Filbertworm Injury to Walnuts

seasonal population trend of filbertworm moths as shown by trapping records may indicate severity of damage to crop

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The flight of filbertworm moths during the early 1956 season was very small when compared to 1954 or to 1955 but after mid-July the moth catch—in five bait pans in an experimental walnut orchard near Gridley—began to mount. By season's end the severity of the infestation was second to that of 1954, when the infestation was the most severe encountered since investigations were started in 1944.

It is not known what environmental conditions were responsible for the upward surge that took place in late season. However, the same situation prevailed with the codling moth. In early season it appeared that the codling moth infestation would not be serious, but in July the picture began to change and by harvest one of the most serious infestations in any recent year had developed.

The experimental orchard is interplanted with Payne and Franquette varieties. The degree of the 1956 infestation of filbertworm in the Payne variety in the experimental orchard was approximately 5%, compared with 3% for 1955 and 29% in 1954. The walnuts delivered to the processing plant ran 3%–4% infested. Early harvest was practiced in all three years. The infestation of filbertworms in the Franquettes at harvest approached 20% probably because of the size of the moth population present in late season.

After three successive years of moth trapping—which should be continued until the walnut crop has reached maturity, at least—it appears as if the seasonal record can be used to predict the severity of the filbertworm infestation in the harvested crop. It was the late season moth catches in 1956 that indicated the presence of a destructive filbertworm population within the orchard.

Because no effective spray program for use against the filbertworm has been developed—to date—cultural measures must be relied upon to limit damage. The filbertworm can not enter nuts until after the husks have begun to crack, so the walnut crop should be harvested at the earliest possible date. Further, the filbertworm is unable to complete its development on dried walnut meats. Therefore, the crop should be dried thoroughly as soon as it is harvested.

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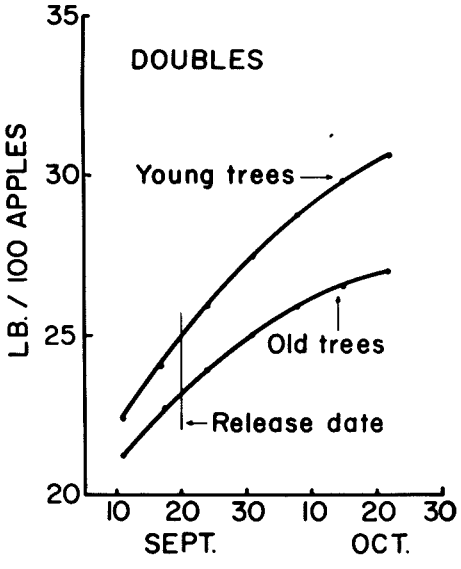
The individual fruit size data obtained from the samples taken to Davis were used to determine the correlation between diameter and weight. A correlation coefficient of 0.938 was found for this relationship which made it possible to formulate a regression equation for estimating the weight of fruit from the diameter measurements. The equation was used in estimating the weight of the fruits measured from week to week.

Growth of Yellow Newtown apples during harvest period, two fruits per cluster base.



For the most part, the rate of size increase was slightly greater during the first four weeks than during the last two but there was a regular increase from the first sampling date to the last. Fruits on the young trees grew at a faster rate than those on the old trees which carried a relatively heavier set of fruit. On September 11, in fact, the single fruits on the young trees averaged smaller than those on the old trees, but on October 22 they were larger. The relatively heavier set of fruit on the old trees may account, in part, for the slower rate of growth. Though trees of both ages suffered seriously from spider mite damage in October, the foliage was in poorer condition on the older trees.

Double Fruits

Fruit size of Yellow Newtown apples, two fruits per cluster base from September 11 to October 22, 1956, in orchard near Watsonville.

Date	Aver. dia. inches	Average weight lb./100 fruit	Average weight % of release date wt.
Young trees			
9/11	2.56	22.40	90.2
17	2.62	24.06	96.9
20*	2.65	24.84	100.0
24	2.69	25.88	104.2
10/1	2.75	27.43	110.4
8	2.80	28.74	115.7
15	2.84	29.84	120.1
22	2.86	30.59	123.1
Old trees			
9/11	2.52	21.20	91.3
17	2.57	22.68	97.7
20*	2.60	23.21	100.0
24	2.62	23.91	103.0
10/1	2.66	25.01	107.8
8	2.69	25.88	111.5
15	2.71	26.51	114.2
22	2.73	27.04	116.5
Average			
9/11	2.54	21.80	90.8
17	2.60	23.37	97.3
20*	2.62	24.02	100.0
24	2.65	24.89	103.6
10/1	2.70	26.22	109.2
8	2.74	27.31	113.7
15	2.77	28.17	117.3
22	2.80	28.82	120.0

* Release date values interpolated.

The fruit size of the doubles averaged smaller than that of the singles. Because the trees had been hand thinned most of the clusters of fruit were reduced to singles, so the doubles available for measurement were those hidden in the inside portions of the tree and missed by the thinners. Such locations were naturally less favorable for sizing fruit than were the more exposed peripheral locations of the singles. However, some of the doubles were as large as the singles.

The doubles increased in size at a rate equal to or greater than that of the singles, as shown by a comparison of the percentages of the release date weight. The slightly higher weight percentages for the doubles suggests that they grew relatively faster than the singles after release date.

The magnitude of the size increase—in terms of yield in tons per acre—to

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