

# Managing cabbage aphids in brussels sprouts

Carolyn Pickel □ Frank G. Zalom  
Norman C. Welch

The cabbage aphid is the most serious pest of brussels sprouts, because it can contaminate the harvested product. Once cabbage aphids colonize the forming heads, they can't be removed, rendering the sprouts unmarketable. In addition, when aphids are in the heads, they aren't affected by pesticide treatments and control becomes difficult. The major goal of this integrated pest management (IPM) study was to determine the effects of delaying or omitting early-season treatments for cabbage aphid, *Brevicoryne*

*brassicacae* (L.), and to learn when aphids entering developing sprouts could no longer be controlled with insecticides.

Research plots were established at the Sheriff's Rehabilitation Center in Watsonville, Santa Cruz County, in 1984. Treatments consisted of zero to nine applications of Metasystox-R (oxydemeton-methyl) at 0.5 pound active ingredient (AI) per acre, applied at two-week intervals. The plots receiving nine applications were first treated 33 days after transplanting (July 3). Every two weeks thereafter, additional plots were treated as well as those previously treated, until only one plot remained without treatment. At harvest, 10 plants were taken from each plot; the leaves were removed and the stalks of sprouts weighed.

There was a significant reduction in the proportion of sprouts infested with cabbage aphids as the number of insecticide applications increased (fig. 1) ( $Y=75.865-10^{0.168x}$ ;  $P<0.01$ ). The proportion of infested sprouts, however, was not reduced appreciably with more than three treatments. The period when infestation occurred corresponded to the period after brussels sprouts were topped to remove the terminal bud and encourage lateral bud formation.

Sprout yields were lower in the plots receiving more insecticide sprays. On average, yields of plots that received four to nine sprays were 18 percent lower than yields of those receiving three or fewer sprays.

In 1985, treatments were evaluated on a 4-acre commercial ranch. The field was divided into six blocks of eight rows with eight-row buffers on both ends of the field. Each row was about 400 feet long. The buffers were sprayed by the grower

on his regular spray program, approximately every two to three weeks. The field was transplanted June 4.

Treatments consisted of zero to five insecticide applications. Up to four applications were made of Metasystox-R (0.5 pound AI per acre) and Phosdrin 10.3 WS (mevinphos) (0.25 pound AI per acre). The plot treated five times received one application of Disyston 15G (disulfoton) at 1 pound AI per acre as the initial spray, on July 15. The additional sprays were applied on August 7, August 29, September 20, and October 10. Plants were topped on September 16, and harvested October 28.

Aphid populations were monitored weekly in the treated and untreated plots by presence/absence sampling. Following the initial treatment, the proportion of aphid-infested plants typically dropped to less than 15 percent and remained at that level. The proportion of aphid-infested plants in the untreated plots remained above 50 percent for most of the season.

At harvest, 20 plants were removed from each treatment. Leaves were removed and the stalks weighed as in 1984. Twenty sprouts were chosen at random along each stalk, cut open, and examined for aphids. As in 1984, the proportion of infested sprouts decreased as the number of sprays increased (fig. 1) ( $Y=46.739 - 10^{0.175x}$ ;  $P<0.01$ ). Unlike 1984, there was no apparent difference in yield weight between treatments. However, fewer sprays were applied overall.

## Conclusions

Cabbage aphid infestations appear to be most serious in brussels sprouts after topping. The reason may be the development of sprouts on the plant after topping, which permits entry of aphids. Sprays applied before topping appear to reduce the abundance of aphids, but don't by themselves appear to improve yield or quality. In fact, excessive sprays may actually reduce yields.

Growers who follow a monitoring program throughout the season, use less disruptive pesticides applied before topping only when high aphid populations are present, and keep the aphid population low after topping can optimize their returns. This study suggests that it is possible to reduce sprays while maintaining or increasing yields and producing a crop acceptable to processors.

Carolyn Pickel is Area IPM Farm Advisor, Cooperative Extension, Santa Cruz County; Frank G. Zalom is IPM Specialist, Cooperative Extension, University of California, Davis; Norman C. Welch is Farm Advisor, Cooperative Extension, Santa Cruz County.

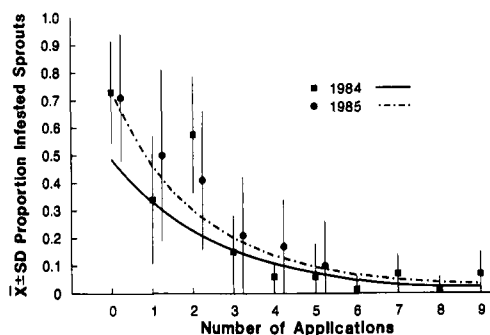


Fig. 1. As the number of pesticide applications increased, the proportion of aphid-infested sprouts decreased, although not appreciably after the third treatment.



Jack Kelly Clark

Cabbage aphids in brussels sprouts are hard to control with pesticide treatments, because they enter developing sprouts after topping, where they can't be reached by control sprays. Brussels sprouts infested with cabbage aphids are unmarketable.