

## Livestock Notes

### Beef — Urea and Mineral Additives for Corn Silage

by John W. Comerford

Corn silage is a popular and effective feed for both feedlot steers and for wintering cows and calves. However, corn silage is deficient in protein, calcium, and phosphorus for most classes of beef cattle.

One way to correct the inadequacy of corn silage for these nutrients and to improve fermentation is to add urea and minerals at the time the silage goes into the silo. Adding urea, limestone, or a combination has been shown to increase the production of organic acids in the silage. Of particular importance is the increased pro-

duction of lactic acid during fermentation.

Dry urea usually has 45% nitrogen which is equivalent to 281% crude protein for a ruminant. By adding 10 lbs. of urea to one ton of corn silage that is 30% dry matter and 8% crude protein, the protein content of the silage will increase to 12.7% crude protein. This may be both an effective and economical way to provide supplemental protein to most classes of beef cattle since there will be no further cost for either protein supplements or for the labor and equipment to provide the supplement.

Additionally, adding urea at ensiling time may be more effective than adding it to the silage at the time of feeding. Research at Ohio State and Illinois has shown a slight advantage in performance for cattle on urea-treated silage compared to when urea was added as a supplement at feeding. It is important to note that calves under four months of age are unable to use the urea as protein until their rumen is more fully developed.

Other important steps in using urea and mineral-treated silage include:

- Get a feed sample of the silage analyzed after the material has fermented to be sure rations are balanced correctly.
- Use additional sulfur in rations where urea is the primary protein source.
- Use untreated silage or hay to start stressed calves in a feedlot.
- Add the prescribed amounts of urea and minerals to the silage because these materials can

become toxic to animals when fed at levels which are too high.

### Silage Dry Matter

It is essential to know the dry matter value of the silage before attempting to mix urea and minerals with it. In general, urea can be added to silage that is between 30% and 40% dry matter. When the silage is too wet, the urea may escape as seepage. When it is too dry, the urea may be lost as ammonia and make the silage unpalatable.

Table 2. Urea-Mineral Mixes for Silage

Item	% of Mix
Urea (45% nitrogen)	58.0
Dicalcium phosphate	18.0
Sodium sulfate	8.0
Trace-mineral salt	16.0

Table 3. Amount of Urea-Mineral Mix to Use Based on Silage Dry Matter

% of Dry Matter In Silage	Pounds of Mix per Ton of Wet Silage
30	17
32	18.1
34	19.3
36	20.4
38	21.5
40	22.7

It is important to get the urea-mineral mix spread evenly through the silage. Poor mixing can result in caking and bridging of the silage, poor animal performance, and possible toxicity problems. To insure proper application:

- Be sure you know the dry matter content of the silage.
- Get a good approximation of the weight of silage in a load so the proper amount of mix can be added.

• Mix the urea and minerals together well before applying them to the silage.

• Meter the mix through the blower for upright silos, or pour it over the top of the load and allow the blower to mix it.

• Meter the mix into the chopper or spread over the top of a load before dumping for a trench or bunker silo. Spreading it over the top of the stack will result in a poor mix.

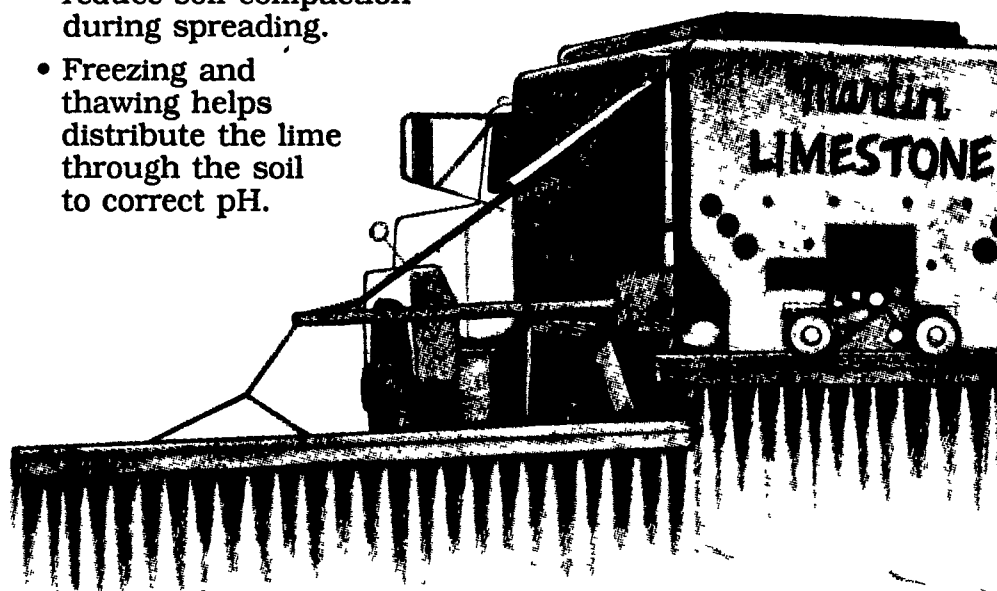
Table 1. Deficiency of Protein, Calcium and Phosphorus in Corn Silage.

	CP <sup>1</sup> %	Ca <sup>1</sup> %	P <sup>1</sup> %
Corn silage	8.1	.27	.20
Daily requirements:			
Growing steer (500 lbs.)	12.2	.31	.25
Finishing steer (800 lbs.)	1.1	.38	.29
Lactating Cow	9.3	.28	.22

<sup>1</sup>CP = crude protein; Ca = Calcium; P = Phosphorus

## Profit from winter lime application

- Winter's frozen ground conditions reduce soil compaction during spreading.
- Freezing and thawing helps distribute the lime through the soil to correct pH.



Hi-Calcium      Hi-Magnesium

# Martin LIMESTONE

For prompt delivery contact your local Martin Limestone dealer or call Blue Ball, Pa.

(800) 233-0205

(717) 354-1370



## Water Quality An IMPORTANT Ingredient In Livestock Management

It's a fact! Contaminated water can have a costly effect on your livestock and poultry performance. Our years of experience plus hundreds of farm related treatment systems has proven the validity and practicality of correcting contaminated water.



**Martin Water  
Conditioning Co.**  
SPECIALISTS IN FARM WATER TREATMENT

Call us today for treatment of:  
\*Nitrates \*Bacteria \*Iron \*Sulfates  
\*pH - Acidity/Alkalinity

548 New Holland Ave.  
Lancaster, PA 17602  
(717) 393-3612  
Along Rte. 23

Willis Sharp  
Somerset, PA &  
Surrounding Counties  
(814)-893-5081

740 E. Lincoln Ave.  
Myerstown, PA 17067  
(717) 866-7555  
Along Rte. 422