Good Silage Is No Accident

From Planting to Storage, Silage Quality Depends on Attention to Details

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Silage is a product of anaerobic (oxygen-free) preservation of a moist forage crop or crop residue by acidification caused by fermentation.

The silage fermentation process is caused by: the conversion of carbohydrates (sugars) into organic acids, like lactic acid thereby lowering the pH and preserving the ensiled material.

The aim of preparing silage is to produce material suitable for animal feeding which can be preserved for long periods of time with minimum loss of nutrients.

Making good silage requires common sense, attention to details and sound management.

FACTORS WHICH AFFECT SILAGE QUALITY:

1. CROP: Grow any crop that offers the greatest economic advantage agronomically and can produce maximum nutrients per acre.

2. STAGE OF MATURITY: Optimum maturity to harvest crops for silage: Alfalfa - late bud to 1/10 bloom. Corn - kernels fully dented. Perennial grasses - prior to head emergence. Sorghum - softdough kernels. Wheat, barley, oats

soft-dough kernels.

3. MOISTURE: Moisture content of forage plays the most important role in the success of silage fermentation. Moisture content of 60-65% is desirable. Ensiling above 75% moisture may produce seepage and undesirable fermentation. Ensiling below 50-55% moisture creates problems in eliminating air, desirable fermentation and preventing mold growth and spoilage.

4. CHOPPING: Fine chopping of 1/4 to 1/2 inch length is recommended.

5. PACKING: Pack the silo as rapidly as possible, and seal the surface where necessary.

6. SILO STRUCTURE: The type of silo affects the quality of silage and amount of nutrient preserved. DDV MAA

	DRY MATTE
SILO TYPE	LOSS
Oxygen-limiting	3 to 8%
Concrete upright	5 to 15%
Trench or bunker	12 to 25%
Open stack	20 to 40%

7. FEEDOUT: Good quality silage must be kept fresh on feedout. If and when exposed to air for long periods, the silage quality deteriorates.

8. WEATHER: Rainy weather can prevent the crop from harvesting at proper drying condition and may interfere with other above mentioned factors.

9. ADDITIVES: Provides added assurance for a good quality silage when management and other conditions are less than ideal. WHY SILAGE ADDITIVES

Good silage results from good silage fermentation. Desirable fermentation preserves nutrients, reduces dry matter loss and makes palatable feed.

Conditions for making silage are not always ideal. Bad weather, composition of the forage at the time of harvest, moisture content of forage before ensiling, activity of plant enzymes, presence of air in silage and others affect silage fermentation adversely. To overcome these problems and assure a desirable fermentation, several products are being aded to silage.

It should be noted that cultures used in various University experiments and those available on the market may vary considerably in potency and type of organisms present. This is the reason why results from research trials with

such fermentation products have been variable.

Good fermentation products containing L. plantarum-2B (like UAS Silage Inoculant) should be used to stimulate lactic acid production and to speed up the normal process of ensiling by reducing the time required for silage to reach a stable acidity thus reducing oxidative losses.

It is essential to achieve and maintain anaerobic conditions. restrict continued plant respiration, and avoid oxidative activities of anerobic microorganisms to preserve nutrients of green plants by fermentation. If suitable micro-organisms are present, adequate nutritional substrates are available, and a suitable physical environment is maintained, a lactic acid fermentation can predominate. The bacteria responsible for production of good quality silages are primarily lactic acid producers. For this reason, different Lactobacillus bacteria are being recommended by many silage inoculant manufacturers. It has been demonstrated that Lactobacillus acidophilus and many such others had no positive effect on corn, sorghum, and wheat silages.

The desirable characteristics for a potential organism that would be satisfactory sor use in silage production include the following: 1. The organism should have a high growth rate and be able to compete with and dominate other organisms likely to occur in silage; 2. the organism should be homofermentative; 3. the organism should be acid-tolerant and produce a final pH of 4.0 rapidly; 4. the organism should be able to ferment glucose, fructose, and sucrose, and preferably able to ferment frustosans and pentosans; 5. the organisms should not react further with organic acids.

Many University studies indicated that Lactobacillus plantarum cultures and sugar can provide improved silage fermentation and decreased silage spoilage losses. University of Georgia research indicated that all Lactobacillus plantarum products (strains) are not alike. It developed a process which makes use of a strain called Lactobacillus plantarum-2B, which was isolated from a successful silage fermentation. It produces superior results in ensiling process. It can be used with all types of forage, including corn, alfalfa, wheat, rye, (Turn to Page D12)

EFFECT OF UAS SILAGE INOCULANT ON SILAGE

FERM	WITH UAS SILAGE INOCULANT	
1. No. of Silos	INOCULANT 5	5
2. Average Temperature (F)	92.4	89.2
3. Average pH	4.67	4.33
4. Dry matter loss (%)	9.20	2.00
5. Mold growth (Scores 1 to 5		
with 5 most severe mold)	4.44	1.33
6. Lactic acid	4.1	5.6



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