



## Efficacy of FRESH CUT<sup>®</sup> brand in a Laboratory Scale Baling System

**SOURCE:** Research & Development, Kemin Industries, Inc.

### ABSTRACT

Efficacy of FRESH CUT was tested in a laboratory scale baling system which had been previously validated by Kansas State University. In this experiment, FRESH CUT was applied to a mixture of third cutting 25% moisture grass and alfalfa. It was able to consistently hold temperatures equal to that of the dry control.

Kemin's FRESH CUT preservative program has for many years been the preeminent preservative for high moisture hay. The efficacy of the product has been demonstrated on countless farms, but the number of controlled experimental situations where it has been trialed has been limited. The difficulties of field trials include the vast number of people and materials that must be coordinated in order to successfully execute these trials. Recently, researchers at Kansas State University have been able to validate a laboratory model system for hay baling (1, 2). This model involves utilizing small (4" x 4.25" x 5.25") bales which can then be tested for relative moisture, heating, etc. This trial was undertaken to evaluate the relative efficacy of FRESH CUT in such a model system.

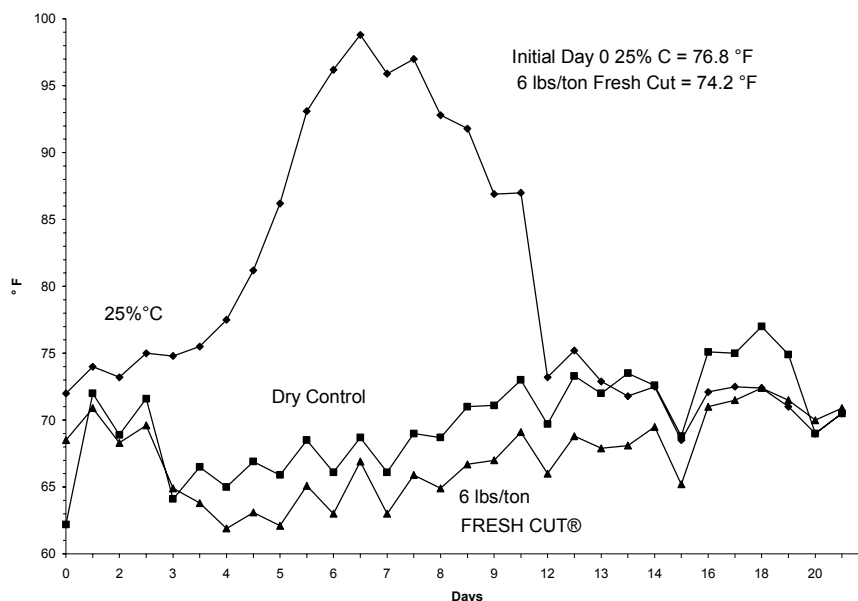
### METHODS AND MATERIALS

The experiment was conducted on an 8 year old stand of mixed alfalfa/grass hay, third cutting. Hay was mowed two days before the experiment began. Hay was not conditioned and was raked into windrows. Moisture was monitored in the windrows via microwave oven drying. It reached 26% at 9:30 a.m. and baling started at 11:00 a.m. Actual moisture of the bales was checked using a complete bale placed into the oven. Moisture at time of baling was 25.05%. The material baled was approximately 65% alfalfa, 35% grass hay. After each bale was made, it was placed into its own individual insulated storage area. Insulation consisted of 2" of commercial housing grade styrofoam that had been annealed together to form a tight box. A temperature probe was inserted through the side of the box into the bale and temperatures monitored over time. Data represents the average of three bales for each particular treatment. Treatments in this experiment included a high moisture control, 25%; high moisture treated, 6 lbs/ton FRESH CUT; and an untreated dry control, 15% moisture.

### RESULTS AND DISCUSSION

The two high moisture treatments were made within a 3 hour period. The low moisture control was made late the same day. Temperatures were monitored twice a day for the first 14 days and once a day thereafter. Results of the temperatures are shown in Figure 1.

FIGURE 1: EFFECT OF 6 LBS/TON FRESH CUT ON HEATING IN 25% MOISTURE GRASS/ALFALFA HAY



Inspection of the data reveals a very classic response as would be expected with FRESH CUT. After 3 to 4 days, the high moisture control began an enormous increase in temperature with the characteristic two peaks being observed, typical of plant and microbial respiration. FRESH CUT treated material stayed equivalent to the dry control during the entire experiment. On the 14<sup>th</sup> day following baling, the individual containers were opened. Results of visual inspection are shown in Table 1.

TABLE 1: RESULTS OF VISUAL INSPECTION OF MODEL BALES AFTER INCUBATION

25% moisture untreated	Extensively molded
25% moisture FRESH CUT treated	No visible signs of mold
Low moisture untreated	No visible signs of mold

The visual observation revealed that the temperature data had indicated that there was no visible microbial growth occurring within the treated material or the dry untreated hay. However, within the untreated high moisture, extensive microbial degradation occurred. The containers were then closed for the remainder of the trial. After 25 days, there was no change in the visual status of the bales.

## CONCLUSION

This experiment demonstrates that the laboratory model system can be utilized in order to demonstrate the efficacy of FRESH CUT. This system can now be further used to evaluate new formulations of hay preservatives.

## ACKNOWLEDGEMENTS

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## REFERENCES

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