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Wilting Bermudagrass Improves Forage Silage Quality and Cattle Performance¹

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Bermudagrass has low levels of sugars that are fermented to lactic and other acids during ensiling. Wilting has been shown to improve the fermentation and the feeding value when levels of sugar are low. The effects of wilting on bermudagrass harvested as round bale silage were investigated in two trials. The round bale silage was compared to similar bermudagrass harvested as round baled hay.

Bermudagrass was harvested after 5 to 6 weeks of regrowth in 1988 and 6 to 7 weeks of regrowth in 1989. The treatments included baling immediately after cutting (unwilted), baling after 1 to 2 hours of wilt, baling after 2 to 4 hours of wilt or field curing and harvesting as hay. Forage was baled with a New Holland 848 baler in bales 4 feet wide and 4.5 feet in diameter. The high-moisture forage was wrapped with four layers of stretch wrap plastic and stored under trees. Hay was stored in a barn. After 4 to 8 months of storage, the forage was fed to heifers in round-bale feeders and wasted forage was removed and weighed. Individual bales were identified and weighed at harvest and at feeding. Each treatment was fed to two groups of 10 growing heifers averaging 550 pounds in 1988 and 520 pounds in 1989. Bermudagrass

forage intake and heifer weight gains and height changes were determined in an 87-day feeding trial in 1988 and a 98-day feeding trial in 1989.

In two trials in which wilted bermudagrass was compared to unwilted forage, wilting 2 to 4 hours had the following effects:

1. Forage moisture was reduced 20 percentage units from 71 to 51%.
2. Bale weights were reduced by 100 pounds per bale from 1,450 to 1,350 pounds.
3. Forage dry matter increased 200 pounds per bale from 420 to 620 pounds.
4. Number of bales and plastic and wrapping costs were reduced by 30%.
5. Storage losses were reduced 3.7 percentage units from 12.5 to 8.8% of the dry matter lost during storage.
6. Feeding losses were increased 6.7 percentage units from 10.1 to 16.8 of the dry matter wasted at feeding. Molding of forage due to holes in the

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plastic contributed to wasted forage and the losses were higher in drier forage.

7. Silage quality was improved and resulted in a 13% increase in intake from 1.67 to 1.89% of body weight, daily gains were increased .4 pounds from -.15 to +.25 pounds, and growth in height was increased .48 inches over 3 months from .43 to .91 inches growth in height.

Forage wilted to 50 to 60% moisture resulted in similar intakes and animal performance compared to forage harvested as hay, but storage and feeding losses were 9 percentage units higher for the silage compared to hay.

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3

Table 1. Effect of wilting bermudagrass on forage characteristics, bale weight, feed and storage losses, and intake and performance of growing cattle.^a

Item	Wilting time, hours			
	None	1-2	2-4	Hay
Forage moisture, %				
1988	73.9	63.3	52.2	13.3
1989	<u>69.1</u>	<u>60.8</u>	<u>54.3</u>	<u>25.5</u>
Average	71.5	62.1	53.3	19.4
Forage dry matter, %				
1988	26.1	36.7	47.8	86.7
1989	<u>30.9</u>	<u>39.2</u>	<u>45.7</u>	<u>74.5</u>
Average	28.5	37.9	46.8	80.6
Wet bale weight, lb				
1988	1,362	1,405	1,273	622
1989	<u>1,545</u>	<u>1,445</u>	<u>1,415</u>	<u>800</u>
Average	1,454	1,425	1,344	711
Dry bale weight, lb				
1988	357	515	608	536
1989	<u>477</u>	<u>565</u>	<u>635</u>	<u>595</u>
Average	417	540	622	566
Storage losses, % DM				
1988	14.7	13.3	9.4	3.0
1989	<u>10.2</u>	<u>9.7</u>	<u>8.1</u>	<u>2.9</u>
Average	12.5	11.5	8.8	3.0
Feeding losses, % dry matter				
1988	8.7	9.2	13.0	7.2
1989	<u>11.5</u>	<u>16.2</u>	<u>20.5</u>	<u>17.7</u>
Average	10.1	12.7	16.8	12.5
Dry matter intake, lb/day				
1988	9.2	10.2	10.9	11.0
1989	<u>8.0</u>	<u>8.9</u>	<u>9.5</u>	<u>8.7</u>
Average	8.6	9.6	10.2	9.9
Dry matter intake, % body weight				
1988	1.67	1.84	1.96	1.88
1989	<u>1.66</u>	<u>1.78</u>	<u>1.81</u>	<u>1.65</u>
Average	1.67	1.81	1.89	1.77
Daily gain, lb/head				
1988	-.07	.15	.35	.53
1989	<u>-.22</u>	<u>-.13</u>	<u>.15</u>	<u>.04</u>
Average	-.15	+.01	+.25	+.29
Height increase, inches				
1988 (87 days)	.19	.84	.86	1.00
1989 (98 days)	<u>.66</u>	<u>.97</u>	<u>.95</u>	<u>1.12</u>
Average	.43	.91	.91	1.06

^aRegrowth was 5-6 weeks in 1988 and 6-7 weeks in 1989.