

2013 Berry Rotational Partners and Select MRLs

The two charts list registered insecticides for managing SWD in either caneberries or blueberry with MRLs at or below the target markets indicated. Notice how each list varies from country to country! These charts were constructed in June 2013 and reflect the MRL data available at that time. These will be updated prior to the 2014 harvest season. It is the growers' responsibility to verify MRL tolerance levels by checking the USDA FAS MRL database (<http://www.mrldatabase.com/>) prior to use. Residual activity is based on SWD % mortality after 24 hours on field-aged leaves brought to laboratory. Proper resistance management requires rotating between mode-of-action classes as much as possible.

Market	Rotational Partners		MRL	PHI DAYS	REI Hours	Residual Activity	Maximum Applications Yearly	Retreatment Interval Days	Comments	
Japan	3A Pyrethroid	Danitol 2.4EC fenproprathrin	US 3 Japan 5	3	24	10-14	2	14	Longest residual registered product.	Long residual makes Danitol useful for late season and postharvest cleanup.
		Asana XL esfenvalerate	US 1 Japan 1	14	12	5-7	4		14 day PHI makes Asana difficult to use. Don't apply Asana within 7 days of pollination.	One way to address the lack of malathion and Mustang Maxx as treatment options during high pest pressure especially for late season varieties is to designate early season varieties for the Japan market.
		Pyganic pyrethrins	US 1 Japan 1	0	12	0			Virtually no residual. Kills only by direct contact with insects.	
	1B Organophosphate	Imidan 70-W phosmet	US 10 Japan 10	3	24	~5	5			
	1A Carbamate	Sevin carbaryl	US 3 Japan 7	7	12	~3	5	7	Don't apply at pollination.	
	5 Spinosyns	Entrust 2SC, Success spinosad	US 0.25 Japan 0.3	3	4	~1	6	6	Good topical performance but minimal foliar activity.	
	4A Neonicotinoid	Assail 30SG acetamiprid	US 1.6 Japan 2	1	12	1-3	5	7	Neonicotinoids are poor adulticides but they suppress oviposition and an application can simultaneously control aphids.	
		Provado 1.6F imidacloprid	US 3.5 Japan 4	3	12	1-3	5	7		
		Actara thiamethoxam	US 0.2 Japan 0.5	3	12	1-3	3	7		
Korea	1B Organophosphate	malathion	US 8 Korea 10	1	12	3-5	3	5	Malathion and Mustang are the most popular rotational compounds.	
		Imidan 70-W phosmet	US 10 Korea 10	3	24	~5	5			
	3A Pyrethroid	Mustang Maxx zeta-cypermethrin	US 0.8 Korea 2	1	12	5-7	6	7		Virtually no residual. Kills only by direct contact with insects.
		Pyganic pyrethrins	US 1 Korea 1	0	12	0				
	5 Spinosyns	Entrust 2SC, Success spinosad	US 0.25 Korea 0.4	3	4	~1	6	6	Good topical performance but minimal foliar activity.	
	4A Neonicotinoid	Actara thiamethoxam	US 0.2 Korea 1	3	12	1-3	3	7	Neonicotinoids are poor adulticides but they suppress oviposition and an application can simultaneously control aphids.	
Taiwan	3A Pyrethroid	Mustang Maxx zeta-cypermethrin	US 0.8 Taiwan 2	1	12	5-7	6	7	Excellent efficacy for SWD.	A difficult foreign market. One idea would be select early season varieties that ripen during low pest pressure. Rotational partners limited to pyrethroids and one OP, diazinon. Other than Mustang Maxx, all MRLs are the same low tolerance as US leaving little room for error.
		Danitol 2.4EC fenproprathrin	US 3 Taiwan 3	3	24	10-14	2	14	Longest residual registered product.	
		Asana XL esfenvalerate	US 1 Taiwan 1	14	12	5-7	4		14 day PHI makes Asana difficult to use. Don't apply Asana within 7 days of pollination.	
	1B Organophosphate	diazinon	US 0.5 Taiwan 0.5	7	5 Days	7-10 SCRI*	1 in-season foliar			
China	3A Pyrethroid	Danitol 2.4EC fenproprathrin	US 3 China 5	3	24	10-14	2	14	Longest residual registered product.	The most challenging market with only 2 registered insecticides with acceptable MRLs and no tolerances set for other insecticides, which means no traces can be detected.
	4A Neonicotinoid	Assail 30SG acetamiprid	US 1.6 China 2	1	12	1-3	5	7	Neonicotinoids are poor adulticides but they suppress oviposition and an application can simultaneously control aphids.	

Blueberry SWD Rotational Partners, 6/18/2013

This is a list of insecticides registered on blueberry for SWD with tolerances = or < those for Japan, Korea, Taiwan and China. MRLs are subject to change.

Always check the USDA FAS MRL database prior to use. (<http://www.mrlatabase.com/>). For resistance management rotate between mode-of-action classes as much as possible. *Residual activity with *SCRI*, are based on laboratory bioassays otherwise based on SWD % mortality after 24h on field-aged leaves.
Questions and comments, contact: Beverly S. Gerdeman, bgerdeman@wsu.edu or Lynell K. Tanigoshi, tanigosh@wsu.edu

Market	Rotational Partners	MRL	PHI DAYS	REI Hours	Residual Activity	Yearly Maximum Applications	Retreatment Interval Days	Comments		
Japan	3A Pyrethroid Pyrethrins	Pyganic pyrethrins	US 1 Japan 1	0	12	0		Virtually no residual. Kills only by direct contact with insects.	Japan has 2 highly effective classes of insecticides available for rotation – pyrethroids and an organophosphate. Spinosyns provide a third rotational partner. While 3 neonicotinoids are an option, they are poor adulticides. This list contains a reasonable array of rotational options making Japan the most tolerant target market for raspberry exports.	
		Brigade 2EC bifenthrin	US 1 Japan 1	3	12	5-7	5	7		May stimulate mite populations.
		Asana XL esfenvalerate	US 1 Japan 1	7	12	5-7	4			7 day PHI makes Asana difficult to use. Don't apply Asana within 7 days of pollination.
	1B Organophosphate	malathion	US 8 Japan 8	1	12	3-5	3	5		An effective chemistry for SWD.
	5 Spinosyns	Entrust 2SC, Success spinosad	US 0.7 Japan 0.7	1	4	~1	6	5		Good topical performance but minimal foliar activity.
	4A Neonicotinoid	Assail 30SG acetamiprid	US 1.6 Japan 1.6	1	12	1-3	5	7		Neonicotinoids are poor adulticides but they suppress oviposition and an application can simultaneously control aphids.
Provado 1.6F imidacloprid		US 2.5 Japan 4	3	12	1-3	5	7			
Actara thiamethoxam		US 0.35 Japan 0.5	3	12	1-3	3	7			
Korea	3A Pyrethroid	Mustang Maxx zeta-cypermethrin	US 0.8 Korea 2	1	12	5-7	6	7	Pyrethroids are highly effective against SWD but Brigade can result in high mite populations.	Mustang Maxx is a highly effective pyrethroid but the only rotational partner is a slow-acting, poor adulticide, neonicotinoid, thiamethoxam.
		Brigade 2EC bifenthrin	US 1 Korea 1	3	12	5-7	5	7		
		Pyganic pyrethrins	US 1 Korea 1	0	12					
	4A Neonicotinoid	Actara thiamethoxam	US 0.35 Korea 1	3	12	1-3	3	7		
Taiwan	3A Pyrethroid	Mustang Maxx zeta-cypermethrin	US 0.8 Taiwan 2	1	12	5-7	6	7	Excellent efficacy for SWD.	Pyrethroids are highly effective against SWD especially Mustang Maxx but Taiwan has no alternate mode of action for rotation!
		Brigade 2EC bifenthrin	US 1 Taiwan 1	3	12	5-7	5	7	May stimulate mite populations.	
		Asana XL esfenvalerate	US 1 Taiwan 1	7	12	5-7	4		7 day PHI makes Asana difficult to use. Don't apply Asana within 7 days of pollination.	
China	4A Neonicotinoid	Assail 30SG acetamiprid	US 1.6 China 2	1	12	1-3	5	7	Neonicotinoids are poor adulticides but they suppress oviposition and an application can simultaneously control aphids.	Most unlikely target market for US with current list of registered chemicals for SWD control. Highly unlikely a program with a single slow-acting adulticide will be successful in preventing infestation.

Caneberry SWD Rotational Partners, 6/18/2013

This is a list of insecticides registered on caneberries for SWD with US tolerances = or < those for Japan, Korea, Taiwan and China.

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Residual activity is based on SWD % mortality after 24 hours on field-aged leaves brought to laboratory.

Proper resistance management requires rotating between mode-of-action classes as much as possible.

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