

Biology/Phenology

DETECTION, FLIGHT PHENOLOGY, AND POPULATION MONITORING OF ORIENTAL FRUIT MOTH AND LESSER APPLEWORM IN THE WILLAMETTE VALLEY, OR

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Oriental fruit moth (OFM) has been occasionally documented in the Willamette Valley; however, those specimens may have been mis-identified due to the presence of a closely related species, the lesser appleworm (LAW). No voucher specimens exist that allow us to confirm the previous identification of OFM. Concerns of an agricultural trade issue brought to our attention questions of whether OFM exists in the Willamette Valley and, if so, how its flight phenology compare to that of the morphologically similar species, LAW. Such information is useful to determine when a trapping program should be implemented (e.g., during the peak adult flight period) and to confirm the OFM free status for certain counties. In this study we were interested in 1) determining whether and where OFM is present in the Willamette Valley and 2) documenting flight phenology and population fluctuations of OFM. In order to achieve the above, we have to examine the same questions for LAW because both species can coexist and may be confused with each other.

To determine the presence and distribution of OFM in the Willamette Valley, a detection survey was conducted in 1998, 1999, and 2000. Each year over 250 traps were distributed throughout seven counties, including the top five nursery producing counties. To document the flight phenology of OFM and LAW we monitored six sites for three years in four Willamette Valley counties for both OFM and LAW. All moths were captured using Pherocon IC traps baited with OFM pheromone, which attract both OFM and LAW in the field. Detection traps were checked approximately twice between mid-May and mid-September. The traps used to document flight phenology were checked each season at the six sites approximately on a weekly basis. Trap bottoms were replaced when target specimens were found or when traps were dirty. The removed trap bottoms were brought to the laboratory for examination. Trapped OFM and LAW were identified, counted, and the numbers recorded.

Of the seven counties surveyed in the Willamette Valley, OFM was found in two sites in Clackamas Co. and one site in Linn Co. Large numbers of OFM occurred only at one site in Clackamas Co., an organic peach orchard near Canby. LAW was more widely distributed than OFM and was found in all counties surveyed; however, the numbers of LAW were low at several sites. As a result, two sites were selected to examine flight phenology in more detail: 1) west Salem, the site with the highest number of LAW and 2) Canby, the only site where OFM and LAW were trapped together. OFM adults were present each year at the Canby peach orchard from mid-April to mid-October with two flight peaks. LAW adults were present in Canby and west Salem from mid-April to the end of October with two to three flight peaks each year. In general, the moths were most numerous and had the largest flight peaks in August and September.

This study indicates that OFM is present only in one county, with the exception of Linn Co., where a single moth was caught during the three-year survey. LAW is more widely distributed in the Willamette Valley and could be found in all seven counties. Although flight phenology of OFM varied slightly from LAW throughout the season, both species could be found each season from mid-April through mid-October. Detection trapping for OFM can be limited to August and September, the two months when OFM adults are most abundant. For both LAW and OFM, population levels and flight peaks varied between years presumably due to weather, hosts, and other field conditions.

Adult Flight Phenology of OFM and LAW in the Willamette Valley

