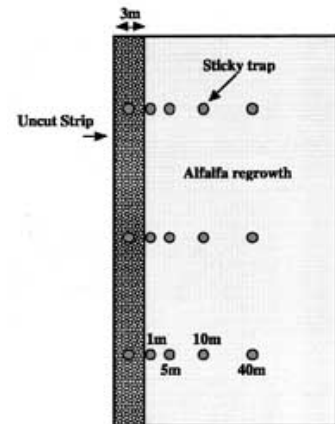


Strip Harvesting to Manage Potato Leaf Hopper in Alfalfa

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The potato leafhopper, *Empoasca fabae*, is a key insect pest of alfalfa grown in the Midwest. Adult *E. fabae* migrate to Iowa from the southern United States in late April but do not cause economic damage to alfalfa stands until the second harvest (June/July). Previous studies demonstrated that narrow uncut strips of alfalfa could be used to reduce densities of both the alfalfa weevil and the potato leafhopper in the alfalfa regrowth by concentrating them in the uncut strips. Our current study focuses on the effects of uncut alfalfa strips (3 meters, or 120 inches wide) on the number and distribution of *E. fabae* and insect predators alfalfa fields.

This study was conducted in four alfalfa fields at three locations representing differences in southern and northern Iowa. The alfalfa fields were located in Chariton (McNay research farm) and Practical Farmers of Iowa (PFI) farms located in Pella (Mark & Julie Roose) and Farmersburg (Jeff Klinge & Deb Tidwell).



Unharvested Alfalfa strip (left) and field showing markers for taking leafhopper counts.



At the time of first harvest, we left uncut a narrow strip of alfalfa, about 120 inches wide by at least 330 feet long. A series of yellow sticky traps was set up at various distances to monitor the movement of the leafhopper back into the alfalfa regrowth. A trap was placed horizontally at the level of the canopy inside the uncut strip, 40 inches away (1 meters), 16 feet away (5 m), 33 feet away (10m), and 131 feet (40 m) away from the strip. This was done at three locations in the field. Sticky traps were replaced weekly until the second harvest and the number of potato leafhoppers was recorded from each trap. Each field was also monitored by taking 8, 20-sweep samples along the transect of each distance.

The results of this study show that for at least 1-2 weeks after harvesting, the number of potato leafhoppers in the uncut strip was significantly more than in the regrowth. By the third and fourth weeks, there were no longer more leafhoppers in the uncut alfalfa strip than in the regrowth. However, the critical 1-2-week period can give the next cutting of alfalfa a headstart on leafhoppers.

Strip-harvesting allows the grower a few management options from which to choose. If the number of potato leafhoppers increases to outbreak numbers, the farmer can harvest just the strip of alfalfa in the field, which would kill any leafhopper eggs and nymphs present, or an insecticide can be selectively sprayed just on the uncut strip. This would save the farmer time and money and also reduce the amount of insecticide that is put into the soil.

In addition to the uncut strip serving as a trap crop for potato leafhoppers, it could also serve as a refuge for natural enemies and retain them in the field. This uncut strip would also provide a suitable microhabitat for the growth of a fungus, *Zoopthora radicans*, which is known to cause disease outbreaks in leafhopper populations. Infected leafhoppers in the uncut strip will have the potential to transmit this fungus to those in the alfalfa regrowth, thereby reducing the pest population.