



## Rate of deterioration of lucerne silage after feeding

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Silage is the material produced by the controlled fermentation of a plant material of high moisture content. It is a common means of conserving forage. Most silages when exposed to air, as occurs when feeding out to animals, immediately start to deteriorate (McDonald et al. 1991). Bacteria, yeasts and moulds use components of the silage eg. water soluble carbohydrate, lactic acid, acetic acid, as substrate with a subsequent loss of quality resulting from increases in crude fibre and ash. With the oxidation of the nutrients, there is heat liberated and the silage mass increases in temperature.

We wish to report on the stability at feeding, as indicated by temperature changes, of several forms of lucerne silage.

### Methods

Silage form. The lucerne (c.v. Aurora) was ensiled into 3 forms of silage viz. precision chopped, round bale, chopped round bale. At feeding (pretesting) a fourth comparison was generated by chopping round bales in a Whoppa Choppa®.

Testing procedure. Fresh, mould free, duplicate samples of each form of silage were placed into polystyrene boxes (32 x 46 x 30cm) in a ventilated room and firmly compressed by hand to within 5 cm of the top. Thermocouples were then placed in the centre of each silage mass and additional (3) located at box level to measure ambient temperature. An insect proof muslin cover was then placed on each box. Temperatures were monitored every hour over 10 days.

### Results and Discussion

Figure 1 illustrates the changes in temperature associated with silage deterioration. All four forms of silage were relatively stable for 3 days but thereafter the silage chopped at feeding increased in temperature, presumably because the chopping aided aerobic conditions and favourably modified the plant particles. At four days the precision chopped silage also increased in temperature at a faster rate than the other 2 forms. Stability was least in the short length silages but it may also be affected by the additional maceration associated with chopping.

### Conclusion

Since each form of this lucerne silage was temperature stable for 2-3 days, silage deterioration after feeding should not be a practical problem.

### Acknowledgment

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### Reference

McDonald, P., Henderson, A.R., and Heron, S.J.E. (1991). *The Biochemistry of Silage* (Chalcombe Publications, Kent).

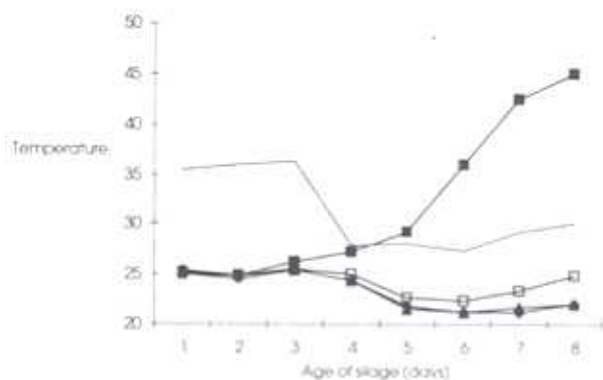


Figure 1. Ambient temperature (C°) and plant particle temperature of 4 forms of silage in the 8 days after exposure to air. — max. ambient temperature; □ precision chop; ▲ round bale; ◆ chopped round bale; ■ chopped prefeeding.