

# 2016 WTFRC CHERRY PESTICIDE RESIDUE STUDY

For the sixth consecutive year, the WA Tree Fruit Research Commission conducted a study of residues of commonly used pesticides on cherry fruit at harvest. Digital versions of this report and similar studies on apple and cherry are available at [www.treefruitresearch.com](http://www.treefruitresearch.com). For current information on maximum residues levels (MRLs) and other regulatory issues, please consult the Northwest Horticultural Council at <http://nwhort.org/export-manual>.



400 gallons/acre airblast spray

## TRIAL DETAILS

- Mature 'Bing'/Mazzard multiple leader open vase trees on 10' x 20' spacing near Orondo, WA
- 16 insecticides/acaricides & 9 fungicides applied at or near maximum rates and minimum pre-harvest and re-treatment intervals; a foliar fertilizer containing potash and phosphite applied early in season at rates & timings consistent with industry use patterns
  - Ground applications made by Rears PakBlast PTO-driven airblast sprayer of the same rate of product per acre with Regulaid surfactant in either 200 or 400 gal water/acre
- Trace amounts of rain recorded on 2 days during study: 0.01" each at 25 and 21 days before harvest (DBH)
- Samples submitted overnight to Pacific Agricultural Labs (Portland, OR) for chemical analysis

## RESULTS & DISCUSSION

This study simulates a *worst case scenario* for residues of legally applied pesticides using aggressive rates, timings, and spray intervals. Most materials were applied twice as allowed by product labels, whether or not commercial use patterns would do the same. With that approach, all residues complied with domestic tolerances but some **exceeded some foreign tolerances**, whether from published MRLs or national default values:

**Insecticides/acaricides: Centaur, Bexar, Mustang MAX, Assail 70WP, Baythroid, Danitol 2.4EC, Perm-Up 3.2EC, Carbaryl 4L, Onager**

**Fungicides: TopGuard, Orbit, Topsin 4.5FL, Merivon**

**Fertilizer: 19% potash + 33% phosphite foliar fertilizer**

MRLs are known to change frequently and cherry producers should routinely monitor the most current information (<http://nwhort.org/export-manual>) to facilitate compliance with dynamic foreign standards. Differences in residues between dilute (400 gal/acre) and concentrate (200 gal/acre) sprays were generally modest with the higher carrier volume tending to increase residue concentration by 10-20%. While fruit from this study were not rinsed prior to analysis, similar studies in 2011 and 2012 found no clear evidence of consistent residue reduction from commercial hydrocooler cycles.

For the first time, our 2016 study included a potash/phosphite fertilizer applied 3 times at 14 day intervals starting around shuck fall; these programs are used by some Northwest cherry growers for nutritional value and to promote overall tree health. While the US EPA does not regulate residues of foliar fertilizers, phosphite residues are regulated by the European Union (EU) as part of its residue definition for fosetyl-Al (Aliette), which is not registered for use on bearing cherry trees in the US. The EU has set a tolerance for fosetyl-Al residues which includes phosphonic acid and all of its salts at 2 ppm; while our samples did not carry any measurable traces of actual fosetyl-Al, they did contain levels of phosphite well in excess of the EU standard. Growers hoping to ship cherries to Europe should avoid use of any phosphite products pending further study and/or relaxation of that MRL.



Cherries with residues at harvest

***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.***

Measured residue levels vs. MRLs for pesticides applied at uniform rates/acre on cherry fruit in either 200 gal or 400 gal water/acre.  
'Bing'/Mazzard, Orondo, WA. WTFRC 2016.

Common name	Trade name	Application rate <sup>1</sup>	Application timing(s)	200 gal water/acre	400 gal water/acre	US tolerance <sup>2</sup>	Lowest export tolerance <sup>3</sup>
		per acre	days before harvest	ppm	ppm	ppm	ppm
phosphite	33% phosphite fertilizer	64 oz	60, 46, 32	<b>8.7</b>	<b>10.0</b>	na	2 (EU)*
buprofezin	Centaur	34.5 oz	28, 14	<b>0.87</b>	<b>1.10</b>	1.9	0.1 (Can)
tolfenpyrad	Bexar	27 oz	28, 14	<b>0.22</b>	<b>0.26</b>	2	0.01 (Tai)
metconazole	Quash	4 oz	28, 14	0.034	0.040	0.2	0.2 (many)
abamectin	Agri-Mek 0.15SEC	20 oz	21	<0.01	<0.01	0.09	0.01 (EU)
zeta-cypermethrin	Mustang MAX	4 oz	21, 14	0.091	<b>0.110</b>	1	0.1 (Can)
acetamiprid	Assail 70WP	3.4 oz	21, 7	<b>0.34</b>	<b>0.45</b>	1.2	0.2 (Kor)
beta-cyfluthrin	Baythroid XL	2.8 oz	21, 7	<b>0.20</b>	<b>0.27</b>	0.3	0.01 (Tai)
spirotetramat	Ultor	14 oz	21, 7	<0.01	<0.01	4.5	1 (Kor)
spinosad	Entrust	2.5 oz	14, 7	0.091	0.10	0.2	0.2 (many)
spinetoram	Delegate WG	7 oz	14, 7	0.037	0.045	0.3	0.05 (EU)
flutriafol	TopGuard	14 oz	14, 7	<b>0.31</b>	<b>0.40</b>	1.5	0.01 (Jap)
flubendiamide	Belt SC	4 oz	14, 7	0.16	0.21	1.6	1 (Tai)
metrafenone	Vivando	15.4 oz	14, 7	<0.01	<0.01	2	0.01 (EU)
fenpropathrin	Danitol 2.4EC	21.3 oz	14, 3	<b>1.2</b>	<b>1.5</b>	5	0.01 (EU)
permethrin	Perm-Up 3.2EC	8 oz	14, 3	<b>0.33</b>	<b>0.37</b>	4	0.05 (EU)
carbaryl	Carbaryl 4L	96 oz	10, 3	<b>3.5</b>	<b>4.0</b>	10	0.01 (EU)
cyantraniliprole	Exirel	20.5 oz	10, 3	0.26	0.25	6	6 (many)
propiconazole	Orbit	4 oz	10, 1	<b>0.21</b>	<b>0.24</b>	4	0.05 (EU)
thiophanate-methyl**	Topsin 4.5FL	30 oz	10, 1	<b>0.61</b>	<b>0.96</b>	20	0.3 (EU)
etoxazole	Zeal	3 oz	7	0.16	0.013	1	0.2 (Kor)
hexythiazox	Onager	24 oz	7	<b>0.23</b>	<b>0.24</b>	1	0.1 (Can)
fluxapyroxad	Merivon	6.7 oz	7, 1	<b>0.25</b>	<b>0.25</b>	3	0.01 (EU)
pyraclostrobin	Merivon	6.7 oz	7, 1	0.49	0.48	2.5	0.7 (Can)
azoxystrobin	Abound	15.5 oz	7, 1	0.35	0.39	2	1 (Tai)
triflumizole	Procure 480SC	16 oz	7, 1	0.31	0.42	1.5	1 (Tai)
bifenazate	Acramite 50WS	16 oz	3	0.15	0.15	2.5	0.3 (Kor)

<sup>1</sup> All materials were applied by Rears PakBlast sprayer with 32 oz Regalaid/acre

<sup>2</sup> 28 June 2016. <http://www.nwhort.org/CherryMRLs.html>, <https://www.globalmrl.com>

<sup>3</sup> Major export markets for Pacific Northwest cherries; 28 June 2016; tolerances may be based on published MRLs or default values. <http://www.nwhort.org/CherryMRLs.html>, <https://www.globalmrl.com>

\* EU tolerance for fosetyl-AI defined as sum total of residue levels of fosetyl-AI, phosphonic acid and all of its salts (including phosphite)

\*\* Reported thiophanate-methyl values reflect sum total of thiophanate-methyl and carbenzadim residue levels

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