



*Washington Tree Fruit Research Commission*

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# Invasive Species and Export Markets: The *Drosophila* *suzukii* (SWD) Management Experience

2017 MRL  
Harmonization  
Workshop.

San  
Francisco,  
California.  
May 31 and  
June 1

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Washington Tree Fruit Research Commission  
Wenatchee, Washington USA



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## **Invasive Species and Export Markets**

- Introduction
- Elements of the cherry production system
- The importance of cherry exports
- IPM before and after SWD
- Impacts of the lack of MRL harmonization



# The Cherry Production System

- Early season cherry varieties are harvested as soon as 65 days after bloom and progresses over the region for 60 to 75 days.
- Cherries are a “pick, pack and ship” crop. Fruit is generally only stored if market movement slows.
- Several pests of quarantine significance directly attack the fruit up through harvest: powdery mildew, western cherry fruit fly and SWD.
- Cherries exported outside of North America are primarily air freighted
- Exported cherries can bring high prices and customers expect high quality fruit.



**Total Cherry Exports:** Over 30% of the cherries grown in the PNW are exported to over 30 countries around the world at about \$45 per carton

Country	20 lb. Cartons	FOB Value (\$)
Canada	2,181,602	98,000,000
China	1,853,437	83,000,000
Korea	1,063,420	47,000,000
Taiwan	575,316	26,000,000
Hong Kong	306,498	14,000,000
Japan	216,112	10,000,000
Australia	191,689	9,000,000
Mexico	133,322	6,000,000
Thailand	112,965	5,000,000
Singapore	102,525	5,000,000
Vietnam	73,005	3,000,000
Malaysia	46,877	2,000,000

**2016 Top export markets for Northwest cherries.**

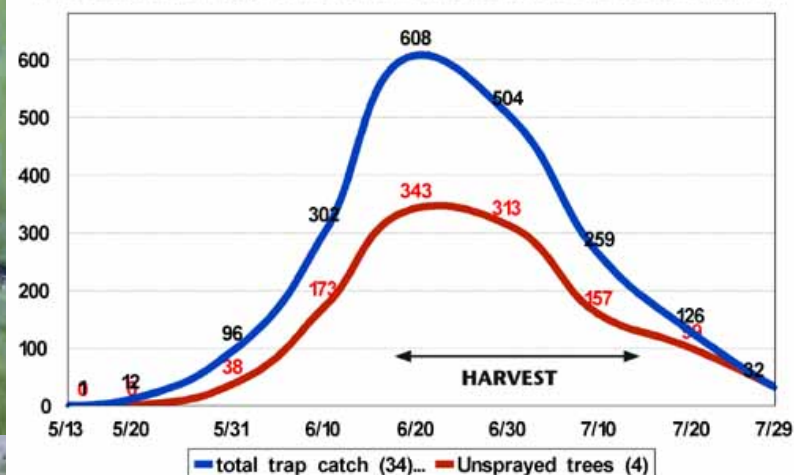


- Spinosyn bait spray:  
GF-120
- 6 MPH
- Every other row



## 2005 Cherry Fruit Fly Trap Catch by Week

Total Catch on All Traps in Wenatchee Area, Cashmere and Chelan / Manson



Tim Smith and Esteban Gutierrez, WSU Extension

- Quarantine pest
- Single generation
- 10 day pre-oviposition period
- Resistance unknown
- Narrow host range

# Before SWD



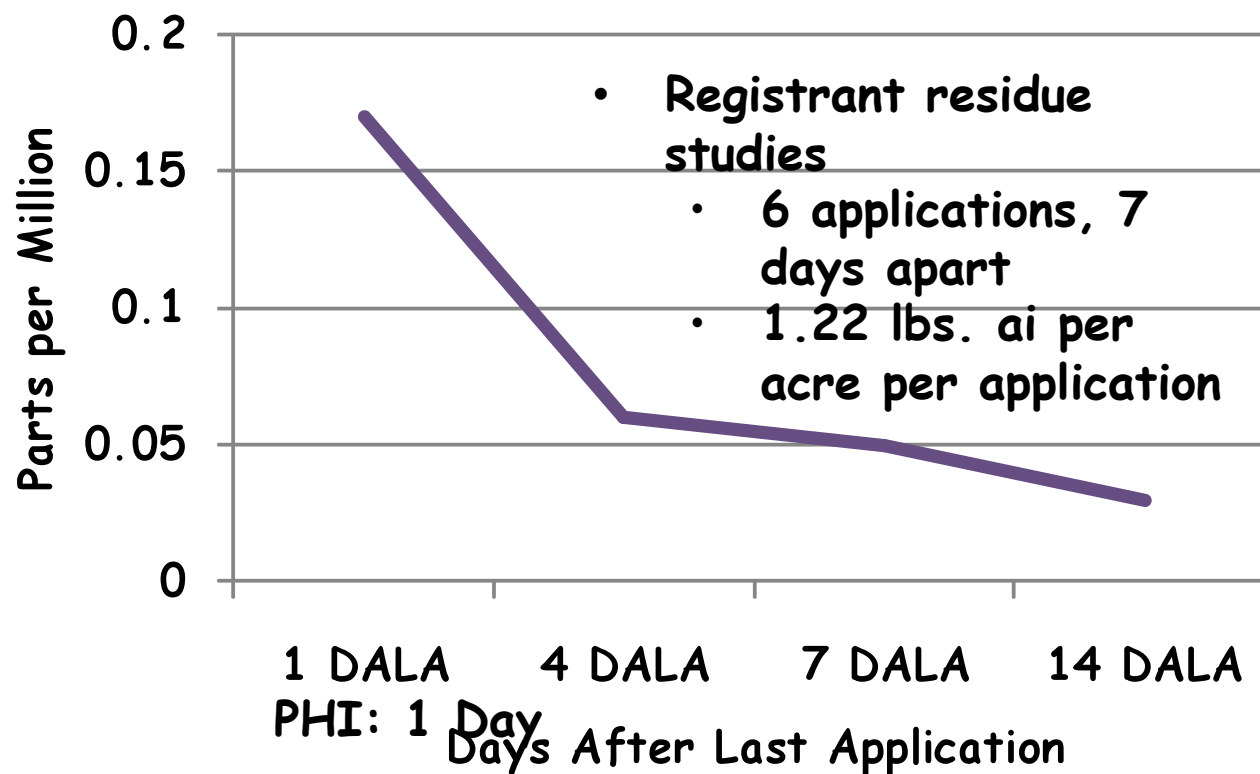


2017 MRL Harmonization Workshop



**Residue  
Decline  
Curve  
Supplied by  
Cheminova**

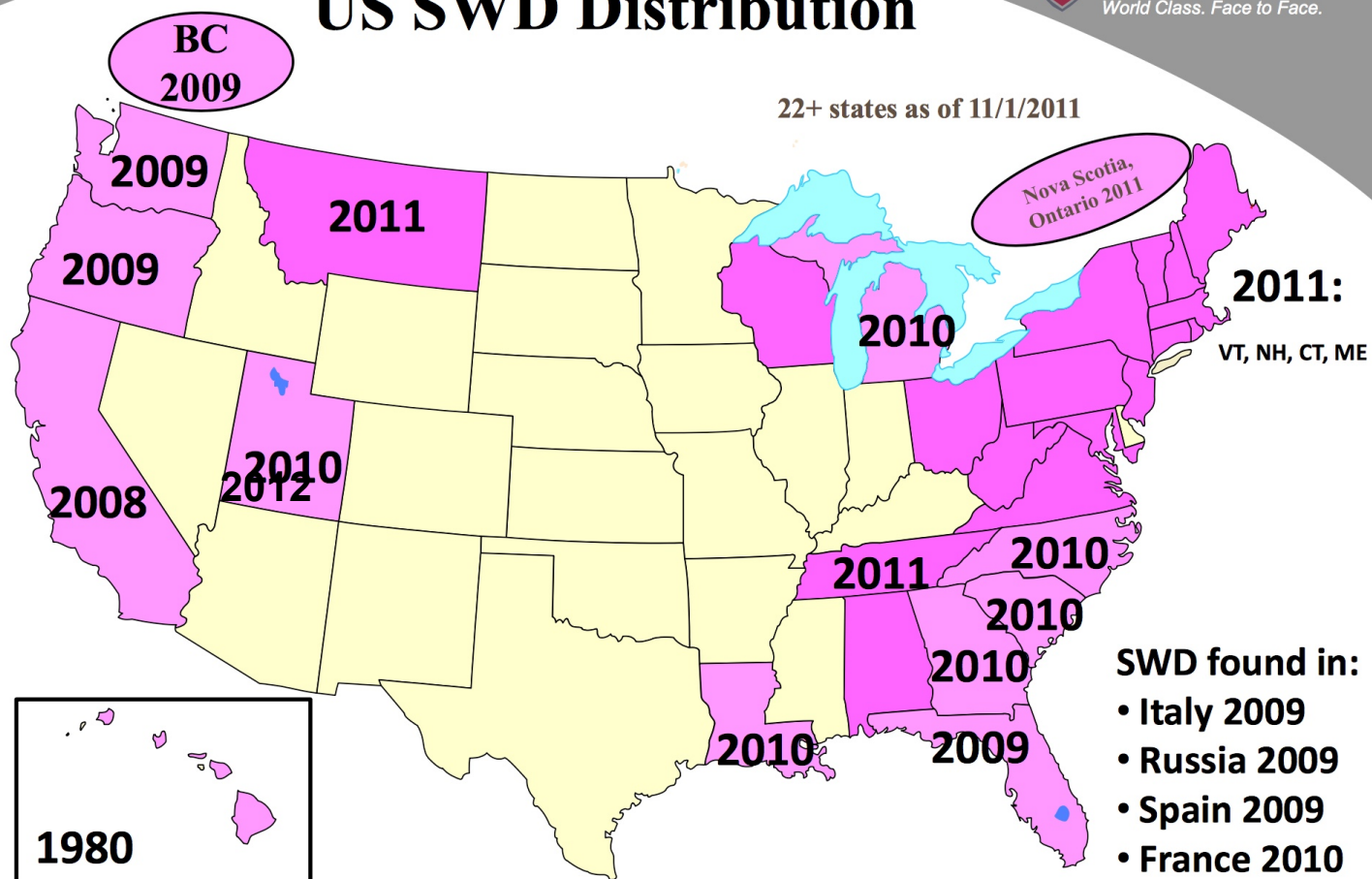
## Malathion ULV Residues: Oregon 1993



Residues determined on field-run frozen pitted cherries.



# US SWD Distribution





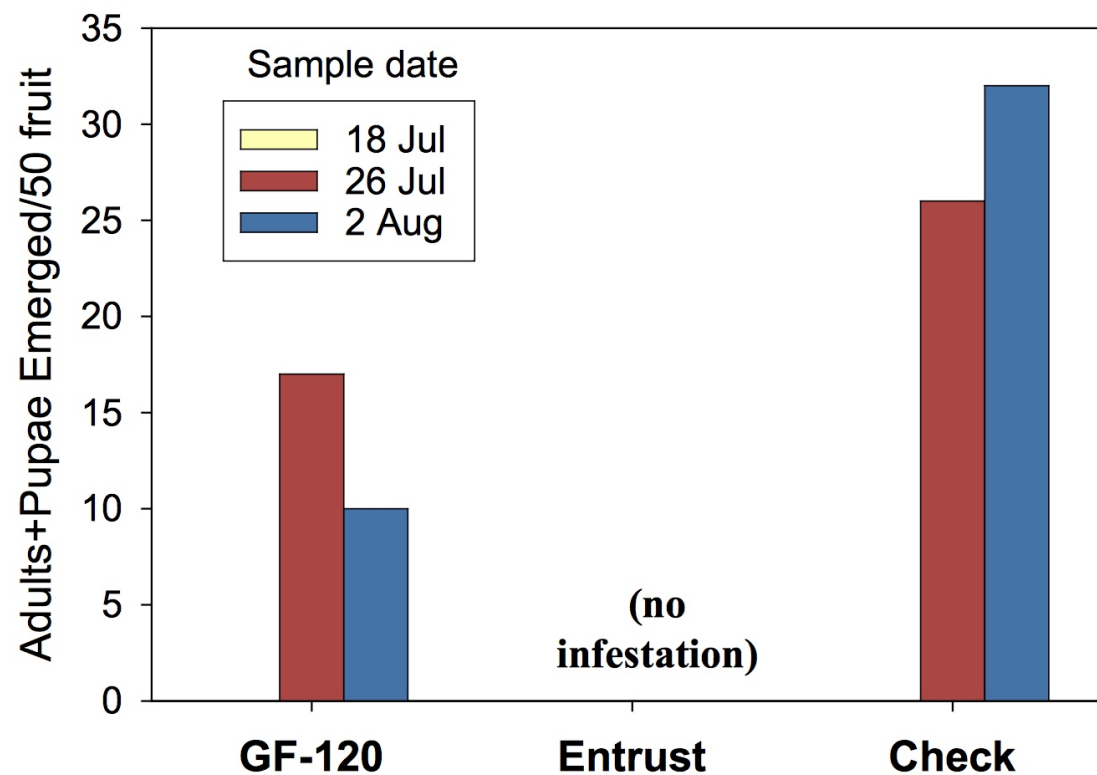


- Many generations per year (13?)
- Egg laying within 1 day
- Broad host range





## GF-120 Field Trial



Trade Name	Common Name	U.S. Tolerance	Taiwan MRL	Korea MRL
Actara	thiamethoxam	0.5	—	—
Admire	imidacloprid	3	0.5	0.5
Ambush	permethrin	4	2	5
Asana	esfenvalerate	3	—	—
Baythroid	B-cyfluthrin	0.3	—	1
Delegate	spinetoram	0.2	—	0.05
Malathion ULV	malathion	8	—	0.5
Diazinon	diazinon	0.2	1	0.1
Mustang	Z-cypermethrin	1	—	2
Sevin	carbaryl	20	1	1
Success	spinosad	0.2	0.2	0.2
Warrior	L-cyhalothrin	0.5	0.4	0.5
Danitol	fenpropathrin	5	0.5	0.5

January 2010: SWD Recommended Insecticides and MRLs



**Concerns regarding potential crop loss drove decision-making (PHI, non-target species)**

## Recommendations

- **Begin CFF sprays at normal time (straw)**
- **Switch to SWD sprays when its detected in your region and fruit is susceptible (CFF will be covered) (depends on PHI)**
  - **Organophosphates (diazinon, malathion ULV)**
  - **Spinosyns (Success, Entrust, Delegate)**
  - **Pyrethroids (Danitol, Mustang, Warrior)**
- **Consider adding imidacloprid (possibly other neonic) to some of the later sprays for “reach back” activity (eggs/larvae in fruit)**
- **Do NOT rely on GF-120 for SWD control!**
- **Don’t cut rates; don’t stretch intervals**
- **Re-cover during long harvest periods (e.g., if harvest extends to 10 days, recover at 5 days)**
- **If aerial application is not an option (proximity to dwellings,) consider Danitol by ground**



Trade Name	Common Name	U.S. Tolerance	Taiwan MRL	Korea MRL
Actara	thiamethoxam		—	—
Admire	imidacloprid			0.5
Ambush	imidacloprid			5
Asana	pyrethrin			—
Baythro	imidacloprid			1
Delegate	imidacloprid			0.05
Malathion ULV	malathion			0.5
Diazinon	diazinon		1	0.1
Mustang	Z-cypermethrin	1	—	2
Sevin	carbaryl	20	1	1
Success	spinosad	0.2	0.2	0.2
Warrior	L-cyhalothrin	0.5	0.4	0.5
January 2010 GFD Recommended Insecticides and MRLs				

In January 2009 the government of Taiwan instituted extensive residue testing for imported fruits and vegetables



- Rejections
- Increased testing
- Compliance plans







**MRL violations  
in fresh  
cherries  
disrupt and  
delay  
marketing**





# 美國櫻桃又爆農藥過量

【甯瑋瑜／台北報導】前一、兩個月才有三批共六公噸美國進口櫻桃在海關檢出農藥不合格，衛生署昨又發布有兩批、約三點六公噸的美國櫻桃農藥超標。

不排除禁止進口

衛生署已要求美方下月四日之前提改善計劃，近日若再有不合格，將再提高抽驗比率，甚至做出暫停報驗、不准進口的嚴厲處置。

衛生署表示，新增兩批分別是六月二十三日由皆盛企業進口的一點三公噸，檢出含農藥馬拉松零點零四ppm (parts per million，百萬分之一濃度)，國內規範不得檢出。另批是匯威公司六月二十一日進口的二點三公噸，檢出含農藥芬普寧零點九三ppm，逾標準的零點五ppm。

五月底至六月初時，也曾有  
三批查出農藥過量，昨再新增兩批，讓美國櫻桃不  
到一個月有五批檢驗不合。

格。衛署食品藥物管理局食品組科長吳宗熹說，第三批出現時，已將抽驗比率從百分之二點五提高至兩成，並在六月十八日行文要求美方於八月四日前提改善計劃。

林口長庚醫院臨床毒物科主任林杰樑說，兩款都屬低毒性有機磷農藥，長期攝取恐造成孩童過動。因櫻桃蒂頭凹陷處，易殘存農藥，建議食用前應以流動清水清洗十五分鐘，並以軟毛刷清洗蒂頭。



2010.07.16





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