

2013 WTFRC CHERRY PESTICIDE RESIDUE STUDY

For the third consecutive year, the Washington Tree Fruit Research Commission conducted a study of residues of commonly used pesticides on cherry at time of harvest. Digital versions of this report, as well as similar studies from 2011 and 2012 on apple and cherry are available at www.treefruitresearch.com. For the most current information on maximum residues levels (MRLs) and other regulatory issues, please consult the Northwest Horticultural Council at www.nwhort.org.

TRIAL DETAILS

- Mature 'Bing'/Mazzard multiple leader open vase trees on 10' x 20' spacing near Orondo, WA
- 16 insecticides/acaricides & 10 fungicides applied at maximum rates and minimum pre-harvest and re-treatment intervals
- Ground applications made by Rears PakBlast PTO-driven airblast sprayer at **400 gal/acre** with Regulaid surfactant
- Measurable rain recorded on 2 days during study: 0.1" 20 days before harvest (DBH) and 0.2" 5 DBH
- Plot split into three equal sections: 1. Pesticides only 2. Pesticides + 408 oz/acre RainGard (Pace Intl.) at 14 and 7 days DBH 3. Pesticides + 128 oz/acre Parka (Cultiva) at 21 and 14 DBH
- Samples submitted overnight to Pacific Agricultural Labs (Portland, OR) for chemical analysis



Spray application 2 days before harvest



Cherries with dry residues at harvest

RESULTS & DISCUSSION

The strategy of this study was to simulate a *worst case scenario* for residues of legally applied pesticides with and without protective rain coatings, using very 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, we produced residues which complied comfortably with all domestic tolerances, but **exceeded foreign MRLs** with application of the insecticides/acaricides: **Agri-Mek 0.15EC, Perm-Up 3.2EC, Danitol 2.4EC, Carbaryl 4L, and Zeal** and the fungicides: **TopGuard, Orbit, and Procure 480SC**. While fruit from this study were not rinsed prior to analysis, similar studies in 2011 and 2012 found no evidence of clear, consistent reduction of residue levels from subjecting fruit to commercial hydrocooler cycles.



Wet cherries after 400 gal/acre application

Residue levels in fruit treated with the rain protectants RainGard or Parka were consistently higher than in control fruit; Parka-treated fruit exceeded foreign MRLs for 7 products and RainGard-treated fruit exceeded foreign MRLs for 5 products, while fruit with no rain protectant exceeded foreign MRLs for only 3 products. On average, residues for cherries treated with RainGard and Parka were higher than residues for control fruit, particularly for pesticides applied within a week of harvest, although most levels still complied with standards for nearly all export markets and none exceeded one-third of the domestic US tolerance. The potential benefits of RainGard and Parka in terms to reduce fruit cracking are significant, but cherry growers making multiple applications of rain protectants may want to be cautious with some pesticides to mitigate the risk of potential residue issues.

****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 their university extension staff, crop advisors, and warehouses to develop responsible pest control programs.**

Measured residue levels vs. MRLs for uniformly applied pesticides on cherries treated with no rain protectant (control), RainGard (408 oz/acre) at 14 and 7 days before harvest, or Parka (128 oz/acre) at 21 and 14 days before harvest. 'Bing'/Mazzard, Orondo, WA. WTFRC 2013.

Common name	Trade name	Application rate ¹ <i>per acre</i>	Application timing(s) <i>days before harvest</i>	Control fruit <i>ppm</i>	RainGard-treated fruit <i>ppm</i>	Parka-treated fruit <i>ppm</i>	US MRL ² <i>ppm</i>	Lowest export MRL ³ <i>ppm</i>
Diazinon	Diazinon 50W	64 oz	21	<0.01	<0.01	<0.01	0.2	0.01 (EU)
Abamectin	Agri-Mek 0.15EC	20 oz	21	<0.01	0.015	<0.01	0.09	0.01 (EU)
Zeta-cypermethrin	Mustang MAX	4 oz	21, 14	<0.05	0.093	<0.05	1	1 (Aus, Kor)
Lambda-cyhalothrin	Warrior II	2.56 oz	21, 14	<0.05	0.065	<0.05	0.5	0.3 (many)
Imidacloprid	Nuprid 2SC	6.4 oz	21, 7	0.092	0.12	0.13	3	0.5 (many)
Acetamiprid	Assail 70WP	3.4 oz	21, 7	0.093	0.12	0.15	1.2	1 (Aus, Tai)
Beta-cyfluthrin	Baythroid XL	2.8 oz	21, 7	<0.05	<0.05	<0.05	0.3	0.2 (EU)
Metconazole	Quash	4 oz	14	0.053	0.083	0.052	0.2	0.15 (EU)
Spinosad	Entrust	2.5 oz	14, 7	0.014	0.017	0.042	0.2	0.05 (Kor)
Spinetoram	Delegate WG	7 oz	14, 7	0.011	0.015	0.023	0.2	0.1 (Kor)
Quinoxifen	Quintec	7 oz	14, 7	0.042	0.055	0.063	0.7	0.3 (EU, Can)
Flutriafol	TopGuard	14 oz	14, 7	0.092	0.11	0.13	1.5	0.01 (Tai)
Penthiopyrad	Fontelis	20 oz	14, 7	0.14	0.21	0.22	4	1 (Kor)
Flubendiamide	Belt	4 oz	14, 7	0.042	0.077	0.070	1.6	0.1 (Can)
Fenpropathrin	Danitol 2.4EC	21.3 oz	14, 3	0.33	0.43	0.70	5	0.01 (EU)
Permethrin	Perm-Up 3.2EC	8 oz	14, 3	0.14	0.23	0.26	4	0.05 (EU)
Carbaryl	Carbaryl 4L	96 oz	10, 3	<0.01	0.084	0.50	10	0.01 (EU)
Propiconazole	Orbit	4 oz	10, 1	<0.02	<0.02	0.11	4	0.05 (EU)
Thiophanate-methyl*	Topsin 4.5FL	30 oz	10, 1	<0.01	0.024	0.182	20	0.3 (EU)
Etoazole	Zeal	3 oz	7	<0.01	<0.01	0.037	1	0.02 (EU)
Spirodiclofen	Envidor 2SC	18 oz	7	<0.01	<0.01	0.018	1	1 (Aus, Can)
Azoxystrobin	Abound	15.5 oz	7, 1	0.022	0.039	0.18	1.5	1 (Tai)
Triflumizole	Procure 480SC	16 oz	7, 1	0.054	0.091	0.25	1.5	0.2 (Kor)
Trifloxystrobin	Luna Sensation	5.6 oz	7, 1	<0.01	0.014	0.055	2	1 (EU)
Fluopyram	Luna Sensation	5.6 oz	7, 1	0.021	0.030	0.17	0.6	0.5 (Kor)
Pyraclostrobin	Pristine	14.5 oz	7, 1	0.027	0.048	0.16	2.5	0.7 (Can)
Boscalid	Pristine	14.5 oz	7, 1	0.078	0.11	0.32	3.5	1 (Kor)
Bifenazate	Acramite 50WS	16 oz	3	<0.01	0.068	0.27	2.5	0.3 (Kor)

¹ All materials were applied by Rears PakBlast sprayer at 400 gal water/acre; all pesticides (excluding RainGard & Parka) were applied with 32 oz Regulaid/acre

² 2 July 2013. <http://www.nwhort.org/CherryMRLs.html>; <http://www.mrlatabase.com>

³ Major export markets for Pacific Northwest cherries; 2 July 2013. <http://www.nwhort.org/CherryMRLs.html>; <http://www.mrlatabase.com>

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

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