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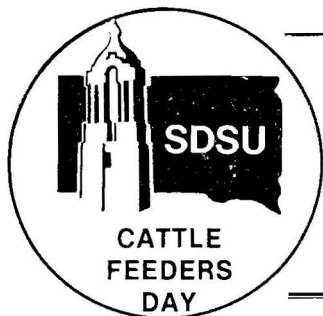
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## FEEDLOT PERFORMANCE OF YEARLING HEIFERS<sup>1</sup> FED PRO-SIL TREATED ON UREA SUPPLEMENTED CORN SILAGE

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### Summary

Corn silage was treated with Pro-Sil, an ammonia-molasses-mineral suspension, at ensiling time and compared with untreated (control) silage supplemented with a urea-based protein-mineral supplement. Eighty crossbred heifers were used in the 61-day trial. The silages were stored in plastic Silopress bags to investigate this ensiling structure.

The cattle fed the Pro-Sil treated silage gained 10.5% faster and required 10.4% less feed per pound of gain than the control silage fed heifers. These results are consistent with recent studies at other midwest experiment stations and demonstrate the effectiveness of this nutritive silage additive.

Producers using ammonia containing silage additives such as Pro-Sil are advised to have their silage analyzed for crude protein to insure optimal levels of this important nutrient. This analysis should be done on the "as received" (wet) sample in order to prevent falsely low protein values resulting from oven-drying the sample before protein analysis.

### Introduction

Whole plant corn silage is highly regarded as an excellent and economical source of energy for growing and finishing beef cattle. However, corn silage is particularly deficient in protein for feedlot cattle, containing only about 8% crude protein on a dry matter basis. Numerous methods of protein supplementation have been evaluated over the years, but the increasing costs of supplemental protein have spurred increased interest in utilizing nonprotein nitrogen sources for this purpose.

The objective of this study was to evaluate the performance of cattle fed Pro-Sil treated corn silage or untreated (control) corn silage supplemented with a urea-based protein supplement at time of feeding. In addition, plastic horizontal Silopress silage bags were used to store the Pro-Sil treated and control corn silages in order to gain experience with this silage storage method.

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<sup>1</sup> Trial conducted at the Southeast South Dakota Experiment Farm, Beresford, South Dakota.

### Experimental Procedure

The corn silage was harvested in early October, 1977, and ensiled in 8 mil thick, plastic "sausage" bags 8 feet in diameter and 100 feet long using the Eberhardt Silopress ensiling system. One bag was filled with untreated (control) silage, while the other had Pro-Sil applied (at approximately 50 pounds per ton of silage) via a broadcast pipe positioned horizontally across the intake of the Silopress machine. The analysis of the Pro-Sil product was 85% crude protein, 2.7% phosphorus, 3.7% calcium and 4.0% salt with trace minerals. The bags were sealed shut until the beginning of the feeding trial on June 30, 1978.

Eighty crossbred yearling heifers averaging 700 lb. were purchased from a reputable backgrounder in central South Dakota. The heifers were 3/8 Limousin out of Hereford-Angus dams. The cattle were allotted into 8 pens of 10 head each on the basis of shrunk body weight obtained after an 18-hour stand without feed and water. Four pens were assigned to the Pro-Sil treatment and four pens to the control treatment. All heifers were implanted with Ralgro and dewormed at the start of the trial.

The control corn silage averaged 43.3% dry matter and 8.4% crude protein, while the Pro-Sil treated silage contained 42.5% dry matter and 13.8% crude protein. Since some volatile nitrogen compounds may be lost through standard drying procedures prior to conventional crude protein analysis, fresh (wet) samples of the silage were also analyzed for crude protein. No differences in crude protein content were noted between the dry and wet analytical methods for the control silage. However, the Pro-Sil treated silage analyzed 15 to 20% higher in crude protein when fresh (nonoven dried) samples were used. The Pro-Sil treated silage was considerably darker in color than the control silage--a characteristic of the product addition.

For the first 27 days of the trial, all cattle received 4 lb. per head per day of high quality alfalfa hay (18-19% crude protein, dry basis) plus a full feed of the appropriate corn silage. Thereafter, the heifers on the control silage treatment received a custom mixed supplement containing 17% urea, 69.6% ground corn, 8.7% dicalcium phosphate, 0.63% limestone, 2.3% trace mineral salt and a source of vitamin A and Rumensin. The Pro-Sil silage fed heifers received a supplement consisting only of ground corn, vitamin A and Rumensin. The supplements were fed at 10% of the ration dry matter. Rumensin was offered at the equivalent of 30 grams per ton of air-dried (90% dry) ration.

### Results

The experimental results are presented in table 1. After 61 days on trial, the Pro-Sil silage fed heifers had gained 11 lb. more per head than the control heifers. Average daily gain was 1.81 lb. for the control heifers and 2.00 lb. for the Pro-Sil silage fed cattle, or a 10.5% difference between the silage treatments.

Table 1. Feedlot Performance of Yearling Heifers Fed Pro-Sil Treated or Control Corn Silage

Item	Control	Pro-Sil
No. of cattle	40	40
Initial shrunk wt., lb.	653.3	654.8
Final shrunk wt., lb.	764.0	776.6
Avg. daily gain, lb.	1.81	2.00*
Avg. daily ration, lb.		
First 27 days		
Corn silage	32.7	32.7
Alfalfa hay	4.0	4.0
Last 34 days		
Corn silage	35.8	35.8
Supplement	1.9	1.9
Lb. feed/lb. gain, as fed		
Corn silage	18.96	17.25
Alfalfa hay	0.98	0.89
Supplement	0.57	0.52
Lb. feed dry matter/lb. gain	9.58	8.58*

\* Significantly different at  $P < .05$ .

The average daily feed consumption results are separated into two phases in the table. For the first 27 days, alfalfa hay was fed at 4 lb. per head per day, while the last 34 days only supplement and silage were fed.

The pounds of feed required per pound of gain are also shown in the table. The Pro-Sil treated corn silage fed cattle were 10.4% more efficient (9.58 vs. 8.58 lb.) than the control animals in dry matter feed conversion to gain.

The Silopress "sausage" bag was found to be a useful and efficient silage making system when managed properly. The bags must be located on a firm well-drained site in order to assure year-round access with mechanized equipment. Silage was stored in the horizontal plastic bags for 9 months without evidence of bag deterioration.