

2012 WTFRC CHERRY PESTICIDE RESIDUE STUDY



Wet cherries after 400 gal/acre application

The Washington Tree Fruit Research Commission conducted a 2012 trial in cherry to study pesticide residues at time of harvest. Digital versions of this report, as well as analogous studies conducted in 2011 on apple and cherry are available at www.treefruitresearch.com. Further information on maximum residues levels (MRLs) available at www.nwhort.org

TRIAL DETAILS

- Mature 'Bing'/Mazzard multiple leader open vase trees on 10' x 20' spacing near Orondo, WA
- 8 insecticides & 7 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**
- Helicopter application of 16 oz Fyfanon ULV AG/acre made 24 hours before harvest
- Subsamples of fruit run through 120 second hydrocooler cycle in bottom bin of 2 bin stack
- Measurable rain recorded on 6 days totaling approx. 0.6" during trial including ¼" rain events on June 4 and June 7, potentially reducing residues from first application (22 dbh)
- Half of plot treated with 408 oz/acre RainGard (Pace Intl.) at 14 and 8 days before harvest
- Samples submitted to Cascade Analytical (Wenatchee, WA) for processing and Pacific Agricultural Labs (Portland, OR) for chemical analysis



Spray application 2 days before 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 insect 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 pesticides applied to cherries. 'Bing'/Mazzard, Orondo, WA. WTFRC 2012.

Common name	Trade name	Application rate ¹	Application timing(s)	Field run fruit	Hydrocooled fruit	US MRL ²	Lowest export MRL ³
		per acre	days before harvest	ppm	ppm	ppm	ppm
Diazinon	Diazinon 50W	64 oz	22	<0.01	<0.01	0.2	0.01 (EU)
Zeta-cypermethrin	Mustang MAX	4 oz	22, 14	0.24	0.25	1	0.01 (Aus)
Lambda-cyhalothrin	Warrior II	2.56 oz	22, 14	0.065	0.065	0.5	0.3 (EU)
Imidacloprid	Nuprid 2SC	6.4 oz	22, 8	0.21	0.21	3	0.5 (many)
Spinosad	Entrust	2.5 oz	14, 8	0.095	0.062	0.2	0.05 (Kor)
Quinoxifen	Quintec	7 oz	14, 8	0.095	0.099	0.7	0.3 (EU, Can)
Flubendiamide	Belt	4 oz	14, 8	0.60	0.37	1.6	0.7 (Kor)
Fenpropathrin	Danitol 2.4EC	21.3 oz	14, 4	1.8	2.1	5	0.01 (EU)
Carbaryl	Carbaryl 4L	96 oz	11, 4	3.5	2.7	10	0.05 (EU)
Propiconazole	Orbit	4 oz	11, 2	0.27	0.25	4	0.05 (EU)
Azoxystrobin	Abound	15.5 oz	8, 2	0.70	0.35	1.5	1 (Tai)
Triflumizole	Procure 480SC	16 oz	8, 2	0.24	0.23	1.5	1 (Tai, Kor)
Trifloxystrobin	GEM 500SC	3.8 oz	8, 2	0.39	0.24	2	1 (EU)
Pyraclostrobin	Pristine	14.5 oz	8, 2	0.56	0.47	2.5	0.7 (Can)
Boscalid	Pristine	14.5 oz	8, 2	0.93	0.43	3.5	1 (Kor)
Malathion*	Fyfanon ULV AG	16 oz	1	<0.01	<0.01	8	0.02 (EU)

¹ All materials except Fyfanon were applied by Rears PakBlast sprayer with 32 oz Regulaid in 400 gal water/acre

² 16 July 2012. <http://www.nwhort.org/CherryMRLs.html>; <http://www.mrldatabase.com>

³ Major export markets for Pacific Northwest cherries; 16 July 2012. <http://www.nwhort.org/CherryMRLs.html>; <http://www.mrldatabase.com>

* Malathion (Fyfanon ULV AG) applied as formulated with no water or surfactant by helicopter



Dry cherries with residue deposits

RESULTS & DISCUSSION

The strategy of this study was to simulate a “worst case scenario” for residues of legally applied pesticides, using very aggressive rates and timings and a carrier volume (400 gal/acre) which allowed for a doubling of the concentrations of many materials if they had been applied at a more standard 200 gal/acre. 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 **exceeded some foreign MRLs** with application of the insecticides: **Mustang MAX, Entrust, Danitol 2.4EC, and Carbaryl 4L**, and the fungicides: **Belt, Orbit, and Pristine**. Additional rinsing

of fruit in a commercial hydrocooler did little to reduce detectable residue levels; the potential cleansing effect of the hydrocooler may have been diminished by several rain events before harvest. Application of RainGard, however, did preserve residues of most products. Cherry growers making multiple applications of waxy products like RainGard may want to consider less aggressive use patterns of some pesticides to minimize the risk of potential residue issues. For more information on MRLs and related regulatory issues, visit the Northwest Horticultural Council website, www.nwhort.org.



Cherry hydrocooler (120 second cycle)

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Measured residue levels vs. MRLs for pesticides applied to cherries also treated with **RainGard** (408 oz/acre) at 14 and 8 days before harvest. ‘Bing’/Mazzard, Orondo, WA. WTFRC 2012.

Common name	Trade name	Application rate ¹ <i>per acre</i>	Application timing(s) <i>days before harvest</i>	Field run fruit <i>ppm</i>	Hydrocooled fruit <i>ppm</i>	US MRL ² <i>ppm</i>	Lowest export MRL ³ <i>ppm</i>
Diazinon	Diazinon 50W	64 oz	22	<0.01	<0.01	0.2	0.01 (EU)
Zeta-cypermethrin	Mustang MAX	4 oz	22, 14	0.32	0.34	1	0.01 (Aus)
Lambda-cyhalothrin	Warrior II	2.56 oz	22, 14	0.079	0.091	0.5	0.3 (EU)
Imidacloprid	Nuprid 2SC	6.4 oz	22, 8	0.20	0.22	3	0.5 (many)
Spinosad	Entrust	2.5 oz	14, 8	0.17	0.16	0.2	0.05 (Kor)
Quinoxifen	Quintec	7 oz	14, 8	0.11	0.16	0.7	0.3 (EU, Can)
Flubendiamide	Belt	4 oz	14, 8	0.79	0.81	1.6	0.7 (Kor)
Fenpropathrin	Danitol 2.4EC	21.3 oz	14, 4	2.1	2.6	5	0.01 (EU)
Carbaryl	Carbaryl 4L	96 oz	11, 4	3.6	3.1	10	0.05 (EU)
Propiconazole	Orbit	4 oz	11, 2	0.26	0.30	4	0.05 (EU)
Azoxystrobin	Abound	15.5 oz	8, 2	0.87	0.55	1.5	1 (Tai)
Triflumizole	Procure 480SC	16 oz	8, 2	0.32	0.34	1.5	1 (Tai, Kor)
Trifloxystrobin	GEM 500SC	3.8 oz	8, 2	0.55	0.35	2	1 (EU)
Pyraclostrobin	Pristine	14.5 oz	8, 2	0.67	0.75	2.5	0.7 (Can)
Boscalid	Pristine	14.5 oz	8, 2	1.1	0.73	3.5	1 (Kor)
Malathion*	Fyfanon ULV AG	16 oz	1	<0.01	<0.01	8	0.02 (EU)

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