Unit C: Meeting Nutritional Needs of Animals

Lesson 5: Understanding Feedstuffs

Terms

- Agricultural by-products
- Animal origin
- Cereal grains
- Conserved roughage
- Fodder crops
- Grasses
- Industrial roughage
- Legumes
- Miscellaneous feedstuffs
- Plant origin
- Pulses

What are plant and animal origin feedstuffs fed in cattle production?

- Feedstuffs are classified in many different ways. One classification system is by origin and includes two categories:
  - ***Plant origin*** – include primarily roughages, with some concentrates
    - Farm products
      - High moisture content – grass, tubers, roots, silage.
      - Moderate moisture content – wilted silage.
      - Low moisture content – hay, straw, stover.
      - Miscellaneous – fruits and pulp.

What are plant and animal origin feedstuffs fed in cattle production?

- By-products from agricultural industries
  - From the sugar industry – pulp and bagasse.
  - From the brewing industry – brewers and distillers grains
  - From the fruit juice and packing industry – fruit pulps.
- Artificial dried fodders
  - Not often fed
  - Some use dried pellets, especially for horse breeding.

What are plant and animal origin feedstuffs fed in cattle production?

- ***Animal origin*** – feedstuffs high in energy and protein; generally considered concentrates
  - Milk and milk by-products
  - Products from the meat and carcass industry – meatmeal, bonemeal, blood meal and feather meal
  - Products from the fish industry – fish meal and shrimp meal
  - Manure of poultry – can be used in ruminant ration

What roughages are fed in cattle production?

- Roughages can be divided into seven groups:
  - ***Grasses*** (pastures) – main supplier of roughage
    - Abundantly available
    - Good quality
      - If poor quality, usually because of
        - Type of grass – some gasses in temperate climates have less protein and lower NFE, while the CF is much higher in some temperate grasses
        - Maturity – can be reached earlier depending on the climate and soil
        - Management factors – including fertilizer use and harvesting method
        - Conservation methods – climates can provide for poor silage making

What roughages are fed in cattle production?

- Cheapest source of feed
- Low digestibility – can cause
  - Poor production
  - Lower fertility
  - High disease incidence
  - Disappointment
- Can be used in many methods
  - Grazing
  - Selective grazing
  - Silage

What roughages are fed in cattle production?

- ***Legumes*** – includes lucerne, alfalfa, and clovers
  - Higher protein and mineral
  - Lower crude fiber
  - Does not allow close grazing
  - May require irrigation
  - May be used for hay
  - Less suitable for silage

What roughages are fed in cattle production?

- ***Fodder crops*** – roots, beets, carrots, cassava, turnips, Swedes, mangolds, tubers, fodder grains (maize, sorghum, oats, rye), and Brassica species (kale, cabbages, rape)
  - Produces high yields
  - Often irrigated
  - Can be used fresh or as silage

What roughages are fed in cattle production?

- Roots, tubers, and Brassica species
  - Low DM%
  - Rich in energy
  - Low CF
  - High digestibility and palatability
  - Low protein, mineral, and vitamins
- Fresh/green fodder crops
  - Important in high roughage rations
  - May cause diarrhea
  - May decrease the digestibility of other fiber in the ration

What roughages are fed in cattle production?

- Fodder grains
  - High in energy
  - Quality depends on quantity and maturity of the seed
  - Sometimes used for human consumption
  - Low protein
- Sorghum
  - Should not be grazed the first 3-4 weeks after cutting
  - May cause poisoning because of prussic acid

What roughages are fed in cattle production?

- ***Agricultural by-products*** – agricultural products that cannot be utilized by humans
  - Most important parts are the stems and leaves
  - Utilized fresh or dry, cut or grazed, in the field or in the stable/barn
  - Straw and legumes
    - High nutritive value if properly handled and stored after harvest

What roughages are fed in cattle production?

- Cereal grains give straw, stubble, stovers, and chaff
  - Generally quite low amounts
  - Low Phosphorus
  - Calcium is difficult for animals to absorb
  - High Silicium decreases digestibility

What roughages are fed in cattle production?

- Sugar beet tops and residues
  - Used to balance energy
  - Often from sugar factories
  - Includes transport costs
- Low feeding value
- Need supplementation

What roughages are fed in cattle production?

- ***Conserved roughage*** – hay or silage
  - Loose 30-50% of dry matter through continued respiration, leaching by rain, mechanical handling and self–heating
  - Energy and DCP losses are even higher – up to 75%
  - Must determine extra costs for equipment

What roughages are fed in cattle production?

- ***Industrial roughage*** – by-products from agricultural industries
  - Disadvantage – high water content
    - Makes transportation difficult
    - Feeding value is extremely variable
  - Generally limited to farming operations in close proximity to industrial plants

What roughages are fed in cattle production?

- ***Miscellaneous feedstuffs*** – chicken manure or litter
  - Includes excrement of poultry – undigested parts of feed, high NPN products, wasted feed and bedding material
  - Variable feed value

What concentrates are fed in cattle production?

- Concentrates fed in cattle production include the following:
  - ***Cereal grains***
    - Have DM 85-90%
    - Low levels of CF
    - Low fat content
    - Main function – provide energy
    - Disadvantages
      - Strong competition for human needs and the feeding of animals
      - High priced

What concentrates are fed in cattle production?

- ***Pulses*** are the edible seeds of legumes, like lentils, beans, peas and chickpeas. They are annual leguminous crops yielding from one to twelve grains or seeds of variable size, shape, and color within a pod. Pulses are used for food and animal feed. The term "pulse", as used by the Food and Agricultural Organization (FAO), is reserved for crops harvested solely for the dry grain. Each of these pulse crops come in a wide range of colors and sizes.
  - High protein content
  - May contain high levels of fat
  - Crude Fiber is decreased if hulls are removed
- Other seeds and parts
  - Examples: sunflower seeds and cotton seeds
  - High energy content when dehulled

What concentrates are fed in cattle production?

- By-products from agricultural industries – 6 main groups
  - Residues from oil and fat industries
    - Examples: cakes and meal
  - By-products from milling industries
    - Examples: bran, pollard, polishing, corncob meal
  - By-products from starch industries
    - Examples: gluten and potato residues
  - By-products from sugar industries
    - Examples: beet pulp and molasses
  - By-products from the fruit industries
    - Examples: citrus pulp, pineapple pulp
  - Miscellaneous products
    - Examples: bean curd residue

What concentrates are fed in cattle production?

- Animal products
  - Milk and milk by-products
  - Slaughter house by-products
  - Fish products
- Industrial feedstuffs
  - Source of NPN
  - Examples: urea and biuret

Review/Summary

- What plant and animal origin feedstuffs are fed in cattle production?
- What roughages are fed in cattle production?
- What concentrates are fed in cattle production?