

Fruit Crops

Pears

Diseases of Pears and Fungicides Labeled for Control

| Disease | Fungicides ^a |
|---|---|
| <p>Fire Blight (<i>Erwinia amylovora</i>)</p> <p>Symptoms: Affects blossoms, leaves, twigs and young fruit. Infected blossoms wilt suddenly and turn dark brown, followed by blighting of leaves and terminals. Infected twigs and leaves turn dark brown to black, and leaves cling to the stem, often remaining attached most of the season.</p> <p>Source of Inoculum: The bacteria overwinter at the base of blighted twigs or in cankers on larger limbs. Bacteria are spread by bees and splashing rain.</p> <p>Control: Spray during bloom with copper fungicides or streptomycin according to manufacturer's directions. Prune out and burn infected twigs. Cut 12-15 inches below affected tissue. Dip pruning tools in 10 percent chlorine bleach solution between cuts. Use resistant varieties such as Orient, Moon Glow and Biscamp.</p> | <p>Agri-mycin, Firewall (streptomycin sulfate)</p> <p>Aliette, Flanker, Legion (aluminum tris)</p> <p>Champ, Champion, Kocide, Stretch (copper hydroxide)</p> <p>Cuprofix (copper sulfate)</p> <p>Mycoshield, FlameOut (oxytetracycline)</p> |
| <p>Fabraea (Early) Leaf Spot (<i>Fabraea</i> sp.)</p> <p>Symptoms: The disease begins on the lower leaves in early spring. Spots on the leaves, mostly circular in outline, are dark brown to nearly black, with purplish margins. Spotted leaves turn yellow and shed.</p> <p>Source of Inoculum: The fungus survives mainly in infected leaves on the ground. It may also form minute cankers on the bark of twigs and shoots.</p> <p>Control: Rake and burn fallen leaves. Begin sprays in April after leaves have unfolded. Orient has moderate resistance, and Maxine is very resistant. Follow Pear Spray Schedule.</p> | <p>Dithane, Manzate, Penncozeb (mancozeb)</p> <p>Topsin, T-Methyl, Thiophanate Methyl (thiophanate-methyl)</p> <p>Ziram (ziram)</p> |
| <p>Late Leaf Spot (<i>Cercospora</i> sp.)</p> <p>Symptoms: This disease is first evident about August. The spots are angular to indefinite in outline and brown to grayish. Infected leaves turn yellow and shed.</p> <p>Source of Inoculum: Spread by wind-borne spores. Fungus may overwinter on diseased leaves or other hosts.</p> <p>Control: Use labeled fungicides.</p> | <p>Topsin (thiophanate-methyl)</p> |
| <p>Quince Rust (<i>Gymnosporangium clavipes</i>)</p> <p>Symptoms: Affects fruit of pear, crabapple, apple, hawthorne and quince. Sometimes affects twigs and buds but seldom leaves. Infected fruit is covered with swellings or pustules that erupt to reveal yellowish to orange powdery spore masses. When each pustule erupts, a white fringe develops around each spore mass.</p> <p>Source of Inoculum: This fungus must have eastern red cedar or</p> | <p>Dithane, Manzate, Penncozeb (mancozeb)</p> <p>Fontelis (penthiopyrad)</p> <p>Pristine (boscalid + pyraclostrobin)</p> <p>Rubigan (fenarimol)</p> <p>Sovran (kesoxim-methyl)</p> <p>Ziram (ziram)</p> |

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| <p>dwarf or prostrate junipers as alternate hosts to complete its life cycle. Galls are formed on the alternate host in which the fungus survives and infects pears and other plants mentioned.</p> <p>Control: Remove alternate host plants in vicinity of desired trees, or remove all galls from cedar trees during the winter or follow a regular spray program beginning at blossom and continuing until fruit is formed. A combination of the above measures may be necessary.</p> | |
| <p>Pear Scab (<i>Venturia pirina</i>)</p> <p>Symptoms: Dark brown to black spots form on infected fruit, which often are misshapen. Brown lesions form on leaves, but these may appear to be velvety and olive green when the fungus is actively sporulating.</p> <p>Source of Inoculum: The fungus overwinters mainly in infected leaves on the ground but it may also survive in infected twigs.</p> <p>Control: Rake and burn fallen leaves. Begin sprays in April after leaves have unfolded. Follow Pear Spray Schedule.</p> | <p>Adament (tebuconazole + trifloxystrobin)</p> <p>Dithane, Manzate, Penncozeb (mancozeb)</p> <p>Flint (trifloxystrobin)</p> <p>Fontelis (penthiopyrad)</p> <p>Merivon (fluxapyroxad + pyraclostrobin)</p> <p>Procure (triflumizole)</p> <p>Rubigan (fenarimol)</p> <p>Scala (pyrimethanil)</p> <p>Sovran (kresoxim-methyl)</p> <p>sulfur</p> <p>Topsin, T-Methyl, Thiophanate Methyl (thiophanate-methyl)</p> <p>Vanguard (cyprodinil)</p> <p>Ziram (ziram)</p> |

^a Trade name (chemical name)

Fungicide Spray Schedule for Pears

| Developmental Stage | Disease(s) |
|--------------------------|--|
| Dormant | Fire blight |
| Tight (or Green) Cluster | Pear scab, Fabraea leaf spot and powdery mildew |
| Pink | Pear scab, Fabraea leaf spot and powdery mildew |
| Bloom | Fire blight, pear scab, Fabraea leaf spot and powdery mildew |
| Petal Fall | Fire blight, pear scab, Fabraea leaf spot and powdery mildew |
| Cover Sprays | Pear scab, Fabraea leaf spot, powdery mildew, sooty blotch and fly speck |

Fruit Crops Pears

Fungicides Labeled for Use on Pears

| Common Name | Trade Name | Formulation(s) | Rate(s) (per Acre) | Comments | FRAC Group | PHI (days) |
|-----------------------------|----------------------------------|--|---|--|------------|------------|
| aluminum tris | Aliette, Flanker, Ledion | WDG | 2.5-5 pounds | See label; do not apply within two to three weeks of senescence; do not mix with copper fungicides. | 33 | 14 |
| boscalid + pyraclostrobin | Pristine | WDG | 14.5-18.5 ounces | Seven- to 10-day interval; no more than two sequential applications; no more than four applications or 74 ounces per acre per season. | 7 + 11 | 0 |
| captan | Captan, Captec | 50 W 80 WDG 4L | 2.5 pounds, 1.6 pounds and 1.25 quarts per 100 gallons water for post-harvest treatment of fruit. | See label; for use only as a post-harvest fruit treatment. | M4 | 0 |
| copper hydroxide | Champ, Champion, Kocide, Stretch | Metallic copper equivalent 2.16% 15% 24.4% 30% 35% 37.5% 40% 50% | 2-4 pints 1.33 pints 0.67 pint 0.5 pound 1.75 pounds 0.33 pound 1 pounds 1 pounds | See label; for control of fire blight only during bloom; five-day interval; do not use in spray solution with pH less than 6.5; may cause russetting of sensitive varieties. | M1 | 1-2 |
| copper hydroxide + mancozeb | ManKocide | Metallic copper equivalent 30% | 1.5 pounds | Five-day interval during bloom; do not use after bloom ; no more than 128 pounds per acre per season; do not graze livestock in treated orchards. | M1 + M3 | NA |
| copper sulfate | Cuprofix | Metallic copper equivalent 20% 40% | 2.5-5 pounds 1.25-2.5 pounds | See label; for control of fire blight only during bloom; five-day interval; do not use in spray solution with pH less than 6.5; may cause russetting of sensitive varieties. | M1 | 0.5 |

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|-------------------------------|-----------------------------------|-----------------------|--|---|------------|------------|
| cyprodinil | Vanguard | 75 WG | 3-5 ounces (tank mix only) | See label; seven- to 10-day interval; no more than 22 ounces per acre per season. | 9 | 72 |
| fenarimol | Rubigan | 1 EC | 8-12 fluid ounces | See label; use only after petal fall ; seven- to 14-day interval; no more than 84 fluid ounces per acre per season. | 3 | 30 |
| fenhexamid | Elevate | 50 WDG | 1-1.5 pounds | Make first application 14 days before harvest; seven-day interval; no more than two consecutive applications; no more than 6 pounds per acre per season. | 17 | 0 |
| fluxapyroxad + pyraclostrobin | Merivon | SC | 4-5.5 fluid ounces | See label ; no more than two consecutive applications before alternating with a fungicide with a different mode of action; no more than 22 fluid ounces per acre per season. | 7 + 11 | 0 |
| kresoxim-methyl | Sovran | 50 WG | 3.2-6.4 ounces | See label; no more than two sequential applications; no more than four applications or 25.6 ounces per acre per season. | 11 | 30 |
| mancozeb | Dithane, Manzate, Penncozeb | 4 F 75 DF 80 WP | 4.8 quarts, 6.4 pounds or 6 pounds 2.4 quarts, 3.2 pounds or 3 pounds | See label ; use higher rates <u>only</u> in a pre-bloom spray schedule; use lower rates <u>only</u> in an extended application schedule; use one schedule or the other, do not combine or integrate them; do not graze livestock in treated orchards. | M3 | 77 |
| oxytetracycline | FlameOut, Mycoshield | 17% a.i. | 1 pound per 100 gallons (200 ppm) | See label; begin spraying at 10 percent bloom; four- to six-day interval. | 41 | 60 |

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|---------------------------------------|--|---|---|---|---------------|---------------|
| penthiopyrad | Fontelis | 1.67 SC | 14-20 fluid ounces (alone) 10-12 fluid ounces (tank mix) | See label; make no more than two sequential applications before switching to a fungicide with a different mode of action; no more than 61 fluid ounces per acre per year. | 7 | 28 |
| phosphite (phosphorous acid salts) | Fosphite, Fungi-phite, Helena Prophyt, Phostrol, Topaz | Phosphorous acid equivalent (pounds per gallon) 3.35 3.9 4.2 4.32 | 1-2 quarts 1-3 quarts 2-4 pints 2.5-5 pints | See label. | 33 | 0 |
| pyrimethanil | Scala | SC | 7-10 fluid ounces (alone) 5 fluid ounces (tank mix) | See label; no more than 40 fluid ounces per acre per season; use lower rate only when tank-mixed with another product labeled for the same use. | 9 | 72 |
| streptomycin sulfate | Agri-mycin 17, Firewall | 17% a.i. | 24-48 ounces (50-100 ppm) | See label; begin spraying at 20-30 percent bloom; three- to four-day interval, | 25 | 30 |
| sulfur | IAP Dusting Sulfur, Liquid Sulfur Six, Microthiol Disperss, Super-Six Liquid Sulfur, Thiolux Jet, 80% Thiosperse, Wettable Sulfur | 53% L 80% 90% 98% | 1.5-3.5 pints 10-20 pounds 10-30 pounds 40-50 pounds | See label; some pears are sensitive to sulfur; do not use when hot or when temperatures are expected to be above 90 degrees F over the next three days; do not use within two weeks of an oil spray. | M2 | 1 |
| tebuconazole + trifloxystrobin | Adament | 50 WG | 4-5 ounces | See label; no more than four applications or 22 ounces per acre per season. | 3 + 11 | 75 |

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|--------------------|--------------------------------------|-----------------|----------------------------------|---|------------|------------|
| thiabendazole | Mertect | 340 F | 16 fluid ounces per 100 gallons | See label; for use only as a post-harvest fruit treatment ; do not treat for more than 3 minutes; do not treat more than once. | 1 | NA |
| thiophanate-methyl | Thiophanate-methyl, Topsin, T-Methyl | 70 WP 85 WDG | 1 pound 0.8 pound | See label; no more than 4 or 3.21 pounds per acre per season, respectively. | 1 | 1 |
| triflumizole | Procure | 50 W 480 SC | 8-16 ounces 8-16 fluid ounces | See label; should be tank-mixed with another labeled fungicide ; no more than 64 ounces or 64 fluid ounces per acre per season; follow rotational crop restrictions. | 3 | 14 |
| trifloxystrobin | Flint | 50 WP | 2-2.5 ounces | See label; no more than two sequential applications; no more than four applications or 11 ounces per acre per season. | 11 | 14 |
| ziram | Ziram | 76 DF | 6-8 pounds | See label; no more than 56 pounds per acre per season. | M3 | 14 |