body condition score drops, fewer cows will come into estrus and the conception rates is about 50%. Weight gain has a positive effect on estrus and conception.

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- C. Mid- and late lactation
 1. In mid lactation, between 12-20 weeks after calving, the nutrient requirements for milk production are less pronounced. As a result, extra feed is partially converted into extra milk and partly for recovery of bodyweight.
 2. It is not justified to increase the feeding level of a an animal with a low or decreased peak yield in the hopes of increasing that yield.

(PowerPoint Slide 16)

3. In no way should feeding be based on calculated production requirements.
4. During late lactation, the quantity and quality of supplementary feeding may be adjusted again. Although advanced production systems will allow the animal to regain more bodyweight, until reaching an acceptable body condition score.

Use TM: 6-2 to review the phases of lactation and discuss with the students the types of feedstuffs fed to the cow at each lactation phase.

Review/Summary: Focus the review and summary of the lesson around the student learning objectives. Use the questions on **PowerPoint Slide 17** to have students explain the content associated with the objectives.

Evaluation: Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as having a local veterinarian come to class and discuss with the students the proper nutrient requirements of the young stock or cow during each phase of growth and development. Students can also apply what has been learned with their own cattle or possibly those on the school farm. A sample written test is included.

Answers to Sample Test:

Matching

1. C
2. B
3. D
4. E
5. A

Fill-in-the-blank

1. Condition growth
2. Calving interval
3. Requirements
4. Bodyweight

Short Answer

Dry period, early lactation, mid- to late-lactation

Feeding Practices

Name: _____

Matching: Match each word with the correct definition.

- | | |
|----------------------|-----------------|
| a. Dry matter intake | d. Overfeeding |
| b. Dry period | e. Underfeeding |
| c. Growth | |

- _____ 1. The increase in size of vital parts of the body such as organs and bones and the development of the rumen.
- _____ 2. Time when the cow is without milk production.
- _____ 3. Providing the animal with an excess amount of nutrients.
- _____ 4. Providing the animal with lesser than required amount of nutrients.
- _____ 5. The amount of feed the animal has consumed on a dry-matter basis.

Fill-in-the-blank: Complete the following statements.

1. _____ is indicated by the amount of fat, deposited in the body and measured by the body condition scoring method.
2. The _____ is about one year, therefore the first three months after calving is the cow's peak production period.
3. The pattern of milk production corresponds to the pattern of milk _____ of the calf.
4. Although advanced production systems will allow the animal to regain more _____, until reaching an acceptable body condition score.

Short Answer: Answer the following question.

What are the three periods the lactation cycle is broken down into?

FEEDING YOUNG STOCK

- Development of growth
 - The increase in size of vital parts of the body such as organs and bones and the development of the rumen
- Condition growth
 - Indicated by the amount of fat, deposited in the body and measured by the body condition scoring method

LACTATION PHASES

- Dry period
 - Bringing the animal in condition (2 months) to reach maximum body score at calving to have sufficient body reserves during early lactation
- Early lactation
 - Development of milk production-potential as (2.5-3 months) expressed by the peak yield (lead-feeding).
- Mid-late lactation
 - Exploitation of milk production potential (7-7.5 months), recovery from early lactation and preparation for next lactation by restoring body reserves.