CONTROL OF SPOTTED WING DROSOPHILA IN ORGANIC BLUEBERRIES

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Description of Problem. Eight years ago, there was an estimated 600 acres of organic blueberries in the United States. By the end of 2013, Washington will have in excess of 2,500 acres of organic blueberries and is a leading source of this crop in the world. Acreage of this crop is expanding due to the favorable prices received and the relative lack of insect and disease pressure the industry has enjoyed. Approximately 90% of organic blueberries are located in eastern Washington. Prior to 2012, virtually no insecticides or fungicides had been applied to blueberries grown in eastern Washington. [Blueberries produced in western Washington have significant disease and insect pressure.]

Spotted wing drosophila (SWD) was detected in eastern Washington in 2010 but was not sufficiently widespread, present in sufficient numbers or was not noticed prior to 2012. This year, 2012, was different from previous years. Several growers deployed significant SWD programs, other growers less aware of the pest or less sophisticated in the SWD control programs suffered significant losses due to the insect. SWD pressure in 2013 was higher than in 2012 in later season blueberries.

For fresh blueberries, detection of a single larva per pallet results in rejection. Processed blueberries have lower standards, but they are still impossible to meet without a competent SWD control program. Several shipments of blueberries from eastern and western Washington were rejected due to the presence of SWD. The administrator of the Washington Blueberry Commission is under significant pressure to respond to this situation. For conventional growers, there are a number of insecticidal options available and WSU's Lynell Tanigoshi has done a good job of evaluating these products. Unfortunately to date, only a single organically approved insecticide (Entrust, spinosad, Dow AgroSciences) has been demonstrated to have sufficient efficacy against SWD. Organic blueberry growers rely very heavily on this product and the Washington (and California and Oregon) organic blueberry industry are dependent on this product. One of the challenges growers have is that there is a limit on the amount of the product that can be made during the course of the season resulting in growers using lower rates in order to extend coverage throughout the season.

SWD has been documented as having developed resistance to Entrust in blueberries in the Watsonville area of California. While strong data may be lacking demonstrating resistance in SWD to Entrust, two things are known: 1) Entrust is not working as well as it once did against

SWD in the areas where it has been used the longest and 2) such heavy reliance on a single mode of action year after a year in a pest known to develop resistance is a risky situation.

The Washington blueberry industry is desperate to develop new organic products for SWD.

In 2013, Schreiber and his researchers conducted a large SWD trial in early season blueberries and found at the completion of the trial that there was a complete absence of the insect in the trial. In desperation they repeated the trial in blackberries. To their surprise the blackberries were overwhelmed by SWD. SWD pressure was unlike anything previously seen in eastern Washington. No product, even the industry standard, Entrust, did not provide commercially acceptable control. The short coming of the trial was that in the face of such heavy pressure, applications were not shorten commensurately. Application intervals were made at 10 days, when, in retrospect, treatment intervals should have been at 5 to 7 days. It is our hope to repleat this trial and make applications at shorter intervals. The summary of results from the second trial is described below.

Efficacy of 17 Programs Against SWD in Blackberries in WA in 2013

Trt No.	Type	Treatment Name	Rate of Application		Appl Code	Total SWD Larvae	
3	INSE	ENTRUST	6	oz/a	ABC	167	f
16	INSE	ENTRUST	4	oz/a	ABC	175	f
16	INSE	AZA-DIRECT	3.5	pt/a	ABC		
2	INSE	ENTRUST	4	oz/a	ABC	180	ef
14	INSE	ENTRUST	6	oz/a	ABC	213	def
14	INSE	GRANDEVO	2	lb/a	A		
4	INSE	ENTRUST	4	oz/a	ABC	214	def
4	INSE	GRANDEVO	1	lb/a	ABC		
6	INSE	ENTRUST+BAIT	4oz/a		ABC	220	def
17	INSE	JET AG	1	% v/v	ABC	237	cdef
13	INSE	ENTRUST	6	oz/a	ABC	240	cdef
13	INSE	PYGANIC	64	fl oz/a	A		
13	INSE	NEEMAZAD	16	oz/a	A		
10	INSE	AZA-DIRECT	3.5	pt/a	ABC	253	bcde
15	INSE	DES-X2	gal/100 gal		ABC	262	abcd
5	INSE	GRANDEVO	2	lb/a	ABC	273	abcd
7	INSE	GRANDEVO+BAIT	1/a		ABC	300	abc
11	INSE	PYGANIC	64	fl oz/a	ABC	305	abc
11	INSE	NEEMAZAD	16	oz/a	ABC		
12	INSE	PYGANIC	64	fl oz/a	ABC	311	abc
12	INSE	AZA-DIRECT	3.5	pt/a	ABC		
9	INSE	NEEMAZAD	16	oz/a	ABC	320	ab
1	CHK	UTC			325	ab	
8	INSE	PYGANIC	64	fl oz/a	ABC	335	a