

2015 WTFRC CHERRY PESTICIDE RESIDUE STUDY

For the fifth 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. For current information on maximum residues levels (MRLs) and other regulatory issues, please consult the Northwest Horticultural Council at www.nwhort.org.



400 gallons/acre airblast spray application

TRIAL DETAILS

- Mature 'Bing'/Mazzard multiple leader open vase trees on 10' x 20' spacing near Orondo, WA
- 18 insecticides/acaricides & 11 fungicides applied at or near 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 1 day during study: 0.1" 20 days before harvest (DBH)
- Plot split into three equal blocks: 1. Pesticides only 2. Pesticides + 408 oz/acre RainGard (Pace Intl.) at 14 and 7 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

RESULTS & DISCUSSION

This study simulates a *worst case scenario* for residues of legally applied pesticides with and without protective rain coatings, using very aggressive rates, timings, and spray intervals; the lone exception was buprofezin (Centaur), which was sprayed a week ahead of its labeled preharvest interval to more closely reflect typical industry use patterns. 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 comfortably with domestic tolerances; some, however, **exceeded some foreign tolerances**, whether from published MRLs or national default values:

Insecticides/acaricides: Assail 70WP, Baythroid XL, Danitol 2.4EC, Perm-Up 3.2EC, Carbaryl 4L, Exirel

Fungicides: TopGuard, Orbit, Topsin 4.5FL, Merivon

These potential violations typically reflect stringent tolerances in certain export markets rather than excessive residues, and cherry producers should routinely monitor changes in posted MRLs (www.nwhort.org) to facilitate compliance with dynamic foreign standards. 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.

As these studies have routinely demonstrated since 2011, application of pesticides according to label directions consistently produces residues safely below tolerance levels set by the US Environmental Protection Agency. For the first time, application of the rain protectants RainGard and Parka in 2015 did not preserve elevated pesticide residue levels. Despite this year's results, the long-term trend in these studies has been that fruit treated with rain protectants have carried higher pesticide residues than untreated control fruit. The potential benefits of RainGard and Parka to reduce fruit cracking are substantial, but cherry growers using rain protectants should exercise caution to mitigate potential MRL issues.



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

Measured residue levels vs. MRLs for uniformly applied pesticides on cherry fruit 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 2015.

Common name	Trade name	Application rate ¹	Application timing(s)	Control fruit	RainGard-treated fruit	Parka-treated fruit	US tolerance ²	Lowest export tolerance ³
		per acre	days before harvest	ppm	ppm	ppm	ppm	ppm
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	<0.01	<0.01	0.09	0.01 (EU)
Buprofezin	Centaur	34.5 oz	21	<0.01	<0.01	<0.01	1.9	0.1 (Can)
Zeta-cypermethrin	Mustang MAX	4 oz	21, 14	<0.05	<0.05	<0.05	1	0.1 (Can)
Lambda-cyhalothrin	Warrior II	2.56 oz	21, 14	<0.05	<0.05	<0.05	0.5	0.3 (many)
Imidacloprid	Nuprid 2SC	6.4 oz	21, 7	0.13	0.11	0.12	3	0.5 (many)
Acetamiprid	Assail 70WP	3.4 oz	21, 7	0.26	0.23	0.24	1.2	0.2 (Kor)
Beta-cyfluthrin	Baythroid XL	2.8 oz	21, 7	0.075	0.056	0.052	0.3	0.01 (Tai)
Metconazole	Quash	4 oz	14	0.038	0.035	0.018	0.2	0.2 (many)
Spinosad	Entrust	2.5 oz	14, 7	0.054	0.031	0.035	0.2	0.2 (many)
Spinetoram	Delegate WG	7 oz	14, 7	0.015	0.013	0.013	0.2	0.05 (EU, Kor)
Quinoxifen	Quintec	7 oz	14, 7	0.055	0.053	0.027	0.7	0.3 (EU)
Flutriafol	TopGuard	14 oz	14, 7	0.19	0.18	0.17	1.5	0.01 (Jap)
Penthiopyrad	Fontelis	20 oz	14, 7	0.17	0.16	0.12	4	1 (Kor)
Flubendiamide	Belt	4 oz	14, 7	0.082	0.073	0.072	1.6	1 (Kor, Tai)
Metrafenone	Vivando	15.4 oz	14, 7	<0.01	<0.01	<0.01	2	0.01 (Tai)
Fenpropathrin	Danitol 2.4EC	21.3 oz	14, 3	0.43	0.46	0.27	5	0.01 (EU)
Permethrin	Perm-Up 3.2EC	8 oz	14, 3	0.39	0.46	0.24	4	0.05 (EU)
Carbaryl	Carbaryl 4L	96 oz	10, 3	0.99	1.2	0.71	10	0.01 (EU)
Cyantranilprole	Exirel	20.5 oz	10, 3	0.14	0.17	0.13	6	0.05 (Aus)
Propiconazole	Orbit	4 oz	10, 1	0.29	0.25	0.21	4	0.05 (EU)
Thiophanate-methyl*	Topsin 4.5FL	30 oz	10, 1	0.69	0.90	0.97	20	0.3 (EU)
Etoazole	Zeal	3 oz	7	0.041	0.038	0.041	1	0.2 (Kor)
Spirodiclofen	Envidor 2SC	18 oz	7	0.070	0.063	0.068	1	0.8 (Tai)
Fluxapyroxad	Merivon	6.7 oz	7, 1	0.39	0.35	0.38	3	0.01 (EU)
Pyraclostrobin	Merivon	6.7 oz	7, 1	0.44	0.32	0.28	2.5	0.7 (Can)
Azoxystrobin	Abound	15.5 oz	7, 1	0.19	0.17	0.20	1.5	1 (Tai)
Triflumizole	Procure 480SC	16 oz	7, 1	0.24	0.24	0.16	1.5	1 (Tai)
Trifloxystrobin	Luna Sensation	5.6 oz	7, 1	0.013	0.012	<0.01	2	1 (EU)
Fluopyram	Luna Sensation	5.6 oz	7, 1	0.082	0.067	0.062	0.6	0.6 (Aus)
Bifenazate	Acramite 50WS	16 oz	3	<0.01	<0.01	<0.01	2.5	0.3 (Kor)

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

² 7 July 2015. <http://www.nwhort.org/CherryMRLs.html>, <https://www.globalmrl.com>

³ Major export markets for Pacific Northwest cherries; 7 July 2015; tolerances may be based on published MRLs or default values. <http://www.nwhort.org/CherryMRLs.html>,

<https://www.globalmrl.com>

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

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