

MODIFIED HARVESTING SCHEDULE MINIMIZES INSECT DAMAGE TO ALFALFA

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The accepted agronomic practice for alfalfa harvest is to wait until 10% of the plants have bloomed. This allows for a balance between maximum protein content (and weight) and nutrient reserves in the roots to ensure vigorous regrowth and overwintering ability. However, by waiting until 10% bloom the grower allows alfalfa weevil, alfalfa blotch leafminer and meadow spittlebug to become sufficiently mature that they can survive the disruption of harvest. This encourages optimal development of pest insects and leads to pest buildup later in the season. In addition, the damage to plants as they approach 10% bloom results in yield loss.

Harvesting 5-7 days before 10% bloom drastically reduces pest insect populations at first cutting. This occurs because the significant pests are at vulnerable points in their life cycle. Alfalfa weevils are still in larval stages. Alfalfa blotch leafminer is just starting to reach its 'blotch' stage, and meadow spittlebug would desiccate because of exposure to direct sunlight. Early harvesting also may cause those pests not killed directly by the operation to disperse from the field. In addition, since the most damage is inflicted by alfalfa weevil and alfalfa blotch leafminer just before they reach maturity, early harvest salvages yield that otherwise would be lost. Agronomic limitations to early harvest include the disruption to build up of the carbohydrate root reserves and some reduction in yield.

Our experiments on the effects of an early first cutting to pest abundance are based on the alfalfa blotch leafminer. The mature larva leaves the mine to pupate in the soil and later emerge as the small black fly. If alfalfa is cut just as the mines become apparent on the leaflets, most (90%+) of the miners die. A delay of 2 or 3 days allows larvae to become large enough so that they leave the mine when the plants are cut and are able to burrow into the soil and emerge later as somewhat stunted adults, but still capable of contributing to the next (and usually largest) generation.

Fig. 1 shows the reduced numbers of alfalfa blotch leafminer (ABL's) that successfully pupate when plants are cut as the first mines appear, as compared to numbers in a 10% bloom regime.

Growers interested in reducing populations of ABL's without pesticides should time their first cutting to coincide with appearance of the early (straight) ABL mines, prior to the time when the miners begin to broaden the mine. Data on yield differences as a result of this practice are still being taken.

Fig. 1. Influence of harvesting schedule on cumulative ABL adult emergence (3rd generation).

