

# ***HAY , SILAGE AND HAYLAGE***

# HAY

- ▶ Hay refers to grasses or legumes that are harvested and dried and stored as 85-90% dry matter.
- ▶ It is green in colour, leafy and free from mustiness.
- ▶ If well cured to 20% or less moisture at the time of storing, best quality hay can be obtained

# Kinds of Hay

- ▶ **1. Legume hay-** higher percentage of digestible nutrients, more digestible protein, vitamin e, carotene, calcium.
- ▶ Suitable crops- lucerene, berseen, cow pea and soyabean.
- ▶ **2. Non-legume hay-** less palatable and less protein, mineral, vitamin than legume hay but rich in carbohydrates.
- ▶ Example- oat, barley, bajra, sorghum and many grasses.
- ▶ **3. Mixed hay-** it is made by mixing crops of legumes and non-legumes. The nutritive value depends on the type of crops used.

# Qualities of good Hay

- ▶ 1. Should be leafy and green in colour.
- ▶ 2. It should be soft and pliable.
- ▶ 3. The crop for hay making should be cut at flowering stage, near maturity.
- ▶ 4. Should be free from weeds, stubbles, dust and moulds.
- ▶ 5. In a good quality hay moisture content should not exceed 15% and should possess characteristic smell.



Field curing method



Hanging method



Electrical drying method



Cocks and stacking method

# Methods of hay making

- ▶ **1. Field curing-** the herbage is allowed to lie in field for few hours until it is well wilted.
- ▶ Then it is raked into small loose heaps called windrows.
- ▶ Windrows can be turned after few hours to fasten the curing.
- ▶ **2. By hanging-** when hay is hung, all the rain water runs off quickly and drying is rapid. The methods applied are-
  - ▶ A) on tripod b) on farm fences C) on racks
- ▶ **3. Cocks and stacking-** hay is tied into bundles to minimize the loss of leaves due to shattering.
- ▶ When the moisture content is reduced bundles are kept in stack.
- ▶ **4. Modern method-** (a) electrical drying- moisture content is reduced to 12% in hot chambers at 200 celsius.
- ▶ (B) shade drying- material is dried in thin layers for quick drying.

# Silage



- ▶ Silage is a fermented feed resulting from storage of high moisture green crops under anaerobic conditions in a silo.
- ▶ The process of preserving green fodder by anaerobic conditions in a Silo is known as Ensiling.
- ▶ Silo-An air tight to semi-air tight structure for the high moisture feeds as Silage.

# Principle of silage making

- ▶ When the green chopped forage is stored in a silo, within 4-5 hours all the O<sub>2</sub> is used up by living plant cells and CO<sub>2</sub> increases rapidly for about next 48 hours.
- ▶ Due to production of other metabolites various gases like CH<sub>4</sub>,CO,NO, etc start to produce and CO<sub>2</sub> begins to decrease.
- ▶ This condition promotes optimum production of organic acids like Lactic acid,acetic acid and formic acid by bacteria to prevent decomposition.



# Advantages

- ▶ 1- Grass silage preserves 85% or more feed value.
- ▶ 2-IT is less time consuming.
- ▶ 3-it is highly palatable and laxative.
- ▶ 4-It is more economical.
- ▶ 5-It requires less storage space.
- ▶ 6-fear of loss due to fire is reduced.
- ▶ 7-green fodders can be preserved for very long period.

# Methods of Ensiling



- ▶ -Green fodder is harvested at a stage when it contains about 60-65% moisture.
- ▶ -Chaffed fodder is filled in silos of various types-Pit silo,trench silo,bunker silo.
- ▶ -The mass is properly packed in silos so that there is very little space for entering of air.
- ▶ -The mass is trampled down with tractors.
- ▶ -Then the material is sealed with straw or mud or polythene sheets.
- ▶ -Silage is ready after 2 to 3 weeks .

# Haylage

- ▶ -It is a low moisture silage.
- ▶ -Made from grass or legume that is wilted to 40-45% moisture content before ensiling.
- ▶ -It is similar to silage except that it is lower in moisture.

# THANK YOU

- ▶ Reference - BASANT BAIS ( LPM )
- ▶ Photos - GOOGLE