



Rotten and mummified grape clusters provide excellent overwintering sites for the omnivorous leaf roller. Herbicide treatment where the soil is left undisturbed in the vine row may have created a large reservoir of overwintering sources from which infestation will occur in the spring.

THE OMNIVOROUS LEAF ROLLER, *Platynota stultana*, is not new to California, but apparently is a recent problem in the interior regions of the state, and has now become a serious grape pest in the San Joaquin Valley. During the past few years it has also been known to have attacked several other major valley crops including citrus, peaches, plums, cotton, and berries. The insect also feeds on numerous weeds and ornamentals.

The damage to grapes is caused primarily by bunch rot which results when the skin of the ripening berries is broken by larval feeding. Once started in a cluster, rot generally spreads rapidly. Exces-

sive bunch rot substantially reduces yield and quality. Although yield losses from infestations resulting in preharvest rot are difficult to assess, estimates this past season indicate that they may be 25 per cent or higher. In addition, where rot is a serious problem, quality and grading standards usually necessitate costly reconditioning in raisins, and diversion to low value uses for table and wine fruit.

The omnivorous leaf roller, which is beginning to be known as OLR among growers, was first noted in grapes in Fresno County in a vineyard near Sanger in 1963. However, it probably became established earlier because it had been

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reported on a number of ornamentals in the county the previous year. In 1964, the pest was found damaging grapes in a few vineyards in the Parlier-Kingsburg area. Since then, OLR has spread throughout Fresno County and now can be found in all of the vineyard districts. Reports from other grape producing counties indicate *Platynota* is now widespread in the San Joaquin Valley. However, as economic infestations tend to lag two or three years behind the first appearance of the pest, many vineyardists are not yet aware of OLR nor of the damage that it can inflict.

Recent investigations have shown that grapes are an almost ideal host for OLR. The larvae feed on practically any chewable part of the vine including the greenest to the ripest berries, stems, flower clusters, leaves, young shoots, drying grapes, and raisins. The shoot terminals, cluster forms, clusters and leaves, which the larvae web together, provide excellent nesting sites for protection and pupation. In general, the pest survives the winter as larvae in the raisins and mummified berries that hang on the vine or drop to the soil.

Studies made during the 1968 season showed that *Platynota* can complete its life cycle within the mummified bunches, or the larvae can leave overwintering sites in early spring and move on to shoot tips, leaves, and flower clusters where they form nests and pupate. Larvae of the first brood appeared in early May in 1968. Most of these formed nests in the cluster forms. The second brood larvae first appeared in late June, the third brood in late July, the fourth brood in late August, the fifth brood in late September and a sixth brood in early November. There was considerable overlapping of broods although there were definite peaks.

OUS LEAF ROLLER

new grape pest

Joaquin Valley



A major change in vineyard weed control practices in recent years may have inadvertently created a large reservoir of overwintering sources from which infestation occurs in the spring. Prior to 1960 the French plow was extensively used to control weeds in the vine row. Since then herbicides have replaced French plowing in many vineyards in the San Joaquin Valley. Besides controlling weeds, French plowing in late winter buries the vine trash that is on the soil surface beneath the trellis. When herbicides are used, a strip approximately 4 feet wide, centered on the vine row, is left undisturbed. Investigations during the past three winters have shown this area to be favorable for the larvae to overwinter in high numbers in mummified fruit. This probably accounts for the fact that OLR is a much greater problem in vineyards under chemical weed control.

Field Investigations

Field investigations indicate controlling OLR with pesticides presents some serious problems in the integrated control concept. Since the pest overwinters primarily as larvae of various ages, pupation takes place over a period of several weeks. Thus, broods tend to overlap from early season on; so the timing of treatments and the limitation of treatments to persistent pesticides or multiple applications is critically important. Unless the pesticides are highly specific, persistent chemicals and/or multiple treatments are undesirable in an integrated pest control program because of their detrimental effect on beneficial parasites and predators. Chemical control is further complicated by the fact that the larvae stay between webbed leaves or in the clusters

where they are protected from pesticide contact.

Pesticides presently registered for use in vineyards which are promising for *Platynota* control include phosdrin, methyl parathion, Sevin-Dibrom combination, and standard lead arsenate. Standard lead arsenate best fits into the integrated pest control program, but its use is limited to early season before fruit formation. Because it is restricted to early season use, a high percentage of control has not been obtained with standard lead arsenate sprays. However, where overwintering populations have been relatively low, it has provided acceptable season control.

Combination

Limited experience showed that a Sevin-Dibrom combination, methyl parathion, or phosdrin gave economic control as long as the treatments were properly timed. Because of its short residual, two applications of phosdrin about 10 days apart were needed. Although one well-timed application of Sevin-Dibrom controlled *Platynota*, the treatment often was followed by severe spider mite infestations. Other than standard lead arsenate, the investigations indicate that chemical treatments should be made about one week after a peak moth flight when a significant part of the population is in the larval stage. Best results seem to be obtained when the second brood is treated. Generally, this would be in early July in the Fresno area.

This past season heavy parasitism of overwintering larvae was noted in some vineyards. However, during early summer, parasite activity was essentially nonexistent and did not increase again until late summer. This phenomenon needs to

Studies indicate that the best approach to control of the omnivorous leaf roller at present is field sanitation and chemical treatment if necessary. Early French plowing and disking should forestall damage in vineyards not yet infested. Where infestation already has occurred, removing all mummified clusters from the vine along with the French plowing and disking will be necessary. A standard lead arsenate spray just prior to fruit formation looks promising in tests but further research is needed. Insecticide treatments may be needed later in the season where sanitation practices are not used, or have failed to provide sufficient control.

be thoroughly investigated since biological control is so important in an integrated program.

Sanitation appears to offer considerable promise in controlling OLR. Destruction of overwintering larvae before they move to the new growth would greatly reduce the initial spring infestation. Many of the overwintering larvae that are in the trash on the ground can be buried by French plowing and disking. Also, in thorough clean-up the mummified clusters hanging on the vine would be removed. These operations would have to be completed before the vines leaf out in the spring.

Most growers using herbicides for controlling weeds in the vine row are reluctant to return to the inconvenience of French plowing. Some growers have tried to kill the overwintering larvae by including an insecticide with the herbicide spray. There is no evidence that this has been effective. Flaming the area in the vine row is another possibility currently being investigated. Butane fired weed control equipment is available for strip treating in vineyards and appears to be economical. The major problem with flaming is how to develop sufficient heat to burn the trash without catching the vines and stakes on fire.

All of these possibilities are still in the experimental stage and are not recommendations for control of OLR. Chemical recommendations are only for the use of Dibrom or Sevin during the summer before harvest.

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