

## **Insecticides Protect Alfalfa in Regions Where Parasites are Ineffective**

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Alfalfa is grown on 21 million acres in 42 states and is the predominant forage of choice for high producing dairy cows.

Although the alfalfa weevil was distributed throughout Europe and Asia, it was not in the U.S. until the early 1900s. The alfalfa weevil is now in all the contiguous 48 states. The Egyptian alfalfa weevil was first discovered in 1939 and has remained confined to California and Arizona. Adult weevils emerge from a summer resting state in fall and begin to migrate to alfalfa fields to feed, mate and lay eggs. Females deposit an average of 50 eggs per day for up to 80 days [1]. The females deposit the eggs in holes they chew in alfalfa stems. The tiny larvae crawl up the stems to feed on young leaves. Older larvae are voracious feeders. Plants may be stripped of all foliage. The alfalfa weevil is capable of defoliating an entire untreated alfalfa field [2].

Because the alfalfa weevil is an invasive species, Asian and European parasites were imported for control beginning in the early 1900s. From 1980 to 1990, USDA distributed 16 million parasites of the alfalfa weevil throughout 38 states [1]. In northeastern and mid-Atlantic states, parasites maintain the alfalfa weevil below economic threshold on the majority of acres [3]. Biological control of alfalfa weevil is now taken for granted in most of the north central states [4]. One parasite particularly suited to the northeast is the wasp *Microtonus aethiopoulos*. After mating, the female pursues the alfalfa weevil adults aggressively. When it catches a weevil, it inserts its egglayer through the anus and lays an egg in the body cavity. The parasite larva feeds on the organs of the alfalfa weevil. Eventually, the weevil is killed. It is estimated that this parasite kills up to 90% of adult weevils.

However, the level of biological control reached in the northeastern and north central states has not been achieved in other regions of the U.S., probably due to higher temperatures in these regions. Consequently, much of the alfalfa acreage in these other states continues to be treated annually with insecticides to control alfalfa weevil and Egyptian alfalfa weevil.

### **References**

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Alfalfa weevil damage



Wasp depositing egg in alfalfa weevil



Alfalfa weevil treatment