

Alfalfa: Back to Basics

S. Ray Smith and T. Adam Probst
Forage Extension Specialist
and
Forage Research Analyst

Introduction

In the past, many university research trials and on-farm demonstrations have determined a range of cutting intervals for alfalfa. Most researchers have agreed that the optimum harvest frequency is about every 35 days to ensure top yields, without sacrificing too much in the way of forage quality and stand persistence. Others use a strategy of harvesting at 10% bloom.

In the last few years many seed companies have developed and are marketing alfalfa varieties that can supposedly tolerate a more aggressive cutting schedule because they show more rapid regrowth. Theoretically a producer can achieve higher yields and higher quality by harvesting more frequently. This research indicates that these claims may be difficult to validate.

Forage Yield

We planted five alfalfa varieties in the spring of 2006 and placed them under schedules of 25, 30, 35, and 40 days between harvests. In 2006 (the establishment year), the 25 day interval was cut four times, and the other management groups were harvested only three times. There was a segregation of yield levels with the different cutting frequencies. Even with an additional harvest, the 25 day harvest interval had about 0.5 ton/acre less yield than the 35 and 40 day interval.

In 2007, the 25 and 30 day frequencies were cut five times, while the 35 and 40 day frequencies were cut only four. Again, the 25 day harvest frequency resulted in yields that were 1.18 tons/acre lower than the 40 day frequency. There was no significant difference between the yields for the other cutting schedules, however, the 30 day cutting frequency was harvested one more time than the 35 and 40 day interval.

Mean Annual Dry Matter Yield for Spindletop.

	-----Tons/acre-----		
Cultivar	2006	2007	Total
WL357HQ	1.86c	3.79a	5.65
Spredor 4	1.93c	3.81a	5.74
Attention	1.88c	3.26b	5.14
Pioneer 54V54	1.87c	3.26b	5.13
HybriForce 400	1.89c	3.34b	5.23
Frequency			
25 Day	1.63d	2.72b	4.35
30 Day	1.63d	3.81a	5.44
35 Day	2.12c	3.58a	5.7
40 Day	2.17c	3.90a	6.07

* - Values with the same letter are not significantly different at P<.05 level.

Number of Cuttings Per Year.

Frequency	2006	2007
25 Day	4	5
30 Day	3	5
35 Day	3	4
40 Day	3	4

Forage Quality

Although there were differences in yield, surprisingly there were no significant differences in forage quality based upon the two years of this study. It is important to note that harvest interval normally has less influence on quality during an establishment year and that drought during the second harvest year of this study may have reduced the likelihood of quality differences. More years of data or a broader range of harvest frequencies may be needed. This study will continue during the 2008 growing season.

Forage Quality Analysis For 2006 and 2007.¹

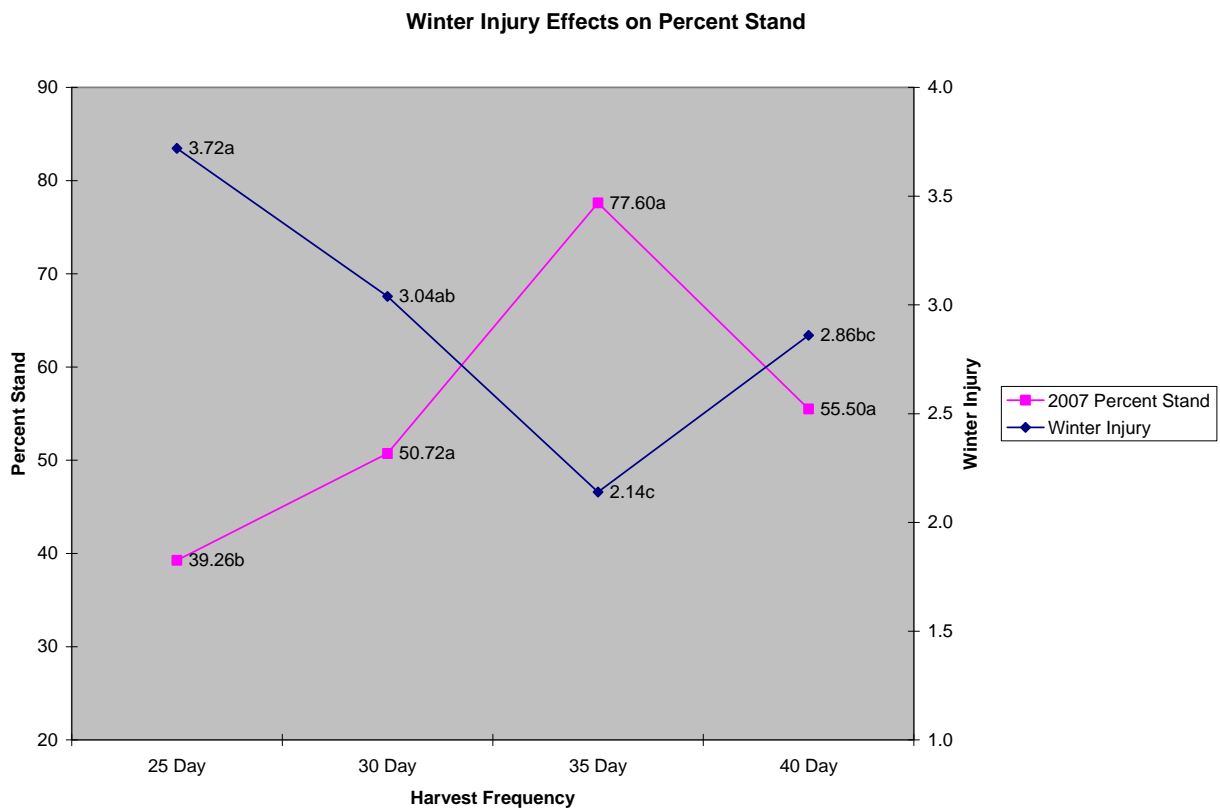
	-----%-----				
	<u>ADF</u>	<u>NDF</u>	<u>CP</u>	<u>RFV</u>	<u>TDN</u>
25 Day	26.84	39.53	20.33	164.12	69.96
30 Day	26.73	38.13	20.23	167.25	70.40
35 Day	27.72	38.94	19.96	163.39	69.03
40 Day	27.56	37.83	20.15	167.25	69.19

¹ - No significant differences between harvest frequencies at P<.05 level.

Stand Persistence

Many producers try to keep alfalfa stands in production for 4-5 years, and some are able to maintain stands for 6 years or more. Stand persistence is key reason to maintain alfalfa plant health by allowing sufficient time between harvests for the rebuilding of root carbohydrates. Under the adverse weather conditions in Kentucky last winter and early spring, the 25 day harvest frequency treatment showed reduced stand persistence.

Plots were scored in mid-April for winter injury, and later in May for percent stand. Although there was a negative relationship between harvest frequency and stand persistence at 25 days, there were no significant differences between the 30, 35, and 40 day harvest frequency for percent stand. Nevertheless, the 25 day cutting frequency had only a 39% stand in the spring of 2007.



What Should We Do?

The results of this research provide an important reminder on the “basics” of managing alfalfa. An aggressive cutting schedule of less than 30 days can really impact stand persistence and percent cover regardless of variety. Higher yields are rarely achieved, and based upon these preliminary results, there may be little or no advantage in forage quality.

Based upon rates collected by U.K.’s Farm Management Specialist, Greg Halich, one extra harvest can cost approximately \$30 per acre for 1200 pound round bales, and \$74 per acre for 50 pound small square bales at a yield of 1.3 tons per acre. Therefore, the hay harvested every 25 days will cost more to produce based upon less yield, and an extra trip over the field. When determining the optimum harvest frequency for your operation, be sure to also look at the cost of an extra harvest.

The 40 day harvest frequency would logically be the most efficient, however, there was more lodging with this harvest frequency. Since lodged plants are more difficult to harvest, the optimum cutting interval from the two years of this research would be the 35 day harvest frequency.

We will continue this research for a third harvest season and expect that under normal growing conditions quality will show more decline with the longer harvest frequencies, at least with some of the varieties. When the study is completed we will publish a complete extension report with final results and recommendations.