

**Project Title:** Pesticide residues of PNW cherries

**Report Type:** Final report

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**Cooperators:** Gerardo Garcia (WTFRC), Northwest Horticultural Council, Pacific Agricultural Labs (Sherwood, OR), OMIC USA Labs (Portland, OR), Orondo Orchards, Gale Fource Orchards, WSU Sunrise Orchard

**Project Duration:** 3 Years

**Total Project Request for Year 1 Funding:** \$ 6000

**Total Project Request for Year 2 Funding:** \$ 6250

**Total Project Request for Year 3 Funding:** \$ 6500

**Other related/associated funding sources:** Most chemical products donated by registrants; sample shipping and lab fees for prohexadione residue testing paid by registrants

**Primary PI:** Tory Schmidt

**Organization Name:** WTFRC

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Item	2023	2024	2025
Salaries			
Benefits			
Wages1	\$1,500.00	\$1,600.00	\$1,700.00
Benefits1	\$800.00	\$850.00	\$900.00
RCA Room Rental			
Shipping2	\$400.00	\$425.00	\$450.00
Supplies	\$300.00	\$300.00	\$300.00
Travel3	\$1,000.00	\$1,025.00	\$1,050.00
Plot Fees			
Miscellaneous			
Analytical lab fees	\$2,000.00	\$2,050.00	\$2,100.00
<b>Total</b>	<b>\$6,000.00</b>	<b>\$6,250.00</b>	<b>\$6,500.00</b>

**Footnotes:**

Schmidt estimates 8% of his time is dedicated to this project on an annual basis

Most pesticides tested are donated by their registrants or an ag chemical supply company

- 1 Wages & benefits primarily for Garcia (spray applications), crew help for Garcia, and Stone (data entry & review)
- 2 Est. costs to ship cherries overnight to Sherwood, OR
- 3 Travel costs include hauling equipment to & from plots

## 2025 WTFRC CHERRY PESTICIDE RESIDUE STUDY

Since 2011, the WA Tree Fruit Research Commission has conducted annual studies of residues of commonly used pesticides on cherry fruit at harvest. Digital versions of this report and similar studies on apple and cherry including comprehensive summaries of multiple years' results are available at [www.treefruitresearch.org](http://www.treefruitresearch.org). For current information on maximum residues levels (MRLs) and other regulatory issues, please consult the Northwest Horticultural Council website at <https://nwhort.org/export-manual/>.

**Spraying trial block at 200 gal/acre**



### TRIAL DETAILS

- Trial conducted in mature 'Skeena'/K.6 central leader trees on 10' x 16' spacing near East Wenatchee, WA
- 15 insecticides/acaricides, 3 fungicides, and 1 plant growth regulator were applied at or near maximum rates and minimum pre-harvest and re-treatment intervals; products were applied twice as allowed by product labels
- Applications made by Rears PakBlast PTO-driven airblast sprayer with 8 oz non-ionic surfactant (Regulaid)/100 gal water at 200 gal water/acre
- Roughly 0.01" of rain fell on the trial block on June 21; this precipitation likely did not affect residues on the fruit
- Fruit samples shipped overnight to Pacific Agricultural Labs (Sherwood, OR) for standard residue analysis and OMIC USA Laboratory (Portland, OR) for analysis of prohexadione calcium residues

### RESULTS & DISCUSSION

Through the years, the primary objective of these studies has been to simulate a *worst case scenario* for residues of legally applied pesticides by using aggressive rates, timings, and spray intervals. As in the past, most materials were applied twice as allowed by product labels, whether or not typical commercial use patterns would do the same. With that approach, **all 2025 residues complied with domestic tolerances but some exceeded foreign MRLs for important export markets: Kudos 27.5WDG, Bexar, Esteem, Asana XL, Nealta, Torino, and Carbaryl 4L.**

While residue levels for prohexadione calcium (Kudos 27.5WDG) in this study are concerning, it should be noted that prohexadione products are rarely, if ever, applied at these late timings; residues from plots sprayed at at more typical industry rates and timings were found to be considerably lower in a separate 2025 WTFRC trial to evaluating various prohexadione calcium programs on Sweetheart cherries. Those results may be found in a supplemental summary focused on prohexadione calcium residues available at [www.treefruitresearch.org](http://www.treefruitresearch.org).

**Dried residues on cherries at harvest**



MRLs are known to change frequently and cherry producers should routinely monitor the most current information (<https://nwhort.org/export-manual/>) to facilitate compliance with constantly evolving foreign standards.

### Measured residue levels vs. MRLs for pesticides applied to cherry fruit at 200 gal water/acre. 'Skeena'/K.6, East

Wenatchee, WA. WTFRC 2025.

Common name	Trade name	Application rate <sup>1</sup>	Application timing(s)	Measured residue	US tolerance <sup>2</sup>	Lowest export tolerance <sup>2</sup>
		per acre	days before harvest	ppm	ppm	ppm
prohexadione calcium	Kudos 27.5WDG	20 oz	35, 21	0.40	0.4	0.01 (THA)
tolfenpyrad	Bexar	27 oz	28, 14	0.39	2	0.01 (many)
pyriproxyfen	Esteem	16 oz	28, 14	0.48	1	0.01 (THA)
thiamethoxam*	Actara	5.5 oz	21, 14	0.183	0.5	0.5 (many)
esfenvalerate	Asana XL	14.5 oz	21, 14	0.17	3	0.01 (THA)
lambda-cyhalothrin	Warrior II	2.56 oz	21, 14	0.17	0.5	0.3 (many)
chlorantraniliprole	Altacor eVo	2.2 oz	21, 11	0.11	2.5	0.5 (KOR)
cyflumetofen	Nealta	13.7 oz	21, 7	0.15	1.5	0.02 (AUS)
quinoxifen	Quintec	8.7 oz	21, 7	0.055	0.7	0.4 (many)
cyclaniliprole	Verdepryn 100SL	11 oz	14, 7	0.082	1	0.6 (TWN)
cyflufenamid	Torino	8 oz	14, 7	0.097	0.6	0.01 (THA)
flonicamid	Beleaf 50SG	2.8 oz	14, 7	0.28	0.6	0.6 (many)
emamectin benzoate	Proclaim	4.8 oz	14, 7	<0.01	0.09	0.005 (THA)
carbaryl	Carbaryl 4L	96 oz	11, 4	3.1	10	0.01 (THA)
zeta-cypermethrin	Mustang Maxx	4 oz	11, 4	0.26	2	1 (KOR)
spinosad	Entrust SC	6.8 oz	11, 4	0.021	0.2	0.2 (many)
pydiflumetofen	Miravis	5.1 oz	11, 1	0.15	2	2 (many)
mefentrifluconazole	Cevva	5 oz	11, 1	0.30	4	1.5 (TWN)
hexythiazox	Onager	24 oz	7	0.17	1	0.2 (KOR)
pyrethrins	Pyganic 5.OEC	15.6 oz	4, 1	<0.05	1	0.01 (THA)

<sup>1</sup> All materials were applied by Rears PakBlast sprayer with 8 oz Regulaid/100 gal water

<sup>2</sup> Major export markets for Pacific Northwest cherries; 29 July 2025. [http://mrlidb.nwhort.org/#top\\_markets](http://mrlidb.nwhort.org/#top_markets)

\* Reported thiomethoxam values reflect sum total of thiomethoxam and clothianidin residue levels

For more information, contact Tory Schmidt (509) 669-3903 or email [tory@treefruitresearch.com](mailto:tory@treefruitresearch.com)



*Results of this lone unreplicated trial are shared for informational purposes only and should not be construed as endorsements of any product, reflections of their efficacy against any arthropod or fungal pest, or a guarantee of similar results regarding residues for any user. Cherry growers should consult with extension team members, crop advisors, and warehouses to develop responsible pest control programs.*

## ***Preliminary findings of prohexadione calcium residues on cherries Supplemental report – WTFRC 2025***

Due to industry concerns about the lack of posted Maximum Residue Levels (MRLs) for prohexadione calcium in Codex and several key Asian export markets, combined with the relative dearth of information regarding those residues on cherries, the Washington Tree Fruit Research Commission (WTFRC) conducted extended testing of residues from two cherry trials where Kudos 27.5WDG was sprayed in 2025. Applications were made in both trials with a PTO-driven Rears Pak-Blast calibrated to 200 gal/acre with 12 oz of a non-ionic surfactant (Regulaid) and 16 oz of ammonium monosulfate (Bronc) per 100 gallons of water per standard industry practices. All fruit samples were held in cold storage (34 F) and shipped overnight to OMIC USA Laboratory (Portland, OR) for analysis of prohexadione calcium residues. Special thanks to Fine Americas and Kumiai America for helping support these trials.



### **TRIAL A: ROCK ISLAND SWEETHEART**

This trial was established primarily to evaluate the efficacy of new formulations of prohexadione calcium for controlling shoot growth in cherry. These new products were compared to a standard program of Kudos 27.5WDG applied twice at industry standard timings in the spring; fruit was sampled from this standard treatment at typical Sweetheart harvest timing (78 days after full bloom), as well as 12 days earlier as a proxy for typical Bing harvest timing (66 DAFB). While these results only reflect single data points, they do suggest that prohexadione calcium residues may decline significantly as the cherry harvest season progresses.

Measured residues of prohexadione calcium on field run cherry fruit sprayed with Kudos WDG27.5 at 20 oz/acre during bloom and 16 oz/acre at shuck fall. 'Sweetheart'/G.6, Rock Island, WA. WTFRC 2025.

<b>Sample timing</b>	<b>Measured residue</b>	<b>US MRL<sup>1</sup></b>	<b>Lowest export MRL<sup>1</sup></b>
	<i>ppm</i>	<i>ppm</i>	<i>ppm</i>
June 5 (66 DAFB/Bing timing)	0.15	0.4	0.01 (THA)
June 17 (78 DAFB/Sweetheart timing)	0.02		

<sup>1</sup> Major export markets for Pacific Northwest cherries; 29 July 2025. [http://mrlidb.nwhort.org/#top\\_markets](http://mrlidb.nwhort.org/#top_markets)

### **TRIAL B: EAST WENATCHEE SKEENA**



A prohexadione calcium product was included in WTFRC's annual cherry pesticide residue study for the first time in 2025. To generate the highest possible residues while still following product label guidelines, Kudos 27.5WDG was applied at the maximum rate (20 oz/acre) at the minimum preharvest interval (21 days before harvest) and retreatment interval (14 days). Fruit from this trial was sampled on July 1, roughly 3 days prior to commercial harvest of that block. Some of that fruit was immediately shipped overnight for processing at the analytical lab. After later conferring with industry collaborators, we decided to use some fruit remaining in our cold storage (34 F) from

that harvest sample to try to get a rough sense of how tenacious prohexadione calcium residues may be during the packing process.

Six days after the fruit was sampled from the field, some of the remaining fruit was packaged without any washing (field run) to serve as a control treatment; other fruit was subjected to a rudimentary simulation of a cherry packing process in the WTFRC lab. Fruit in that treatment were rinsed in the sink for 3 minutes to simulate hydrocooling and then floated in a large tub of water with gentle agitation for 10 minutes to simulate time spent in the dump tank and floating down a commercial packing line. Both samples were shipped overnight for processing by the analytical lab.



Residue levels show a modest decrease between the July 2 and July 8 dates of processing samples from the same lot of fruit, suggesting that prohexadione calcium residues may diminish during cold storage after harvest. Our unsophisticated simulation of a cherry cooling and packing process also produced a modest reduction of prohexadione calcium residues, as indicated in the table below.

Measured residues of prohexadione calcium on cherry fruit sprayed with 20 oz/acre Kudos WDG27.5 at 35 and 21 days before harvest. Samples harvested on July 1. 'Skeena'/K.6, East Wenatchee, WA. WTFRC 2025.

Treatment	Sample processing date	Measured residue	US MRL <sup>1</sup>	Lowest export MRL <sup>1</sup>
		<i>ppm</i>	<i>ppm</i>	<i>ppm</i>
Field run (no washing)	July 2	0.40	0.4	0.01 (THA)
Field run (no washing)	July 8	0.29		
Simulated packing (with washing)	July 8	0.23		

<sup>1</sup> Major export markets for Pacific Northwest cherries; 29 July 2025. [http://mrlidb.nwhort.org/#top\\_markets](http://mrlidb.nwhort.org/#top_markets)

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Reports from other pesticide residue studies on apple and cherry which provide a broader context for these results are available on the WTFRC website at [www.treefruitresearch.org](http://www.treefruitresearch.org). We encourage growers and consultants to stay abreast of current information on international MRLs, which often change in response to trade negotiations and/or political developments. For more information, visit the Northwest Horticultural Council website, [www.nwhort.org](http://www.nwhort.org).



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## EXECUTIVE SUMMARY

**Project Title:** Pesticide Residues of PNW Cherries

**Keywords:** MRL, pesticide, residue, cherry

**Abstract:** The Washington Tree Fruit Research Commission (WTFRC) has conducted annual pesticide residue studies in apple and cherry since 2011 to provide basic data to the tree fruit industry regarding residue levels of commonly used pesticides. This information is used by growers, consultants, and fruit sales desks to help guide management decisions regarding spray programs for fruit being exported to foreign markets which may have more stringent Maximum Residue Level (MRL) tolerances than those allowed for fruit sold domestically.

For these studies, various fungicides, insecticides, acaricides, and plant growth regulators were sprayed at typical rates and timings used by the PNW cherry industry. Applications were made to a commercial ‘Skeena’ orchard with an airblast sprayer calibrated to 200 gallons water/acre. Fruit were then sampled at standard harvest timing and submitted to commercial labs for residue analysis.

Results have consistently found that residue levels of all pesticides applied were safely below tolerances set for the United States market by the Environmental Protection Agency (EPA), but many residues have exceeded MRLs for some important cherry export markets. Most of these potentially problematic cases have been for countries that have either set their MRLs at the minimum limit of detection for those particular products, or have not posted MRLs for those pesticides; in those cases, imported fruit in those markets cannot have residues which exceed that nation’s default level for MRLs, which is frequently a very stringent value such as 0.1 or 0.01 ppm.

Due to keen interest from industry, we did additional testing in 2025 of cherries sprayed with prohexadione calcium at various rates and timings, including some ‘Sweetheart’ cherries from another WTFRC trial site. All samples tested detected some residues of prohexadione, which would potentially be problematic for fruit destined for export markets with minimal MRLs of 0.01 ppm such as Thailand. Field run fruit sprayed at the maximum rate and minimum pre-harvest interval (PHI) had residue levels close to the US EPA tolerance but was still in compliance. Crude simulations of hydrocooling and packing line processes slightly reduced prohexadione residues on the fruit.

Reports of all WTFRC pesticide studies on apple and cherry since 2011 are available at [www.treefruitresearch.org](http://www.treefruitresearch.org).