

# Bale Feeder Types Affect Amount Of Forage Wasted

UNIVERSITY PARK, (Centre Co.) —Research in Penn State's College of Agricultural Sciences found little variation in nutritional quality among three methods used to store forage for beef cattle, but suggests that feeder types greatly influence the amount of forage wasted.

Dr. John Comerford, associate professor of animal science, compared various storage methods for large round bales of grass. Dr. Dennis Buckmaster, assistant professor of agricultural engineering, and Dr. Erskine Cash, professor of animal science, also participated in the study.

The researchers evaluated three bale storage methods. Some grass bales were stored inside as dry hay. The rest was harvested as balage at about 40 percent dry matter, then wrapped in plastic with a bale wrapper or in a plastic tube to ferment. After 170 days, the dry hay and fermented balage were fed to mature beef cows using both a conventional ring-type bale feeder and one with an inverted cone and solid base.

Cattle in the study readily ate all of the forage. "They didn't care how it had been stored," Comerford said. "Palatability was fine for each storage method. But there were significant differences in feed losses

between ring and cone feeders. The ring-type feeder wasted nearly four times as much forage as the cone-type feeder.

"That's probably because the cone feeder's solid base catches dropped forage as the cow pulls it from the bale," Comerford said. "In this study, ring feeders wasted 149 more pounds of dry hay per ton than cone feeders, and 305 more pounds of balage per ton.

"For the average cow fed hay valued at \$70 per ton for five months, that's an average loss of \$10.33 per bale," said Comerford. "Cone feeders cost about \$550 more than ring feeders, but with a 53-cow herd, a cone feeder would pay for itself through reduced waste of forage."

The researchers analyzed each feed for dry matter and fiber content, and total digestible nutrients (TDN) both at harvest and after storage. "We measured changes in feed value after storage, and found some slight differences in TDN change. However, after adjusting for dry matter losses, there was no major difference in feed value loss among the three methods. Average TDN loss was 2.5 pounds per bale for dry hay and tubed balage, and

2.8 pounds per bale for wrapped balage."

Storing hay in plastic has the potential to recover more standing forage by reducing leaf loss and drying time in the field. But producers should compare the cost of wrapping—at about \$4 per bale—with the costs of other storages, including bags, before deciding to switch methods. In most cases,

there also is a cost to dispose of the plastic wrap after feeding.

Labor costs also may be higher for wrapping or tubing bales. "It takes two to three times as much labor at the time the grass is baled compared to baling dry hay," Comerford said. "Within 24 hours, balage needs to be wrapped and moved to a permanent storage site without piercing the bale and disrupting fer-

mentation.

"Wrapping or tubing bales costs more, but these methods give producers more flexibility in harvesting and storing forage, and may recover more standing forage. Switching from dry hay to wrapped balage may be worth it, but the long-term cost must be weighed against the benefits. The situation will be different for each cattle feeder."

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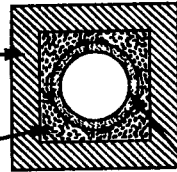
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