

# **COLORADO TREE FRUITS: Pest and Crop Management Guide.**

**Bulletin XCM-41**

**1999 Update**

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## PREFACE

The information and recommendations assembled by the editors and included within this guide are supplied with the understanding that Colorado State University intends neither endorsement of nor discrimination toward any specific product included in or omitted from this guide.

**READ THE LABEL!** Make certain that the EPA and the Colorado Department of Agriculture have registered the chemical you select for use on the crop in question. Do not use more than the recommended amount and observe restrictions on reentry of treated areas and preharvest intervals.

Handle pesticides that are considered highly toxic (Class I - generally, pesticides with oral LD<sub>50</sub> of 0 - 50 milligrams per kilogram of body weight or a dermal LD<sub>50</sub> of 0 - 200 mg/kg of body weight for 24 hours exposure) with extreme care. Pesticides or materials listed in this manual, which are in the highly toxic category, include: azinphos methyl, Carzol, Endocide, endosulfan, Guthion, Lannate, Penncap-M, Parathion, Phosdrin, Supracide, Thiodan, and Vydate.

## ACKNOWLEDGMENTS

Valuable suggestions were provided by agricultural chemical producers and dealers, fruit grower associations, county Cooperative Extension agents, individual fruit growers, and others. We gratefully acknowledge their help.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Milan A. Rewerts, interim director of Cooperative Extension, Colorado State University, Fort Collins, Colorado. Cooperative Extension programs are available to all without discrimination. To simplify technical terminology, trade names of products and equipment occasionally will be used. No endorsement of products named is intended nor is criticism implied of products not mentioned.

500 3/88; 350 3/89; 400 4/91; 400 4/93; 250 2/95; 100 4/95; 350 1/96; 300 1/97; 50 11/98;

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# L      **Emergency Phone Numbers**      7

|  |                |
|--|----------------|
| Rocky Mountain Poison Center .....                           | (800) 332-3073 |
| CHEMTREC Emergency Hotline .....                             | (800) 424-9300 |
| Colorado Dept. of Public Health & Environment                |                |
| (Must notify in case of major spills) .....                  | (303) 331-4830 |
| Colorado Department of Agriculture (Pesticide Section) ..... | (303) 239-4139 |
| State of Colorado Office of Emergency Management .....       | (303) 273-1622 |
| EPA National Response .....                                  | (800) 424-8802 |
| Local Police, Fire, or Sheriff .....                         | 911 (usually)  |

Pesticide labels often include a telephone number where expert information is available.

# OVERVIEW

The Colorado Tree Fruits Pest and Crop Management Guide underwent major revisions for the 1997 edition. Changes since it was issued have been relatively few and do not justify major revision and reprinting. Thus it has been decided to provide those necessary changes in the form of an Update that is intended to be used in conjunction with the 1997 Guide.

This Update consists of only the changes for the 1997 edition of the Colorado Tree Fruits Pest and Crop Management Guide necessary to bring it up to date. As such, the user should check for and use any changes in the Update in preference to the same information in the 1997 Guide. However, where the Update contains no updated information, then the 1997 Guide should be used.

Current plans are to do a major revision of the Guide for the year 2000, so stay tuned.

## CHANGES SINCE 1997

### Pesticides

**Registrations expired OR production dropped:** The following materials are no longer available, but existing stocks may be used until exhausted if noted:

1. Ensign 720 (Platte Chemical Co.) is no longer available for use. References in the crop recommendations have therefore been deleted.

### New, cleared, expanded or modified registrations:

Several chemical companies (e.g., Gowan Co., Drexel Chemical Co., Griffin Corp., Micro Flo Co., Miller, etc.) have entered the Colorado chemicals market with generic versions of several materials. In some instances (e.g., copper materials) **only** generic products are available, and these may take a variety of names. Check with your supplier on what materials are available, but remember that they have **not** been evaluated by Colorado State University personnel under Colorado conditions.

1. Diazinon formulations 50W, 4E, and AG500 have all been changed to restricted use pesticides. This new status applies to all newly manufactured and packaged products only; growers may use any existing supplies according to the label they were sold with.
2. Pyramite 60WSP (BASF/Sandoz Agrichemical) is now registered for use on apples and pears to control a variety of mites. It has performed well in western Colorado.
3. Elite 45DF fungicide (Bayer Corp.) is now registered for control of brown rot on peaches and nectarines and for control of brown rot, leaf spot, and powdery mildew on cherries. It has not been tested under Colorado conditions, but has been added to the crop recommendation tables since it is one of only a few products available for control of cherry leaf spot.

4. Amine-4 4E (Clean Crop, Platte Chemical Co.) is now registered for use in apple, pear, and stone fruit orchards. The label includes several restrictions to be followed. It has been added to the Weed Control Recommendation tables.
5. Botran 75W (Gowan Chemical Co.) is once again available and registered for control of fruit rot of stone fruit. It has been added to the crop recommendation tables.
6. Kocide 2000 (Griffin Chemical Co.) is registered for control of Coryneum blight in stone fruits and for control of fireblight in pear. It has been added to the crop recommendation tables.
5. Topsin M 70WSB (Elf-Atochem Co.) is registered for control of fruit russet and powdery mildew in apple. It has been added to the crop recommendation tables.

## **Other Changes**

**General Information:** Control of bark sunburn can be obtained by painting tree trunks or scaffold limbs with a diluted white latex paint. The dilution is 1 part paint plus 1 to 2 parts water. It can be applied by brush, paint-soaked glove or rag, or pump-type hand sprayer. Applications may need to be repeated yearly for two to four years on new trees until trunk growth slows and extensive bark is produced.

**Pesticide Regulation, Safety & Storage:** Changes to the Restricted Entry / Preharvest Interval table and the chemical name cross reference table are included in this Update.

**Crop Pest Control Recommendation Tables:** These have been updated and included in this Update. Stone fruit crops have been recombined from individual crop listings. Brown rot and cherry leaf spot have been added for stone fruit crops. Fruit rot control, powdery mildew, and western cherry fruit fly control options or treatment timings have been expanded.

**Weed Control Recommendation Tables:** These have been updated and included in this Update.

# REGULATORY INFORMATION CHANGES

## Restricted Entry Intervals (REI'S) and Preharvest Spray Intervals (PHI'S)

Table 4. Restricted entry intervals (REI's) and preharvest spray intervals for pesticides added or whose registrations have changed since 1997.<sup>1</sup>

| Pesticide  | REI<br>(Hrs)       | Pome Fruit      |                | Stone Fruit     |                   |                  |                |
|------------|--------------------|-----------------|----------------|-----------------|-------------------|------------------|----------------|
|            |                    | Apple<br>(Days) | Pear<br>(Days) | Peach<br>(Days) | Apricot<br>(Days) | Cherry<br>(Days) | Plum<br>(Days) |
| *Ambush    | 12                 | P               | P              | 14              | —                 | 3                | —              |
| Amine 4    | 48                 | 14              | 14             | 40              | 40                | 40               | 40             |
| Botran     | 12                 | —               | —              | 10              | 10                | B                | B              |
| *Diazinon  | 12-24 <sup>2</sup> | 21              | 21             | 21              | 21                | 21               | 21             |
| Kolospray  | 12                 | 12 hr           | 12 hr          | 12 hr           | —                 | 12 hr            | 12 hr          |
| *PennCap-M | 48                 | 30              | 30             | 14              | —                 | — <sup>3</sup>   | 14             |
| *Pounce    | 12                 | P               | P              | 14              | —                 | 3                | —              |
| Pyramite   | 12                 | 25              | 7              | —               | —                 | —                | —              |
| Topsin M   | 12                 | 1               | —              | 1               | 1                 | 1                | —              |

\* = Restricted Use Pesticide

<sup>1</sup> Code Key: "—" =Not Registered for crop; D=Dormant Only; F=Fall; NB=Nonbearing trees only; P =Prebloom; B = Bloom; PF =Petal Fall; PH =Postharvest; SS =Shuck Split; V =Various (see label); T = Trunk.

<sup>2</sup> REI varies with the product and formulation; see label.

<sup>3</sup> Use only where annual rainfall exceeds 25 inches/year; then cherry PHI=14 days.

## Chemical Cross-Reference List

Table 8. Chemical product / common chemical name cross-reference list for products added since 1997.

| Trade Name | Common Chemical Name | Category <sup>1</sup> |
|------------|----------------------|-----------------------|
| Microthiol | sulfur               | F/M                   |
| Pyramite   | pyridaben            | M                     |
| Topsin M   | thiophanate methyl   | F                     |
| Ziram      | ziram                | F                     |

<sup>1</sup> Combination categories/activities list the primary category/activity first. B = Bactericide, F = Fungicide, G = Growth Regulator/Thinner, H = Herbicide, I = Insecticide, M = Miticide.

# Apple

| PEST OR DISEASE   | MATERIALS   | RATE PER ACRE   | RATE PER 100 GAL. (DILUTE) <sup>1</sup>  | REMARKS  |
|---|---|---|--|--|
| <b>Delayed Dormant Stage (Stages 1-2)</b>   |   |   |  |  |
| Rosy Apple Aphid<br>European red mite<br>San Jose scale<br>Leafrollers<br>Blister mites | Superior oil + one of the following:<br>● Asana XL<br>● Lorsban 4E<br>● Cygon/Dimethoate 25W<br>● Supracide 2E<br>● Diazinon 50W<br>● Ethion 25W<br>● endosulfan (Endosulfan, Thiodan) 50W<br>● permethrin (Ambush) 2E or (Pounce) 3.2E or (Ambush, Pounce) 25W | 4-6 gal.<br>4.8-14½ fl.oz.<br>2-4 pt.<br>4 lb.<br>4-8 pt.<br>4 lb.<br>2-3 lb.<br>4-5 lb.<br>13-25 fl.oz.<br>4-16 fl.oz.<br>6.4-25.6 oz. | 1-1½ gal.<br>1.2-3.6 fl.oz.<br>½-1 pt.<br>1-2 lb.<br>1-2 pt.<br>1 lb.<br>1 lb.<br>1 lb.<br>3.2-6.4 fl.oz.<br>1-4 fl.oz.<br>1.6-6.4 oz. | Asana is not labeled for and may not control blister mites. Lorsban 4E - use at least 1½ pt./acre.   |
| Powdery Mildew  | ● Bayleton 50DF<br>● Nova 40W<br>● Procure 50WS<br>● Rubigan 1E<br>● Sulfur products<br><sup>a</sup> Funginex   | 4-6 oz.<br>5-10 oz.<br>8-16 oz.<br>6-12 fl.oz.<br>8-16 lb.ai<br>36-40 fl.oz.  | 1-1½ oz.<br>1¼-2½ oz.<br>2-4 oz.<br>3 fl.oz.<br>See label<br>10 fl.oz.   | Many different sulfur product formulations are available; see the label for specific rates of these materials. Application limits per acre per season: Bayleton - 24 oz., Nova - 80 oz., Rubigan - 84 fl.oz., & Procure 64 oz. Funginex - 5 applications maximum (Do NOT use after petal fall). General effective life is 7-10 days for the last two materials and 10-14 days for the other materials <u>unless</u> trees and fruit are growing very rapidly. Minimum spray concentration for Rubigan is 3 fl.oz./100 gal. |
| Collar Rot  | <sup>a</sup> Ridomil 2E or 50W<br><sup>a</sup> Kocide 101 or DF<br><sup>a</sup> Kocide 606  | ----<br>----<br>----<br>----  | 1 qt.<br>1 lb.<br>4 lb.<br>2½ qt.  | Ridomil: 1-4 qts. spray/tree (See text, p. 7.9). Kocide: 4 gal. spray/ tree. Apply to a 3 ft. circle of soil around trunk before growth (in spring) and after harvest (Sept.- Oct.)  |
| <b>Pink Stage (Stages 4-5)</b>  |   |   |  |  |
| Rosy apple aphid<br>Lygus bugs<br>Stink bugs<br>Leafrollers                             | ● Diazinon 50WP<br>● dimethoate 4E, (Cygon/Dimethoate) 25W or (Dimethoate) 2.67E<br>● endosulfan (Endosulfan, Thiodan) 50W<br>● Asana XL<br>● permethrin (Ambush) 2E or (Pounce) 3.2E or (Ambush, Pounce) 25W   | 4 lb.<br>2-4 pt.<br>4 lb.<br>3 pt.<br>3-4 lb.<br>4.8-14½ fl.oz.<br>13-25 fl.oz.<br>4-16 fl.oz.<br>6.4-25.6 oz.                          | 1 lb.<br>½-1 pt.<br>1-2 lb.<br>12 fl.oz.<br>1 lb.<br>1.2-3.6 fl.oz.<br>3.2-6.4 fl.oz.<br>1-4 fl.oz.<br>1.6-6.4 oz.                     | Note 101 fl.oz./Acre/Season limit for Asana.   |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.



# Apple

| PEST OR DISEASE                                   | MATERIALS  | RATE PER ACRE      | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS  |
|---|--|--------------------|---|--|
| <b><u>Pink Stage (Stages 4-6) (Continued)</u></b> |  |                    |   |  |
| Codling moth                                      | ● Isomate-C Plus   | 400 dispensers     |   |  |
|   | Mating Disruption: Isomate-C Plus pheromone dispensers must be in place before the first moth flight. Place within 2 feet of the top of the canopy. If the orchard has a history of codling moth problems, use one or two conventional insecticide sprays against the first generation in the first year. If a codling moth source exists nearby, use border sprays of conventional insecticides. Monitor the orchard with pheromone traps using a 10-mg lure set at mid-canopy height. If more than six moths are captured in traps, check the orchard for fruit damage or apply a conventional insecticide. If damage exceeds 1% at the end of the first generation, use conventional insecticides to control the second and subsequent generations. |                    |   |  |
| Powdery mildew                                    | ● Benlate 50W<br>+ Oil   | 12 oz.<br>+ 1 gal. | 3 oz.<br>+ 1 qt.                        | Many sulfur products are available; see the labels for specific rates of these materials. Use the last three options at 7-10 day intervals and the other options at 10-14 day intervals. Note the following product limits per Acre/Season: Bayleton - 24 oz., Rubigan - 84 fl.oz., Nova - 80 oz., Procure - 64 oz., Funginex - 5 applications maximum (Do NOT apply after petal fall). Minimum spray concentration for Rubigan is 3 fl.oz./100 gal. |
|   | ● Bayleton 50W   | 4-6 oz.            | 1-1 ½ oz.                               |  |
|   | ● Rubigan 1E   | 9-12 fl.oz.        | 2 ¼-3 fl.oz.                            |  |
|   | ● Nova 40W   | 5-10 oz.           | 1 ¼-2 ½ oz.                             |  |
|   | ● Procure 50WS   | 8-16 oz.           | 2-4 oz.                                 |  |
|   | ● Sulfur products  | 8-16 lb.a.i.       | See label                               |  |
|   | <sup>a</sup> Funginex  | 36-40 fl.oz.       | 10 fl.oz.                               |  |
|   | <sup>a</sup> Topsin M 70WSB  | 1-1 ½ lb.          | ¼-¾ lb.                                 |  |
| Crown rot   | <sup>a</sup> Aliette WDG   | 2 ½-5.0 lb.        |   | Use low rate on 30 day interval, high rate on 60 day interval. Do not apply with, prior to, or after copper fungicides. Do not apply within 2-3 weeks of leaf senescence. Do not allow livestock to graze on treated orchards. Season limit: 20 lbs/acre.  |
| <b><u>Blossom Stage (Stage 7)</u></b>             |  |                    |   |  |
| Fire Blight                                       | ● Streptomycin 17W   | ---                | 8 oz.                                   | Recommended rate is at 100 ppm concentration. Start copper sprays at 10% bloom and repeat at 5-day intervals until bloom is over.  |
|   | <sup>a</sup> Basic Copper 53WP   | 2 lb.              | ½ lb.                                   |  |

<sup>1</sup>based on 400 gallons per acre with average sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Apple

| PEST OR DISEASE                                       | MATERIALS                                   | RATE PER ACRE   | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS  |
|---|---|-----------------|---|--|
| <b><u>Calyx to Petal Fall Period (Stages 5-9)</u></b> |   |                 |   |  |
| Powdery mildew  | ● Benlate 50W + Oil                         | 12 oz. + 1 gal. | 3 oz. + 1 qt.                           | Many sulfur products are available; see the labels for specific rates. Use the last three options at 7-10 day intervals and the other options at 10-14 day intervals. Note the following product limits per Acre/Season: Bayleton - 24 oz., Rubigan -84 fl.oz., Nova - 80 oz., Procure - 64 oz., Funginex - 5 application maximum (Not after petal fall). Minimum spray concentration for Rubigan is 3 fl.oz./100 gal. |
|   | ● Bayleton 50DF                             | 4-6 oz.         | 1-1 ½ oz.                               |  |
|   | ● Rubigan 1E                                | 6-12 fl.oz.     | 3 fl.oz.                                |  |
|   | ● Nova 40W                                  | 5-10 oz.        | 1 ¼-2 ½ oz.                             |  |
|   | ● Procure 50WS                              | 8-16 oz.        | 2-4 oz.                                 |  |
|   | ● Sulfur products                           | 8-16 lb.a.i.    | See label                               |  |
|   | <sup>a</sup> Funginex                       | 36-40 fl.oz.    | 10 fl.oz.                               |  |
| <sup>a</sup> Topsin-M 70WSB                           | 1-1 ½ lb.                                   | ¼-¾ lb.         |   |  |
| Climbing cutworms                                     | ● Diazinon 50W                              | 4 lb.           | 1 lb.                                   | Note the 101 fl.oz./Acre season limit for Asana. Permethrin use is pre-bloom only.   |
|   | ● Asana XL                                  | 4.8-14 ½ fl.oz. | 1.2-3.6 fl.oz.                          |  |
|   | ● permethrin (Pounce) 3.2E (Ambush) 2E      | 4-16 fl.oz.     | 1-4 fl.oz.                              |  |
|   | or (Ambush, Pounce) 25W                     | 13-25 fl.oz.    | 3.2-6.4 fl.oz.                          |  |
|   |   | 6.4-25.6 oz.    | 1.6-6.4 oz.                             |  |
| Campyloomma bug,<br>Lygus bug,<br>Stink bug           | ● azinphos methyl (Azinphos-M, Guthion) 50W | 2-3 lb.         | 8-12 oz.                                | Apply as needed after survey in late bloom. Season limits/acre: azinphos methyl 50W - 12 lb.   |
|   | ● endosulfan (Endosulfan, Thiodan) 50W      | 2 lb.           | 8 oz.                                   |  |
|   | ● Diazinon 50W                              | 4 lb.           | 1 lb.                                   |  |
|   | ● Lorsban 50W                               | 3 lb.           | 12 oz.                                  |  |
|   |   |                 |   |  |
| <b><u>Post-Petal Fall Sprays</u></b>                  |   |                 |   |  |
| Aphids  | ● dimethoate 4E                             | 2-4 pt.         | ½-1 pt.                                 | Note season limits per acre: Asana - 101 fl.oz., endosulfan - 8 lb., Provado - 40 fl.oz.   |
|   | or (Cygon/Dimethoate) 25W                   | 4-6 lbs.        | 1-2 lbs.                                |  |
|   | or (Dimethoate) 2.67E                       | 3-6 pt.         | 12-24 oz.                               |  |
|   | ● Diazinon 50W                              | 4 lb.           | 1 lb.                                   |  |
|   | ● endosulfan (Endosulfan, Thiodan) 50W      | 3 lb.           | 12 oz.                                  |  |
|   | ● Asana XL                                  | 4.8-14 ½ fl.oz. | 1.2-3.6 fl.oz.                          |  |
|   | ● Provado 1.6E                              | 8 fl.oz.        | 2 fl.oz.                                |  |
| Codling moth<br>Leafrollers                           | ● azinphos methyl (Azinphos-M, Guthion) 50W | 2-3 lb.         | 8-12 oz.                                | Timing for Codling Moth sprays may be obtained from your local Code-A-Phone Numbers.<br>Delta and Montrose<br>Counties: 244-1709<br>Mesa County: 244-1806<br>Note season application limits (per acre): Asana - 101 fl.oz., azinphos methyl 50W - 12 lb.   |
|   | ● Imidan 50W                                | 4-6 lb.         | 1-1 ½ lb.                               |  |
|   | or 70W                                      | 3-5 lb.         | ¾-1 ¼ lb.                               |  |
|   | ● Diazinon 50W                              | 4 lb.           | 1 lb.                                   |  |
|   | ● Asana XL                                  | 4.8-14 ½ fl.oz. | 1.2-3.6 fl.oz.                          |  |
|   | ● PennCap-M 2F                              | 4-8 pt.         | 1-2 pt.                                 |  |
|   | ● Lorsban 50W                               | 3 lb.           | 12 oz.                                  |  |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Apple

| PEST OR DISEASE                              | MATERIALS  | RATE PER ACRE   | RATE PER 100 GAL. (DILUTE) <sup>1</sup>   | REMARKS   |
|--|--|---|---|---|
| <b>Post-Petal Fall Sprays (Cont'd)</b>       |  |   |   |   |
| Two spotted spider mite<br>European red mite | <ul style="list-style-type: none"> <li>● Vendex 50W</li> <li>● Carzol 92SP</li> <li>● Morestan 25W</li> <li>● Kelthane 35W</li> <li>● Pyramite 60WSB</li> </ul>  | 1-3 lb.<br>1-2 lb.<br>2-4 lb.<br>5-8 lb.<br>4.4-13.2 oz.  | 4-12 oz.<br>4-8 oz.<br>8-16 oz.<br>1 ¼-2 lb.<br>1.1-4.3 oz.   | Kelthane rate varies with tree size; see label. Maximum applications /season: Vendex - 4 (3 between petal fall and harvest); Pyramite -2. Apply Pyramite just as populations begin to build; use high rate for spider mites.  |
| Tentiform leafminer                          | <ul style="list-style-type: none"> <li>● Asana XL</li> <li>● Vydate 2L</li> <li>● Lannate 90SP or 2.4LV</li> <li>● Provado 1.6F</li> </ul>   | 4.8-14 ½ fl.oz.<br>2-4 pt.<br>4 lb.<br>1 ½-3 pt.<br>8 oz.   | 1.2-3.6 fl.oz.<br>½-1 pt.<br>8 oz.<br>6-12 fl.oz.<br>2 fl.oz.                                       | Note season limits/acre: Asana - 101 fl.oz., Provado - 40 fl.oz., Vydate - 8 pt.  |
| White Apple leafhopper                       | <ul style="list-style-type: none"> <li>● Asana XL</li> <li>● Diazinon 50W</li> <li>● endosulfan (Endosulfan Thiodan) 50W</li> <li>● Carzol 92SP</li> <li>● Provado 1.6F</li> </ul>   | 4.8-14 ½ fl.oz.<br>4 lb.<br>4 lb.<br>1 lb.<br>8 fl.oz.  | 1.2-3.6 fl.oz.<br>1 lb.<br>1 lb.<br>4 oz.<br>2 fl.oz.   | Note season limits/acre: Asana - 101 fl.oz., endosulfan - 8 lb., Provado - 40 fl.oz.  |
| Crown rot                                    | <sup>a</sup> Aliette WDG   | 2 ½-5.0 lb.   |   | Use low rate on 30 day interval, high rate on 60 day interval. Do not apply within 2-3 weeks of leaf senescence. Do not allow livestock to graze in treated orchards. Season limit: 20 lbs/acre.  |
| Powdery mildew                               | <ul style="list-style-type: none"> <li>● Benlate 50W + Oil</li> <li>● Bayleton 50DF</li> <li>● Rubigan 1E</li> <li>● Nova 40W</li> <li>● Procure 50WS</li> <li>● Sulfur products</li> <li><sup>a</sup> Topsin M 70WSB</li> </ul> | 12 oz.<br>+ 1 gal.<br>4-6 oz.<br>6-12 fl.oz.<br>5-10 oz.<br>8-16 oz.<br>8-16 lb.a.i.<br>1-1 ½ lb. | 3 oz.<br>+ 1 qt.<br>1-1 ½ oz.<br>3 fl.oz.<br>1 ¼-2 ½ oz.<br>2-4 oz.<br>Various-see label<br>¼-⅜ lb. | See remarks on sulfur for delayed dormant spray. Use a 7-10 day interval for Sulfurs, a 10-14 day interval for the others. Avoid use of sulfur products when daily temperatures exceed 85°F. Product limits/acre/season: Bayleton - 24 oz; Rubigan - 84 fl.oz; Nova - 80 oz.; Procure - 64 oz. Minimum spray concentration for Rubigan is 3 fl.oz./100 gal. |
| Fire Blight                                  | ● Streptomycin 17W   | ---   | 8 oz.<br>(100 ppm)  | Do not use later than 50 days before harvest.   |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Apple

| PEST OR DISEASE                               | MATERIALS                      | RATE PER ACRE | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS  |
|---|--------------------------------|---------------|---|--|
| <b><u>Post Harvest (Leaf Fall) Sprays</u></b> |                                |               |   |  |
| Anthracnose                                   | <sup>a</sup> Kocide 101 or DF  | 12-16 lbs.    | 3-4 lbs.                                | Apply before fall rains to twigs/branches/scaffolds at 400 gal./acre.                            |
|   | <sup>a</sup> Basic copper 53WP | 3-4 lb.       | ¾-1 lb.                                 |  |
| Crown rot                                     | <sup>a</sup> Ridomil 2E or 50W | ----          | 1 qt.<br>1 lb.                          | Apply as a trunk or crown drench before fall rains. Ridomil: 1-4 qts./tree; Kocide: 4 gal./tree. |
|   | <sup>a</sup> Kocide 101 or DF  | ----          | 4 lb.                                   |  |
|   | <sup>a</sup> Kocide 606        | ----          | 2.5 qt.                                 |  |
|   |                                |               |   |  |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Pear

| PEST OR DISEASE                                  | MATERIALS   | RATE PER ACRE   | RATE PER 100 GAL. (DILUTE) <sup>1</sup>  | REMARKS  |
|--|---|---|--|--|
| <b><u>Dormant Stage (Stage 0)</u></b>            |   |   |  |  |
| Pear psylla                                      | Superior Oil alone<br>or<br>+ one of the following:<br>● Asana XL<br>● Pounce 3.2E<br>● Ambush 2E or 25W<br>● Thiodan 3EC or 50W<br><sup>a</sup> Lorsban 4E   | 4-6 gal.<br><br>9.6-19.2 fl.oz.<br>8-16 fl.oz.<br>13-25 fl.oz.<br>13-25 oz.<br>3½ qt.<br>5 lb.<br>2-4 pt. | 1-1 ½ gal.<br><br>2.4-4.8 fl.oz.<br>2-4 fl.oz.<br>3.2-6.4 fl.oz.<br>3.2-6.4 oz.<br>26¼ fl.oz.<br>1¼ lb.<br>½-1 pt. | Asana season maximum: 72 fl.oz. per acre. Higher rates of Asana <u>only</u> for dormant to white bud stages (stages 0-6). The lower rates of Ambush have provided only marginal control in some Colorado orchards. Lorsban - use at least 1 ½ pt./acre.  |
| Scale<br>Mite eggs                               | Superior Oil alone<br>or<br>organophosphate registered for these pests (e.g. Diazinon, Ethion, Etc.)  | Consult label for correct dosage.   |  |  |
| <b><u>Delayed Dormant Stage (Stages 1-3)</u></b> |   |   |  |  |
| Pear rust mite                                   | ● Superior Oil<br>+<br>endosulfan (Thiodan, Endosulfan) 50W   | 6-8 gal.<br><br>4 lb.   | 1 ½ gal.<br><br>1 lb.  |  |
| Pear psylla                                      | Asana, Ambush, Pounce, or Thiodan at rate listed for dormant treatment may be used if not applied previously. Excessive use will increase problems with pear psylla resistance. Asana maximum: 72 fl.oz./acre/Yr. |   |  |  |
| <b><u>Pre Bloom (Stages 5-7)</u></b>             |   |   |  |  |
| Grape mealybug                                   | Superior Oil (98%) +<br>Diazinon 50W  | 6 gal.<br>4 lb.   | 1 ½ gal.<br>1 lb.  |  |
| Pear psylla                                      | ● Morestan 25WSP  | 6 lb.   | 1 ½ lb.  | Avoid application within 10 days of an oil spray, or injury may occur to fruit and/or foliage. Fruit set may be reduced if fruit injury occurs.  |
| Codling moth                                     | ● Isomate-C Plus  | 400 dispensers  |  | Mating Disruption: Isomate-C Plus pheromone dispensers must be in place before the first moth flight. Place within 2 feet of the top of the canopy. If the orchard has a history of codling moth problems, use one or two conventional insecticide sprays against the first generation in the first year. If a codling moth source exists nearby, use border sprays of conventional insecticides. Monitor the orchard with pheromone traps using a 10-mg lure set at mid-canopy height. If more than six moths are captured in traps, check the orchard for fruit damage or apply a conventional insecticide. If damage exceeds 1% at the end of the first generation, use conventional insecticides to control the second and subsequent generations. |

<sup>1</sup>based on 400 gallons per acre with average-sized trees unless otherwise noted.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Pear

| PEST OR DISEASE                                 | MATERIALS                               | RATE PER ACRE          | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS  |
|---|---|------------------------|---|--|
| <b><u>Blossom Stage (Stages 7-8)</u></b>        |   |                        |   |  |
| Powdery mildew                                  | ● Bayleton 50DF                         | 4-6 oz.                | 1-1 ½ oz.                               | Sulfur should not be used on Anjou pears. Sprays begun at bloom or petal fall and continued through 4-6 wks. after petal fall should provide protection against fruit russet. Recommended spray intervals: Sulfur products 7-10 days, Bayleton 10-14 days. Minimum spray concentration of Rubigan is 3 fl.oz./100 gal.   |
|   | ● Sulfur products                       | 8-16 lb. a.i.          | See label                               |  |
|   | <sup>a</sup> Rubigan 1E                 | 6-12 fl.oz.            | 3 fl.oz.                                |  |
|   | <sup>a</sup> Procure 50WS               | 8-16 oz.               | 2-4 oz.                                 |  |
| Fire blight                                     | ● Streptomycin 17W                      | 2 lb.                  | 8 oz. (100 ppm)                         | Basic copper sprays need 4 oz. metallic copper per 100 gal to be effective. Repeat copper or Kocide sprays at 5 day intervals throughout bloom.  |
|   | ● Kocide 101 or 2000                    | 1 lb.<br>¾ lb.         | 4 oz.<br>2 oz.                          |  |
|   | ● Basic Copper 53WP                     | 2 lb.                  | 8 oz.                                   |  |
|   |   |                        |   |  |
| <b><u>Petalfall</u></b>                         |   |                        |   |  |
| Grape mealybug                                  | ● Diazinon 50W                          | 4-6 lb.                | 1-1 ½ lb.                               | - Use only with caution to avoid injury to bees.   |
|   | <sup>a</sup> Provado 1.6E               | 20 fl.oz.              | 5 fl.oz.                                |  |
| Fire blight                                     | ● Streptomycin 17W                      | 2 lb.                  | 8 oz. (100 ppm)                         | Basic copper sprays need 4 oz. metallic copper per 100 gal. to be effective. Kocide should be applied at 5 day intervals throughout bloom.   |
|   | ● Kocide 101 or DF                      | 1 lb.                  | 4 oz.                                   |  |
|   | ● Basic Copper 53WP                     | 2 lb.                  | 8 oz.                                   |  |
| <b><u>Post Petal Fall and Summer Sprays</u></b> |   |                        |   |  |
| Pear psylla                                     | ● Thiodan 50W                           | 4-5 lb.                | 1 lb.                                   | Pyrethroid materials (Asana) should be used only two or less times in a season to avoid resistance. It also is effective against codling moth. Apply oil as a dilute spray in evening or early morning to recently watered trees, not to drought-stressed trees or when temperatures will exceed 90°F within 4 hours. Maximum applications allowed per season: Agri-Mek - 2, Pyramite - 2. |
|   | ● Mitac 50W                             | 1 ½-3 lb.              | 6-12 oz.                                |  |
|   | ● Asana XL                              | 4.8-14 ½ fl.oz.        | 1.2-3.6 fl.oz.                          |  |
|   | ● Summer oil                            | 4-6 gal.               | 1-1 ½ gal.                              |  |
|   | ● Provado 1.6E                          | 20 fl.oz.              | 5 fl.oz.                                |  |
|   | ● Agri-Mek 0.15E<br>+ horticultural oil | 16-20 fl.oz.<br>1 gal. | 4-5 fl.oz.<br>1 qt.                     |  |
|   | <sup>a</sup> Pyramite 60WSP             | 4.4-6.6 oz.            | 1.1-1.6 oz.                             |  |

<sup>1</sup>based on 400 gallons per acre with averaged-sized trees unless otherwise noted.

<sup>a</sup> Product not evaluated by CSU personnel on this crop under Colorado conditions.

# Pear

| PEST OR DISEASE                                    | MATERIALS                                   | RATE PER ACRE      | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS   |
|--|---|--------------------|---|---|
| <b>Post Petal Fall and Summer Sprays (Cont'd.)</b> |   |                    |   |   |
| Codling Moth                                       | ● azinphos methyl (Guthion, Azinphos-M) 50W | 2-3 lb.            | 8-12 oz.                                | Note season limits/acre: Asana - 72 fl.oz., azinphos methyl 50W - 12 lb. Asana has good activity life on pears (Approx. 21 days); however, it should be used only two or less times per season on pears to avoid development of psylla resistance to it and other pyrethroids.  |
|  | ● Imidan 50W or 70W                         | 4-6 lb.<br>3-6 lb. | 1-2 lb.<br>¾-1½ lb.                     |   |
|  | ● Asana XL                                  | 4.8-14½ fl.oz.     | 1.2-3.6 fl.oz.                          |   |
|  | ● Diazinon 50W                              | 4 lb.              | 1 lb.                                   |   |
|  | <sup>a</sup> Pennacap-M 2FM                 | 4-8 pt.            | 1-2 pt.                                 |   |
| Spider mites                                       | ● Carzol 90SP                               | 1 lb.              | 4 oz.                                   | Maximum applications per season: Vendex - 4 (3 between petal fall and harvest); Pyramite - 2. Apply as populations are just beginning to build. Apply oil as a dilute spray in evening or early morning to recently watered trees, not to drought-stressed trees or when temperatures will exceed 90°F within 4 hours. Kelthane rate varies with tree size; see label.  |
|  | ● Vendex 50W                                | 1-3 lb.            | 4-12 oz.                                |   |
|  | ● Kelthane 35W                              | 4-8 lb.            | 1-2 lb.                                 |   |
|  | ● Summer oil                                | 4-6 gal.           | 1-1½ gal.                               |   |
|  | ● Pyramite 60WSP                            | 6.6-13.2 oz.       | 1.2-3.3 oz.                             |   |
|  | <sup>a</sup> Apollo 1SC                     | 4-8 fl.oz.         | 1-2 fl.oz.                              |   |
| <sup>a</sup> Savey 50W                             | 4-6 oz.                                     | 1-1½ oz.           |   |   |
| Pear rust mite                                     | ● Carzol 92SP                               | 1 lb.              | 4 oz.                                   | Maximum sprays per season: Vendex - 4 (3 between petal fall and harvest), Agri-Mek - 2, Pyramite - 2. Apply Pyramite as populations begin to build. Do not use oil later than 1 month before harvest nor within 30 days of any sprays containing azinphos methyl or endosulfan. If oil is to be used on Anjou pears, be sure to check labels of other organo-phosphate insecticides and fungicides used for potential injury intervals. Summer oil applications can suppress pear psylla and 2-spot mite populations. Do not apply oil to drought-stressed trees or when temperatures will exceed 90°F within 4 hours after treatment; best applied evenings or early mornings to recently watered trees. Kelthane rate varies with tree size; see label. |
|  | ● Vendex 50W                                | 1-3 lb.            | 4-12 oz.                                |   |
|  | ● Summer Oil (dilute spray only!)           | 4-6 gal.           | 1-1½ gal.                               |   |
|  | ● Kelthane 35W                              | 4-8 lb.            | 1-2 lb.                                 |   |
|  | ● Thiodan 3EC or 50W                        | 2½ qt.<br>4 lb.    | ¾ qt.<br>1 lb.                          |   |
|  | <sup>a</sup> Agri-Mek 0.15E                 | 10-20 fl.oz.       | 2½-5 fl.oz.                             |   |
|  | <sup>a</sup> Pyramite 60WSB                 | 4.4-6.6 oz.        | 1.1-1.6 oz.                             |   |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Pear

| PEST OR DISEASE                        | MATERIALS                      | RATE PER ACRE  | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS   |
|--|--------------------------------|----------------|---|---|
| <b>Post Petal Fall Sprays (Cont'd)</b> |                                |                |   |   |
| Powdery mildew                         | ● Bayleton DF                  | 4-6 oz.        | 1-1 ½ oz.                               | Sprays begun at bloom or petal fall and continued through 4-6 wks. after petal fall should protect against fruit russet. Sulfur products protect for 7-10 days while Bayleton and Procure protect for 10-14 days. Avoid use of sulfur when temperatures are above 85°F and after pear fruit turn down. Minimum spray concentration for Rubigan is 3 fl.oz./100 gal. |
|  | ● Sulfur products              | 8-16 lb.a.i.   | See label                               |   |
|  | <sup>a</sup> Rubigan 1E        | 6-12 fl.oz.    | 3 fl.oz.                                |   |
|  | <sup>a</sup> Procure 50WS      | 8-16 oz.       | 2-4 oz.                                 |   |
| Fire blight                            | ● Streptomycin 17W             | 2 lb.          | 8 oz.                                   | Caution: copper or Kocide sprays may cause fruit russet, especially on Anjou. Basic Copper sprays need 4 oz. metallic copper per 100 gal. to be effective.  |
|  | ● Kocide 101 or DF or 2000     | 1 lb.<br>¾ lb. | 4 oz.<br>2 oz.                          |   |
|  | <sup>a</sup> Basic Copper 53WP | 2 lb.          | 8 oz.                                   |   |
| Crown rot                              | <sup>a</sup> Aliette WDG       | 2½-5 lb.       | .63-1 ¼ lb.                             | Use low rate on 30 day interval, high rate on 60 day interval. Do not apply within 2-3 weeks of leaf senescence. Do not allow livestock to graze in treated orchards. Season limit: 20 lbs/acre.  |

<sup>1</sup>based on 400 gallons per acre with averaged-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.



# Stone Fruit

| PEST OR DISEASE   | MATERIALS  | RATE PER ACRE  | RATE PER 100 GAL. (DILUTE) <sup>1</sup>  | REMARKS   |
|---|--|--|--|---|
| <b>Dormant Stage (Stage 0)</b>  |  |  |  |   |
| Scale<br>Brown mite eggs<br>Aphid eggs  | ● Superior Oil<br>+<br>Diazinon 50W<br>or Lorsban 4E   | 8 gal.<br>+<br>4 lb.<br>or 2-4 pt.   | 2 gal.<br>+<br>1 lb.<br>or ½-1 pt.   | <b>Note:</b> Lorsban is <b>NOT</b> REGISTERED for apricot. Either product will also give some suppression of twig borer. Lorsban 4E - use at least 1 ½ pt./acre.  |
| Cytospora canker  | Post-pruning wound treatment paint:<br>● Benlate 50W   |  | ½-1 Tbsp./gal. carrier<br>4 tsp./16 fl.oz. carrier                                       | Apply slurry to pruning cuts with a paint brush immediately after pruning. The higher rate may be used only on peach while the trees are dormant; the lower rate may be used on all stone fruits when the trees are growing. Carrier liquid may be spray oil (10% or less) or interior white latex paint diluted 1 part paint to 2 parts water. |
| Coryneum blight   | ● Bravo 500F<br>or 720F<br>● Kocide 101 or DF<br>or 2000<br><sup>a</sup> Basic Copper 53WP   | 4-6 pt.<br>3-4 pt.<br>8-16 lb.<br>6-12 lb.<br>16-20 lb.                                    | 1-1 ½ pt.<br>12-16 fl.oz.<br>2-4 lb.<br>1.5-3 lb.<br>4-5 lb.                             | When conditions favor high disease levels, use high rate of application once or twice in late winter to early spring.   |
| <b>Delayed Dormant Stage (From First Green Until Pink or white; Stages 1-5)</b> |  |  |  |   |
| Aphids,<br>Mites, &<br>Scale  | Superior Oil<br>+ one of the following<br>● endosulfan (Thiodan,<br>Endosulfan) 50W<br>● Asana XL<br>● Diazinon 50W<br>● Lannate 90SP<br>or 2.4LV  | 6 gal.<br>+<br>4 lb.<br>4.8-14 ½ fl.oz.<br>4 lb.<br>1-2 lb.<br>3-6 pt.                     | 1 ½ gal.<br>+<br>1 lb.<br>1.2-3.6 fl.oz.<br>1 lb.<br>4-8 oz.<br>¾-1 ½ pt.                | <b>Note:</b> Lannate is REGISTERED <b>ONLY</b> for use on peach ( <b>NOT</b> apricot, cherry, nectarine, or plum). If dormant spray has been made, there may not be any need for insect and mite control. Oil should not exceed 1 ¼ % (1 ¼ gal per 100 gal. spray) at first bloom.  |
| Lygus bugs<br>Stink bugs  | ● azinphos methyl (Guthion,<br>Azinphos-M) 50W<br>● endosulfan (Thiodan,<br>Endosulfan) 50W<br>● permethrin (Ambush) 2E<br>or (Pounce) 3.2E<br>or (Ambush, Pounce) 25W<br>● Lannate 90SP<br>or 2.4LV | 1 ½-4 lb.<br>4 lb.<br>6.4-19.2 fl.oz.<br>4-12 fl.oz.<br>6 ½-19.2 oz.<br>1-2 lb.<br>3-6 pt. | 6-16 oz.<br>1 lb.<br>1.6-4.8 fl.oz.<br>1-3 fl.oz.<br>1.6-4.8 oz.<br>4-8 oz.<br>¾-1 ½ pt. | <b>Note:</b> Lannate is REGISTERED <b>ONLY</b> for use on peach (NOT apricot, cherry, nectarine, or plum); permethrin products are <b>NOT</b> REGISTERED for use on apricot or plum; Guthion is <b>NOT</b> REGISTERED for use on apricot. Note the lower rates of Guthion and permethrin on cherry.   |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.



# Stone Fruit

| PEST OR DISEASE                          | MATERIALS  | RATE PER ACRE                                  | RATE PER 100 GAL. (DILUTE) <sup>1</sup>     | REMARKS  |
|--|--|--|---|--|
| <b>Petal Fall Stage (Continued)</b>      |  |  |   |  |
| Flower thrips                            | ● Lannate 90SP or 2.4LV  | 1-2 lb.<br>3-6 pt.                             | 4-8 oz.<br>¾-1 ½ pt.                        | <b>Note:</b> Lannate is REGISTERED <b>ONLY</b> for peach ( <b>NOT</b> apricot, cherry, nectarine, or plum). Reduces numbers of thrips and also benefits twig borer control. Thrips injury can be reduced by not disturbing the cover crop for 2 wks. prior to bloom.   |
|  | ● Diazinon 50W   | 4 lb.  | 1 lb.                                       |  |
| Lygus bugs                               | ● azinphos methyl (Guthion, Azinphos-M) 50W  | 3-4 lb.  | 12-16 oz.                                   | <b>Note:</b> Guthion is <b>NOT</b> REGISTERED for apricot; Lannate is REGISTERED <b>ONLY</b> for peach ( <b>NOT</b> apricot, cherry, nectarine, or plum). These are pests of apricot, peach, nectarine, and plum.  |
|  | ● endosulfan (Thiodan, Endosulfan) 50W   | 4 lb.  | 1 lb.                                       |  |
|  | ● Lannate 90SP or 2.4LV  | 1-2 lb.<br>3-6 pt.                             | 4-8 oz.<br>¾-1 ½ pt.                        |  |
|  |  |  |   |  |
| Peach twig borer,<br>Oriental fruit moth | ● azinphos methyl (Guthion, Azinphos-M) 50W  | 2 lb.  | ½ lb.                                       | <b>Note:</b> Guthion is <b>NOT</b> REGISTERED for apricot. Bts are stomach poisons, so complete coverage is VERY important for control. Two applications are usually required. Apply when forecasts predict a warm weather pattern for 3 or more days.   |
|  | ● Imidan 50W or 70W  | 6 lb.<br>2.13-4.25 lb.                         | 1 ½ lb.<br>¾-1 lb.                          |  |
|  | ● permethrin (Ambush) 2E or (Pounce) 3.2E or (Ambush, Pounce) 25W                          | 6.4-19.2 fl.oz.<br>4-12 fl.oz.<br>6 ½-19.2 oz. | 1.6-4.8 fl.oz.<br>1-3 fl.oz.<br>1.6-4.8 oz. |  |
|  | ● Asana XL   | 4.8-14 ½ fl.oz.                                | 1.2-3.6 fl.oz.                              |  |
|  | <sup>a</sup> endosulfan (Thiodan, Endosulfan) 50W  | 4 lb.  | 1 lb.                                       |  |
|  | <sup>a</sup> <i>Bacillus thuringensis</i> (Bt) (Dipel, Biobit, Cutlass, Javelin, Agree WG) | 1 lb.  | 4 oz.                                       |  |
|  |  |  |   |  |
| Powdery mildew                           | ● Sulfur products  | 8-16 lb. a.i.                                  | 2-4 lb. a.i.                                | <b>Note:</b> Nova and Sulfur products CANNOT BE USED on apricot; Elite is <b>NOT</b> REGISTERED for apricot or plum nor for this disease on peach. Season limit/acre: Nova 40W - 3.25 lbs.; Elite 45DF - 3 lbs. Use sulfur with caution during hot weather (temperatures above 85°F). Apply all sprays at petal fall and at 10 day intervals until pit hardening (as needed) on highly mildew susceptible varieties. |
|  | ● Benlate 50W  | 2 lb.  | ½ lb.                                       |  |
|  | ● Nova 40W   | 5 oz.  | 1.25 oz.                                    |  |
|  | <sup>a</sup> Elite 45DF  | 4-8 oz.  | 2 oz.                                       |  |
| <b>Shuck Split/Shuck Fall Stage</b>      |  |  |   |  |
| Aphids                                   | ● Lannate 90SP or 2.4LV  | 1-2 lb.<br>3-6 pt.                             | 4-8 oz.<br>¾-1 ½ pt.                        | <b>Note:</b> Lannate is REGISTERED <b>ONLY</b> for peach ( <b>NOT</b> apricot, cherry, nectarine, or plum).  |
|  | ● endosulfan (Thiodan, Endosulfan) 50W or (Endocide) 3E                                    | 4 lb.<br>2.7-3.3 qt.                           | 1 lb.<br>22 fl.oz.                          |  |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Stone Fruit

| PEST OR DISEASE                                 | MATERIALS   | RATE PER ACRE                                  | RATE PER 100 GAL. (DILUTE) <sup>1</sup>     | REMARKS   |
|---|---|--|---|---|
| <b>Shuck Split/Shuck Fall Stage (Continued)</b> |   |  |   |   |
| Peach twig borer,<br>Oriental fruit moth        | ● azinphos methyl (Guthion, Azinphos-M) 50W                       | 1 ½-4 lb.                                      | 6-16 oz.                                    | <b>Note:</b> Guthion and Penncap M are <b>NOT REGISTERED</b> for apricot; permethrin products are <b>NOT REGISTERED</b> for apricot or plum. Note lower rates for Guthion and permethrin on cherry. If parasites are being imported, eliminate the more toxic sprays. See Notes on season limits/acre under Delayed Dormant. Sevin/carbaryl only lasts for 7-10 days and is very hard on mite predators and bees. Use it only with extreme caution. |
|   | ● Imidan 50W or 70W   | 4 lb.<br>3 lb.                                 | 1 lb.<br>¾ lb.                              |   |
|   | ● Diazinon 50W  | 4 lb.  | 1 lb.                                       |   |
|   | ● permethrin (Ambush) 2E or (Pounce) 3.2E or (Ambush, Pounce) 25W | 6.4-19.2 fl.oz.<br>4-12 fl.oz.<br>6 ½-19.2 oz. | 1.6-4.8 fl.oz.<br>1-3 fl.oz.<br>1.6-4.8 oz. |   |
|   | ● Asana XL  | 4.8-14 ½ fl.oz.                                | 1.2-3.6 fl.oz.                              |   |
|   | ● carbaryl (Sevin) 50W or (Sevin XLR+) 4L                         | 8 lb.<br>4 qt.                                 | 2 lb.<br>1 qt.                              |   |
|   | <sup>a</sup> Penncap M  | 2-6 pt.  | ½-1 ½ pt.                                   |   |
| Coryneum blight                                 | ● Captan 50W  | 4-8 lb.  | 1-2 lb.                                     | Continue sprays annually as needed. Captan & Ziram may be applied prior to rainy periods at 7-10 day intervals through 6-8 wks. post-shuck to protect against fruit damage. Bravo cannot be applied after shuck split. Dilute rates for Ziram are based on 300 gal./acre. Captan limit/acre/crop cycle: apricot - 25 lb., cherry - 28 lb., nectarine - 48 lb., peach - 64 lb., plum - 54 lb.  |
|   | ● Fixed coppers   | As Directed                                    |   |   |
|   | ● Bravo 500F or 720F  | 6 pt.<br>3-4 pt.                               | 1 ½-2 pt.<br>12-16 fl.oz.                   |   |
|   | ● Ziram 76DF  | 6-8 lb.  | 2-2 ½ lb.                                   |   |
| Mites   | ● Carzol 92SP   | 1 lb.  | 4 oz.                                       | <b>Note:</b> Vendex is <b>NOT REGISTERED</b> for apricot; Apollo is <b>NOT REGISTERED</b> for plum; Carzol is <b>NOT REGISTERED</b> for apricot or cherry. Vendex may be applied <u>only</u> twice per season. PHI's for Carzol differ on peach (21 days) and nectarine (14 days).  |
|   | ● Vendex 50W  | 1-2 lb.  | 4-8 oz.                                     |   |
|   | <sup>a</sup> Apollo 1SC   | 2-8 fl.oz.                                     | ½-2 fl.oz.                                  |   |
| Lygus bugs                                      | ● Diazinon 50W  | 4 lb.  | 1 lb.                                       | <b>Note:</b> DO <b>NOT</b> use Penncap M on apricots (or on cherry unless rainfall exceeds 25 inches/yr.). Use 300 gal/acre for dilute application of Penncap-M.  |
|   | ● endosulfan (Endosulfan, Thiodan) 50W                            | 4 lb.  | 1 lb.                                       |   |
|   | ● Asana XL  | 4.8-14 ½ fl.oz.                                | 1.2-3.6 fl.oz.                              |   |
|   | <sup>a</sup> Penncap-M  | 2-6 pt.  | 0.67-2 pt.                                  |   |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Stone Fruit

| PEST OR DISEASE                                 | MATERIALS  | RATE PER ACRE                  | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS  |
|---|--|--------------------------------|---|--|
| <b>Shuck Split/Shuck Fall Stage (Continued)</b> |  |                                |   |  |
| Western cherry fruit fly                        | <sup>a</sup> diazinon (AG 500) 4E or 50W               | 2-4 pt.<br>2-4 lb.             | 0.5-1 pt.<br>0.5-1 lb.                  | Monitor preharvest intervals very carefully! Wettable powder formulations may leave visible residues when applied near harvest. <b>WARNING:</b> multiple applications of carbaryl may cause mite problems. Malathion may cause leaf injury.  |
|   | <sup>a</sup> Malathion 8E or 5EC                       | 3 pt.<br>4 pt.                 | 0.75 pt.<br>1 pt.                       |  |
|   | <sup>a</sup> azinphos methyl (Guthion, Azinphos-M) 50W | 1.5 lb.                        | 6 oz.                                   |  |
|   | <sup>a</sup> carbaryl (Sevin XLR Plus)                 | 4 pt.                          | 1 pt.                                   |  |
|   | <sup>a</sup> Asana XL                                  | 4.8-14.5 fl.oz.                | 1.2-3.6 fl.oz.                          |  |
| Powdery mildew                                  | ● Benlate 50W  | 1 ½-2 lb.                      | 6-8 oz.                                 | <b>Note:</b> Elite and Nova are <b>NOT</b> REGISTERED for apricot or plum; Elite IS registered for peach and nectarine, but not for powdery mildew control. Season limit/acre: Nova 40W - 3 ¼ lb.; Elite 45DF - 3 lb. Minimum application rate for Elite is 4 oz./acre/spray. Spray intervals for Benlate and Sulfur should not exceed 10 days between shuck split and pit hardening on cultivars susceptible to powdery mildew. |
|   | ● Sulfur products                                      | 8-16 lb. a.i.                  | 2-4 lb. a.i. (see label)                |  |
|   | ● Nova 40W   | 5 oz.                          | 1 ¼-2 oz.                               |  |
|   | <sup>a</sup> Elite 45DF                                | 4-8 oz.                        | 2 oz.                                   |  |
| <b>Summer Sprays</b>                            |  |                                |   |  |
| Thrips  | ● Lannate 90SP or 2.4LV                                | 1-2 lb.<br>3-6 pt.             | 4-8 oz.<br>0¾-1 ½ pt.                   | <b>Note:</b> Use Lannate only on peach; it is <b>NOT</b> REGISTERED for use on apricot, cherry, nectarine, or plum. Permethrin products are <b>NOT</b> REGISTERED for use on apricot or plum. Note lower rates for permethrin on cherry.   |
|   | ● permethrin (Ambush) 2E or (Pounce) 3.2E              | 6.4-19.2 fl.oz.<br>4-12 fl.oz. | 1.6-4.8 fl.oz.<br>1-3 fl.oz.            |  |
|   | or (Ambush, Pounce) 25W                                | 6 ½-19.2 oz.                   | 1.6-4.8 oz.                             |  |
|   |  |                                |   |  |
| Peach twig borer                                | ● azinphos methyl (Guthion, Azinphos-M) 50W            | 3-4 lb.                        | 12-16 oz.                               | <b>Note:</b> Guthion is <b>NOT</b> REGISTERED for apricot; permethrin products are <b>NOT</b> REGISTERED for apricot or plum. See Notes on season limits/acre under Delayed Dormant. Sevin/carbaryl only lasts for 7-10 days and is very hard on mite predators and bees. Use it only with extreme caution.  |
|   | ● Diazinon 50W   | 4 lb.                          | 1 lb.                                   |  |
|   | ● Asana XL   | 4.8-14 ½ fl.oz.                | 1.2-3.6 fl.oz.                          |  |
|   | ● permethrin (Ambush) 2E or (Pounce) 3.2E              | 6.4-19.2 fl.oz.<br>4-12 fl.oz. | 1.6-4.8 fl.oz.<br>1-3 fl.oz.            |  |
|   | or (Ambush, Pounce) 25W                                | 6 ½-19.2 oz.                   | 1.6-4.8 oz.                             |  |
|   | ● carbaryl (Sevin) 50W or (Sevin XLR+) 4L              | 8 lb.<br>4 qt.                 | 2 lb.<br>1 qt.                          |  |
| Earwigs, Sap beetles                            | <sup>a</sup> carbaryl (Sevin XLR+) 4L                  | 1 gal.                         | 1 qt.                                   | Apply only to trunk and soil to avoid mite problems  |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Stone Fruit

| PEST OR DISEASE                  | MATERIALS  | RATE PER ACRE  | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS  |
|----------------------------------|--|----------------|---|--|
| <b>Summer Sprays (Continued)</b> |  |                |   |  |
| Peach tree (crown) borer         | ● endosulfan (Thiodan, Endosulfan) 50W                 | ---            | 1-1 ½ lb.                               | <b>Trunk/ground spray.</b> Apply sprays (approx. ½ gal per tree) only to tree trunk and soil around base -- do not contaminate fruit. <b>Note:</b> Guthion and Lorsban are <b>NOT REGISTERED FOR</b> apricot; permethrin products are <b>NOT REGISTERED</b> for apricot or plum. Lorsban can be used for this only once per season.  |
|                                  | or (Endocide) 3E                                       | ---            | 1 qt.                                   |  |
|                                  | ● Asana XL   | ---            | 2-5.8 fl.oz.                            |  |
|                                  | ● permethrin (Ambush 2E) or Pounce 3.2E                | ---            | 4.8 fl. oz.                             |  |
|                                  | or (Ambush, Pounce) 25W                                | ---            | 3 fl.oz.                                |  |
|                                  | or (Ambush, Pounce) 25W                                | ---            | 4.8 oz.                                 |  |
| <sup>a</sup> Lorsban 4E          | ---  | 1 ½-3 qt.      |   |  |
|                                  | ● azinphos methyl (Guthion, Azinphos-M) 50W            | 3-4 lb.        | 12-16 oz.                               |  |
| Western cherry fruit fly         | <sup>a</sup> diazinon (AG 500) 4E                      | 2-4 pt.        | 0.5-1 pt.                               | Monitor preharvest intervals very carefully! Wettable powder formulations may leave visible residues when applied near harvest. <b>WARNING:</b> multiple applications of carbaryl may cause mite problems. Malathion may cause leaf injury.  |
|                                  | or 50W   | 2-4 lb.        | 0.5-1 lb.                               |  |
|                                  | <sup>a</sup> Malathion 8E                              | 3 pt.          | 0.75 pt.                                |  |
|                                  | or 5EC   | 4 pt.          | 1 pt.                                   |  |
|                                  | <sup>a</sup> azinphos methyl (Guthion, Azinphos-M) 50W | 1.5 lb.        | 6 oz.                                   |  |
|                                  | <sup>a</sup> carbaryl (Sevin XLR Plus)                 | 4 pt.          | 1 pt.                                   |  |
| <sup>a</sup> Asana XL            | 4.8-14.5 fl.oz.  | 1.2-3.6 fl.oz. |   |  |
| Coryneum blight                  | ● Captan 50W   | 4-8 lb.        | 1-2 lb.                                 | Continue sprays annually as needed. Captan & Ziram may be applied prior to rainy periods at 7-10 day intervals through 6-8 wks post-shuck to protect against fruit damage. Bravo cannot be applied after shuck split. Dilute rates for Ziram are based on 300 gal./acre. Captan limit/acre/crop cycle: apricot - 25 lb., cherry - 28 lb., nectarine - 48 lb., peach - 64 lb., plum - 54 lb.              |
|                                  | ● Fixed coppers  | As Directed    |   |  |
|                                  | ● Bravo 500F   | 6 pt.          | 1 ½-2 pt.                               |  |
|                                  | or 720F  | 3-4 pt.        | 12-16 fl.oz.                            |  |
|                                  | ● Ziram 76DF   | 6-8 lb.        | 2-2 ½ lb.                               |  |
| Powdery mildew                   | ● Benlate 50W  | 1 ½-2 lb.      | 6-8 oz.                                 | <b>Note:</b> Nova is <b>NOT REGISTERED</b> on apricot or plum; Elite is <b>NOT REGISTERED</b> on apricot or plum nor for this disease on peach. Minimum rate for Elite is 4 oz./acre/spray. Season limit/acre: Nova 40W - 3 ¼ lb.; Elite 45DF - 3 lb. Spray intervals for Benlate and Sulfur should not exceed 10 days between shuck split and pit hardening on cultivars susceptible to powdery mildew. |
|                                  | ● sulfur products                                      | 6-16 lb. a.i.  | See label                               |  |
|                                  | ● Nova 40W   | 5 oz.          | 1 ¼-2 oz.                               |  |
|                                  | <sup>a</sup> Elite 45DF                                | 4-8 oz.        | 2 oz.                                   |  |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

## Stone Fruit

| PEST OR DISEASE                              | MATERIALS   | RATE PER ACRE             | RATE PER 100 GAL. (DILUTE) <sup>1</sup> | REMARKS  |
|--|---|---------------------------|---|--|
| <b><u>Preharvest and Harvest Periods</u></b> |   |                           |   |  |
| Western cherry fruit fly                     | <sup>a</sup> azinphos methyl (Guthion, Azinphos-M) 50WP   | 1 ½ lb.                   | 6 oz.                                   | <b>Note:</b> Carbaryl use may cause mite flare-ups.  |
|  | <sup>a</sup> carbaryl (Sevin) 4F or (Sevin) 50WP  | 4 pt.<br>8 lb.            | 1 pt.<br>2 lb.                          |  |
| Coryneum blight                              | ● Captan 50W  | 8 lb.                     | 2 lb.                                   | <b>Note:</b> 4 day REI for captan results in a 4 day Pre-Harvest Interval. Apply weekly beginning 3-4 wks. before harvest if rainy weather is forecasted. Captan limit/acre/crop cycle: apricot - 25 lb., cherry - 28 lb., nectarine - 48 lb., peach - 64 lb., plum - 54 lb.   |
| Fruit decay<br>Brown Rot<br>Rhizopus         | Avoid bruising or other injuries to fruit during picking, packing and other handling operations. Bruises or other injuries provide easy points of entry for Rhizopus. Clean field crates by flushing with high pressure water hose or steam clean before picking fruit. Also see next option. |                           |   |  |
|  | Botran 75W  | 1 ⅓-5 ⅓ lb.               | ⅓-1 ⅓ lb.                               | Apply at 18 and 10 days before harvest.  |
| <b><u>Post-Harvest Period</u></b>            |   |                           |   |  |
| Pear slugs on cherry                         | ● Diazinon 50W  | 4 lb.                     | 1 lb.                                   | This spray may be needed where/when populations of this pest build up.   |
| Western cherry fruit fly                     | <sup>a</sup> azinphos methyl (Guthion, Azinphos-M) 50WP   | 1 ½ lb.                   | 6 oz.                                   | Guthion is <b>NOT</b> REGISTERED for apricot.  |
| Cherry leaf spot                             | <sup>a</sup> Elite 45DF   | 4-8 oz.                   | 2 oz.                                   | For cherry only. A postharvest application may be made to maintain control and reduce overwintering inoculum.  |
|  | <sup>a</sup> Ziram 76W  | 6 lb.                     | 2 lb.                                   |  |
| Coryneum blight                              | ● Kocide 101 or DF or 2000  | 8-12 lb.<br>6-12 (-9) lb. | 2-3 lb.<br>1 ½-3 (-2 ¼) lb.             | <b>Note:</b> Ziram is <b>NOT</b> REGISTERED for plum; for apricots, use lower rates of Captan, Basic Copper, Kocide, and Ziram; lower maximum for Kocide 2000 is for apricot. Apply immediately after leaf fall. Use these sprays in severely infected orchards, especially in wet fall weather. Use as directed on labels. Check orchard for possible need of follow-up sprays the next season. Captan limit/acre/crop cycle: apricot - 25 lb., cherry - 28 lb., nectarine - 48 lb., peach - 64 lb., plum - 54 lb. Dilute rates for Ziram are based on 300 gal./acre. |
|  | ● Captan 50W  | 3-5 lb.                   | 12-15 oz.                               |  |
|  | ● Ziram 76DF  | 6-8 lb.                   | 2-2 ½ lb.                               |  |
|  | ● Bravo 500F or 720F  | 6 pt.<br>3-4 pt.          | 1 ½ pt.<br>12-16 fl.oz.                 |  |
|  | <sup>a</sup> Basic Copper 53WP  | 12-18 lb.                 | 3-4 ½ lb.                               |  |

<sup>1</sup>based on 400 gallons per acre with average-sized trees.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.

# Weed Control

## SOIL ACTIVE (PRE-EMERGENCE) HERBICIDES -- Single Fall Application After Harvest Recommended<sup>1</sup>

| MATERIAL<br>& PRODUCT                                     | RATE <sup>2</sup><br>(per treated<br>acre per year) | FRUIT<br>CROPS  | REMARKS <sup>3</sup>  |
|---|---|---|---|
| <u>Grasses and Broadleaves</u>                            |   |   |   |
| diuron<br>● Karmex or Direx 80DF<br><sup>a</sup> Direx 4L | (1.6-3.2 lb. a.i.)<br>2-4 lb.<br>1.6-3.2 qt.        | 1. Apple<br>2. Peach<br>3. Pear   | Do not use on apples grafted onto full-dwarf rootstocks. Do not use on dwarf trees or on peach trees planted less than 3 years. Also do not use where soil organic matter is below 1% and/or soil texture is sandy. Application every 2 years may be sufficient. Karmex may be tank mixed with Sinbar or Surflan; See label. Split application is recommended for the 4 lb. rate of Karmex with 2 lb. in fall + 2 lb. in March. |
| dichlobenil<br>● Casoron 4G<br>● Norosac 4G               | (4-6 lb. a.i.)<br>100-150 lb.<br>100-150 lb.        | 1. Apple<br>2. Cherry<br>3. Nectarine<br>4. Peach<br>5. Pear<br>6. Plum               | Can be used in orchard 4 wks after planting, after the ground has settled and soil cracks have been filled.   |
| napropamide<br>● Devrinol 50W                             | (4 lb. a.i.)<br>8 lb.                               | 1. Apple<br>2. Apricot<br>3. Cherry<br>4. Nectarine<br>5. Peach<br>6. Pear<br>7. Plum | Do not apply within 35 days of harvest. Apply only to weed-free, non-frozen ground. Devrinol may be tank-mixed with Paraquat; see label.  |
| norflurazon<br>● Solicam 80DF                             | (2 lb. a.i.)<br>2.5 lb.                             | 1. Apple<br>2. Pear   | Do not apply to trees planted less than 18 months.  |
| oryzalin<br>● Surflan AS (4E)                             | (2-6 lb. a.i.)<br>2-6 qt.                           | 1. Apple<br>2. Apricot<br>3. Cherry<br>4. Nectarine<br>5. Peach<br>6. Pear<br>7. Plum | Rain (.5-1") required within 21 days of application for activation. Surflan may be tank-mixed with Karmex, Sinbar, or Princep (not for peach); see label. Surflan can be used in orchard 4 weeks after planting, after the ground has settled and soil cracks have been filled.   |

<sup>1</sup>Apply after Nov. 1<sup>st</sup>, but before the soil freezes. Soil Active herbicides kill primarily new weed plants (whether annual or perennial) as the seeds germinate; thus they are most effective on annual weeds which depend on seed germination for plant growth each year.

<sup>2</sup>Rates given are per acre of tree row actually treated; those within parentheses are of active ingredient while those with no parentheses are amount of product. Actual rates also depend on soil organic matter content, soil texture, and weed species to be controlled. See the label on container.

<sup>3</sup>Remarks given here are intended to highlight important properties of particular herbicides rather than to substitute for the manufacturer's recommendations and warnings. **ALWAYS CONSULT THE LABEL** before use of any pesticide.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado conditions, but found to be effective elsewhere.



# Weed Control

## SOIL ACTIVE (PRE-EMERGENCE) HERBICIDES -- Single Fall Application After Harvest Recommended<sup>1</sup>

| MATERIAL & PRODUCT  | RATE <sup>2</sup><br>(per <u>treated</u><br>acre per year)                    | FRUIT CROPS   | REMARKS <sup>3</sup>  |
|---|---|---|---|
| <u>Grasses and Broadleaves (Cont.)</u>  |   |   |   |
| oxyflourfen<br>● Goal 1.6E<br>or 2XL (2E)   | (.5-2 lb. a.i.)<br>2.5-10 pt.<br>2-8 pt.                                      | 1. Apple<br>2. Apricot<br>3. Cherry<br>4. Nectarine<br>5. Peach<br>6. Pear<br>7. Plum | Dormant application only. Goal can be mixed with some other herbicides as directed on the label.  |
| pendimethalin<br><sup>a</sup> Prowl   | (2-4 lb. a.i.)<br>2-4 qt.   | 1. Apple<br>2. Apricot<br>3. Cherry<br>4. Nectarine<br>5. Peach<br>6. Pear<br>7. Plum | <b>Non-bearing orchards only.</b> Apply only to weed-free soil. Delay application until soil has settled and no cracks are present. Lower rate for 4-month control; higher rate for 6-8 months control. Treatments most effective if rainfall or irrigation received within 7 days after application. Controls most germinating annual grasses and some annual broadleaf weeds. |
| pronamide<br>● Kerb 50W   | (1-4 lb. a.i.)<br>2-8 lb.   | 1. Apple<br>2. Cherry<br>3. Nectarine<br>4. Peach<br>5. Pear<br>6. Plum               | <u>Restricted use pesticide.</u> One application per season. Do not apply to seedling trees less than 1 year old or to transplanted trees until 6 months after planting. Gives some postemergence control of grasses. Do not allow livestock to graze treated areas.  |
| simizine<br>● Princep 4L<br>● Princep 80W<br>● Caliber 90 (90W)<br><sup>a</sup> Simizine 4L<br>or 90WDG | (2-4 lb. a.i.)<br>2-4 qt.<br>2-4 lb.<br>2.2-4.4 lb.<br>2-4 qt.<br>2.2-4.4 lb. | 1. Apple<br>2. Sour Cherry<br>3. Pear   | Do not apply to trees planted less than 12 months. Application every 2 years may be sufficient in Colorado. Princep may be tank-mixed with Surflan; see label.  |
| terbacil<br>● Sinbar 80W  | (1.6 lb. a.i.)<br>2 (-4) lb.  | 1. Apple<br>2. Peach  | Do not apply under trees less than 3 years old. Application every 2 years may be sufficient in Colorado. Sinbar may be tank-mixed with Karmex or Surflan; see label.  |

<sup>1</sup>Apply after Nov. 1<sup>st</sup>, but before the soil freezes. Soil Active herbicides kill primarily new weed plants (whether annual or perennial) as the seeds germinate; thus they are most effective on annual weeds which depend on seed germination for plant growth each year.

<sup>2</sup>Rates given are per acre of ground actually treated; those within parentheses are of active ingredient while those with no parentheses are amount of product. Actual rates also depend on soil organic matter content, soil texture, and weed species to be controlled. See the label on container.

<sup>3</sup>Remarks given here are intended to highlight important properties of particular herbicides rather than to substitute for the manufacturer's recommendations and warnings. **ALWAYS CONSULT THE LABEL** before use of any pesticide.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado Conditions, but effective elsewhere.

# Weed Control

## FOLIAGE ACTIVE (POST-EMERGENCE) HERBICIDES -- Applied to Growing Plants<sup>1</sup>

| MATERIAL & PRODUCT                                 | RATE <sup>2</sup><br>(a.i. per treated acre) | FRUIT CROPS  | REMARKS <sup>3</sup>   |
|--|--|--------------|--|
| <u>Grasses, Annual &amp; Perennial</u>             |  |              |  |
| fluazifop-p-butyl                                  | (0.25-0.38 lb. a.i.)                         | 1. Apple     | <b>Non-bearing trees only.</b> Always add oil or non-ionic surfactant, but do NOT mix with other pesticides. Do not use more than 72 fl.oz. per acre per season.   |
| ● Fusilade Dx                                      | 16-24 fl.oz.                                 | 2. Pear      |  |
| + surfactant <sup>4</sup>                          | + 8 fl.oz./100 gal.                          |              |  |
| <u>or</u>  | <u>or</u>                                    |              |  |
| spray oil  | 1 qt./100 gal.                               |              |  |
| ● Fusilade Dx                                      | 8-12 fl.oz.                                  | 1. Apricot   | NOTE: 14 day preharvest interval. Always add oil or non-ionic surfactant, but do NOT tank mix with other pesticides. Season limit: 72 fl.oz. per acre per season.  |
| + surfactant <sup>4</sup>                          | + 8 fl.oz./100 gal.                          | 2. Cherry    |  |
| <u>or</u>  | <u>or</u>                                    | 3. Nectarine |  |
| spray oil  | 1 qt./100 gal.                               | 4. Peach     |  |
|  |  | 5. Plum      |  |
|  |  | 6. Prune     |  |
| sethoxydim   | (0.3-0.5 lb. a.i.)                           | 1. Apple     | Use beneath <b>non-bearing trees only</b> ; a 1-year interval is required between last application and harvest. Do NOT tank mix with other pesticides.   |
| ● Poast 1.5E                                       | 1.5-2.5 pt.                                  | 2. Apricot   |  |
| + oil  | + 2 pt.                                      | 3. Cherry    |  |
|  |  | 4. Nectarine |  |
|  |  | 5. Peach     |  |
|  |  | 6. Pear      |  |
|  |  | 7. Plum      |  |
| <u>Broadleaves, Annual &amp; Perennial</u>         |  |              |  |
| 2,4-D amine  | (1-1.4 lb. a.i.)                             | 1. Apple     | <b>Note:</b> Clean Crop Amine 4 <b>CANNOT</b> be used beneath Gala apples. Users must have a copy of the Labels in their possession at the time of use. Check label for new Worker Protection and handling requirements. Use only beneath vigorous trees planted at least 12 months. Do not apply during bloom or within 3 days of irrigation; do not apply to bare, dry soil nor to tree foliage, limbs, or trunks. Be <u>very</u> careful to eliminate drift, especially near grapes and/or irrigation ditches; do NOT apply through irrigation equipment! Any sprayed fruit must be destroyed. Bindweed is controlled by 2,4-D best through fall application after the first mild frost. Maximum of 2 applications per year (75 day interval between sprays for Amine 4). |
| <sup>a</sup> Weedar 64 or 64 TF                    | 3 pt.  | 2. Apricot   |  |
| <sup>a</sup> Amine 4E                              | 3 pt.  | 3. Cherry    |  |
|  |  | 4. Nectarine |  |
|  |  | 5. Peach     |  |
|  |  | 6. Pear      |  |
|  |  | 7. Plum      |  |
| (for spot treatments, use solutions of 0.52-0.78%) |  |              |  |

<sup>1</sup>Apply during the growing season to actively growing weeds that are not stressed for water. Foliage-active herbicides, except for paraquat, are absorbed by foliage and translocated to all parts of the plant. Paraquat, however, kills only the foliage on which it is sprayed. See "REMARKS" column for additional information.

<sup>2</sup>Rates given are per acre of surface actually treated; those in parentheses are of active ingredient while those with no parentheses are of product. Actual rates also depend on the weed species to be controlled. See the Label.

<sup>3</sup>Remarks given here are intended to highlight important properties of particular herbicides rather than to substitute for the manufacturer's recommendations and warnings. **ALWAYS CONSULT THE LABEL** before use of any pesticide.

<sup>4</sup>Non-ionic surfactant should contain at least 75% surface active ingredients.

<sup>a</sup> Product not evaluated by CSU personnel under Colorado Conditions, but effective elsewhere.

# Weed Control

## FOLIAGE ACTIVE (POST-EMERGENCE) HERBICIDES -- Applied to Growing Plants<sup>1</sup>

| MATERIAL & PRODUCT   | RATE <sup>2</sup><br>(a.i. per treated acre)                         | FRUIT CROPS   | REMARKS <sup>3</sup>  |
|--|--|---|---|
| <b>Both Grasses &amp; Broadleaves, Annual &amp; Perennial</b>  |  |   |   |
| glyphosate<br>● Roundup Ultra 4L<br>-normal applic.<br>-high vol.<br>hand held equip.<br>-wiper applic.  | (.75-3 lb. a.i.)<br><br>1-4 qt.<br>1-2% sol.<br><br>33% sol.         | 1. Apple<br>2. Apricot<br>3. Cherry<br>4. Nectarine<br>5. Peach<br>6. Pear<br>7. Plum | Kills entire plant (including roots). Use only under trees planted at least 8 months. Do not apply 3 days prior to irrigation nor within 14 days before harvest. A surfactant may be helpful. Addition of 8.5-17 lbs. ammonium sulfate fertilizer per 100 gal. spray also can increase effectivity -- see label. Glyphosate is absorbed rapidly by tree leaves and bark, so all suckers should be removed before application and any contaminated branches should be removed immediately. Be very careful of drift. Best timing: when grasses are less than 6" tall and broadleaves are close to bloom. |
| paraquat<br>Non-ionic Surfactant <sup>4</sup><br>+ one of following:<br>● Gramoxone Extra (2.5 lb.ai/gal)<br>● Gramoxone Super (1.5 lb.ai/gal) | (0.6-0.9 lb. a.i.)<br>0.5-1 pt./50 gal.<br>+<br>2-3 pt.<br>2.5-5 pt. | 1. Apple<br>2. Apricot<br>3. Cherry<br>4. Nectarine<br>5. Peach<br>6. Pear<br>7. Plum | Kills foliage only (used for chemical mowing). <u>Restricted Use Pesticide</u> . Wear full protective clothing and respirator while weighing, mixing, and spraying this herbicide. Do not spray trunks of young trees; do not mow treated areas before rain as paraquat-contaminated dust is a potential hazard to people. Do not graze livestock in treated areas. Destroy any contaminated fruit.   |
| glufosinate<br><sup>a</sup> Rely 1E<br><br>(for spot treatments, use solutions of 1.5-4 fl.oz. per gallon of water)                            | (.75-1.5 lb. a.i.)<br>3-6 qt.  | 1. Apple  | Apply to actively growing weeds. Use only beneath vigorous trees planted at least 12 months. Does not provide residual weed control because it kills only the actively growing plant parts to which it is applied; it may be tank mixed with other soil active herbicides to provide longer control, especially for germinating weed seeds. See label. This material is not a Restricted Use product (in contrast to paraquat) and may provide a safer alternative to paraquat. Maximum of 18 qts./acre/12 months.  |

<sup>1</sup>Apply during the growing season to actively growing weeds that are not stressed for water. Foliage-active herbicides, except for paraquat and glufosinate, are absorbed by foliage and translocated to all parts of the plant. Paraquat and glufosinate, however, kill only the foliage on which they are sprayed. See "REMARKS" column for additional information.

<sup>2</sup>Rates given are per acre of surface actually treated; those in parentheses are of active ingredient while those with no parentheses are of product. Actual rates also depend on the weed species to be controlled. See the Label.

<sup>3</sup>Remarks given here are intended to highlight important properties of particular herbicides rather than to substitute for the manufacturer's recommendations and warnings. **ALWAYS CONSULT THE LABEL** before use of any pesticide.

<sup>4</sup>Nonionic surfactant should contain at least 75% surface active ingredients.

## SAFETY RULES FOR PESTICIDE USE

1. READ ENTIRE LABEL BEFORE USING PRODUCT.
2. Observe all precautions each time a material is used.
3. Store chemical under lock and key out of reach of children and pets and away from food and feed.
4. Keep chemicals in their original containers.
5. Dispose of unused chemicals and empty containers in such a way that they are no longer hazardous.
6. Follow directions pertaining to residual tolerances on edible plants; allow the specified time interval between last application and harvest.
7. Use chemicals only on crops specified at the correct rate and schedule.
8. Do not eat or smoke while applying pesticides.
9. Wear protective clothing and masks when directed on the label.
10. Bathe and change to clean clothing right after spraying or dusting. Wash clothing before reuse.
11. If chemicals are spilled on the skin or clothing, change clothing immediately and wash thoroughly.
12. If illness develops during or after a spraying or dusting operation, call a physician or take patient to hospital immediately. **Take a copy of the label with you.**
13. Avoid chemical injury to plants; use separate equipment for herbicides.
14. Rates of application have been carefully computed; do not use more than recommended.
15. Do not spray or dust on a windy day; avoid drift that would injure plants on adjacent property.

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**L For Emergency Phone Numbers, See Page ii 7**