Unwilted Legume For Cattle Feed Studied

Recent Agriculture Research Service trials suggest that unwilted legume silage would be a good cattle feed —if a substitute for wilting could be found to make the silage more palatable.

Dairymen know cattle do poorly on unwilted legume silage because they won't eat nearly as much of it as of other feeds, ARS says. However, if a farmer didn't have to wilt his forage after mowing he'd save time and eliminate the risk of damage from rain.

Dairy cattle nutritionist D. R. Waldo found in tests at Beltsville, Md., that cattle got as much nutrition per pound of dry matter from unwilted silage as they did from field-cured hay. He eliminated through research the possibility that slower passage of feed through the digestive tract causes cattle to eat less unwilted silage. He concluded that this lower consumption must be because unwilted silage isn't palatable.

But why is it less palatable? Is it because of the formation of amines and aldehydes — chemicals sometimes found as byproducts of unwilted silage—during fermentation in the silo? Research at other stations suggests this possibility, but it hasn't established whether the formation of these chemicals is the only, or even the main reason for the low palatability of unwilted silage.

So far, attempts to prevent these chemical byproducts, from forming by mixing additives with silage at the time of ensiling haven't been successful. Scientists think, however, that the use of additives may yield good results eventually. This approach is being followed by ARS and in other research in all major silage producing countries

Waldo's trials followed work done several years ago by ARS nutritionists J W. Thomas Thomas ran tests with unwilted silage and disproved the possibility that its bulk, caused by its high water content, might make it difficult for cattle to consume it in large enough quantities He soaked hay in water until it was as wet as unwilted silage, then compared the intake of the two feeds. Cattle ate the wet hay more readily than the silage, showing that high water content itself was not responsible for the low intake of the silage.

For his own comparisons, Waldo used two groups of heifers. Heifers in one group were fed good quality legume forage put into a silo without wilting Those in the other group received hay cut from the same field Thus, the nutritionist was able to compare digestion of high moisture forage to that of forage from which most of the moisture had been removed

Waldo completely emptied the rumens of heifers fed the two rations and calculated the gross wet and dry weight of the contents He found the rumen load of silage-fed heifers considerably lighter, showing that they were not overstraining the capacities of their rumens. Other data showed that heifers on silage drank less water, partially compensating for the high water content of their feed

This finding still left the possibility that digestion of silage is inefficient and that it stays in the rumen longer, slowing the overall progress of feed through the animal. No such slowdown proved to exist. When he measured the flow of feed into the rumen against the level of feed remaining there, Waldo found that silage passed through the rumen as fast as hay, or faster

Next, he checked the possibility that digestion might be less complete because fermentation in the silo had altered the digestibility of the silage.

The effect of silo fermentation proved to be measurable, but only for one fiber— hemicellulose Since hemicellulose forms only a small percentage of legume forage, the net effect on digestibility is small.

Then, Waldo looked beyond the rumen, where the capacity of the digestive tract is much lower His research showed that heifers on hay passed more feces per day than those on silage, indicating that the digestive tract of silage-fed heifers must be unrestricted — fact, used below capacity.

Waldo found that energy furnished per pound of dry matter was the same for both forms of feed: Nitrogen derived from silage was slightly less per pound of feed, but enough to support a good growth rate.

Management Ability Seen Biggest Single Factor In Farmer's Success

The ability to manage is more important in determining a farmer's success than the size of his farm or quality of land or type of enterprise, according to W. T. McAllister, farm management specialist at the University of Delaware "There is little doubt about the fact that the real difference between the successful and the marginal businessman — be it farmer

Continued on Page 23)