



Soybean Silage

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Drought often raises the issue of harvesting soybean fields for forage due to forage shortage and low yield grain yield potential of the soybeans. Little information is available concerning soybean silage. Therefore a number of farmers who had made soybean silage during the winter of 2005 were surveyed and the silage was sampled for analysis. What follows is a report of farmer experience with soybean silage.

Generally the recommendation has been to harvest at the R3 stage (when one of the four top nodes with a fully developed leaf has a 3/16 inch long pod). Harvesting earlier results in reduced dry matter and harvesting later results in seed shatter and reduced forage quality. Most of the farmers surveyed had harvested the forage at the R3 to R4 stage.

Standing soybean forage was generally at about 80% moisture at this stage and needed to be mowed and wilted to dry down to 65% moisture for ensiling. The farmers were able to mow and condition with their standard mower/conditioners, though they often needed to go slower than normal. Farmers also noted that flail conditioners caused more damage to the soybean than roller conditioners. Drying time generally took 2 to 3 days in the late fall.

Forage yield averaged 1.5 tons/acre, ranging from 1.0 to 2.25 t/a. Silage was made in oxygen limiting silos, plastic bags and bunkers. Forage should be chopped with a 3/8 inch theoretical length of cut for good packing. Silage of farmers surveyed was generally in the correct moisture range (table 1) and fermented well. Forage quality was generally similar to alfalfa haylage.

Table 1. Forage quality of soybean silage not mixed with other crops

Component	Mean	Minimum	Maximum
%, Dry matter basis			
DM	37.1	30.8	45.8
CP	20.7	18.1	24.0
ADF	31.9	29.7	36.2
NDF	39.0	33.0	47.5
NDFD	44.3	42.0	48.4

Some farmers mixed the soybean silage with other crops including 3rd crop alfalfa, corn

Table 2. Effect of soybean silage on feed intake, stem sorting, and milk production

Type animals fed	Feed intake	Sorting	Effect on milk production
Milking cows,	Stayed same	None	None
Dry cows, heifers	Stayed same	None	N/A
Dry cows and heifers	Stayed same	None	N/A
Milking cows	Decreased	None	None
Milking cows, heifers	Stayed same	None	None
Milking, Dry & heifers	Stayed same	None	None
Milking cows	Stayed same	None	None

silage, sorghum-sudangrass, and triticale. Alfalfa mixed with the soybean silage had no effect on forage quality. Sorghum-sudangrass, corn silage, and triticale all lowered the quality of the silage.

We generally recommend that forages be ensiled separately (easily done with silage tubes) and mixed at the time of feeding rather than ensiling. This gives the operator has more flexibility mixing the ration according to needs of the

animals being fed and quality of the ensiled material.

Farmers were asked how animals consumed and performed on soybean silage. Of the farms surveyed (table 2), in only one case was feed intake decreased and there was no problem with sorting stems from leaves – likely due to the fine chop used. Most importantly, in no case was there any discernable difference in performance when animals were fed soybean silage.

In summary, making soybean silage may be a good opportunity for farmers short of forage due to drought. The following recommendations will provide successful soybean silage experience:

- Talk to your Crop Insurance adjuster before harvesting any insured soybeans for forage. You could forfeit a lot of money you would have otherwise received.
- Make sure any herbicides used on the soybeans are cleared for feeding to cattle.
- Harvest soybeans at R3 stage - when one of the four top nodes with a fully developed leaf has a 3/16 inch long pod.
- Wilt forage to 35% dry matter before ensiling. Producers felt soybean whole plant moisture was difficult to judge in the field, therefore testing is well worth the expense.