

## ALFALFA CUTTING MANAGEMENT - CROP YIELDS 1981-82

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Several research studies suggest farmers can maximize total digestible nutrients from alfalfa by harvesting the crop when it begins to bloom but before more than 10% of the stems have flowers. Cutting at this growth stage is the best compromise between the higher quality forage of earlier cut alfalfa and the greater yield from delaying harvest for a more mature crop. Delaying harvest until 10% bloom also allows sufficient time for storing of root reserves for rapid growth and long term plant survival. To evaluate these responses an alfalfa cutting management study was initiated in the spring of 1981. The previous year Saranac alfalfa was seeded June 19, 1980, on the entire plateau field at the University Research Farm in South Deerfield.

Six cutting treatments were imposed. These are listed in Table 1 and except for the prebud\* treatment the growth stage at harvest refers only to the first harvest. The second and third 1981 harvests and the first 1982 harvest were taken when new crown shoots appeared or 10% bloom was reached, whichever was first to occur. First cut yields in 1981 were increased 60% for the greater than 50% bloom growth stage, compared with harvested yields at the prebud growth stage. Second cut yields in 1981 were similar for all treatments except they were slightly lower for the >50% bloom and 80% greater than the prebud-prebud treatment. Third cut 1981 yields and first cut 1982 were similar across all treatments except for the prebud-prebud-prebud treatment. Continued cutting at this early growth stage reduced the third cut yield by 37% and the first cut 1982 yield by 57% compared to other treatments. Repeated early cutting as in the prebud-prebud-prebud treatment severely weakens the alfalfa plant depleting root reserves necessary for regrowth. In this study such cutting management resulted in a grass weed problem. The weakened alfalfa stand in the prebud-prebud-prebud treatment was slow to recover after each cutting in 1981 and did not shade out emerging grassy weeds.

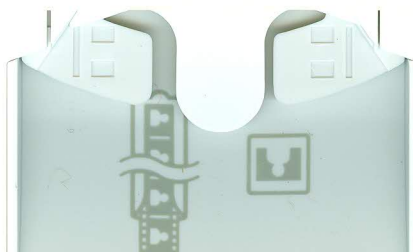
Table 1. Alfalfa yields in 1981 and first cut 1982 (hay equivalent, tons per acre).

Growth Stage	First Cut 1981		Total Yield 3 cuts 1981	Date of Third Cut	First Cut 1982	
	Date	Yield			Yield†	Shoot Count‡
Prebud*	May 19	1.78	3.65	July 17	0.66	7.8
Prebud	May 19	1.74	4.23	Aug. 3	1.68	16.5
Early bud	May 27	2.40	4.80	Aug. 6	1.54	16.9
Full bud	June 3	2.41	4.79	Aug. 6	1.56	16.7
10% bloom	June 9	2.58	4.96	Aug. 14	1.66	17.1
>50% bloom	June 15	2.82	5.05	Aug. 17	1.23	17.7

\* All three 1981 cuts taken at the prebud stage.

† First cut in 1982 taken near 10% bloom for all 1981 treatments.

‡ Number of shoots per sq. ft.



After the third prebud cutting of this treatment in mid July the stand was allowed to regrow throughout the fall. This regrowth period given for restoration of root reserves and alfalfa plant vigor was not enough to overcome the effects of the repeated early cutting. This had severely thinned the stand. The reduced first cut yield in 1982 resulted because there were fewer shoots produced.

## ALFALFA CUTTING MANAGEMENT FOR INSECT PEST CONTROL

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The harvesting process has a pronounced effect on the insects in alfalfa fields, either by removing the insects (including their eggs) with the forage or by destroying the major source of food for those remaining. The physical environment of the alfalfa field is changed, and generally becomes much hotter and drier. Also, the cutting practice abruptly changes the vegetative cycle, and plants that varied from a late bud to a past blossom stage become stubble, which sprouts and initiates a new cycle of vegetative growth. These changes in the environment of an alfalfa field at cutting will cause insects to leave, seek shelter or die.

The three pests of most importance in Massachusetts alfalfa are: Alfalfa Blotch Leafminer, Potato Leafhopper, and Alfalfa Weevil. Cutting management can provide effective control for each of these pests.

### Alfalfa Blotch Leafminer

The adult leafminer is a small black fly (1/8 inch long) which is active on the growing tips of alfalfa. Females feed by puncturing leaflets, resulting in "pinholes" (Fig. 1a). Eggs deposited in leaf tissue, hatch into maggots, which usually develop parallel to the midrib (Fig. 1b) and then expand into the comma-shaped "blotch mine" (Fig. 1c). Finally, the maggot chews its way out of the mined leaflet and drops to the soil to pupate, leaving behind an empty blotch mine (Fig. 1d). At summer temperatures maggots take 10-12 days to develop; new adults emerge from pupae after approximately 18 days.

