



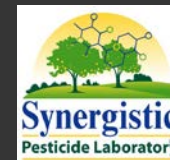
Caneberry Pesticide Decline Study 2017-2019

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Field

- OSU NWREC - Aurora, OR
 - 2 trials: Meeker Raspberries & Marion Blackberries
 - CO₂ Backpack – 40 PSI, 50 gal/acre H₂O
 - Held frozen and transferred by vehicle to lab
- Randy Honcoop - Lynden, WA
 - 1 trial: Meeker Raspberry
 - Over-the-row boom – 75 gal/acre H₂O
 - Held frozen and shipped via next day to lab
- Randomized complete block experimental design with 4 reps
- UTC, 0, 1, 3, 5, 7, 10, 14, 21 days after application



Insecticide/Miticide Treatment List

Active Ingredient	Trade Name	IRAC	Rate (lb ai/A)	Rate (product/A)	USA PHI (days)
Treatment #1 (T1) tank mix					
Bifenazate	Acramite 50WS	25	0.5	16 oz.	1
Bifenthrin	Brigade 2EC	3A	0.1	6.4 fl. oz.	3
Fenbutatin (hexakis)*	Vendex 50W*	12B	1.0	32 oz.	3
Flupyradifurone	Sivanto Prime	4D	0.18	14 fl. oz.	0
Hexythiazox	Onager EW	10A	0.1875	24 fl. oz.	3
Imidacloprid	Admire Pro	4A	0.1	2.8 fl. oz.	3
Methoxyfenozide	Intrepid	18A	0.25	16 fl. oz.	3
Spinetoram	Delegate WG	5	0.09	6 oz.	1
Treatment #2 (T2) tank mix					
Acequinocyl	Kanemite 15SC	20B	0.3	31 fl. oz.	1
Cyantraniliprole	Exirel	28	0.133	20.5 fl. oz.	1
Fenpropathrin	Danitol 2.4EC	3A	0.3	16 fl. oz.	3
Malathion	Malathion 8F	1B	2.0	32 fl. oz.	1
Spinosad	Success	5	0.09	6 fl. oz.	1
Thiamethoxam	Actara	4A	0.047	3 oz.	3
<i>zeta</i> -Cypermethrin	Mustang MAXX	3A	0.025	4 fl. oz.	1

*Not registered for Blackberries

Fungicide Treatment List

Active Ingredient	Trade Name	FRAC	Rate (lb ai/A)	Rate (product/A)	USA PHI (days)
Treatment #3 (T3) tank mix					
Azoxystrobin	Abound	11	0.25	15.5 fl. oz.	0
Captan	Captan 4L	M04	2.0	64 fl. oz.	3
Fenhexamid	Elevate	17	0.75	24 oz.	0
Fluopyram + Pyrimethanil	Luna Tranquility	7 & 9	0.9	27 fl. oz.	0
Myclobutanil	Rally	3	0.075	3 oz.	0
Penthiopyrad*	Fontellis*	7	0.313	24 fl. oz.	0
Treatment #4 (T4) tank mix					
Boscalid + Pyraclostrobin	Pristine	7 & 11	0.55	23 fl. oz.	0
Cymoxanil + Famoxadone	Tanos	27 & 11	0.31	10 oz.	0
Cyprodinil + Fludioxonil	Switch	9 & 12	0.55	14 oz.	0
Iprodione	Rovral	2	1.0	32 fl. oz.	0
Isofetamid	Kenja	7	0.4	15.5 fl. oz.	7
Pydiflumetofen*	Miravis Prime*	7	0.134	10.3 fl. oz.	0
Pyriofenone	Proливо 300 SC	50	0.098	5 fl. oz.	0

*Not registered for Caneberries

Laboratory

- Samples received in good condition, homogenized and stored frozen
- Extracted via QuEChERS with dSPE cleanup
- Analyzed by LC/MS/MS and GC/MS/MS
- LOQs as low as possible to mirror MRLs
- Calculated data for reps averaged then graphed as decline curve with 95% confidence interval
 - Concentration over time for each year at each site
 - PHI on x-axis, US Tolerance (MRL) on y-axis
 - Table of MRLs
 - All values in ppm

MRLs

- Bryant Christie Inc - <https://www.bryantchristie.com>
- MRLs Current as of 11/15/19
- All values in ppm

Countries:

- US – United States
- AU – Australia
- CA – Canada
- CH – China
- EU – European Union
- HK – Hong Kong
- JA – Japan
- KO – Korea
- TA – Taiwan

	Rsp	Blk
US	5	5
AU	5	5
CA	5	5
CH	NT=0	NT=0
EU	5	5
HK	5	5
JA	5	5
KO	3	3
TA	5	0.01

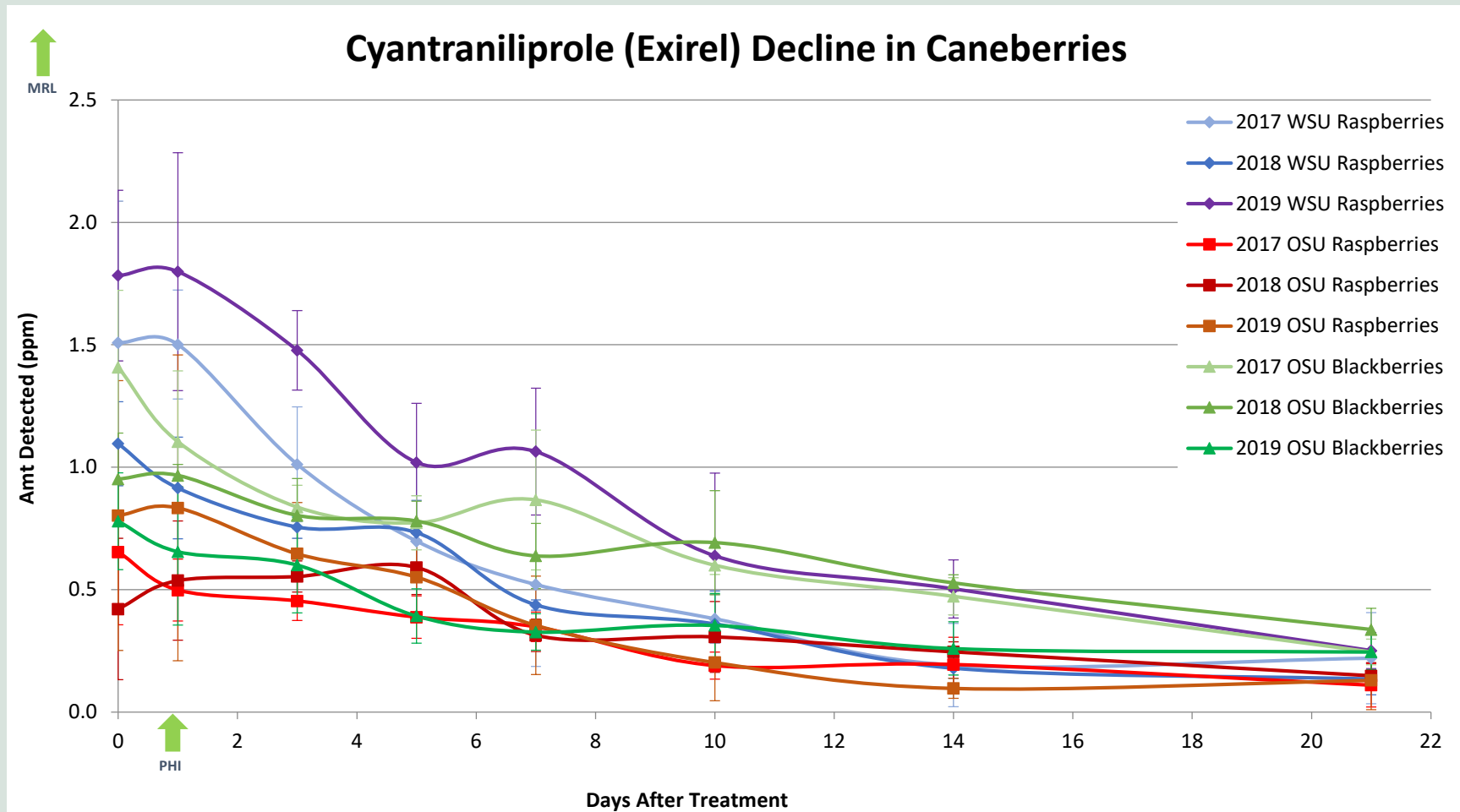
Orange highlights MRLs moderately lower than residues at the PHI

Red highlights MRLs significantly lower than residues at the PHI (MRL $\leq$ 0.1 ppm)



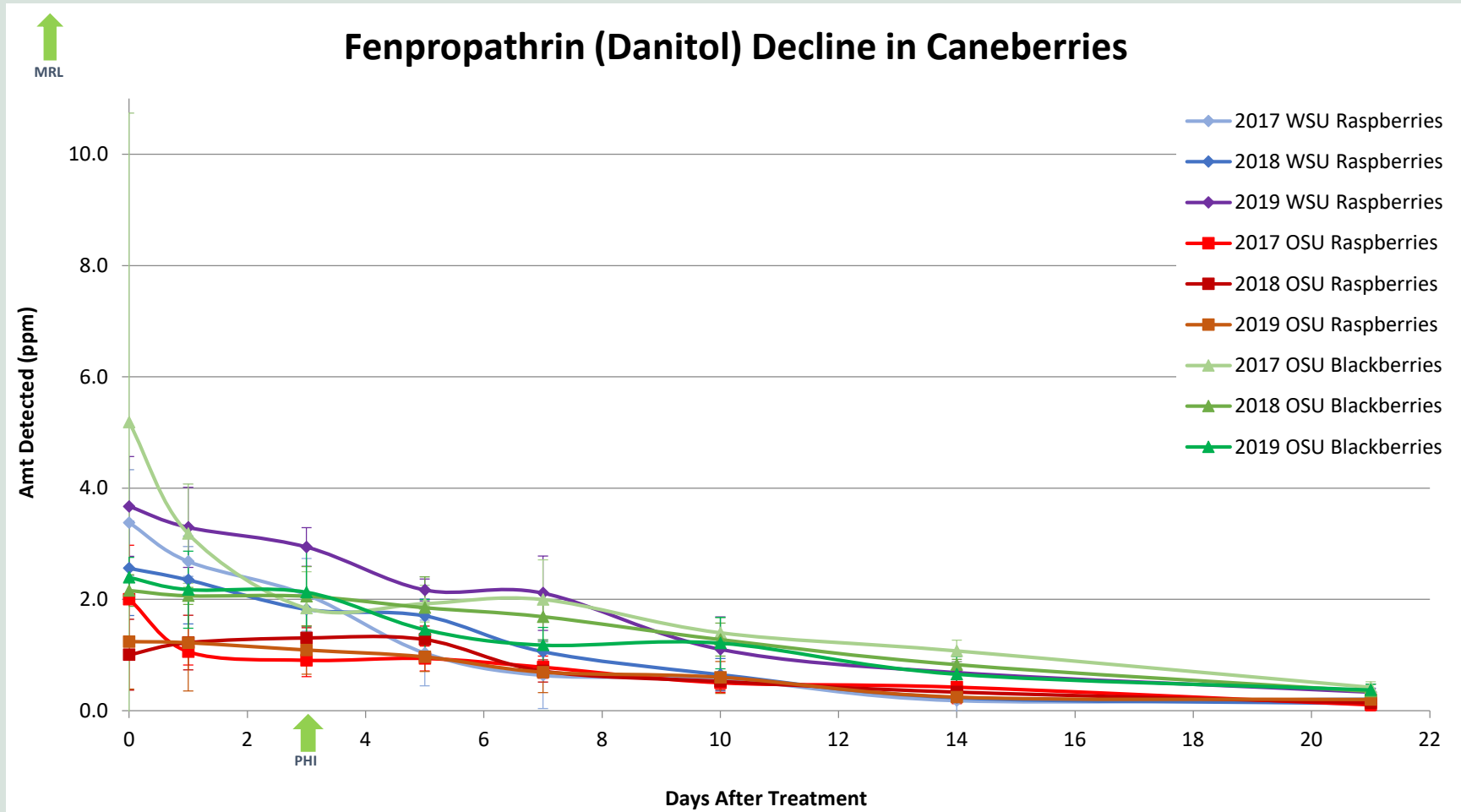
2017-2019 Insecticide
Decline study

2017-2019 Insecticide Study



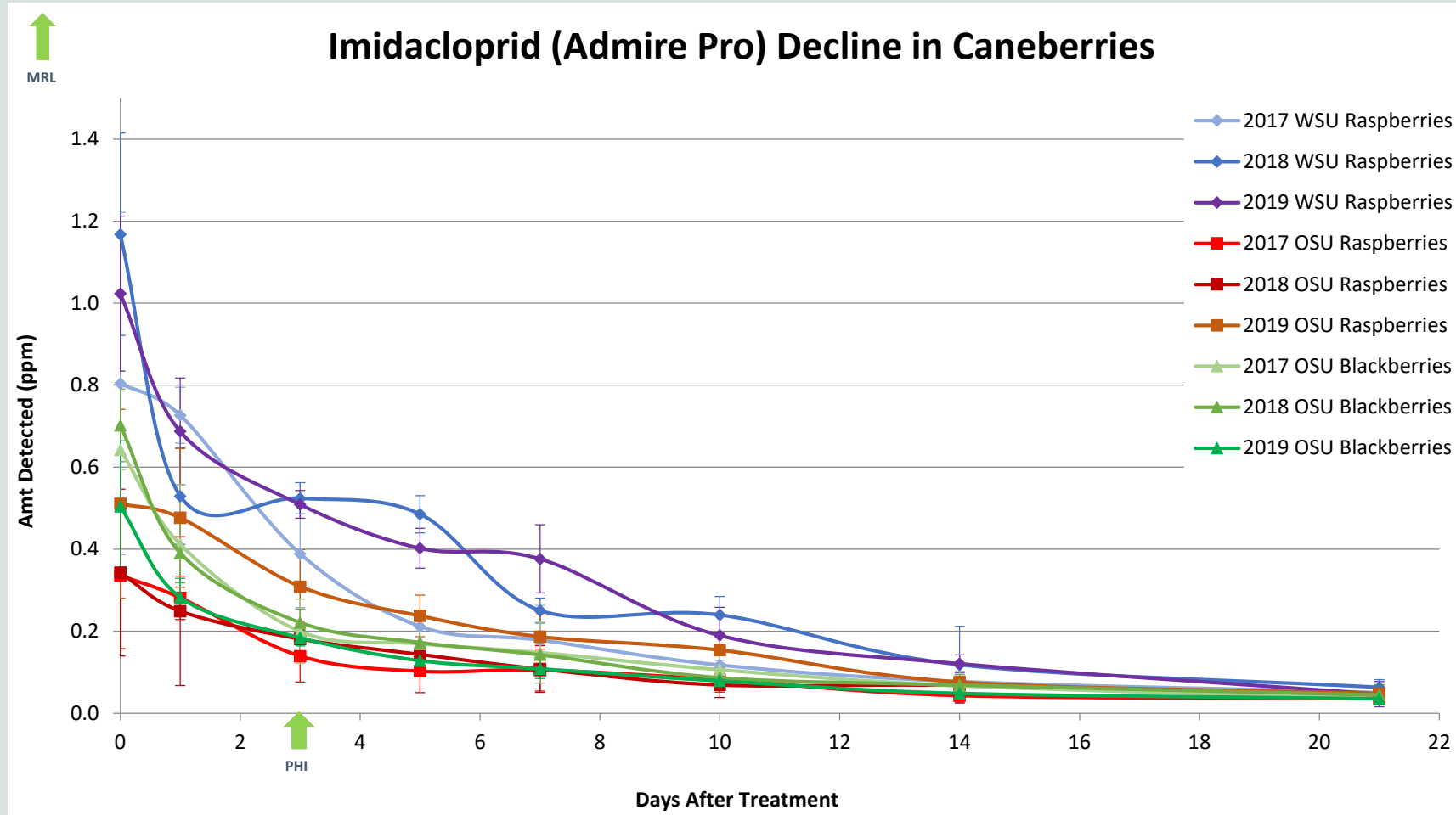
	Rsp	Blk
US	4	4
AU	0.05	0.05
CA	4	4
CH	NT=0	NT=0
EU	0.9	0.9
HK	NT=0	NT=0
JA	NT=0.01	NT=0.01
KO	0.7	0.7
TA	NT=0	NT=0

2017-2019 Insecticide Study



	Rsp	Blk
US	12	12
AU	NT=0	NT=0
CA	12	12
CH	5	5
EU	0.01	0.01
HK	5	5
JA	5	5
KO	0.01	0.01
TA	3	3

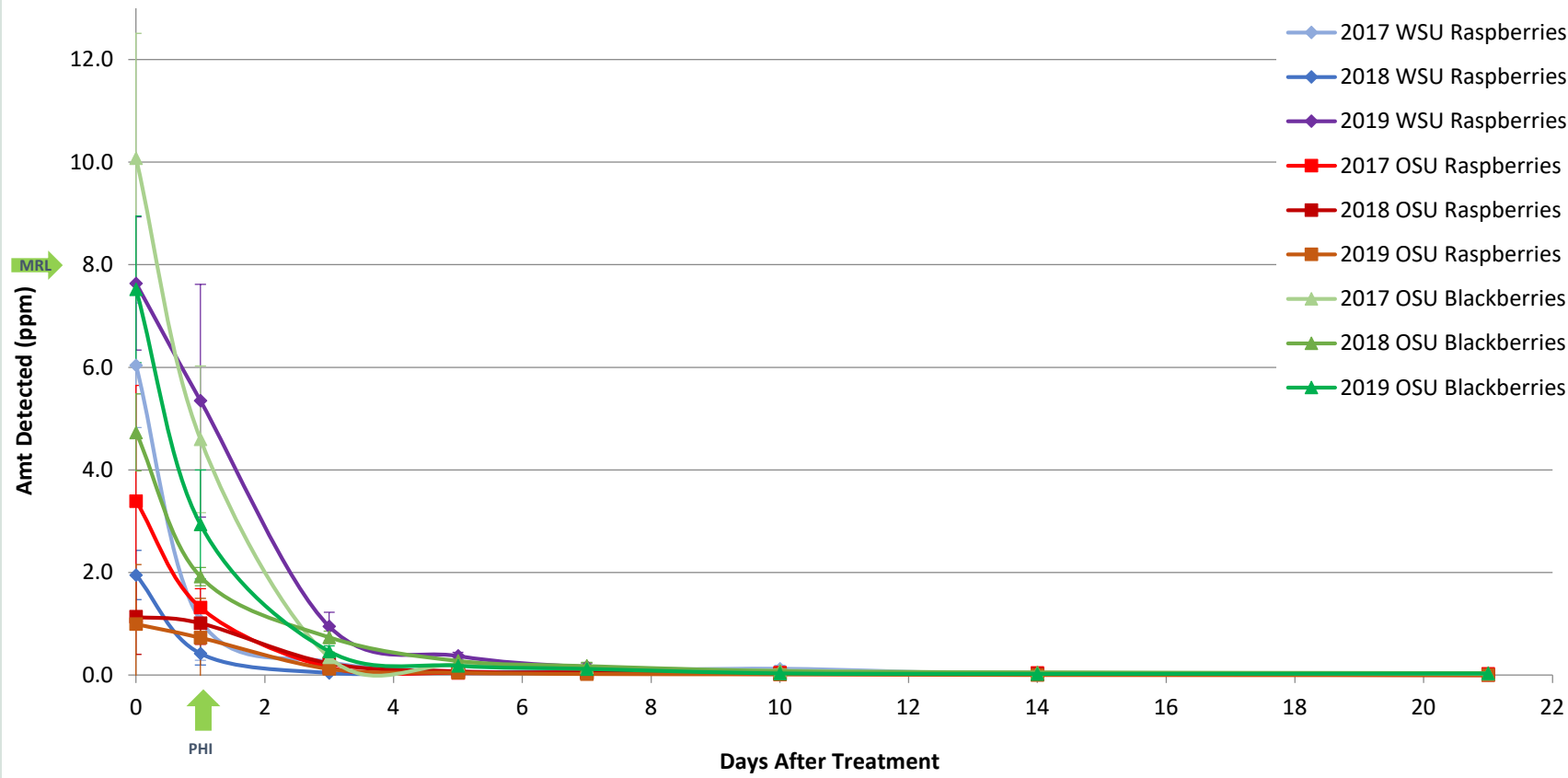
2017-2019 Insecticide Study



	Rsp	Blk
US	2.5	2.5
AU	5	5
CA	2.5	2.5
CH	NT=0	NT=0
EU	5	5
HK	5	5
JA	4	4
KO	1.5	1.5
TA	1	1

2017-2019 Insecticide Study

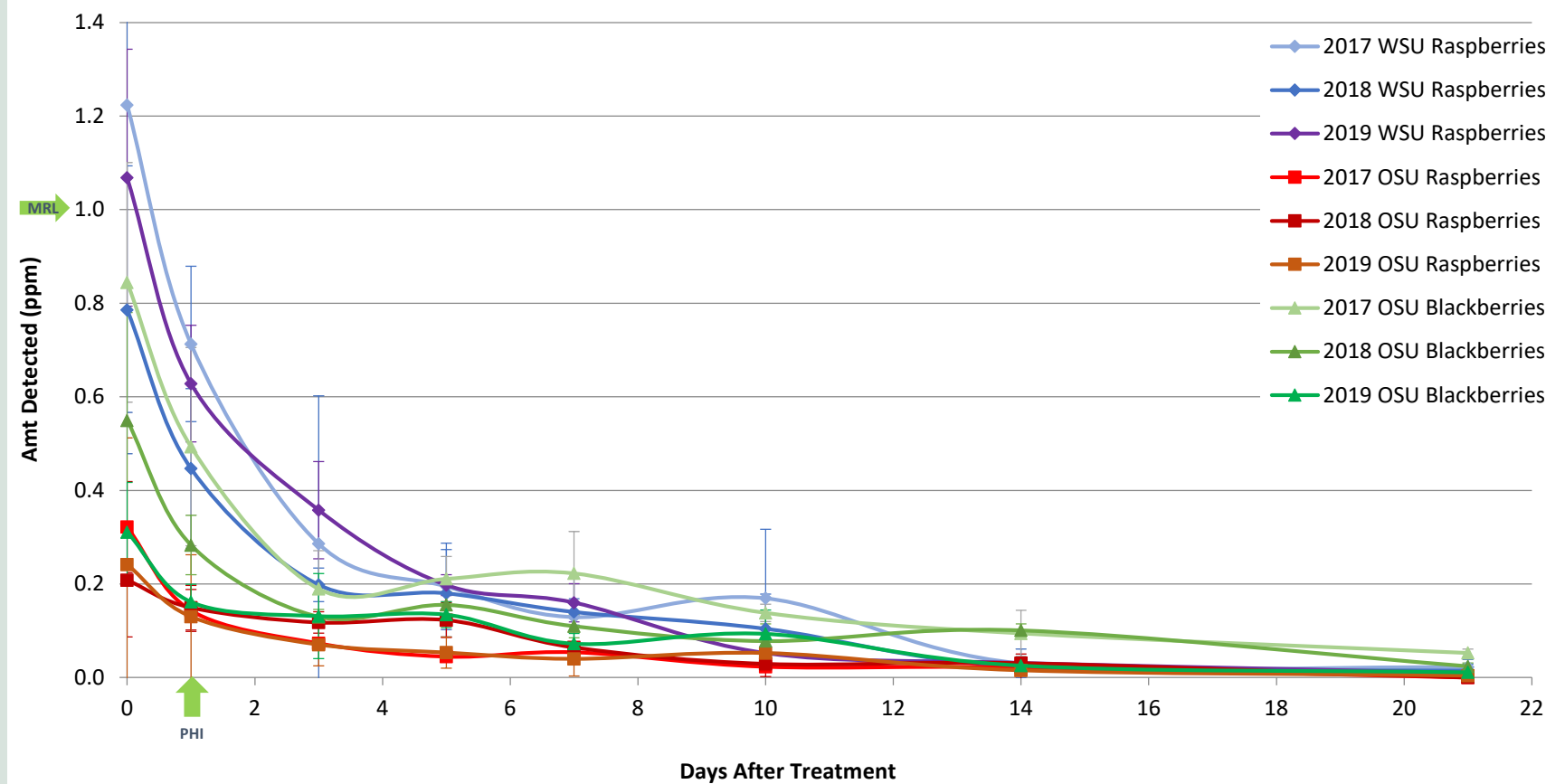
Malathion Decline in Caneberries



	Rsp	Blk
US	8	8
AU	10	10
CA	8	8
CH	NT=0	NT=0
EU	0.02	0.02
HK	8	8
JA	8	8
KO	0.5	0.5
TA	0.01	0.01

2017-2019 Insecticide Study

Spinosad (Success) Decline in Caneberries



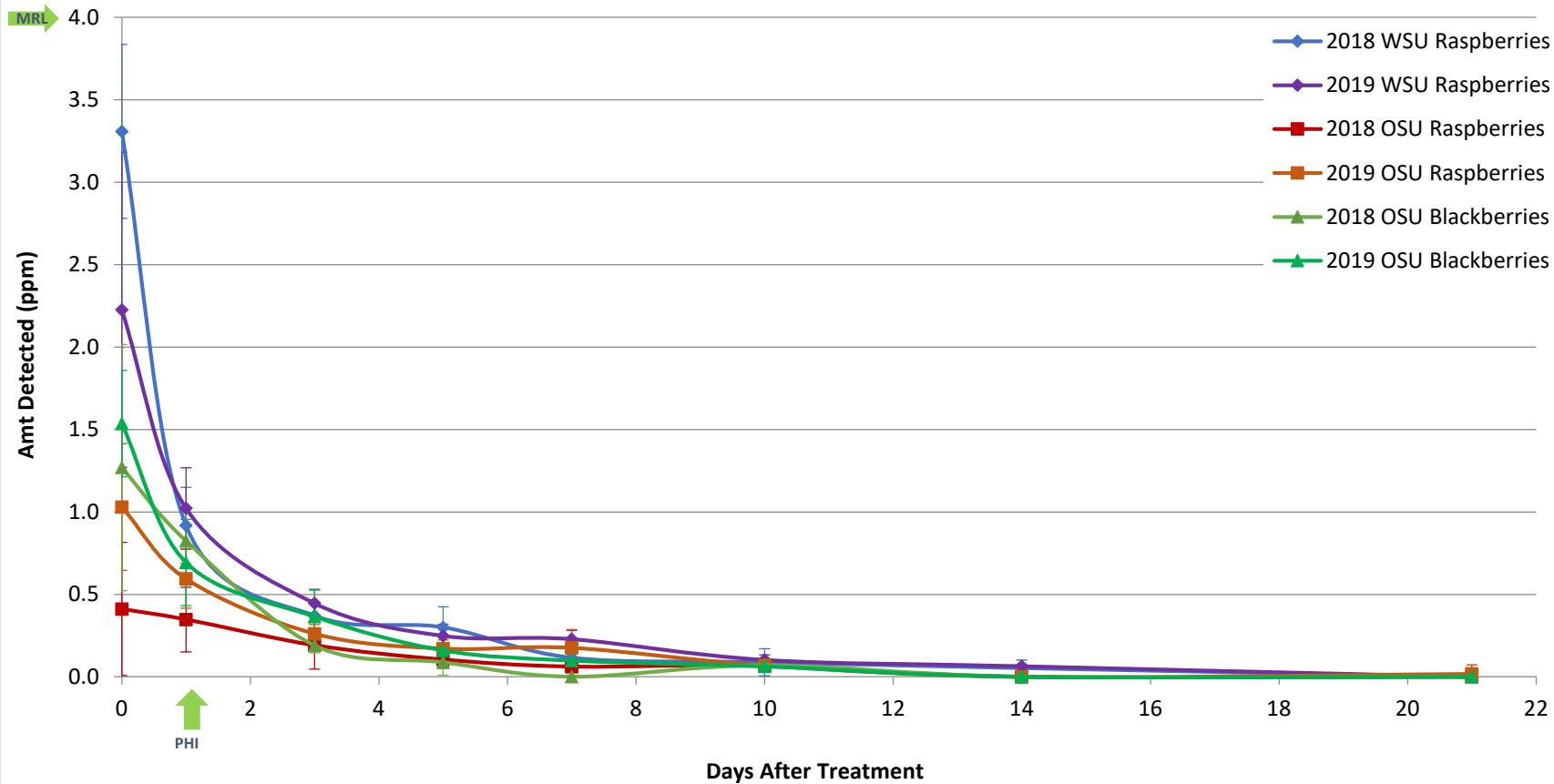
	Rsp	Blk
US	1	1
AU	0.7	0.7
CA	0.5	0.5
CH	NT=0	1
EU	1.5	1.5
HK	NT=0	NT=0
JA	1	1
KO	0.5	0.5
TA	1	1



2017-2019 Miticide
Decline study

2017-2019 Miticide Study

Acequinocyl (Kanemite) Decline in Caneberries



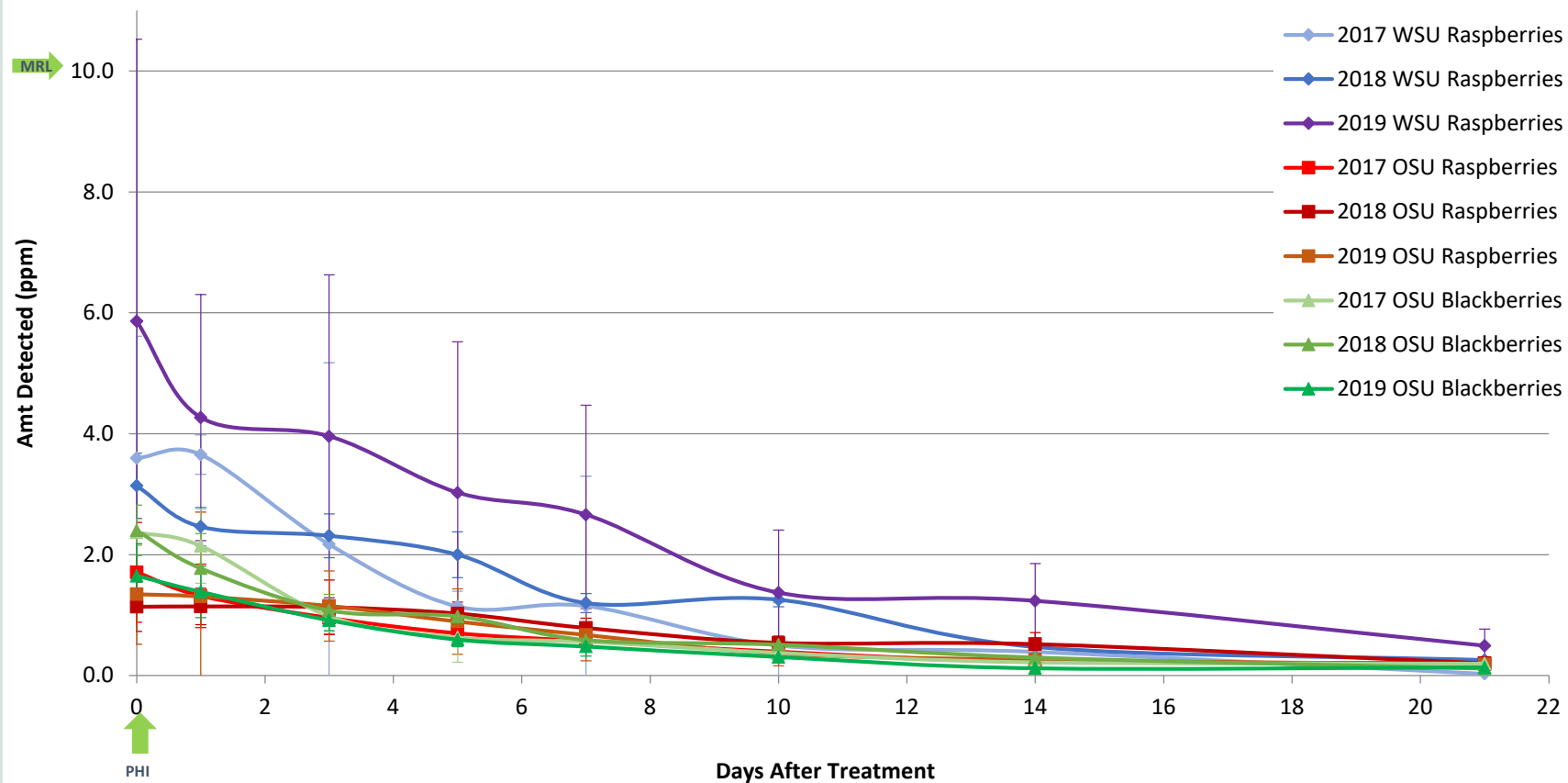
	Rsp	Blk
US	4	4
AU	NT=0	NT=0
CA	4	4
CH	NT=0	NT=0
EU	0.01	0.01
HK	NT=0	NT=0
JA	NT=0.01	NT=0.01
KO	0.5	0.5
TA	NT=0	NT=0



2017-2019 Fungicide Decline Study

2017-2019 Fungicide Study

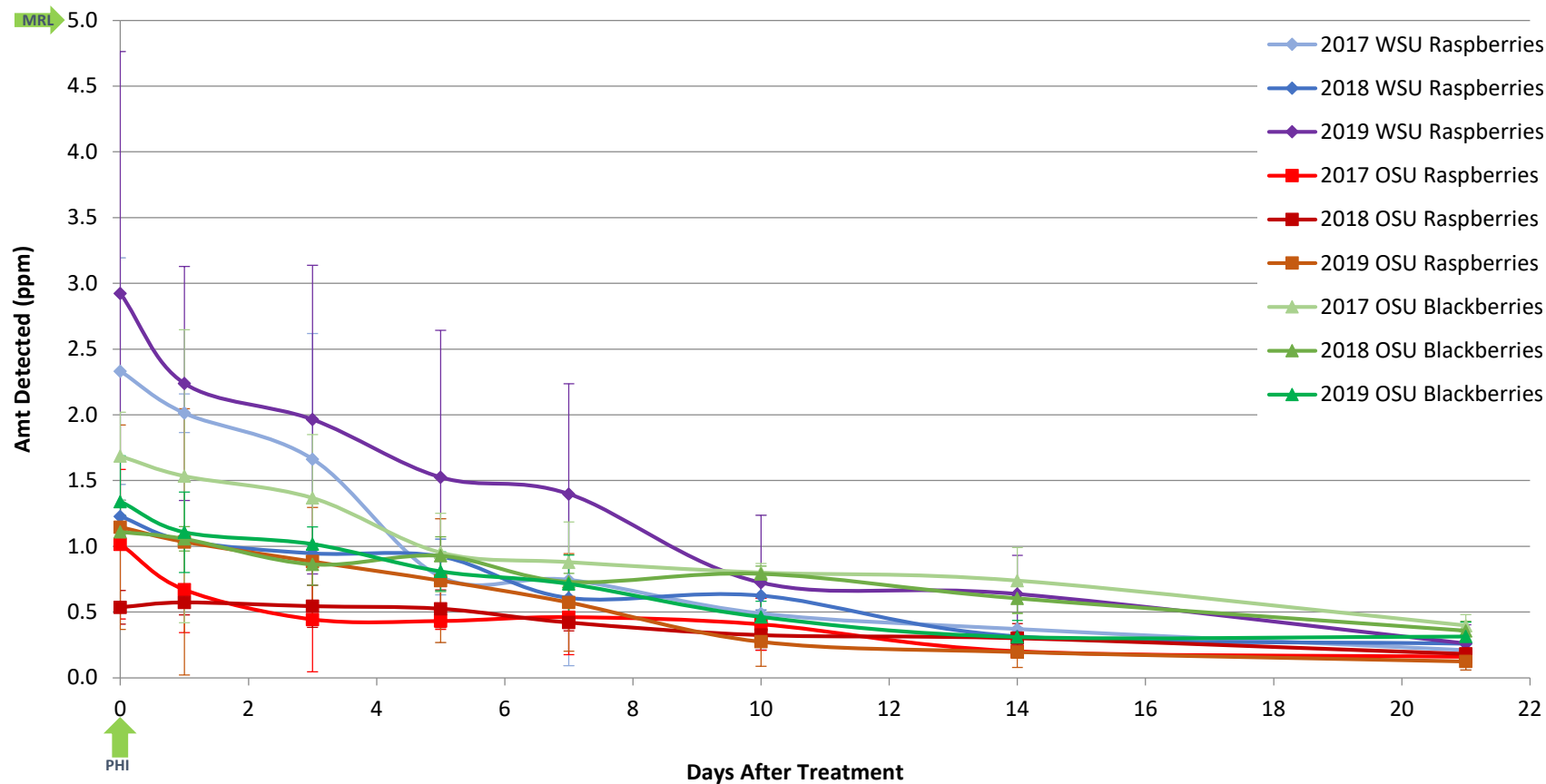
Cyprodinil (Switch) Decline in Caneberries



	Rsp	Blk
US	10	10
AU	10	10
CA	10	10
CH	NT=0	NT=0
EU	3	3
HK	10	NT=0
JA	10	10
KO	1	1
TA	3	3

2017-2019 Fungicide Study

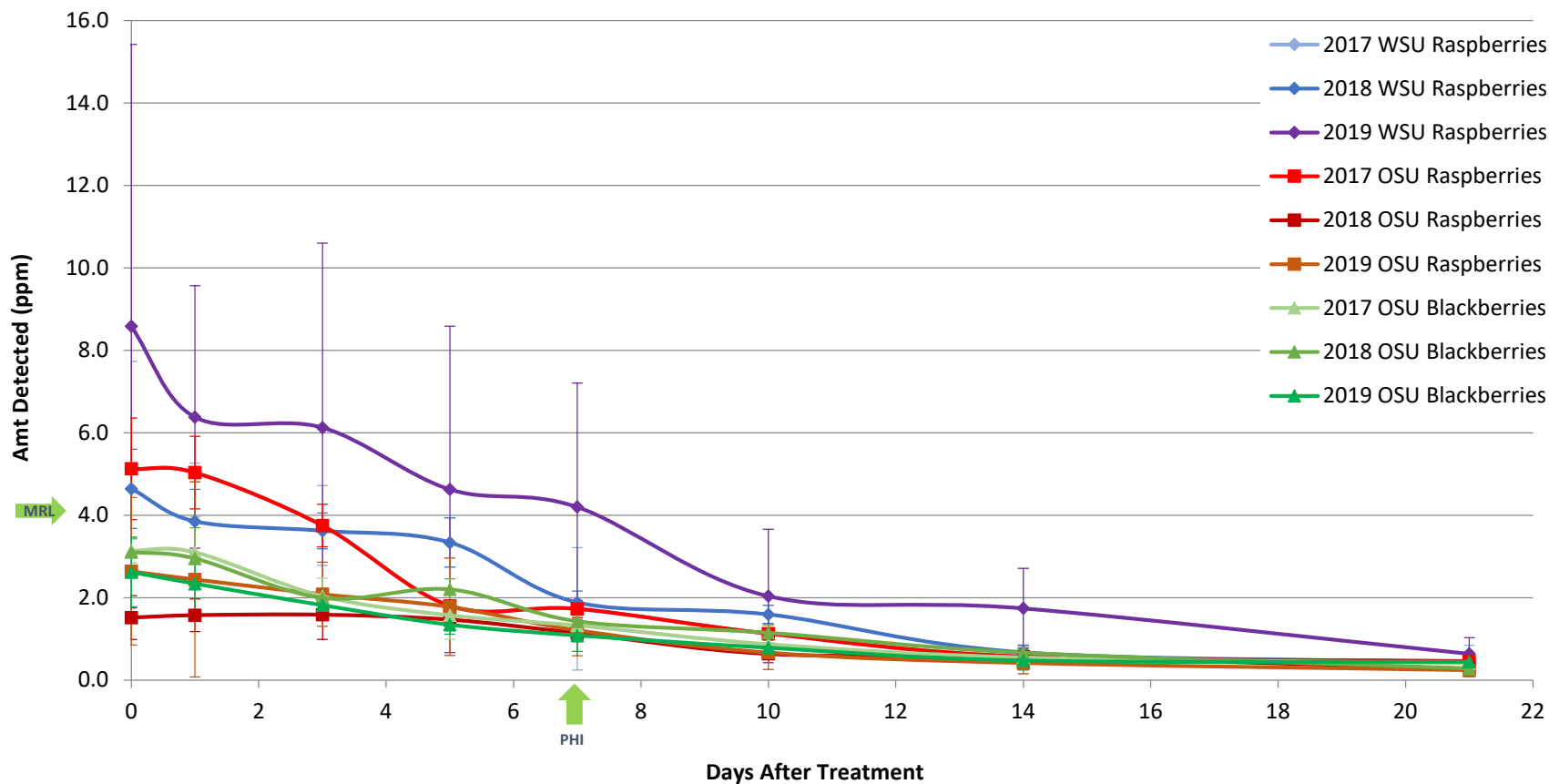
Fludioxonil (Switch) Decline in Caneberries



	Rsp	Blk
US	5	5
AU	5	5
CA	7	7
CH	NT=0	NT=0
EU	5	5
HK	5	5
JA	5	5
KO	5	5
TA	5	5

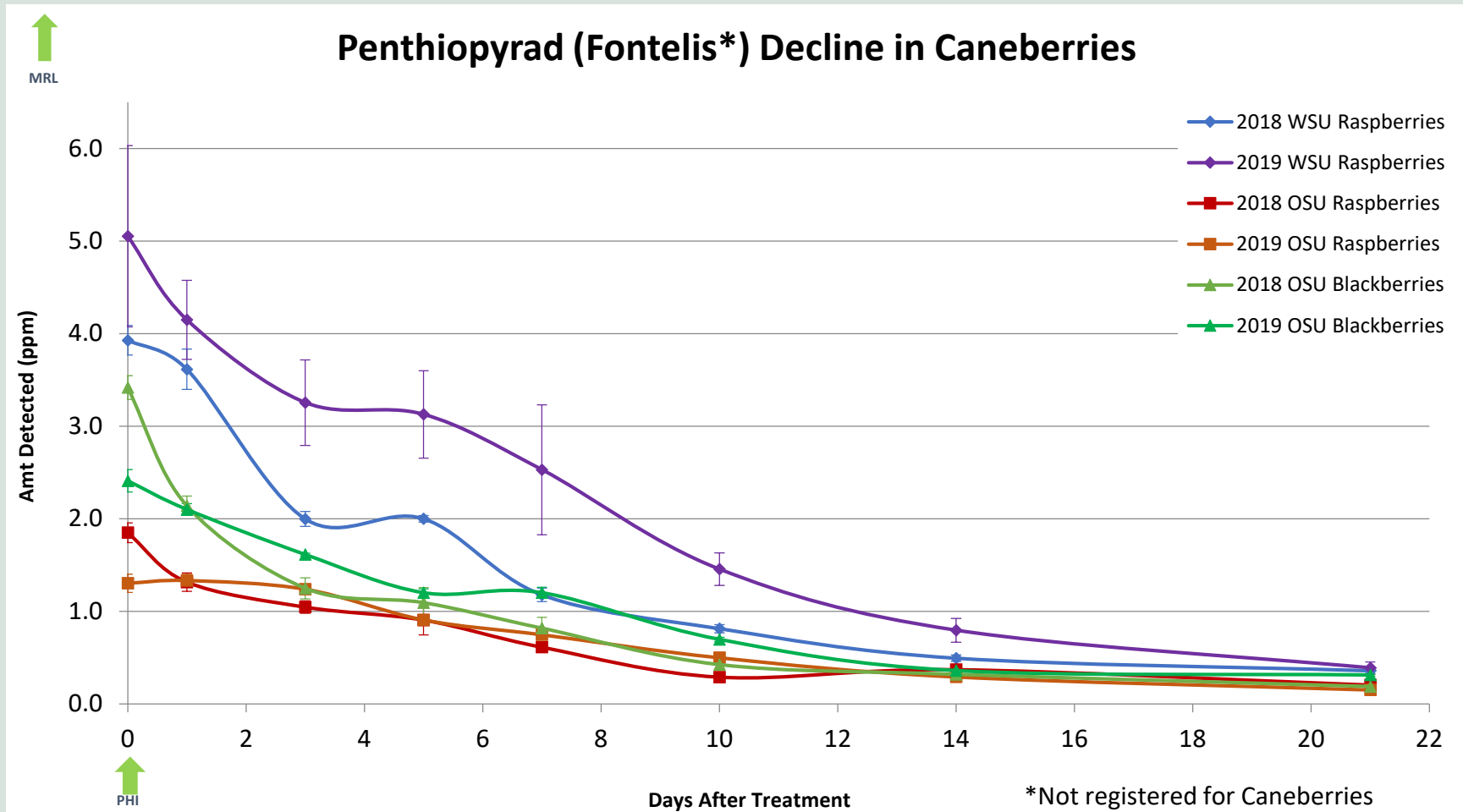
2017-2019 Fungicide Study

Isofetamid (Kenja) Decline in Caneberries



	Rsp	Blk
US	4	4
AU	NT=0	NT=0
CA	4	4
CH	NT=0	NT=0
EU	0.01	0.01
HK	NT=0	NT=0
JA	NT=0.01	NT=0.01
KO	0.01	0.01
TA	NT=0	NT=0

2017-2019 Fungicide Study



	Rsp	Blk
US	10	10
AU	0.05	0.05
CA	10	10
CH	NT=0	NT=0
EU	0.01	0.01
HK	NT=0	NT=0
JA	0.01	0.01
KO	0.5	0.5
TA	NT=0	NT=0



Thank You!

- Washington Red Raspberry Commission
- Oregon Raspberry and Blackberry Commission
- USDA Technical Assistance for Specialty Crops (TASC)
- Randy Honcoop
- Peter Sturman & Gina Koskela, OSU NWREC
- Hannah Hefely, Synergistic Pesticide Lab, LLC