Feed and feeding management of small ruminants

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The objective of the training is:

- To create awareness on the techniques of exploit and promote feed and feeding management of sheep using the available resources.

Feed resources and Feeding small ruminants

Industrial byproduct:

-Molasses,
-Oilcakes,
-Milling by-product and
-Brewery by-product.

The products are very important in fatten animal ration.

✓**Cereal forage :**

Any type of cereal which is used for human food can be used for animal fattening.

✓**Hay:**

-Good hay has 15-16% moisture content.
-It is greenish- yellow smells pleasant, and
- contains many leaves.

Improved forage:

mixture of improved

- ✓Grasses-eg.oat,rhodes,desho,…
- ✓ legumes forages-vetch,lupin,…
- ✓shrubs forage that are used in fatten animal feed-three lucern,sasbania,…

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Crop residue Nutritive variability

quality varies on :

- genotype,
- environment, and
- morphological fractions.
- Species /genotype. Legume straw/ residue, in general, have higher feeding values compared to cereal straws.

- Cultivar. Even with the same species, crop residue qualities may vary depending on cultivar.
- Soil fertility. The soil on which a crop is grown influences residue quality. fertile soils .
- Fertilizer application : improves straw/residue quality.
- Rainfall amount(leaf-to-stem)
- Stage of harvest.
- Storage conditions.
- Morphological fractions. (Leaf fractions are more nutritive)

Chemical Upgrading of Straw

- **Treating straw with molasses**

- mix molasses with twice as much water,
- sprinkle this on the crop residues. Alternatively
- Treat only as much straw as you need each day.

- **Treating by urea**
  - **Urea +water+strow**
  - **5kg+80lit+100kg=strow**

- Spread a layer of chopped straw on a large, thick plastic sheet and sprinkle it with a mixture of urea and water.

- Add another layer for straw and sprinkle with more urea and water. Repeat for several layers. For 100 kg of straw you will need 80liter buckets of water and 5 kg of urea.

- and side of the pile so it is scaled completely. Put a stone on it to keep it air tight. And leave for 3 weeks.

Treating by alkali

- ✓break the bond between lignin and cell wall polysaccharides
- ✓ hydrolysis of the polysaccharide (i.e., cellulose and hemicelluloses) and free them from lignified matrix, thereby nullifying the effect of lignifications on digestion
- ✓Treatment with chemicals makes cell walls more susceptible to attacks by rumen microorganisms resulting in better digestibility and intake.
- ✓NaOH treatment significantly improved nutritive value and dry matter intake (DMI).

Intake and Digestibility

Intake and digestibility are also influenced by

- straw characteristics such as chemical composition,
- morphological components,
- palatability,
- In addition to this animal factors like species, live weight, age, type and level of production.

Factors influencing intake and digestibility are

- **Selectivity.** Leaves are preferred to stems.
- Particle size.
- Eating rate.; stems in wheat straw, are eaten at a slower rate than leaves.

Selectivity and Intake

- ✓Chopping of straw decreases bulk, increases consumption rate
- ✓The animal is forced to consume what it is provided with, leaving it little room for selection,

Nutrient requirement of animals

Traditional system are ecological well-balanced, but sometimes there are shortages of specific nutrient such as minerals. If this is the case, giving an appropriate supplement can have a big response. In order to develop new feeding systems it is necessary to understand the nutrient requirement of the animals and the ways in which these can be satisfied.

Synonyms

Dray matter (DM) : is the weight of food left after all the moisture has been removed by heating.

Joule: Energy measurement ,

1KJ (kilo joule)= 1000 joule

1MJ=one million joules

GJ (giga joule)= billion joule

To change Mcal to Mega jule multiply by 4.184

1.. for maintenance , mcal per day = $0.077(BW_{kg})^{0.75}$

2. for weight gain , Mcal per day = $0,0635 (BW_{kg})^{0.75}$

Nutrient requirement of fatten animals

The feed requirement of fattened animal depends on

- The weight and age of the animals
- Daily weight gain
- Stage of fattening period
- Temperature
- Species type

There are six main components which need to be supplied in ruminant rations. These are

- ✓ Energy
- ✓ Protein
- ✓ Fiber
- ✓ Minerals
- ✓ Vitamins and
- ✓ Water

Protein

- All animals require protein for basic body building
  - The total amount of protein is known as Crude Protein (CP).
  - Some of the CP is not digestible and is lost in the feces.
  - The remainder is Digestible Crude Protein (DCP).

Fiber

Is not strictly a nutrient, but without enough the rumen may stop working properly. Forage-based rations generally contain adequate fiber.

Minerals

Calcium and phosphorus are the two most important minerals for ruminants.

Salt :

The need for salt is 0.25-1% of ration.

Vitamins

• Vitamin is necessary for a functional immune system. And has been recognized as an essential nutrient for all species of Animals Vitamin A is usually adequate in diets containing green forage.

• Vitamin D is available through the diet as a result of exposure to sun light. Sun-cured hay is an excellent source of vitamin D. Natural forage-based diets usually supply adequate amounts of vitamin E.

Water:

- If an animal is thirsty, it will eat less.

The amount of water an animal need depends on:

- ✓ Its size: Large animal need more water
- ✓ The type of feed :Animal feed with dry hay need more water than those fed on fresh forage
- ✓ How is it kept: Animal that graze outside need to drink more than one kept in the shade

Thanks