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QUESTIONS AND
ANSWERS ON
**GRASS AND
LEGUME
SILAGE**

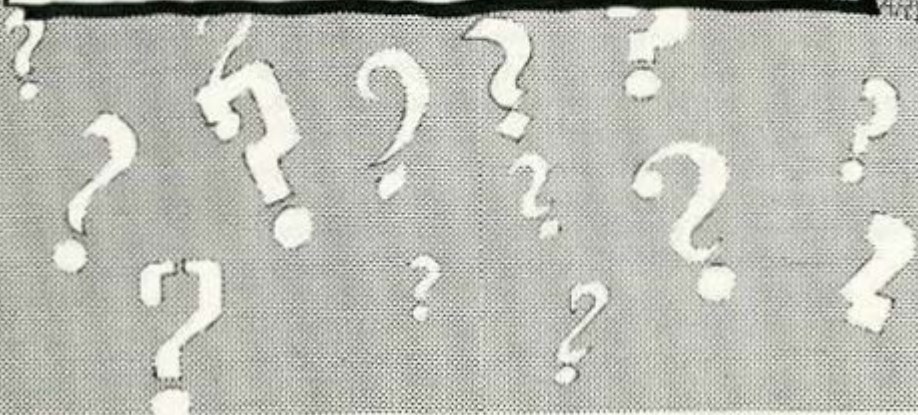
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QUESTIONS AND ANSWERS ON GRASS AND LEGUME

SILAGE

1. QUESTION: What is grass and legume silage?

Answer: Grass and legume silage is formed when small grain, grass and legume crops are placed where they ferment in the absence of-air. Spoilage is prevented by the formation of acids which prevent molds from developing. Grass silage ferments the same as corn silage. Silages are high in moisture, sour to the taste, and relatively low in total digestible nutrients.

2. QUESTION: Why make grass and legume silage?

Answer: When grass and legumes are placed in a silo, there is less danger of the crops being damaged by rain. More leaves are saved. More carotene, the forerunner of Vitamin A, and protein are conserved by placing the crops in the silo. Grass and legume silage provides a succulent roughage similar to pasture for winter feeding.

3. QUESTION: How does grass silage compare with hay or corn silage?

Answer: Three tons of average grass or corn silage has the same feeding value as one ton of average alfalfa hay. Grass silage is higher in protein than corn silage, but is slightly lower in total digestible nutrients. Alfalfa silage is higher in calcium and carotene than corn silage. When grass silage is fed with a limited amount of corn (4 to 6 lbs. daily) and some hay, the gains for wintering cattle should equal those on corn silage.

4. QUESTION: How much protein, vitamins, and moisture does grass silage contain?

Answer: Nutrients vary in grass silage, depending on the quality of the crop. These variations are due to the maturity of the crop, method of handling, and to the amount of fermentation. Analysis of 21 samples of alfalfa silage made by the Experiment Station in 1951 showed dry matter varied from 23 to 44 per cent, crude protein from 3.1 to 8.6 per cent, and carotene (dry basis) from 6,000 to 27,000 International Units per pound.

5. QUESTION: How many tons of silage can I expect from the first cutting of hay?

Answer: Alfalfa put up for silage will produce about three times as many tons as when put up for hay. For example, if the first cutting would make 3/4 T. of hay, you could expect 2 1/4 T. of silage per acre.

6. QUESTION: At what stage of growth should alfalfa, sweetclover, red clover, bromegrass, and small grains be cut for grass silage?

Answer: For maximum production and the least damage to the crop, alfalfa should be harvested at about the tenth-bloom stage. Earlier cutting will endanger the stand. The clovers also are commonly cut at the tenth-bloom stage. Red clover should be cut not later than the tenth-bloom stage if a seed crop is to be harvested later in the season.

7. QUESTION: How can you estimate moisture content of grass silage crops?

Answer: The moisture content of the chopped material as it goes into the silo should be no higher than 68 per cent, and preferably around 65 per cent. Crops harvested at

the hay-making stage of maturity ordinarily will have about 75 per cent moisture. If the soil is dry, they may have less. The time to allow such crops to wilt to reduce the moisture content to 68 per cent will depend on moisture in the soil, yield of the crop, temperature, wind, humidity, and intensity of sunlight. On a good drying day two hours in the swath should be sufficient.

A simple test that will help determine the moisture content of alfalfa, clover, or fine grasses, but not the coarse grasses, is to squeeze a handful of the chopped material and then release it. When the moisture is about right for making silage, the ball of chopped material should expand slowly and break apart into several sections. If it fluffs up at once and falls apart completely, the crop is too dry. If juice is squeezed out and it remains in a compact ball, the moisture in the crop is above the recommended stage.

8. QUESTION: Should a preservative be added in making grass silage?

Answer: Not if the crop is allowed to wilt until the moisture is between 65 and 68 per cent. Use of preservatives may increase the feeding value and reduce undesirable odors.

9. QUESTION: What are the recommended preservatives:

Answer: Cereal grains such as corn, corn cob meal, oats and sorghum grain; dry roughages like corn fodder, cane fodder and hay; molasses (liquid or dried), dried whey, and sulphur dioxide gas.

10. QUESTION: What are the recommended amounts of preservative to add?

Answer: The amounts of the preservative to add -

- Corn or other grains....
150 to 200 pounds per ton of silage
- Molasses (Liquid)....
40 to 60 pounds per ton of silage
- Molasses (Dried)....
20 to 30 pounds per ton of silage
- Dried whey.....
30 to 40 pounds per ton of silage
- Dry roughages.....
300 pounds per ton of silage
- Sulphur dioxide gas....
5 pounds per ton of silage

11. QUESTION: How are preservatives added?

Answer: To apply the proper amount of preservatives, it is necessary to estimate the weight of a load. One cubic foot of fresh chopped grass weighs 15 to 20 pounds.

Grains and whey may be added by spreading the desired amount on top of the chopped grass or legume in the wagon before it is unloaded. These preservatives may be added to the chopped forage in the silo. Sulphur dioxide gas should be applied in accordance with the manufacturer's recommendations. Special equipment is needed.

12. QUESTION: Can wet corn that may not keep this summer be used as a preservative?

Answer: Yes, either as shelled corn or corn and cob meal.

13. QUESTION: Can I store grass silage with corn or cane silage?

Answer: Yes. One kind of silage may be stored in a silo which is partly filled with another kind of silage. It is advisable to remove any spoilage before adding new silage.

14. QUESTION: Can silage be made from fresh green legumes or grasses cut and placed in the silo directly from the field without wilting?

Answer: Because moisture is very high in freshly cut forages, it is best to add chopped dry roughage to soak up the extra moisture. If dry roughages are not added, one of the preservatives will hasten beneficial fermentation.

15. QUESTION: Is it practical to make silage from unchopped grasses or legumes?

Answer: Yes. However, unchopped forage is harder to handle and pack and more difficult to remove from the silo. Sometimes, to eliminate raking, forage can be placed in the silo directly from the swath with a buck rake.

16. QUESTION: What kinds of silos can be used for storing grass silage?

Answer: Any silo used for corn silage can be used for storing grass silage. Since grass silage may produce wall pressures twice as great as those caused by corn silage, additional reinforcing of upright silos may be necessary. Extra precautions should be taken to protect the interior surface of the walls from the silage acids. This is especially true of metal, block, brick, concrete or concrete stave silos. For further information, see Extension Circular 728 and USDA Farmers' Bulletin 1820, "Silos -- Types and Construction."

17. QUESTION: Can I make silage by piling the material on top of the ground?

Answer: Some farmers have used stack or surface silos with success. These are uncovered piles of silage, located on a well-drained

site. Loss due to spoilage may be rather high in stack silage; however, losses may be reduced if silage is firmly packed, the sides of the pile are kept as straight as possible and the silage is fed rapidly after feeding starts. More experimental work will eventually provide definite answers about this method of making silage.

18. QUESTION: What is a recommended procedure for packing grass silage in trench silos?

Answer: Use a tractor to pack the silage. Start packing as soon as the filling begins. Many farmers continue packing for several hours after the filling has been completed.

19. QUESTION: Do I need to cover grass silage in trench silos?

Answer: A cover is not necessary, but silage should be well packed. There will be more spoilage if not covered, but the cost of covering and removal may equal the cost of the spoilage. Either a thin layer of dirt or sisal kraft paper will serve as a good cover.

20. QUESTION: What equipment is needed for making grass silage?

Answer: To make grass silage you need a mower, windrower or side delivery rake, field chopper or stationary cutter, wagons or trucks. A blower or elevator is needed if the silage is put in an upright silo.

21. QUESTION: How does the cost of harvesting grass and legumes for silage compare with the cost of baling them for hay?

Answer: There is a wide range in cost for either method. Much depends on the kind of equipment you use to cut and haul the feed.

The best information available indicates that the cost of harvesting hay by baling is about one-fourth higher than the cost of harvesting it for silage. The cost of the silage method is slightly higher than the cost of harvesting chopped hay.

This comparison of costs is based on mowing, raking, baling or cutting the feed, and hauling to storage. If the hay for silage is cut and windrowed with a swather, the cost of this method should not be much higher than the cost of handling dry chopped hay.

The labor and machinery requirements of ensiling, barn drying and field curing are not materially different, except when field-cured hay is damaged by rain. The labor and machinery requirements are highest when poor-quality, rain-damaged, field-cured hay is produced.

22. QUESTION: When juices are lost from grass and legume silage, are nutrients lost?

Answer: Yes. At the Oregon Experiment Station a silo was filled with 70 tons of grass and legume silage containing 70 per cent moisture, to which 60 pounds of molasses per ton was added. One thousand eight hundred gallons of juice was lost, which contained 9.4 per cent dry matter, 1.6 per cent protein and 2.3 per cent minerals.

23. QUESTION: How about feeding grass silage to dairy cattle, beef cattle, and sheep?

Answer: Dairy cattle like grass silage, but it takes a little time for some cattle to become accustomed to the silage. Silage should be fed after milking to remove any danger of tainting the milk. It should be fed liberally.

Grass silage can be fed to fattening cattle and sheep as well as in wintering rations.

24. QUESTION: In feeding grass silage, should dry roughages also be fed?

Answer: In wintering rations for beef cattle and sheep, it is beneficial to feed roughage or a limited quantity of grain to furnish the desired dry matter and total digestible nutrients. Dry roughage should be fed liberally in addition to the grass silage. The more roughage a cow will consume, the better. For dairy cows, roughages are the cheapest source of nutrients; therefore, they should be fed all the grass and corn silage they will consume. Feeding both a dry and succulent roughage may increase the consumption of nutrients.

25. QUESTION: Is there any method other than ensiling that will help save the grass crop?

Answer: Yes, some farmers are drying hay artificially.

26. QUESTION: Has hay drying proved successful?

Answer: Several farmers have found that hay drying makes it possible for them to obtain a high-quality hay. Drying saves more leaves, reduces lowering of quality because of the weather, and reduces the fire hazard of storing chopped hay.

27. QUESTION: What equipment is needed for drying?

Answer: Three main items of equipment are necessary for drying hay with forced air. These are (1) a power unit, (2) a blower or fan, and (3) an air distribution system or a storage place designed for drying. This equipment can be used for drying other crops. For further details, see Extension Circular 735, "Curing Hay With Forced Air."