



## WHAT IS HIGHEST MOISTURE AT WHICH I WANT TO BALE HAY USING AN ACID PRESERVATIVE, FRESH CUT® BRAND PLUS?

### KEY CONCLUSIONS

- *There is a moisture level at which no economically feasible treatment appears to be effective. Do not make hay above 27% moisture.*

### INTRODUCTION

The production of hay with high feeding value and good visual appearance is dependent upon drying conditions while cut hay is in a windrow. Consequently, hay producers should consider: (1) how quickly can the crop in the windrow be baled; (2) how storable are the hay bales; and (3) what will be the potential feeding value of the baled hay after storage.

### Objectives

The objectives of the evaluation reported here were to quantify the upper limit in moisture content that hay could be stored effectively in unwrapped and unsealed large, rectangular bales (1100 lbs and 18 lbs/ft<sup>3</sup>) and to evaluate the effectiveness of an additive.

### RESULTS AND DISCUSSION

Four hay additives were used. Six bales were made of each additive/application rate in each of two cuttings, first (May) and fifth (October). At each cutting, three moisture levels were compared: wet = greater than 26%, medium = 20 to 26% and dry = less than 20%. These were baled and stored for twenty-one days.

Temperature was taken each 20-minutes for 21 days and converted into Heat Units (HU = ((daily maximum temperature minus daily minimum temperature) divided by 2)). A Heat Unit is the heat generated in the bale and available to cause heat damage to nutrients, especially proteins. HU were the basis for the comparison of the treatments.

- There was a statistical advantage for the reduction of HU (133 vs. 415; P<0.05) produced by the bales made with less than 25% moisture.
- At these moisture levels Fresh Cut® brand Plus hay preservative showed a significant 13 unit reduction (P<0.05) in HU produced when compared to bales made with no additive.
- At less than 25% moisture, Fresh Cut® Plus also showed a significant lowering of HU produced (P<0.05) when compared to two other commercial treatments each applied in accordance with their respective label recommendations.
- Hay bales, regardless of moisture content, experience diurnal variation internally by as much as 50 to 70 degrees within the bale and above ambient temperature. This is an important observation with implications for all hay producers because: (1) heat in bales produces heat-damaged protein (%ADICP or acid detergent insoluble protein) which lessens the feeding value of hay; and (2) heat can cause water to collect at the surface of the bale. This "surface water" can combine with oxygen in the air to enhance the chances for spoilage organisms to grow on the outer surface.
- No treatment was effective at or above 28% moisture.