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MONITORING FOR WALNUT HUSK FLY AND CONDUCTING A NEEDS ASSESSMENT OF WALNUT GROWERS IN LAKE COUNTY

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Objectives

1. Conduct a needs assessment of walnut growers and PCAs in Lake County to more accurately direct future research in addressing the integrated pest management needs of the walnut industry in Lake County.
2. Monitor for walnut husk fly to determine the seasonal fluctuations of this species in Lake County and associated walnut damage with the goal of gaining a better understanding of this key pest for future research.
3. Familiarize oneself with walnut production, phenology, and seasonal needs with weekly visits throughout the season.

Background

The walnut husk fly is a mid- to late season pest negatively impacting walnut production in Lake County. Infestations stain the walnut shell, make the hull difficult to remove, and cause shriveled kernels, yield reduction, and a 30% loss in crop value. Investigations into alternative integrated pest management tools and possible modifications of current methods are needed for control of this insect. Funding for the 2020 walnut husk fly trapping in Lake County contributed to a better understanding of this key pest in walnuts and established a baseline for future research projects that address walnut husk fly control in Lake County.

Results & Discussion

Due to COVID-19 restrictions, opportunities to conduct an in-person needs assessment at meetings and seminars along with in-field interviews with growers and PCAs were not possible. The revised plan is to create a survey through Qualtrics that can be completed online and/or printed and mailed to growers and PCAs for their input. The formal needs assessment of walnut growers and PCAs in Lake County will commence in winter of 2021 as part of a larger needs assessment of growers and PCAs for all crops in Sonoma, Napa, Lake, and Mendocino counties.

In our study, four walnut orchards (two in Upper Lake and two in Kelseyville) were visited weekly from July to October. The time spent in the orchard over the season contributed to a better understanding of walnut production, phenology, and insects present in the orchard. The data collected established a baseline for future research projects to further address walnut husk fly (WHF) control in Lake County.

Although trap counts were limited to four orchards in two regions of Lake County, the data collected can contribute to the understanding of the WHF seasonal dynamics in Lake County (Figure 1,2). Documentation of the seasonal fluctuations in WHF populations and when gravid females are present are important baseline data that will be useful in timing future projects.

In this study, the percent estimated WHF damage (Table 1) corresponded with the mean number of WHF adults caught in traps for the 2020 season (Table 2), meaning that as the number of adults caught in traps increased, so did the damage estimate at the end of the season. Although somewhat intuitive, this relationship is not true for all insect species in that trap counts do not always correspond with damage in other insect/crop relationships. This again contributes to the baseline data that will be helpful in developing future research projects.

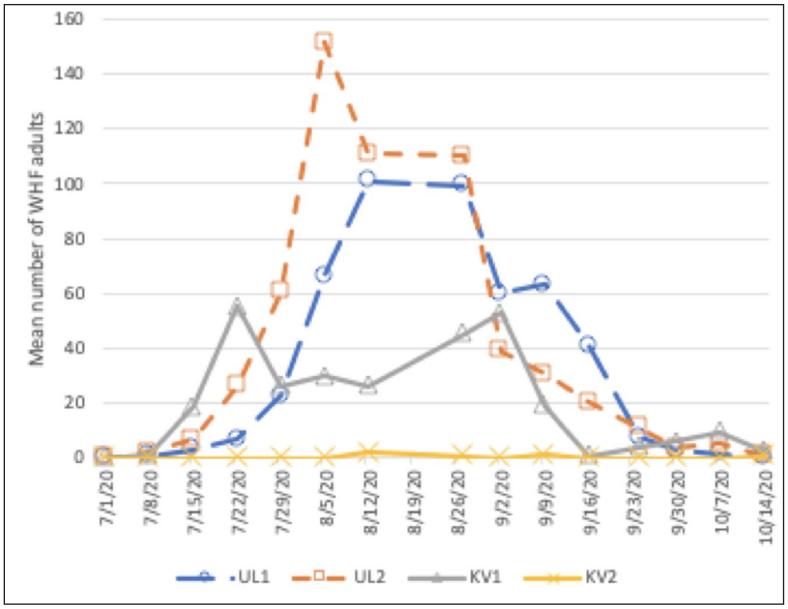

FIGURE 1. 2020 Lake County walnut husk fly trap counts by orchard.

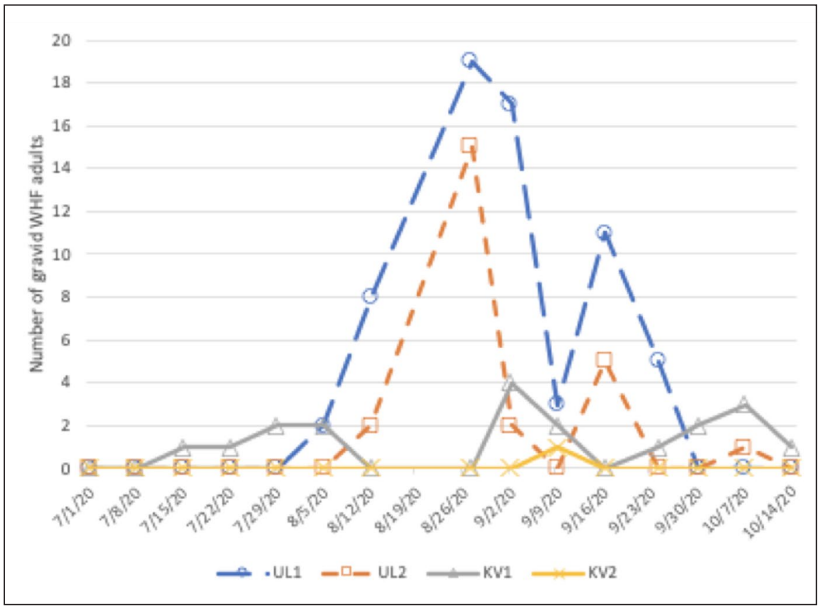

FIGURE 2. Number of gravid female walnut husk flies found in 2020 Lake County traps by orchard.

	UL1U	L2	KV1	KV2
TRAP 1	6.51	12	3	0.5
TRAP 2	13.5	23	9.5	.5
TRAP 3	-	-	6	-
AVERAGE	10	17.5	6.20	.5

TABLE 1. Percent estimated WHF damage.

	UL1U	L2	KV1	KV2
TRAP 1	527	675	288	1
TRAP 2	423	479	248	7
TRAP 3	-	-	452	-
TOTAL	950	1154	988	8
AVERAGE	475	577	329	4

TABLE 2. WHF trapped per orchard.