

Nutritive Value Of Drought Soybeans As A Forage

UNIVERSITY PARK (Centre Co.) — Drought or immature soybean plants can be satisfactorily used as a forage crop. Plants should be allowed to mature as much as possible before harvesting. Some pod or bean development enhances feeding value of plants harvested either as hay or silage. Soybean forage is high in calcium and should be avoided as the major forage source for dry cows.

If the plants are going to be ensiled, it is recommended to do so before the plant moisture drops below 60 to 65 percent. As with any forage crop, it is most critical to have adequate moisture levels in the crop at ensiling to achieve a proper fermentation. This may require chopping some and checking dry matter content with a microwave oven or Koster Tester.

If plants are high in moisture and lack pod or bean development, and if it is possible, add 100 to 200 pounds of a ground grain per ton when direct-

cutting rather than wilting to 60 to 65 percent moisture. The ground corn or other grains will add carbohydrates to the crop to help with fermentation. The cow will then use the energy from the grains when the crop is fed.

The stems of soybean plants are not very palatable and animals will sort them out if given the opportunity. It is best to feed soybean silage in a TMR system. Silage may have to be chopped finer to minimize sorting of the stems even if used in a TMR. If using the Penn State Forage Particle Separator, recommended ranges should be no more than 10-15 percent greater than .75 inch and 30-40 percent in the .75 to .31 inch range.

Another possibility is to make soybean hay. If soybean hay is made, it is best to use this hay in a total mixed ration to help prevent sorting. Soybean hay can be unpalatable under many circumstances. This can be more difficult to work with as leaf shatter may

cause great losses of protein, calcium, and energy during haymaking. It may be difficult to dry down pods for hay if beans are too well developed.

It is critical as with any forage to analyze soybean silage or hay for their nutrient content. These can vary greatly depending on the circumstances involved. The maturity of the soybean plants at harvest will greatly effect their nutritive content.

Fat content should be analyzed if

the crop had any pods or beans present at harvest. If soybean forage contains substantial amounts of developed beans, you may have to reduce the amount of other fats and oils in the ration for lactating cows. In addition, fiber level may vary greatly, and these items will both have major impacts on rumen utilization and milk fat production. The expected nutrient content of soybean forage is listed in Table 1.

Table 1. Expected nutrient content of soybean forage

Stage of maturity	CP %	ADF %	NDF %	NE _L Meal/lb.	Ca %	P %	Mg %	Fat %
Average silage	17.3	40.0	48.2	0.56	1.36	.47	.34	5.1
Average hay	16.5	35.0	-	0.55	1.20	.47	.32	-
Midbloom	17.8	40.0	-	0.54	1.25	.49	.34	5.4
Seed developing	17.5	35.0	-	0.59	1.20	.47	.32	-
Seed dough stage	16.8	39.0	-	0.63	1.15	.45	.30	4.1

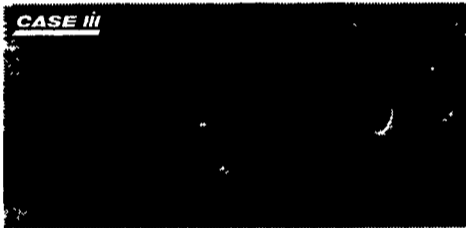
Note: CP=crude protein; ADF=acid detergent fiber; NDF=neutral detergent fiber; NE_L=net energy of lactation; Ca=calcium; P=phosphorus; Mg=magnesium. All values are on a dry matter basis.

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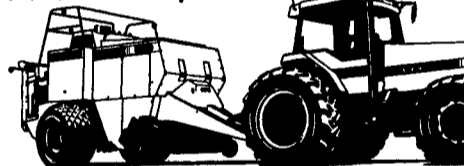
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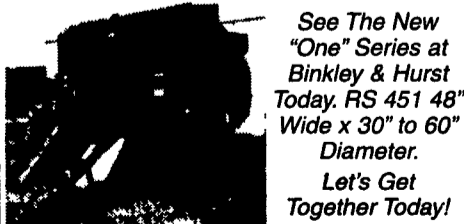
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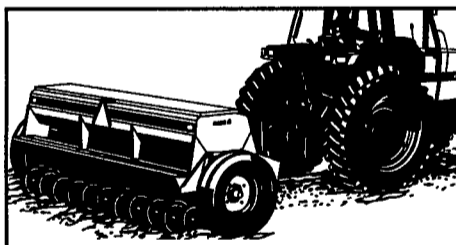
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