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Lecture title: Animal feedstuffs

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Summary:

Feed stuffs:- they are considered that any feed can be used for animal feeding. These materials may include any material that farm animal can digested, absorbed and metabolized either for maintenance or for production. Generally, animal feedstuffs can be divided into two main parts which are:-

1.Concentrates :-

These types of feed contain high percentage of protein and soluble carbohydrates and low percentage of crude fiber **(less than 18%)**.

Concentrates include cereals, such as wheat, barley, corn as well as meals. **Meals are the residues of oily crops after the extraction of oil from these crops such as soy bean meal ,** sesame meal, cotton seed meal and sun flower meal. Concentrates may contain protein of animal sources as well as animal by products such as blood and bone meal, feather meal. and include vegetable sources it may include sugar beet residues, wheat bran, molasses, rice husks and rice bran.

2. Roughages :-

It refers to those feed which contain high percentage of crude fibers **(more than 18%).** It is nutritional value is low and is given to the ruminants rations as bulky material. **It means , the limited between concentrated and roughages is 18 % crude fiber**

There are two types of roughages:

A. Green feedstuffs :-

It includes grasses of various kinds and the clover, alfalfa as well as the **silage which are fermented grass preserved away from air in special siloes.** Silage is considered as a palatable feed for animals. Yellow corn silage is the most famous silage.

B. Dry feedstuffs :-

Straw and plant stems are examples of dry roughages which are produced after the harvest of field crops. Also, **hay** is dry roughages, these materials are dry feed substance. **The purpose of drying is to prolong time of preservation**, so it is stored at summer and being given to the animals at winter. Examples of hay is alfalfa hay and oat hay.

Approximate analysis of feedstuffs :-

It is regarded as a series of chemical analysis that are performed on feedstuff to determine percentages of feed compounds such as protein , fat and carbohydrates.

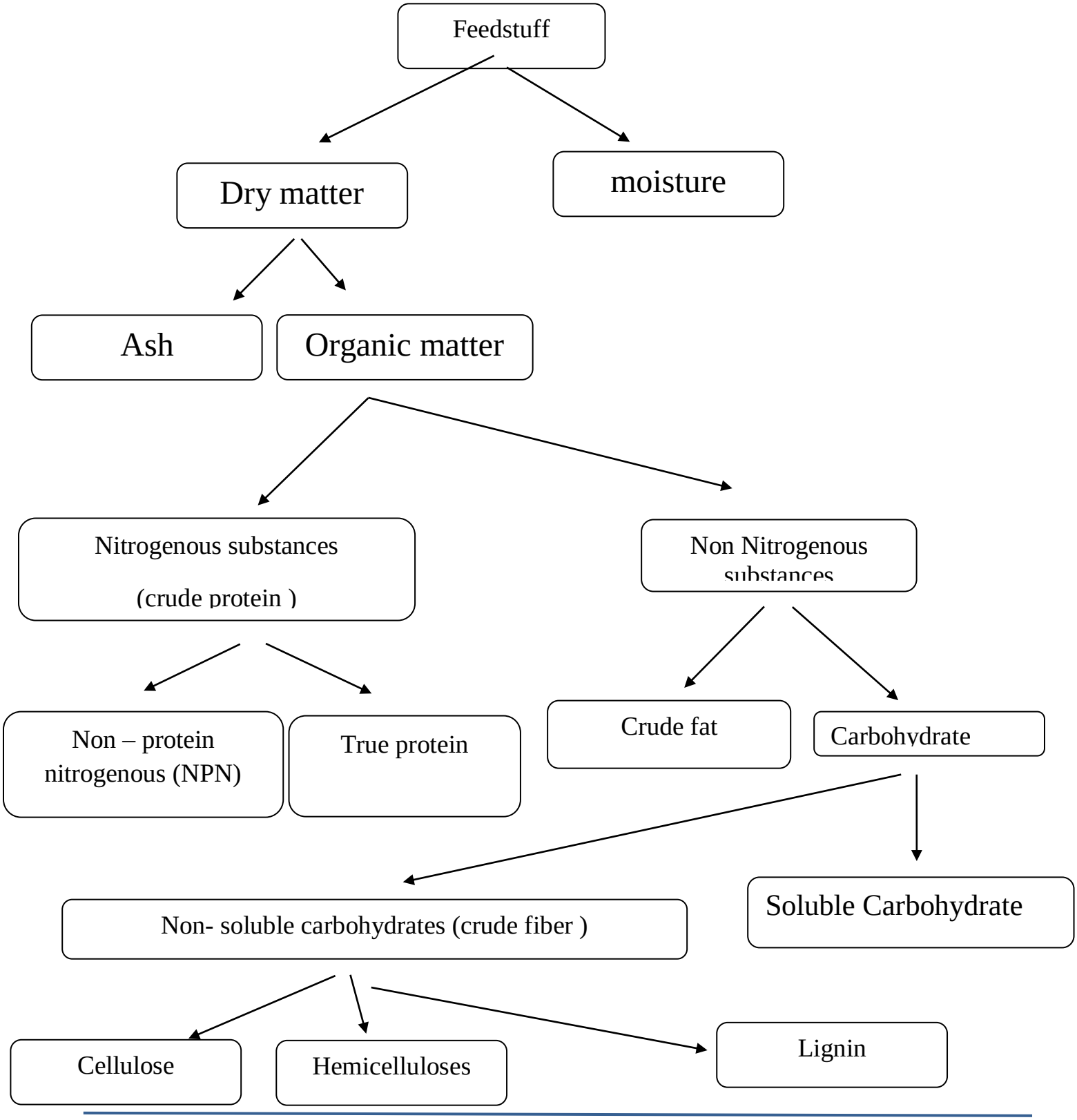
The purpose of feedstuff analysis as follows :-

1. To determine the real nutritional value of the ration or feedstuff.

2.To detect the cheat of the feedstuff.

3. To determine the suitable price of the feedstuff.

A diagram showing the components of the feedstuff



1.Moisture :-

It is the free water present in the feedstuff. It can be estimated by drying feedstuff sample in oven at certain temperature for (150°C) for half an hour .

2. Dry Matter :-

It is the residual part of feedstuff sample after the total exclusion of moisture. The dry matter contains all the portions of feedstuff sample except the water.

Dry matter = 100 - moisture

3. Ash :-

It is the non-organic part of feedstuff sample which is the residue after the burning of the sample in muffle furnace. Ash contains salts , minerals and silica .

4.Organic matter :-

It is the non- metallic portion of dry feedstuff involving crude protein, crude fat , carbohydrates and crude fiber.

Organic matter = protein + fat + fiber + carbohydrate

Or) Organic matter = Dry matter – Ash

5. Crude protein :-

It is all the nitrogenous substances present in feedstuff sample. It includes true protein and non- true protein (Non- protein nitrogenous-NPN) such as Urea.

6. Crude fat :-

It includes all compounds that can be dissolved in organic solvents (such as ether, benzene, hexane, etc.).it includes Fats, Oils, waxes, and vegetable pigments.

7. Carbohydrate :-

Carbohydrate can be divided into two main parts :

A- Soluble Carbohydrate :-

These are carbohydrates which are capable of dissolving in diluted acids and bases. Glucose, sucrose, and starch are examples of this type of carbohydrates.

B- Non Soluble Carbohydrate (Crude fiber) :-

These carbohydrates do not dissolve in diluted acids and basis but it dissolves in concentrated acids and bases .

Crude fibers consist from three components, it is Cellulose , hemicellulose and lignin .