

TABLE 1. Expected and observed numbers of *Prionus californicus* Mots. larvae in 4 hypothetical populations calculated by the EM algorithm.

Population	Number in Population	Loss	Gain	Expected Number in Interval	Observed Number in Interval
1	148	0	2	150	151
2	36	2 + 2	9	41	39
3	37	9	2 + 1	31	31
4	<u>22</u>	1		<u>21</u>	<u>22</u>
	243			243	243

damaged roots showing they can move from one part of a root system to another. These larger larvae were occasionally found at depths to 50 cm.

Control Considerations

The presence of uninfected hops at a locality within 6 km of infected yards suggests that spread of *P. californicus* may be limited when occurrence of the host is not continuous, and that rotation of production between areas even relatively close together would be an effective control. Under those circumstances it is highly unlikely that a serious infestation would develop in the 15 to 20 year life expectancy of a yard. Losses could also be reduced by allowing at least three years between hop plantings.

Eyer (1942) found eggs to a maximum depth of 37 mm. In the present study essentially all larvae were found well below this level. Therefore applications of effective soil insecticides at plant bases as suggested by Eyer (1942) could provide control since newly hatched larvae would be exposed as they

migrated through the soil before entering the crown or a root. Under Idaho conditions an insecticide application could be made beginning with 2-year-old hops on about July 15 and repeated annually.

Eyer (1942) reported that *P. californicus* in New Mexico was most prevalent in light loam and sandy soils. These soil types are typical of the western Idaho hop producing area and may have contributed to the development of *P. californicus* as a serious problem.

No natural enemies were observed to attack *P. californicus* in this study, but Leech (1947) has reported parasitism of an adult female by the dipteran, *Sarcophaga rapax* Walk.

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ERRATUM

In Vol. 80, 1983, in the article by Vernon and Houtman entitled, 'Evaluation of sprayed and granular aphicides against the European asparagus aphid . . .', the graphs from Figure 2 should appear above the caption of Figure 3 and *vice versa*.