

Biology/Phenology

Flight Phenology of Oriental Fruit Moth and Lesser Apple Worm in the Willamette Valley, Oregon

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Keywords: oriental fruit moth, *Grapholita molesta*, lesser appleworm, *Grapholita prunivora*, cherry, peach, plum

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 compares 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. This would allow nursery stock from these counties to be shipped to other states or countries (e.g., Canada) without quarantine treatments such as fumigation. In this study we were interested in (1) determining whether and where OFM is present in the Willamette Valley, and (2) documenting adult phenology of OFM. In order to achieve the above, we have to study the same questions for LAW because both species can coexist and may be confused with each other.

To detect the presence and distribution of OFM and document its flight phenology, we monitored six sites for both OFM and LAW using Pherocon IC traps baited with OFM pheromone, which attract both OFM and LAW in the field. The traps were placed in one site each in Clackamas and Marion counties, and two sites each in Linn and Polk counties from April or May through November in both 1998 and 1999. In Clackamas Co. one trap was placed in an organic peach orchard in 1998 and five were set in the same orchard in 1999. In all other counties—depending on the size of the chosen site—two to six traps were placed in each cherry, peach, or plum orchard in 1998 and 1999. In 1998 all traps were checked approximately every two weeks at all sites until the end of June. Starting in July, traps were checked every week at all sites except the Clackamas site. In 1999 all traps were checked weekly. 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.

OFM was found only in Clackamas Co. in the Willamette Valley. LAW was more widely distributed than OFM and could be found frequently in many counties. Populations of both OFM and LAW were 3 to 6 times higher in 1998 than in 1999 based on the trap catches. OFM adults were fairly abundant in 1998 between late July and late September with two flight peaks, one in mid-August and the other in mid-September. In 1999, there were also two flight peaks but the peaks were two to three weeks earlier than those in 1998. The peak flight periods for LAW were not as distinct as for OFM but there appeared to be at least two flight peaks in 1998 and at least three in 1999. The two main flight peaks for LAW occurred in the beginning of June and the end of August. In 1999, there was a third flight peak in the end of July. The peak flight periods of LAW in 1999 were also about one to two weeks earlier than those in 1998.

This study indicates that OFM is present only in one county while LAW is more widely distributed in the Willamette Valley. Of the 23 traps placed each year in six sites spanning four counties, we trapped LAW in all sites, but OFM only in one site. Although flight phenology of OFM varied slightly from LAW throughout the season, both species could be found from the beginning of May through mid-October. Since the peak flight periods of OFM and LAW overlapped, flight phenology cannot be used as a reliable guide for species identification of trapped moths. However, detection trapping for OFM can be limited to August and September, the two months when OFM adults are most abundant.

Adult Flight Phenology of OFM and LAW in the Willamette Valley

