

Spray Program for Multi-Small Fruit Plantings



Many local farms are composed of multi-small fruit combinations producing for fresh market blackberries, raspberries, blueberries, strawberries and grapes. Aggressive fruit spray programs are required to achieve high quality fruit. These multi-small fruit plantings create many spray management challenges for the achievement of good pest control in accordance to label guidelines.

Therefore, the following multi-small fruit spray program for the control of major small fruit pests and diseases may offer some assistance:

Labeled as noted in 2024 for All Small Fruit – Strawberries, Brambles: Blackberries, Raspberries, Blueberries, and Grapes.

FUNGICIDES: [IRAC]	*RATE	NOTES
Lime Sulfur [M2]	10.0 gals	Dormant Fall Sanitizer
JMS® Stylet Oil [NC]	1.0 gal	Apply Temp 35-85° F
Kocide® DF [M1]	2.0 lbs	Other Fixed Coppers
Captan® 50W [M4]	2.0 lbs	General Protectant
Ziram® 76DF [M3]	5.0 lbs	General Protectant
(Except for Strawberry use Thiram®)		
Sulfur 95W [M2]	3.0 lbs	General Protectant
(Grape variety sensitivity)		
Rally®40W [3]	4.0 ozs	Powdery Mildew & Black Rot
(Except for blueberry use Tilt®)		
Pristine® [7/11]	14.5 ozs	Fruit Rots, Fruit Spots, Powdery & Downy Mildew & Cane Blight
Elevate® 50 WG [17]	1.5 lbs	Botrytis & Powdery Mildew
Switch® 62.5 WG [9/12]	11.0 ozs	Anthraco-nose, Mummy Berry, Phomopsis, Sour Rot & Botrytis
Phostrol® [33]	4.0 pts	Downy Mildew & Red Stele
Ph-D® WDG [19]	6.2 ozs	Botrytis & Powdery Mildew
(Strawberries and grapes only)		
INSECTICIDES: [IRAC]	*RATE	NOTES
Provado® Admire® [4A]	4.0 ozs	SWD, Grubs, Aphids, Hoppers, Curculio & Whitefly
or Actara® [4A]		
Brigade® WSB [3]	12.0 ozs	BMSB, SWD, Clipper Beetle, Plant Bug, Mites & Root Weevil
Malathion [1B]	2.0pts	SWD, Scale, Fruit Moths & Whitefly
Sevin® 50W [1A]	4.0 lbs	SWD, Japanese Beetles, Hornets & Sap Beetles

*Rate for 50-100gal Acre Concentrate Spray

**Be sure to follow all labels closely for PHI and REI

Multi-Small Fruit Spray Calendar*

March 5 - Spring Dormant Spray	JMS® Stylet Oil 1.0 gal (Scales & Mites)
April 10 - Early Strawberry Bloom	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Thiram® 75WDG 5.0 lbs (Strawberry Only)
April 15 - Strawberry Bloom/ Blueberry Early Bloom	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Ziram 76DF 5.0 lbs (Except Strawberry) Brigade®WSB 12.0 ozs (Clipper Beetle, 0-3-day PHI)
April 25 - Strawberry Full bloom/Blueberry Mid-Bloom/ Grape Bud Break	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Pristine® 14.5 ozs Brigade®WSB 12.0 ozs (Clipper Beetle, 0-3-day PHI)
May 5 - Strawberry 1st Cover & Early Harvest Spray/ Blueberry Full Bloom/Grape & Bramble Shoot Growth	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Elevate® 1.5 lbs (0-day PHI) Provado® 4.5 ozs (Curculio & Aphids; 7-Day PHI)
May 15 - Strawberry 2nd Cover & Harvest Spray/ Blueberry 1st Cover/Grape Bloom Spray/Bramble Cane Development	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Switch® 11.0 ozs (0-day PHI) Malathion® 2.0 pts (Curculio, Scale & Fruit Moths; 0-3-day PHI)
June 1 - Strawberry 3rd Cover & Harvest Spray/Blueberry 2nd cover/Grape 1st Cover/Bramble Bloom	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Pristine® 14.5 ozs (0-day PHI) Malathion® 2.0 pts(Curculio, Scale & Fruit Moths; 0-3-day PHI)

June 15 - Strawberry 4th Cover & Harvest Spray/Blueberry 3rd Cover & Early Harvest/ Bramble 1st Cover/ Grape 2nd Cover	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Ph-D® 6.2 ozs (0-day PHI) Sevin® 50W 4.0 lbs (sap beetle, 5-Day PHI)
July 1- Strawberry Renovation/Blueberry 4th Cover & Harvest/ Bramble 2nd Cover & Early Harvest/ Grape 3rd Cover	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Pristine® 14.5 ozs (0-day PHI) Rally 40 W 4.0 ozs (Except Blueberry, 0-day PHI) Brigade®WSB 12.0 ozs (0-3-day PHI)
July 15 - Strawberry Post Harvest/ Blueberry 5th Cover & Harvest/ Bramble 3rd Cover & Harvest/ Grape 3rd Cover & Veraison	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Switch® 11.0 ozs (0-day PHI) Sulfur 95W 3.0 lbs (0-day PHI) or Kocide DF 2.0 lbs (0-day PHI) Malathion 2.0 pts (0-3-day PHI)
August 1- Strawberry Post Harvest/ Blueberry 6th Cover & Harvest/ Bramble 4th Cover & Harvest/ Grape 4th Cover & Early Harvest	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Pristine® 14.5 ozs (0-day PHI) Sevin® 50W 4.0 lbs (Japanese Beetle, 5-Day PHI)
August 15 - Strawberry, Blueberry & Bramble Post Harvest/ Grape 5th Cover & Harvest	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Elevate® 1.5 lbs (0-day PHI) Phostrol® 4.0 pts (0-day PHI) Sevin® 50W 4.0 lbs (Hornets – 5-Day PHI for All Fruit)
September 1 - October 30 Strawberry Post Harvest/ Grape 6th Cover & Harvest	Captan® 50W 2.0 lbs (0-3 Day PHI & 2-Day REI) Phostrol® 4.0 pts (0-day PHI) Sevin® 50W 4.0 lbs (Hornets – 5-Day PHI for All Fruit)
November 25 Fall Dormant	Lime Sulfur 10.0 gals Kocide DF 2.0 lbs (0-day PHI)

HERBICIDES: [HRAC]	*RATE	NOTES
Gramoxone® [22]	1.0 qts	Burndown, Directed Spray
Roundup® [9]	1.0 qts	Burndown, Shielded & Directed Spray
Devrinol® 50 DF [15]	4.0 lbs	Spring/Summer 35-day PHI
Princep® 4L [5]	1.0 qts	Spring Dormant, Avoid High pH Soils
Solimax® [12]	2.5 lbs	Spring/Fall Dormant, 1-yr Established
(Except strawberry)		
Aim® [14] or Shark® [14]	2.0 ozs	Directed Spray to Weeds, 3-day PHI
Venue [14] (Grapes only)	2.0 ozs	Directed Spray, 0-day PHI
Chateau [14]	12.0 ozs	After Harvest to Spring Bud Swell
(Except brambles)		
Zeus Prime XC [14]	7.5 ozs	Shielded Spray, 3-14 day PHI, Avoid >7 pH soil, 2-yr Established
(Except strawberry)		
Surflan® [3]	2.0 qts	Spring/ Summer, Prowl 60-day PHI
(Except strawberry)		
Poast® [1]	1.5 pts	Summer Grasses, Variable PHI
Sinbar® [5]	4.0 ozs	Fall Dormant, 1-yr Established

*Lowest use herbicide rate recommended initially

Consult label for specific fruit applications

Organic Approach Substitutions:

Conventional Product	Organic Certified Product (OMRI)
Captan®	Surround® or Sulfur or Lime Sulfur
Rally®	Kaligreen® (Powdery Mildew Eradicant)
Listed Insecticides	Neem® or Pyganic® or Entrust® or Dipel®
Gramoxone® or Roundup®	Avenger® or Burnout® or AXXE®/BioSafe® or (Scythe® no OMRI label)

* Important Note: The calendar spray dates given are an average estimate for Anne Arundel and Prince George's County small fruit production, and may vary by location in Maryland. Be sure to adjust your spray schedule application dates accordingly. The above recommendations very closely reflect the current spray program utilized at the University of Maryland Research and Education Center, Upper Marlboro Facility for its research fruit plots. Remember to always "Read the Label".

R. David Myers
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Spray Program for Multi-Tree Fruit Orchards



Many local orchards are composed of multi-fruit combinations producing for fresh market apples, peaches, pears, plums, nectarines, and cherries. Aggressive fruit tree spray programs are required to achieve high quality fruit. These multi-fruit orchards create many spray management challenges for the achievement of good pest control in accordance to label guidelines.

Therefore, the following multi-fruit orchard spray program for the control of major tree fruit pests and diseases may offer some assistance: **Labeled as noted in 2024 for All Tree Fruit – Pomes: Apples & Pears Stones: Peaches, Plums, Nectarines, and Cherries.**

FUNGICIDES: [FRAC]	*RATE	NOTES
Captan® 80WDG [M4]	3-5.0 lbs	General Protectant (Not Labeled for Pears; Reduce Rates for Cherries)
Dormant Oil [NC]	4.0 gal	Apply Temp 35-85° F
Kocide® DF [M1]	6.0 lbs	Other Fixed Coppers (Stones: Dormant Spray Only)
Rally® 40W [3]	4.0 ozs	Powdery Mildew
Sulfur 95W [M2]	3.0 lbs	General Protectant
Gem® 500 SC [11]	3.0 ozs	Brown Rot & Peach Scab (Stones Only) or
Adamant® 50WG [3/11]	6.0 ozs	Brown Rot, Peach Scab & Powdery Mildew (Stones Except Plums)
Pristine® [7/11] or	14.5 ozs	Brown Rot, Powdery Mildew, Scab, Rusts & Fruit Spots (Limited to 4 Sprays/Season With Only 2 Consecutively)
Indar® 2F [3]	6.0 ozs	Powdery Mildew & Rusts
Topsin-M® 70W [1]	8.0 ozs	General Protectant
Ziram 76DF [M3]	5.0 lbs	Dormant Peach Leaf Curl (Captan Substitute for Pears)
Agrimycin® 17 W	24.0 ozs	Fireblight Control (Apples & Pears Only)
Ph-D® WDG [19]	6.2 ozs	Powdery Mildew & Scab (Not labeled for stones)

INSECTICIDES: [IRAC]	*RATE	NOTES
Imidan® 70W [1A]	2.0 lbs	Curculio, SWD, Scale & Fruit Moths
Warrior® [3] or Tombstone® [3]	4.0 ozs 2.0 ozs	Borers, Curculio, SWD, BSMB & Fruit Moths
Besiege [3/28]	6.0 ozs	Peachtree Borer, SWD, Aphids, Curculio, Fruit Moths & Thrips
Actara® [4A]	4.5 ozs	Aphids & Curculio
Acramite® 50WS [25]	1.0 lbs	Mites Only as Required
Sevin® 50W [1A]	4.0 lbs	SWD, Japanese Beetles (Apple Thinning Agent) Hornets & Sap Beetles

***Rate for 50-100gal Acre Concentrate Spray**

****Be sure to follow all labels closely for PHI and REI!**

Multi-Fruit Spray Calendar*

March 15 - Dormant Spray	Dormant Oil 4.0 gal (Scales & Mites) Kocide® DF 6.0 lbs
April 5 - Peach Bloom	Apple Tight Cluster Captan® 80WDG 3.0 lbs
April 15 - Peach Petal Fall	Apple Bloom Captan® 50W 3.0 lbs Indar® 2F 6.0 ozs Agrimycin® 17 W 24.0 ozs (Fireblight Control Add for Apples & Pears Only)
April 25 - Peach Shuck Split	Apple Petal Fall Pristine® 14.5 ozs Warrior® 4.0 ozs (Curculio) Agrimycin® 17 W 24.0 ozs (Fireblight Control Add for Apples & Pears Only)
May 5 - 1st Cover Spray	Captan® 80WDG 4.0 lbs (Cedar Apple Rust - Higher Rates for Wetter Conditions) Indar® 2F 6.0 ozs (Powdery Mildew & Rusts) Actara® 4.5 ozs (Curculio & Aphids; PHI: 35-Days Pomes, 14-Days Stones)
May 15 - 2nd Cover Spray	Captan® 80WDG 3-4.0 lbs Rally® 40W 4.0 ozs (Peach Rusty Spot Only) Warrior® 4.0 ozs (Curculio; PHI 21-Days Pomes, 14-days Stones)

June 1 -

3rd Cover Spray

Captan® 80WDG 3-4.0 lbs
Topsin-M® 70W 8.0 ozs (Apple Scab Resistance Likely)
Imidan® 70W 2.0 lbs (Curculio, Scale & Fruit Moths; PHI: 7-Days Pomes, 14-Days Stones)
Acramite® 50WS 1.0 lbs (For Mites if Required PHI: 7-Days Pomes, 3-Days Stones)

June 15 -

4th Cover Spray

Captan® 80WDG 3-4.0 lbs
Sulfur 95W 3.0 lbs (0-day PHI; Stones Only)
Tombstone® 2.0 ozs (Borers, Curculio & Fruit Moths – 7-day PHI)

July 1-

5th Cover Spray

Early Peach Harvest
Captan® 80WDG 3-4.0 lbs (0-day PHI; 1-day REI); or
Pristine® 14.5 ozs (Early Stones 0-day PHI; Limited to 4 Sprays/Season With Only 2 Consecutively)
Tombstone® 2.0 ozs (Borers, Curculio & Fruit Moths – 7-Day PHI)

July 15 -

6th Cover Spray

Peach Harvests
Captan® 80WDG 3-4.0 lbs (0-day PHI; 1-day REI)
Rally® 40W 4.0 ozs (0-day PHI, except apples 14-days)
Sevin® 50W 4.0 lbs (Japanese Beetle & Moths – 5-Day PHI for All Fruit)

August 1-

7th Cover Spray

Peach Harvests
Captan® 80WDG 4.0 lbs (0-day PHI; 1-day REI); **or**
Pristine® 14.5 ozs (Early Pomes 0-day PHI)
Sevin® 50W 4.0 lbs (Japanese Beetle & Hornets – 5-Day PHI for All Fruit)

August 15 -

8th Cover Spray

Early Apple Harvests
Late Peach Harvest
Captan® 80WDG 4.0 lbs (0-day PHI; 1-day REI); **or**
Pristine® 14.5 ozs (Pomes 0-day PHI)

September 1 -

9th Cover Spray

Apples and Pears Only
Captan® 80WDG 4.0 lbs (0-day PHI; 1-day REI); **or**
Pristine® 14.5 ozs (Pomes 0-day PHI)
Sevin® 50W 4.0 lbs (Japanese Beetle & Hornets – 5-Day PHI for All Fruit)

September 15 -

Directed Trunk Bore Spray

Besiege® 12.0 ozs (Post Harvest for Borers)

HERBICIDES: [HRAC]

*RATE	NOTES
Gramoxone® [22]	1.0 qts Burndown, Directed Spray
Roundup® [9]	1.0 qts Burndown, Shielded & Directed Spray
Devrinol® 50 DF [15]	4.0 lbs Spring/Summer 35-day PHI
Princep® 4L [5]	1.0 qts Spring Dormant, Avoid High pH Soils
Solicam® [12]	2.5 lbs Spring/Fall Dormant, 1-yr Established
Goal® or Galigan® [14]	2.0 pts After Harvest to Spring Bud Swell
Chateau [14]	12.0 ozs After Harvest to Spring Bud Swell
Aim®, Shark® or Venue [14]	2.0 ozs Directed Spray, 0-3-day PHI
Matrix® [2]	4.0 ozs Late Spring, 1-yr Established
Prowl® [3] or Surflan® [3]	2.0 qts Spring/ Summer, Prowl 60-day PHI
Poast® [1]	1.5 pts Summer Grasses, Variable PHI
Karmex® [7] or Diuron® [7]	1.6 qts Spring/Fall Dormant, 3-yr Established

***Lowest Use Rate Recommended Initially**

Organic Approach Substitutions:

Conventional Product	Organic Certified Product (OMRI)
Captan® & Topsin-M®	Surround® or Sulfur or Lime Sulfur
Rally®	Kaligreen® (Powdery Mildew Eradicant)
Listed Insecticides	Neem® or Pyganic® or Entrust® (Stone Fruits Only)
Agrimycin®	Agrimycin® or Fixed Copper (Apples & Pears Except During Bloom)
Gramoxone® or Roundup®	Avenger® or Burnout® or AXXE®/BioSafe® or (Scythe® no OMRI label)

*** Important Note: The calendar spray dates given are an average estimate for Anne Arundel and Prince George's County Orchards, and may vary by location in Maryland. Be sure to adjust your spray schedule application dates accordingly. The above recommendations very closely reflect the current spray program utilized at the University of Maryland Research and Education Center, Upper Marlboro Facility for its research orchards. Remember to always "Read the Label"**

Common Fruit Herbicides Consult label for specific fruit applications.

R. D. Myers 2024

Herbicide	Low Rate	H R A C	Application Timing and Activity	Koc ml/g	Water Solubility mg/L	Soil Half-Life Avg Days	Application Notes
Gramoxone paraquat	1.0 qts	22	Burndown	1,000,000	620,000	1000	Directed Spray, Latex Trunks, Wraps 1-3 Years
Roundup glyphosate	1.0 qts	9	Burndown	24,000	15,700	47	Shielded, Directed Spray, Latex Trunks, Wraps 1-3 Years
Rely glufosinate	22.0 ozs	10	Burndown	100	1,370,000	7	Shielded, Directed Spray, Latex Trunks, Wraps 1-3 Years
Devrinol napropamide	4.0 lbs	15	Preemerge	700	73	70	Spring, Early Summer, 35-day PHI
Surflan oryzalin	2.0 qts	3	Preemerge	600	2.6	20	Spring or Summer, Surflan 0-day PHI
Prowl pendimethalin	2.0 qts	3	Preemerge	17,200	0.275	44	Spring, Prowl 60-day PHI
Karmax diuron	1.0 lbs	7	Preemerge	480	42	90	Fall or Spring Dormant, 3-yr Established
Sinbar terbacil	4.0 ozs	5	Preemerge	55	710	120	Fall Dormant, 1-yr Established
Kerb pronamide	2.0 lbs	15	Preemerge	840	15	35	Fall Dormant, 1-yr Established
Princep simazine	1.0 qts	5	Preemerge	130	2	80	Spring Dormant, Avoid >7 pH Soils, 3-yr Established
Alion indazaflam	3.5 ozs	29	Preemerge	496	dispersible	150	Fall or Spring Dormant, Directed Spray, 3-yr Established
Casoron dichlobenil	100 lbs	20	Preemerge	400	dispersible	60	Granular Applied Incorporated, 4-weeks Post Transplanting
Solicam norflurazon	2.5 lbs	12	Pre & Post	700	28	112	Spring or Fall, 1-yr Established
Chateau flumioxazin	12.0 ozs	14	Pre & Post	---	1.79	14	Broadleaves, After Harvest to Bud Swell
Goal oxyfluorfen	1.0 qts	14	Pre & Post	100,000	0.1	30	Broadleaves, After Harvest to Bud Swell
2,4-D	1.0 qts	4	Pre & Post	62	NA	14	Broadleaves, Dormant Only, Avoid Temps Above 85° for 3-Days
Matrix rimsulfuron	4.0 ozs	2	Pre & Post	30	7300	24	Spring, 1-Yr Established, Mixed Weeds, 7-30 days PHI
Zeus Prime XC sulfentrazone + carfentrazone	7.5 ozs	14	Pre & Post	43	dispersible	150	Shielded Spray, 3-14 day PHI, Avoid >7 pH soil, 2-yr Established
Aim carfentrazone	2.0 ozs	14	Post	750	12,000	0.1	Broadleaves, Directed Spray, 0-3-day PHI
Venue pyraflufen	2.0 ozs	14	Post	2090	0.5	3	Broadleaves, Directed Spray, 0-3-day PHI
Poast sethoxydim	24.0 ozs	1	Post	100	NA	5	Grasses, Apply with COC, 7-50 days PHI

