



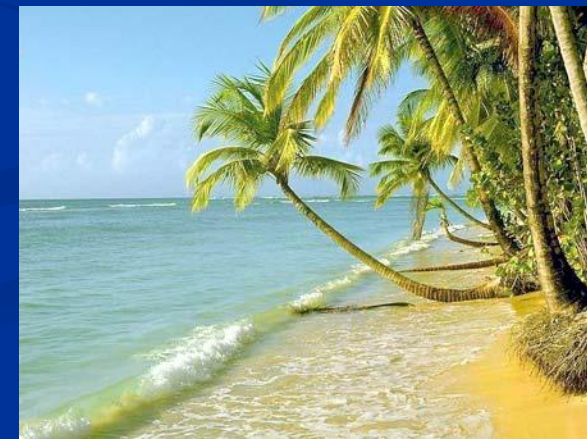
SILAGE

Prof.Dr. M. KEMAL KÜÇÜKERSAN



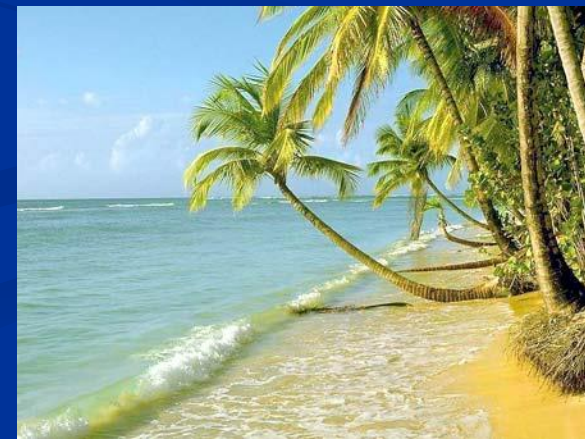
WHAT IS SILAGE ?

The fermented feed obtained by storing the green feed containing sufficient dry matter (30-40%) under anaerobic conditions after harvesting is called silage feed.





Question one WHAT IS SILAGE ?





There are three important factors in making silage feed .

1. Chemical composition of silo feed,
2. Oxygen input to silo feed,
3. Activation of bacterial population



Continuation of fermentation depends on the composition of roughage. In order to provide good protection in fermentation,

lactic acid production in the silage feed should be high,
pH should be low,
sugar content should be sufficient and
buffer capacity should be low.



Question two;
what should be done to maintain good
fermentation

lactic acid production in the silage feed
should be high,
pH should be low,
sugar content should be sufficient and
buffer capacity
should be low.

ADVANTAGES OF SILAGE

- 1. Loss of nutrients in silage feeds is minimum.
- 2. Better quality feed in bad weather conditions.
- 3. In the winter months when there is no green feed, in dry summer months and even in cases where pasture is inadequate, animals are provided with high quality, cheap and rich water-rich feed.



- 4. When dried, the feeds that harden enough to be eaten by the animal become softer and silent when consumed.
- 5. For fermentation, green fodders retain their freshness and softness, resulting in a delicious and fragrant, slightly laxative feed and eagerly consumed by the animal.



- 6. Silage feeds provide maximum yield from each acres of land.
- 7. Silage is easier to store than hay and requires less space per kg DM.
- 8. The field is emptied early, so a second crop can be prepared for planting.
- 9. No fire hazard.
- 10. When the silo feed is obtained properly, it can be stored for a long time without losing its value.

DISADVANTAGE

- 1. In order to produce a high quality silo feed, structures called silos are needed. The construction of said structures is more expensive than the drying method.
- 2. Silo feed contains less vitamin D than the sun-dried herb.
- 3. The same amount as it contains a high level of water requires 3-4 times more labor for the service of the dry substance.
- 4. During silos, it is necessary to use additives and condoms especially for forage crops which are difficult to silage. These costs extra.

OPTIMUM CONDITIONS FOR THE FORMATION OF MILK ACID BACTERIA

- 1. Withering and Degradation of Green Plants
- 2. Anaerobic environment
- 3. Heat
 - hot milk acid bacteria
 - cold milk acid bacteria
- 4. pH: pH 3.8-4.2
- 5. Carbohydrate Rich Environment

SUITABLE FORAGE PLANTS FOR SILO FEEDING

- 1. The most suitable feed for silo: CORN YIELD, SUGAR BEET LEAVES, SUGAR BEET HEADS
- 2. Less suitable for silo: GRAIN AND GRAIN STRAWS
- 3. Forages that are difficult to silo: BODY MORTARS AND SOME WHEATS:, SUNGLASSES AND HERB
- 4. The most difficult to silo feeds: Alfalfa, Corrugated and Fig



CRITERIA THAT MUST BE IN GOOD SILAGE

- 1. Anaerobic Environment
- 2. Odor (vinegar acid)
- 3. Color (olive green)
- 4. pH
- 5. Tissue Integrity of the Plant





Good silage



Bad silage



Silage
spoilage







silage material stays in the barn for a maximum of 24 hours

What do you think this is, it is the best example of bad silage material.





Do you think silage should be like this

CORN PRODUCTION SILAGE

- The advantages of corn silage can be listed as follows;
 1. As it has a high energy content, it allows less use of concentrated feed.
 2. Increases the flavor of feed.
 3. It contains sufficient energy for the production of milk and the continuation of the body condition and sufficient cellulose for a regular rumination.
 4. It is easier to manage and use than meadow and other legumes.
 5. Nutritional value of corn silage is also high.

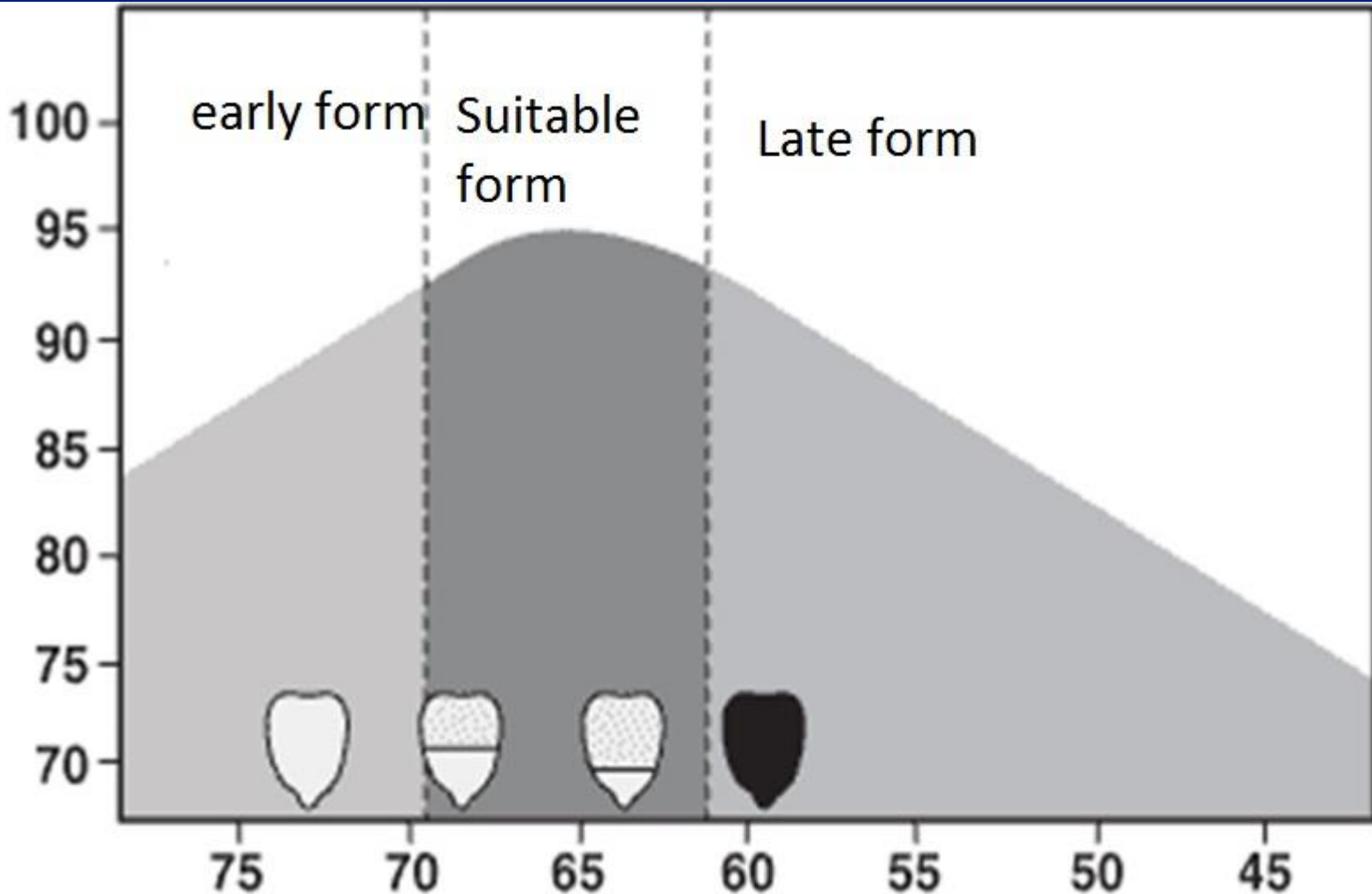


- Corn yield can be harvested in 4 different periods.

1. Milk-granulated period,
2. Dough consistency,
3. Dough consistency last period,
4. The period can be listed as the full hardening period.

The most appropriate form time in corn yield is the period in which a black layer is formed where the grain meets the cob.

Graph showing the forming time in silage material



Corn Yield Silage Production

- Corn harvested milk is chopped 4-5 cm long during the formation period. Then the feed material is left in sunlight for 1-2 hours and the amount of dry matter is increased.

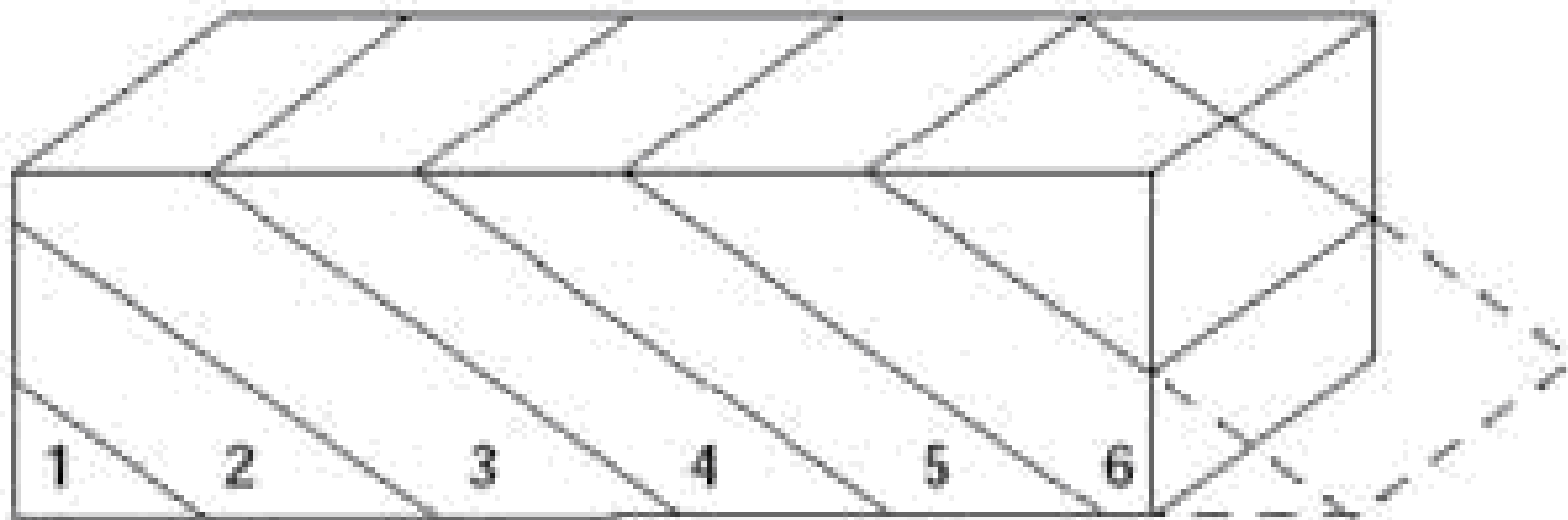


Corn Yield Silage Production

- A small amount of water (optimum moisture content of 60-65%) corn is filled into the silo pit by going through the tractor several times and a good compression is made. Following this process, depending on the height of the silo pit, the corn products are filled into the pit and compacted with the help of a tractor.



Graph showing the forming time in silage material







16 Preform sample collection



the transportation of the harvested grass to the silo



Spreading and compacting weed





Covering the silo with soil

kersan

32



silo material left to stand by ditching around



The operation of the meadow forage harvester



16. meadow grass form



Loading the
cut material
into the trailer



16.10.2022

Prof.Dr. Kemal Küçükersan

Loading the cut material into the trailer

37



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Loading the cut material into the trailer³⁸



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Loading the cut material into the



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Prof. Dr. Kemal Küçükersan

Loading the cut material into the trailer

40



The grass that was harvested and brought into pieces is being downloaded



The grass that was harvested and brought into pieces is being downloaded



The grass that was harvested and brought into pieces is being downloaded



The grass that was harvested and brought into pieces is being downloaded



16.10.2022 compaction of silage material with Prof. Dr. Kemal Küçükarslan 45



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46

compaction of silage material with



16.10.2022

Prof. Dr. Kemal Küçükörsan

compaction of silage material⁴⁷ with



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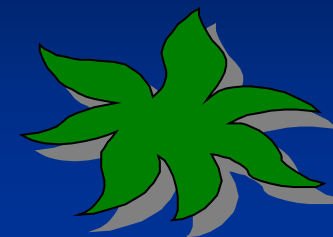
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compaction of silage material with





Clover Silage



- Alfalfa silage is the most difficult feed material.

Protein level



Carbohydrate level



- The optimal time for clover is the beginning of flowering (When flowering reaches 1/10 level) or the full flowering period

Clover Silage Production

- After the alfalfa is cut, it is filled into the silage pit after a pre-withering. After laying a layer of 10-15 cm thickness in the silage pit, the process of compacting is done with the help of the tractor.



Clover Silage Production

- In the alfalfa silage, additives such as molasses, barley and whey are applied to the feed material by spraying or sprinkling to enrich the carbohydrate environment. After this process, approximately 10-15 cm thick clover is laid in the silage pit and trapped by tractor. These operations are continued until the silage pit is filled.



POINTS TO BE CONSIDERED IN DETERMINING SILO PLACES

- 1. The silo should be near the barn.
- 2. Silos should not be near sherbet and manure pits. Otherwise, leakage and silo feed may break down.
- 3. Ease of filling and emptying.
- 4. The silo should be built in a slightly sloping place. If it is to be carried out in a flat place, it is necessary to give 1-2% slope to the silo floor, especially for the discharge of rain water.
- 5. Very good ventilation is required in stables where silage is used.



ADDITIVES IN SILAGE

- 1. Molasses
- 2. Whey
- 3. Sugar
- 4. Carbohydrate rich substances





ADDITIVES IN SILAGE

- 1. **Molasses** (When molasses are added to the silo feed, it is diluted 3-4 times and sprayed on the feed to provide a homogeneous mixture).
- 2. **Whey** can also be used directly in silage feed or in the form of dried.
- 3. **Sugar** can be 2-3% added to the silage .
- 4. **Carbohydrate rich substances**; For this purpose, animal beet, turnip, potato and various cereal fractures can be used as silo additives.

SILAGE CONSUMPTION

- Dairy cows can be fed a maximum of 40 kg (wet) silage feed. However, the ideal ratio is 15-30 kg / day. 15 kg / day for fattening cattle and calves, 3-4 kg / day for sheep and 5 kg / day for silage.

Important informations

- If the silage material is not opened, it can be used even after a year.
- Easily silaged forages can be opened and used one month after the earliest, while those that are made difficult can be opened and used two months later.
- If the cutting time is exceeded in corn harvested silage, it is classified as feeds that are difficult to silage.
- all green feeds can be silaged