

**SMALL FRUIT DISEASES (Commercial)**

Sherrie Smith

| Growth Stage       | Disease                          | Product                               | Active Ingredient  | FRAC Code*                     | Rate/Acre       | Comments  |  |
|--------------------|----------------------------------|---------------------------------------|--------------------|--------------------------------|-----------------|---|--|
| <b>GRAPES</b>      |                                  |                                       |                    |                                |                 |   |  |
| Dormant            | Anthracnose                      | Liquid lime-sulfur                    |                    | M2                             | 10 gal          | Apply in late winter before buds swell.   |  |
|                    | Eutypa<br>Black rot<br>Phomopsis | Nu-Cop 50DF                           | cupric hydroxide   | M1                             | 2 lb            | Begin applications late dormancy before bud break.  |  |
| Bud Break to Bloom | Black rot                        | Mancozeb 75DF                         | mancozeb           | M3                             | 3 - 4 lb        | Various brand names. Early sprays are critical for control of black rot if the disease has been a historical problem. |  |
|                    | Phomopsis                        | Captan 50WP                           | captan             | M4                             | 3 - 4 lb        |   |  |
|                    | Downy mildew                     | Ziram 76DF                            | ziram              | M3                             | 3 - 4 lb        |   |  |
|                    | Angular leaf scorch              | Abound 2.08 FL                        | azoxystrobin       | 11                             | 11 - 15.4 fl oz |   |  |
|                    |                                  |                                       | Sovran 50WG        | kresoxim-methyl                | 11              | 3.2 - 5.6 oz  |  |
|                    |                                  |                                       | Flint 50WG         | trifloxystrobin                | 11              | 1.5 - 4 oz  | DO NOT APPLY FLINT OR ADAMENT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT!  |
|                    |                                  |                                       | Adament 50WG       | tebuconazole + trifloxystrobin | 3<br>11         | 3 - 7.2 oz  |  |
|                    |                                  |                                       | Pristine           | boscalid + pyraclostrobin      | 7<br>11         | 6 - 10.5 oz   | DO NOT APPLY TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT— SEE LABEL!  |
|                    |                                  |                                       | Quadris Top        | azoxystrobin + difenoconazole  | 11<br>3         | 12 - 14 oz  |  |
|                    |                                  |                                       | Revus Top          | mandipropamid + difenoconazole | 40<br>3         | 7 oz  |  |
|                    |                                  |                                       | Revus              | mandipropamid                  | 40              | 8 oz  |  |
|                    |                                  | Bunch rot<br>Dead arm<br>Downy mildew | Gavel 75DF         | mancozeb + zoxamide            | M3<br>22        | 2 - 2.5 lb  | Apply when new shoots are 1/2 to 1 1/2 inches long. Repeat when shoots are 3 to 5 inches long, when shoots are 8 to 10 inches long and then at 7 - 10 day intervals. |
|                    |                                  |                                       | Reason 500SC       | fenamidone                     | 11              | 2.7 fl oz   | Apply every 10 - 14 days when conditions favor disease.  |
|                    |                                  |                                       | Aliette WDG        | aluminum tris                  | 33              | 3 - 5 lb  | Continue applications on a 21 day interval when conditions are favorable for disease.  |
|                    |                                  | Topsin M WSB                          | thiophanate-methyl | 1                              | 0.75 - 1.5 lb   |   |  |

(continued)

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|--------------------------------------|--------------------------------|-------------------|--------------------------------|------------|-----------------|---|---|
| <b>GRAPES (cont.)</b>                |                                |                   |                                |            |                 |   |   |
| Bud Break<br>to Bloom <i>(cont.)</i> | Powdery mildew                 | Abound 2.08 FL    | azoxystrobin                   | 11         | 11 - 15.4 fl oz | DO NOT APPLY FLINT TO CONCORD OR RELATED VARIETIES AS INJURY MAY RESULT!                              |   |
|                                      |                                | Sovran 50WG       | kresoxim-methyl                | 11         | 3.2 - 5.6 oz    |   |   |
|                                      |                                | Flint 50WG        | trifloxystrobin                | 11         | 1.5 - 4 oz      |   |   |
|                                      |                                | Nova 40WP         | myclobutanil                   | 3          | 3 - 5 oz        |   |   |
|                                      |                                | Rubigan           | fenarimol                      | 3          | 3 fl oz         |   |   |
|                                      |                                | Procure 50WS      | triflumizole                   | 3          | 4 - 8 oz        |   |   |
|                                      |                                | Pristine          | boscalid + pyraclostrobin      | 7<br>11    | 6 - 10.5 oz     |   | DO NOT APPLY TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT– SEE LABEL! |
|                                      |                                | Quintec           | quinoxifen                     | 13         | 3 - 4 fl oz     |   | Apply prior to disease on 14 day interval. Rotate with other chemistry. See label.                    |
|                                      |                                | Tebuzol 45DF      | tebuconazole                   | 3          | 4 oz            |   | Apply as a preventative on 21 day interval.   |
|                                      |                                | Adament 50WG      | tebuconazole + trifloxystrobin | 3<br>11    | 3 - 4 oz        |   | Apply prior to disease on 14 or 21 day interval. See label restrictions.                              |
| Bloom                                | Same as Bud Break              | Same as Bud Break |                                |            |                 |   |   |
|                                      | Botrytis bunch rot             | Rovral 50WP       | iprodione                      | 2          | 1.5 - 2 lb      | Apply at early bloom, again just prior to bunch closing and again at early ripening.                  |   |
|                                      |                                | Vanguard 75WG     | cyprodinil                     | 9          | 10 oz           | As for Rovral.  |   |
|                                      |                                | Elevate 50WG      | fenhexamid                     | 17         | 1 lb            | As for Rovral. PHI = 0 days. Rotate chemistry after 2 apps.   |   |
|                                      |                                | Botran 75W        | dicloran                       | 14         | 2 - 4 2/3 lb    | Apply when disease is anticipated. Repeat at 7 day intervals or as needed.                            |   |
|                                      |                                | Pristine          | boscalid + pyraclostrobin      | 7<br>11    | 8 - 12.5 oz     | DO NOT APPLY TO CONCORD, WORDEN, FREDONIA AND RELATED VARIETIES AS LEAF INJURY MAY RESULT– SEE LABEL! |   |
|                                      |                                | Quadris Top       | azoxystrobin + difenoconazole  | 11<br>3    | 12 - 14 oz      |   |   |
|                                      |                                | Revus Top         | mandipropamid + difenoconazole | 40<br>3    | 7 oz            |   |   |
|                                      |                                | Revus             | mandipropamid                  | 40         | 8 oz            |   |   |
|                                      |                                | Scala             | pyrimethanil                   | 9          | 18 oz           | Do not apply within 7 days of harvest.  |   |
| Adament 50WG                         | tebuconazole + trifloxystrobin | 3<br>11           | 6 oz                           |            |                 |   |   |



**SMALL FRUIT DISEASES (Commercial) – continued**

| <b>Growth Stage</b> | <b>Disease</b>   | <b>Product</b>   | <b>Active Ingredient</b>  | <b>FRAC Code*</b> | <b>Rate/Acre</b>                     | <b>Comments</b>  |
|---------------------|--|--|---------------------------|-------------------|--------------------------------------|--|
| <b>BLUEBERRY</b>    |  |  |                           |                   |                                      |  |
| Dormant             | Phomopsis blights  | Kocide 3000  | copper hydroxide          | M1                | 1 - 2.5 lb                           | Dormant application. Begin at bud swell.   |
|                     | Bacterial blight   |  |                           |                   |                                      |  |
|                     | Mummy berry  | Lime-sulfur spray  | sulfur                    | M2                | 6 gal                                | Apply at delayed dormant stage when leaf buds start to break.  |
|                     |  | Abound   | azoxystrobin              | 11                | 6 - 15.5 fl oz                       | Do not apply more than 2 consecutive sprays of Abound before switching to a fungicide with a different mode of action. PHI for Abound is 0 days. Do not apply more than 1.44 qts per acre per season nor make more than 3 applications per acre per crop year. |
|                     | Phytophthora root rot  | Ridomil Gold EC  | mefenoxam                 | 4                 | 3.6 pt broadcast basis<br>See label. | Ridomil Gold EC will not revitalize plants showing moderate to severe root rot symptoms.   |
| Green Tip           | Stem canker  | Captan 50WP  | captan                    | M4                | 5 lb                                 |  |
|                     | Stem blight  | Abound 2.08 FL   | azoxystrobin              | 11                | 6 - 15.5 fl oz                       | Do not apply more than 2 consecutive sprays of Abound before switching to a fungicide with a different mode of action. PHI for Abound is 0 days. Do not apply more than 1.44 qts per acre per season nor make more than 3 applications per acre per crop year. |
|                     | Mummy berry (shoot blight)   |  |                           |                   |                                      |  |
|                     |  | Alternaria leaf spot and fruit rot<br>Anthracnose leaf spot and blotch<br>Phomopsis leaf, twig and fruit blights<br>Powdery mildew | Cabrio 20 EG              | pyraclostrobin    | 11                                   | 14 oz  |
|                     | Alternaria leaf spot and fruit rot<br>Anthracnose leaf spot and blotch<br>Phomopsis leaf, twig and fruit blights | Pristine   | boscalid + pyraclostrobin | 7<br>11           | 18.5 - 23 oz                         | Broad spectrum fungicide. See label. Best as a preventative. Begin applications of Pristine® fungicide prior to onset of disease development and continue on a 7 - 14 day interval.  |
|                     | Botrytis gray mold<br>Mummy berry<br>Powdery mildew  | Tilt   | propiconazole             | 3                 | 6 oz                                 | See label.   |

## SMALL FRUIT DISEASES (Commercial) – continued

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|-----------------------------------|--|---------------------|------------------------------|------------|--------------|--|
| <b>BLUEBERRY (cont.)</b>          |  |                     |                              |            |              |  |
| Early Bloom                       | Stem canker<br>Stem blight<br>Mummy berry  | Same as Green Tip   |                              |            |              |  |
|                                   | Anthracnose  | Pristine            | boscalid +<br>pyraclostrobin | 7<br>11    | 18.5 - 23 oz | Do not make more than 4 applications per season or more than 2 sequential app.   |
|                                   | Botrytis blight  | Elevate 50WG        | fenhexamid                   | 17         | 1.5 lb       | Begin applications at 10% bloom. Continue through harvest. Applications should be made every 7 days or when conditions favor disease development. See label.                               |
|                                   | Gray mold only   | Switch 62.5WG       | cyprodinil +<br>fludioxonil  | 9<br>12    | 11 - 14 oz   | PHI = 0 days. Rotate chemistry after 2 app. See label.   |
|                                   | Phytophthora root rot<br>Anthracnose fruit rot<br>Alternaria fruit rot<br><br>Phomopsis canker | Aliette WDG         | aluminum tris                | 33         | 5 lb         | Begin foliar sprays in the spring at approximately the pink bud stage and continue on a 14 - 21 day interval. Use a sufficient volume of water for good coverage.<br><br>Suppression only. |
| Full Bloom to<br>Early Petal Fall | Same as Early Bloom  | Captan 50WP         | captan                       | M4         | 5 lb         |  |
| First and<br>Second Cover         | Anthracnose  | Captan 50WP         | captan                       | M4         | 5 lb         | Apply only if these diseases have been a problem in the past.  |
|                                   | Stem canker  | Pristine            | pyraclostrobin               | 11         | 18.5 - 23 oz | Apply Pristine no more than 4 app. in one growing season.  |
|                                   |  | Abound              | azoxystrobin                 | 11         | 6 - 15.5 oz  | See label.   |
| Third and<br>Additional Covers    | Anthracnose<br>Stem canker and<br>stem blight  | Same as First Cover |                              |            |              |  |
| After Harvest                     | Stem canker and blight   | Captan 50WP         | captan                       | M4         | 5 lb         | Apply monthly after harvest until leaf drop in the fall if these diseases have been a problem.   |

**SMALL FRUIT DISEASES (Commercial) – continued**

| <b>Growth Stage</b>                      | <b>Disease</b>   | <b>Product</b>                             | <b>Active Ingredient</b>      | <b>FRAC Code*</b>        | <b>Rate/Acre</b> | <b>Comments</b>  |
|--|--|--|-------------------------------|--------------------------|------------------|--|
| <b>BLACKBERRY, RASPBERRY, LOGANBERRY</b> |  |  |                               |                          |                  |  |
| Delayed Dormant                          | Cane and leaf rusts  | Liquid lime-sulfur                         | sulfur                        | M2                       | 20 gal           | Good coverage is essential.  |
|  | Anthracnose<br>Cane blights  | Drexel Captan 50W**                        | captan                        | M4                       | 4 lb             | **Section 24(c) label only for Arkansas. Follow directions. This label must be in the possession of the user at application.   |
|  |  | Pristine                                   | boscalid + pyraclostrobin     | 7<br>11                  | 18.5 - 23 oz     | See label.   |
|  | New plants – crown gall  | Galltrol                                   | Agrobacterium radiobacter K84 | ---                      |                  | Dip roots in Galltrol before planting.   |
| First Bloom through Petal Fall           | Phytophthora root rot  | Aliette WG                                 | aluminum tris                 | 33                       | 5 lb             | Begin application in the spring after bud break (1 to 3 inches new growth) and continue spraying on a 45 - 60 day schedule, up to a maximum of 4 sprays during the growing season. |
|  |  | Abound                                     | azoxystrobin                  | 11                       | 6 - 15.5 oz      | See label information.   |
|  | Botrytis fruit rot   | Rovral 50WP                                | iprodione                     | 2                        | 1 - 2 lb         | Commercial use only, not for U-pick, etc.  |
|  | Spur blight<br>Anthracnose<br>Botrytis fruit rot   | Drexel Captan 50W**                        | captan                        | M4                       | 4 lb             | **Section 24(c) label only for Arkansas. Follow directions. This label must be in the possession of the user at application.   |
|  | Alternaria leaf spot and fruit rot; anthracnose leaf spot and blotch; phomopsis leaf, twig and fruit blights; powdery mildew; rust | Cabrio 20 EG                               | pyraclostrobin                | 11                       | 14 oz            | No more than 4 applications per season. No more than 2 sequential applications before rotating to a labeled fungicide with a different mode of action. PHI = 0 days.               |
|  |  | Pristine                                   | boscalid + pyraclostrobin     | 7<br>11                  | 18.5 - 23 oz     | See label.   |
|  | Gray mold  | Elevate 50WG                               | fenhexamid                    | 17                       | 1.5 lb           | PHI = 0 days. Rotate after 2 applications. No more than 6 lb/A per season. See label.  |
|  |  | Anthracnose, phomopsis, Botrytis fruit rot | Switch 62.5WG                 | cyprodinil + fludioxonil | 9<br>12          | 11 - 14 oz   |
| Post Bloom through Harvest               | Anthracnose<br>Botrytis fruit rot  | Same as First Bloom                        |                               |                          |                  | Same as above.   |
|  | Rust   | Cabrio 20 EG                               | pyraclostrobin                | 11                       | 14 oz            | Follow label directions. May not control systemically infected plants but helps prevent spread of the fungus to new plants in the spring.  |
|  |  | Pristine                                   | boscalid + pyraclostrobin     | 7<br>11                  | 18.5 - 23 oz     | See label.   |

**SMALL FRUIT DISEASES (Commercial) – continued**

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|--------------------------------------|--|--|---|---------------------------|--------------------------------------|--|---|
| <b>STRAWBERRY</b>                    |  |  |   |                           |                                      |  |   |
| Pre-Bloom<br>(early spring)          | Leaf spot, scorch, blight  | Captan 50WP  | captan  | M4                        | 6 lb                                 | Check label for REI and other restrictions.  |   |
|                                      |  | Thiram 65WP  | thiram  | M3                        | 5 lb                                 |  |   |
|                                      | Anthracnose<br><br>Anthracnose<br>Powdery mildew                       | Captan 50WP  | captan  | M4                        | 6 lb                                 | Apply on a 7 - 14 day schedule depending on weather and continue through harvest. See label.   |   |
|                                      |  | Captevate 68WDG  | fenhexamid + captan   | 17 + M4                   | 5.25 lb                              | No more than 2 consecutive before rotating. Begin applications at flower bud emergence, then 7 - 10 day intervals. See label.  |   |
|                                      |  | Abound   | azoxystrobin  | 11                        | 6 - 15.5 fl oz                       | Begin prior to disease development and continue throughout the season on a 7 - 10 day schedule, following the resistance management guidelines. Do not make more than 4 applications per season or more than 2 consecutive applications. |   |
| Early Bloom<br>through Bloom         | Botrytis blossom blight<br>and fruit rot, leaf spot,<br>scorch, blight | Flint  | trifloxystrobin   | 11                        | 2 - 3.2 oz                           | No more than 5 applications per season (70 oz/A). PHI = 0 days.  |   |
|                                      |  | Cabrio 20 EG   | pyraclostrobin  | 11                        | 12 - 14 oz                           |  |   |
|                                      |  | Pristine   | boscalid + pyraclostrobin                                     | 7 + 11                    | 18.5 - 23 oz                         |  | See label.  |
|                                      |  | Elevate 50WG +<br>Captan 50WP or<br>Thiram 65WP<br>Switch 62.5WG | fenhexamid<br>captan<br>thiram<br>cyprodinil +<br>fludioxonil | 17<br>M4<br>M3<br>9<br>12 | 1.5 lb<br>4 lb<br>4 lb<br>11 - 14 oz |  | Elevate and Thiram are for Botrytis only.<br>Begin applications at or before bloom, then 7 - 10 day intervals. See label. |
| Post-Bloom<br>to Harvest             | Gray mold  | Scala SC   | pyrimethanil  | 9                         | 18 oz                                | Apply 9 oz of Scala in tank mix with other material.   |   |
|                                      | Leather rot  | Aliette 50WDG<br>Ridomil Gold EC                                 | aluminum tris<br>mefenoxam                                    | 33<br>4                   | 2.5 - 5 lb<br>1 pt                   | Apply on 14 day schedule as needed.<br>Apply according to label directions.  |   |
| At Harvest                           | Botrytis blossom blight<br>and fruit rot, leaf spot,<br>scorch, blight | Same as Early<br>Bloom   |   |                           |                                      |  |   |
|                                      |  | Same as Early<br>Bloom   |   |                           |                                      |  |   |
| Post-Bloom<br>and<br>New Plantings   | Leather rot  | Same as Early<br>Bloom   |   |                           |                                      |  |   |
|                                      |  | Same as Early<br>Bloom   |   |                           |                                      |  |   |
| At Harvest                           | Botrytis fruit rot   | Elevate 50WG   | fenhexamid  | 17                        | 1.5 lb                               | 0 day PHI.   |   |
|                                      |  | Topsin M 70WSB   | thiophanate-methyl  | 1                         | 1 lb                                 | 1 day PHI.   |   |
| Post-Harvest<br>and<br>New Plantings | Leaf spots, scorch, blights  | Captan 50WP  | captan  | M4                        | 6 lb                                 | Apply as needed to maintain healthy foliage until late fall.   |   |
|                                      |  | Thiram 65WP  | thiram  | M3                        | 5 lb                                 |  |   |
|                                      |  | Topsin M 70WSB   | thiophanate-methyl  | 1                         | 1 lb                                 |  |   |
|                                      | Red stele<br>Leather rot   | Syllit 65WP  | dodine  | U12                       | 2.4 - 3 pt                           | Do not apply within 14 days of harvest.  |   |
| Ridomil Gold EC                      |  | mefenoxam  | 4   | See label.                | See label.                           |  |   |
|                                      |  | Aliette 50WG   | aluminum tris   | 33                        | See label.                           | See label.   |   |

\***FRAC Code** – Fungicides with the same FRAC Code have the same mode of action. See <http://www.frac.info/frac/index.htm> for an explanation of the FRAC Codes. Rotation of fungicides with different FRAC Codes could minimize the development of fungicide-resistant strains.