Washington State Department of Agriculture

CHANGES IN PESTICIDE USE IN WASHINGTON SWEET CHERRIES

Introduction

During the past 10 years, Little Cherry Disease has been spreading in Washington cherry orchards. This disease can be caused by Little cherry virus 1 and 2 or the X-disease phytoplasma. Infections with each of these pathogens can reduce fruit quality and yield. Even though they are all commonly called Little Cherry Disease because of similar symptoms, Little cherry virus and X-disease are two different pathogens. The continued spread of Little Cherry Disease/X-disease threatens the economic stability of sweet cherry production in Washington.

X-disease is currently the most prevalent of the pathogens and it spreads by small insects called leafhoppers. The only direct option to manage the disease is to remove infected trees to prevent further spread of the pathogen. Other options to reduce the risk of X-disease include keeping leafhopper populations low and eliminating other host plants of X-disease and the leafhoppers within the orchard, notably broadleaf weeds. Both strategies could be achieved using insecticides and herbicides for the vector and the weeds respectively.

In 2020, the Natural Resources and Agricultural Sciences (NRAS) program of the Washington State Department of Agriculture conducted focus groups in Wenatchee and Yakima to learn about pesticide (insecticides, herbicides, and fungicides) usage in sweet cherries in 2019. The groups discussed products used, application rates and timings, and the percentage of acres treated. At this time, Little Cherry Disease/X-disease was beginning to spread from initial detection sites.

In 2024, NRAS staff held follow-up focus groups in Yakima and Wenatchee to discuss pesticide use in sweet cherries to see if there were changes in pesticide usage practices related to managing Little Cherry Disease/X-disease in 2023. We were also interested in potential geographic differences in pesticide usage. Both the Yakima and the Wenatchee group consisted of growers, crop consultants, and other knowledgeable individuals, however the two groups drew attendees from different regions. Attendees at the Wenatchee group were from Chelan, Douglas, and northern Grant counties, while attendees at the Yakima group were from Yakima, Benton, and Franklin counties, which have a higher prevalence of Little Cherry Disease (Harper et al. 2023). In total participants had knowledge of pesticide usage on 7,000 acres or 15% of the sweet cherry acres in Washington. Cherry pest management plans from two pesticide distribution companies supplemented the focus groups.

Results

From the data gathered in 2019 and 2023 at the focus groups, there is a notable qualitative increase in the use of insecticides and herbicides, with more applications and new active ingredients being used. Many of these pesticides are labeled for use against leafhoppers or broadleaf weeds. Removing both from orchard environments may help limit exposure to Little cherry disease/X-disease. These increases are likely related to more proactive

management against Little cherry disease/X-disease. However, since the 2024 events were marketed specifically towards Little cherry disease/X-disease management, changes in pesticide usage may be due to a bias towards more active orchard managers.

Fungicides: Little change in fungicide was seen between focus groups years and locations.

Herbicides: There are several notable differences between the 2019 and 2023 data for herbicide use. The active ingredients 2,4-D, carfentrazone-ethyl, clopyralid, and fluridone were all used in 2023 but not 2019. Carfentrazone-ethyl use was only reported by the Yakima group. The reported percentage of acres treated increased from 2019 to 2023 for glyphosate, indaziflam, pendimethalin, pyraflufen-ethyl, and rimsulfuron (Table 1). Four herbicides active ingredients were used in 2023 that hadn't been used in 2019: 2,4-D, carfentrazone-ethyl, clopyralid, and fluridone, all of which can be used to manage broadleaf weeds. No use of these herbicides was reported in United States Department of Agriculture (USDA) surveys in 2015 and 2021. For each herbicide that was used in both 2019 and 2023, the percentage of acres treated increased from 20% or less to more than 85% for each herbicide. Likewise, the increase in herbicide use shows a similar trend of active ingredients that work against broadleaf weeds. Limiting broadleaf weeds within orchards can be one way to reduce exposure to X-disease (Harper et al. 2023).

Table 1. Comparison of selected pesticide active ingredients (AI) used by focus group participants in 2019 and 2023.

Herbicides		2019		2023	
	AI	No. Apps.	% treated	No. Apps	% treated
	Glyphosate	1	20	1	100
	Indaziflam	1	10	1	89
	Pendimethalin	1	10	1	100
	Pyraflufen-ethyl	1	10	1	86
	Rimsulfuron	1	15	1	100
Insecticides		**2019**		**2023**	
	AI	No. Apps	% treated	No. Apps	% treated
	Buprofezin*	1	40	1	100
	Carbaryl*	1	5	1	57
	Imidacloprid*	2	60	2	100
	Kaolin clay*	1	3	1	75
	Lamda-cyhalothrin*	1.5	60	2.75	100
	Spinetoram	2	50	2.25	100
	Spinosad	1	70	2.75	100
	Zeta-cypermethrin*	2	10	2	100

* labeled for use against leafhoppers in cherries

Insecticides: Eight insecticide active ingredients were reported in 2023, but not 2019 (abamectin, acetamiprid, beta-cyfluthrin, cyflumetofen, malathion, methoxyfenozide, sulfoxaflor, and thiamethoxam). The reported percentage of acres treated increased from 2019 to 2023 for buprofezin, carbaryl, imidacloprid, kaolin clay, spinetoram, spinosad, and zeta-cypermethrin (Table 1). The average number of applications of lamda-cyhalothrin per year increased from 1.5 to 2.75. The Yakima group reported four applications of lamda-cyhalothrin in 2023 compared to the 1.5 of the Wenatchee group. Applications of spinosad increased from 1 to 2.75 from 2019 to 2023.

Of the insecticides reported in 2023 but not 2019, five (acetamiprid, beta-cyfluthrin, malathion, sulfoxaflor, and thiamethoxam) belong to groups that can control leafhoppers (Clark et al. 2024). Prior use of acetamiprid and thiamethoxam were reported in a 2015 survey conducted by the USDA. The increased use of imidacloprid, lamda-cyhalothrin, and zeta-cypermethrin may be indicative of more applications to control leafhoppers as these active ingredients are effective against leafhoppers (Clark et al. 2024).

Prepared by: *Christopher McCullough, Pesticide Usage and Stewardship Scientist, Washington State Department of Agriculture*

References

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