



Peach bacterial spot and brown rot management

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Xanthomonas arboricola
-bacteria NOT a fungus

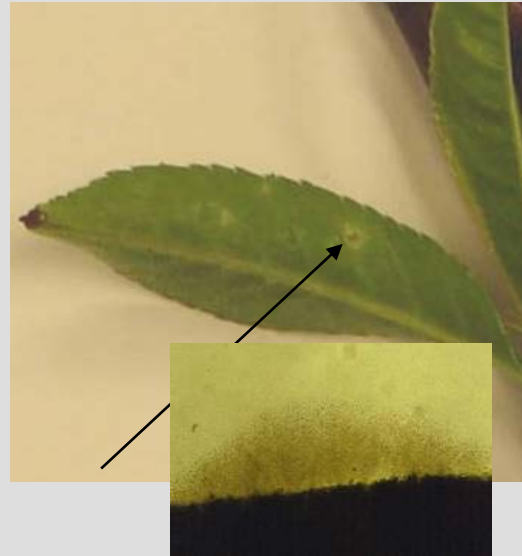


Bacterial spot “bacteriosis” (courtesy of Dr. Ritchie)

15 March



23 March



21 April



5 August



25 July



12 May



Two Types of Lesions on Mature Fruit

“Deep” lesions associated with infections before pit-hardening



“Surface” lesions associated with infections after pit-hardening



Cultivar choice; SC/GA grower survey results 2018

Number of votes

Year with LOW BacSpot pressure				Year with HIGH BacSpot pressure			
Cultivar	Sensitive	Moderately resistant	Resistant	Cultivar	Sensitive	Moderately resistant	Resistant
Resistant/tolerant				Resistant/tolerant			
Cresthaven	0	2	6	Juneprince	3	1	5
Rubyprince	2	2	6	Messina	1	1	4
Harvester	1	1	6	Julyprince	3	1	4
Goldprince	0		6	Harvester	0	2	3
Contender	1	3	5	Cresthaven	1	2	3
Flameprince	2	3	5	Gala	1	2	3
Julyprince	4	1	5	Goldprince	0	1	3
Sureprince	2		5	Contender	0	1	3
Gala	0	3	4	Sureprince	2	1	3
Juneprince	1	3	4	Rubyprince	3	1	3
Scarletprince	2	2	4	Redgold	1		3
Redhaven	2	2	4	Blazeprince	2		3
Summerprince	3		4	Early Augustprince	2		3
Blazeprince	4		4	Scarletprince	3		3
Flavorich	2	4	3	Flameprince	4	2	2
Big Red	6	4	3	Redhaven	1	1	2
Fireprince	2	2	3	Coronet	3	1	2
Messina	1	1	3	Fireprince	4	1	2
Redgold	1	1	3	Rushton Red	0		2
Early Augustprince	3	1	3	Augustprince	2		2
Rushton Red	1		3				

Treatment	Active Ingredient	Rate/A	Cu/A
Kocide 3000 30DF	Copper Hydroxide	3.3 oz	1 oz
		6.6 oz	2 oz
Badge X2 28DF	Copper Oxychloride* + Copper Hydroxide	3.6 oz	1 oz
		7.1 oz	2 oz
Nordox 75WG	Cuprous Oxide	1.3 oz	1 oz
		2.7 oz	2 oz
Cueva 0.16F	Copper Octanoate	50 fl oz	1 oz
		100 fl oz	2 oz

*Copper oxychloride = tribasic copper chloride: $\text{Cu}_2(\text{OH})_3\text{Cl}$

Factorial Main Effects Means

Main Effect	Level	Grade 1 % Fruit*	Grade 1+2 % Fruit*
Year	2012	57.0 B	69.8 B
	2013	68.8 A	82.8 A
Bactericide	Kocide	59.1 A	74.2 A
	Cueva	61.3 A	73.5 A
	Badge	65.6 A	78.0 A
	Nordox	66.1 A	80.1 A
Rate	1 oz	51.0 B	67.5 B
	2 oz	74.5 A	85.0 A

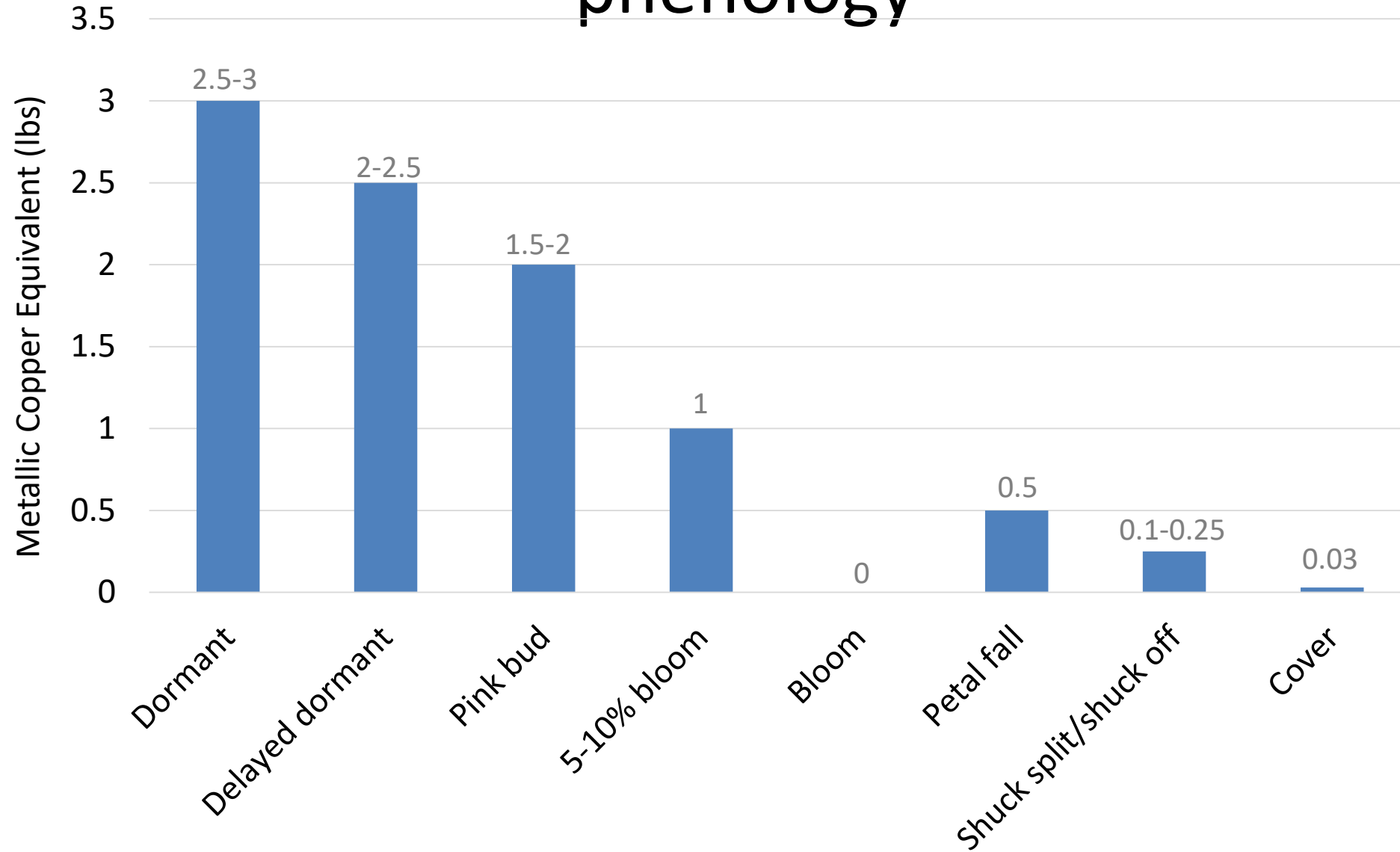
* Means within each main effect compared using Tukey's procedure

Treatment		23-25 July	
Fungicide	Rate	Mean	
Cueva	2oz	80.0	A
Kocide		79.1	A
Nordox		74.7	A
Badge		73.7	A
Cueva	1oz	74.5	A
Badge		75.7	A
Nordox		73.4	A
Kocide		71.7	A
NTC	---	72.8	A

Sprays

12

Recommended MCE at various stages of peach phenology



Copper products and their legal use

	Dormant	Delayed Dormant	Pink to 5% bloom	Bloom	petal fall to 1% SS	SS to 10% SO (1st cover)	7-10 days after SS (2nd cover)	Summer Cover
Kocide 3000	X	X	X		X*	X	X	X
Badge SC	X	X	X		X	X	X	X
Cuprofix Ultra 40 Disperss								
Nordox 30/30 WG								
Kocide 2000								
Nordox 75WG								
Copper-Count-N								
MasterCop								

*the maximum label rate is below what is considered necessary for effective control.

**MasterCop rates specified for bacterial spot are below the levels required for effective control. If applied for other diseases, one can achieve the recommended rates.

Bacterial spot research at Clemson University

Brodie Cox, graduate student

- Investigates sources of inoculum (twig cankers)
- Monitors sensitivity to copper over two seasons (4 farms in SC)
- Monitors sensitivity to mycoshield over two seasons

- Found isolates tolerant AND resistant to Mycoshield and copper **but in very low numbers** (fitness cost?)

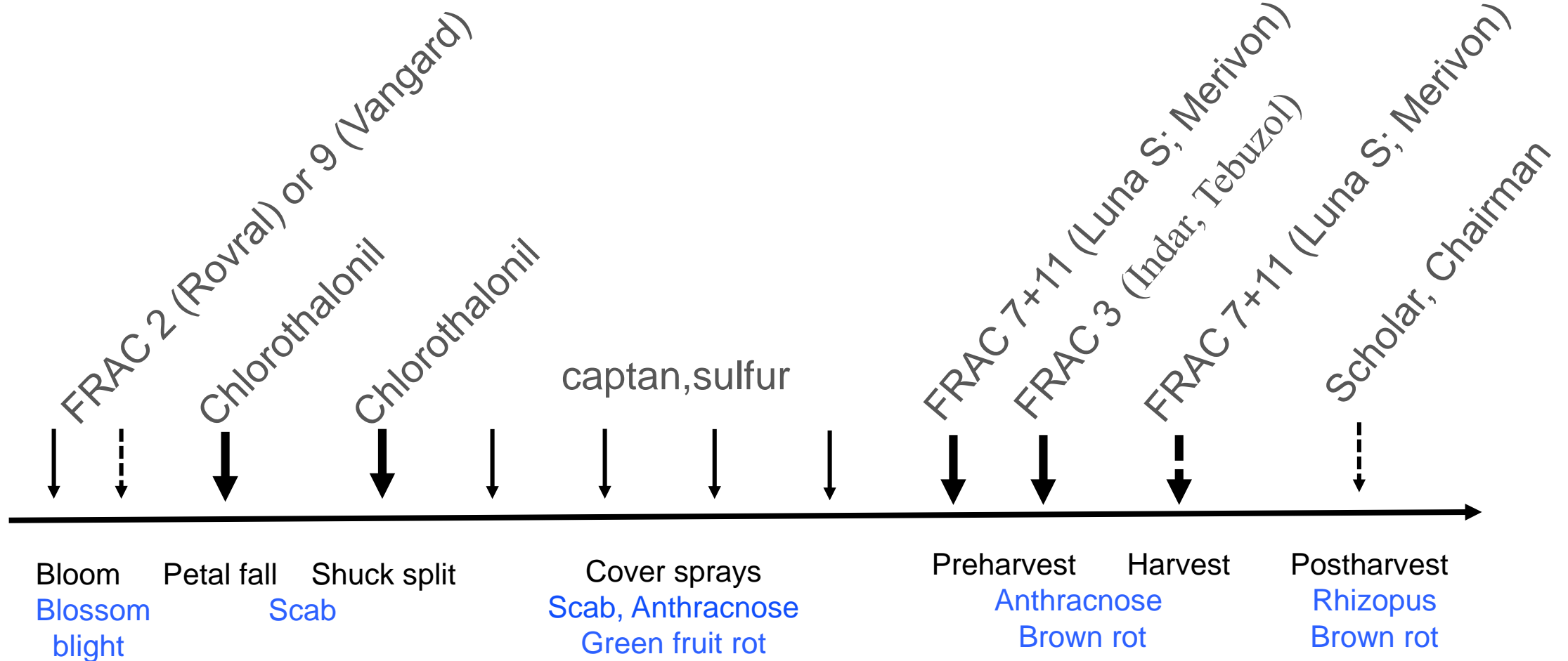


Monilinia fructicola

-fungus; disease cycle to follow



Fungicide schedule in commercial peach orchard; **normal** blossom blight and scab disease pressure



The rate of FRAC 3 matters. Use the normal rate if it has been working well. Increase rate (tebuconazole, fenbuconazole) if resistance is suspected.

Syngenta Crop Protection, LLC
P. O. Box 18300
Greensboro, North Carolina 27419-8300

SCP 1601A-S1 0819

PYDIFLUMETOFEN	GROUP	7	FUNGICIDE
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Miravis®

Fungicide

An ADEPIDYN™ brand fungicide

This supplemental label expires on 08/30/2022 and must not be used or distributed after this date.

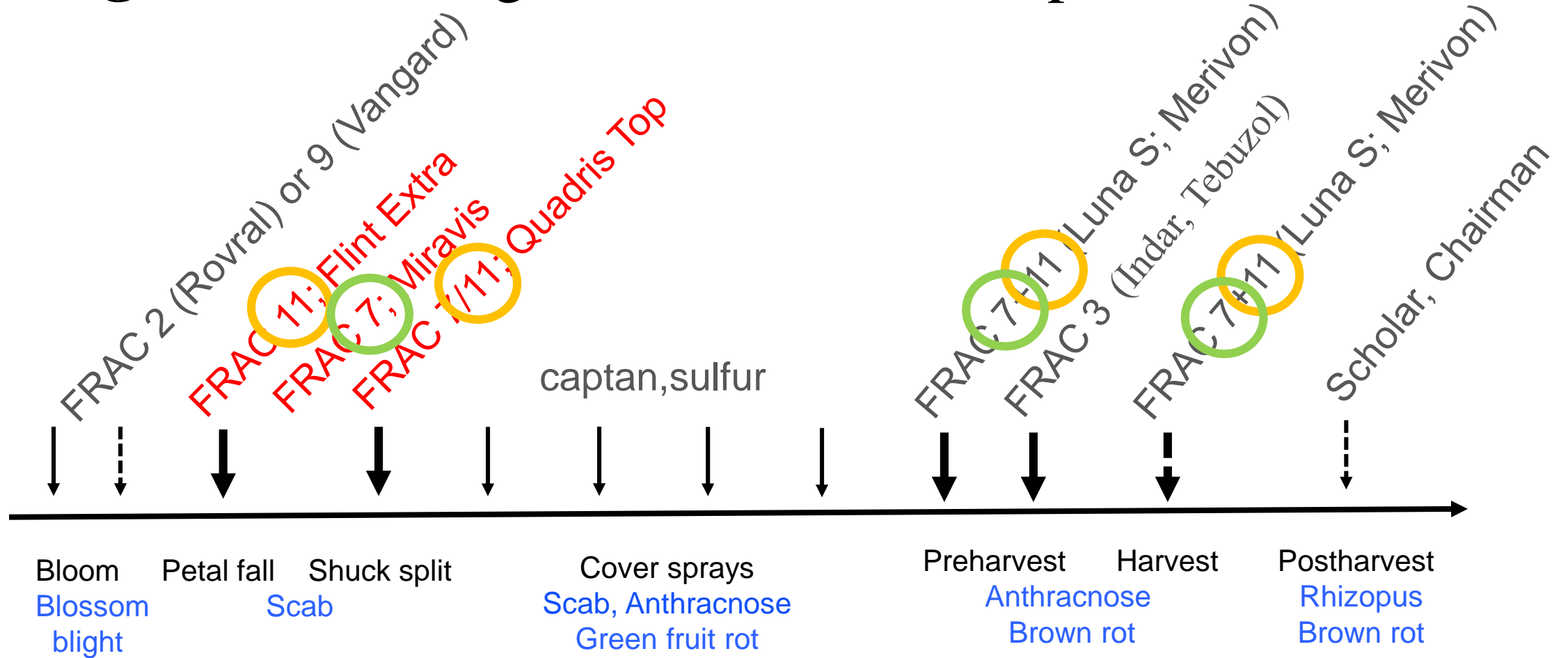
Active Ingredient(s):

Pydiflumetofen* 18.3%

Other Ingredients: 81.7%

Total: 100.0%

Fungicide schedule in commercial peach orchard; high blossom blight and scab disease pressure



The rate of FRAC 3 matters. Use the normal rate if it has been working well. Increase rate (tebuconazole, fenbuconazole) if resistance is suspected.

Cevya®

Fungicide



Cevya® Fungicide Peach and Stone Fruit Use Technical Profile

Target Diseases	Use Rate (fl oz/A)		Crop List
	Single Application	Season Total	
Brown Rot, Blossom Blight, Alternaria Leaf Spot, Leaf Spot, Ripe Fruit Rot, Rust, Scab, Shothole, and Powdery Mildew	5	15	Crop Subgroups 12-12a, 12-12b, 12-12c: Apricot (Apricot, Japanese); Capulin; Cherry (Black, Nanking, Sweet, Tart); Jujube (Chinese); Nectarine; Peach; Plum (Plum, American, Beach, Canada, Cherry, Chickasaw, Damson, Japanese, Klamath, Prune); Plumcot; Sloe; Cultivars, Varieties, and/or hybrids of these

Active Ingredient:
Mefentrifluconazole

Chemistry Class:
Isopropanol azole

Mode of Action:
Demethylation inhibition
FRAC Group 3 (DMI)

Formulation:
Suspension concentrate
3.34 lbs a.i./gal

Mefentrifluconazole (Cevya; BASF)

Treatment	Application timing (days before harvest)	Rate/acre	Preharvest brown rot (%)	Postharvest brown rot (%)		
				3dph		7dph
Cevya (BASF)	14, 7	4 floz	43.2 b	28.3 b		60.7 b
Cevya (BASF)	14, 7	5 floz	34.4 bc	10.7 c		39.7 c
Indar 2F (Corteva)	14, 7	6 floz	25.4 bc	9.7 c		35.1 cd
Untreated	N/A	N/A	76.5 a	93.7 a		100 a

Why yet another FRAC 3?

- **DMIs (FRAC 3s) are endocrine disruptors:**
- -interfere with **endocrine** (or hormonal) systems at certain doses.
- Many are being phased out in Europe.
- Mefentrifluconazole is the **next generation DMIs** with good efficacy AND more favorable toxicity profile (much less endocrine disruption)

Thank you!