

Pear

Disease

Symptoms, source of inoculum and management of pear diseases.

Disease	Symptoms	Source of Inoculum	Management
Armillaria root rot (<i>Armillaria</i> spp.)	Trees appear weak with small, yellowish leaves over the entire tree or confined to one or two branches. The entire tree or single branches may die by the end of the summer or the next year. White mycelial growth can be found beneath the bark of roots or base of affected trees at or about the time of death.	These fungi live in soil and survive for many years in old, diseased roots.	Dig up and burn old roots before planting peach trees. Remove dead trees and as many roots as possible. Fumigate before replanting.
Black rot (<i>Botryosphaeria obtusae</i>)	Symptoms are observed on leaves, limbs and fruit. Leaf lesions begin as small purple flecks that enlarge and develop a tan to brown center. Heavily infected leaves become chlorotic (yellow), die and drop off of the tree. Red flecks that develop into purple raised spots are observed on immature fruit. As fruit matures the lesions enlarge with concentric rings and fruit may rot around the core. Slightly sunken red colored cankers can form on the limbs and may cause the limb to crack and die.	The fungus survives between seasons on infected wood and fruit. Spores are released from fungal fruiting structures during rain events.	Remove and burn infected twigs, limbs and mummified fruit. Dip pruning tools in 10% chlorine bleach solution or another registered disinfectant between cuts. Apply fungicides according to the pear spray schedule.
Blossom blast (<i>Pseudomonas syringae</i>)	Buds are the most sensitive to infection and fail to open when infected. Eventually buds dry out and die. Infections that occur after bloom result in slightly depressed shiny black spots on the fruit and leaves.	<i>Pseudomonas</i> is ubiquitous on plants. Cold weather and wet weather favor population and disease development. High populations of pseudomonads induce freeze damage in fruit and foliage tissue at temperatures 3 degrees to 6 degrees F higher than would occur in their absence.	Protect trees against frost. Maintain a firm, wet soil surface with a low cover crop to keep orchards warm. Apply copper-based bactericides during dormancy.
Early leaf spot or Fabraea leaf (<i>Fabraea</i> spp.)	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.	The fungus survives mainly in infected leaves on the ground. May also form minute cankers on the bark of twigs and shoots.	Rake and burn fallen leaves. Begin sprays in April after leaves have unfolded. Orient has moderate resistance, and Maxine is very resistant. Follow a pear spray schedule.

Disease	Symptoms	Source of Inoculum	Management
Fire blight (<i>Erwinia amylovora</i>)	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.	The bacteria overwinter at the base of blighted twigs or in cankers on larger limbs. Bacteria are spread by bees and splashing rain.	Spray during bloom with copper fungicides or streptomycin according to manufacturer's directions. Prune out and burn symptomatic twigs. Cut 12-15 inches below affected tissue. Dip pruning tools in 10% chlorine bleach solution between cuts. Use resistant varieties such as Orient, Moon Glow and Biscamp.
Flyspeck (<i>Schizothyrium pomi</i> , formerly <i>Microthyriella rubi</i>)	Shiny black raised specks on the fruit. These specks are the fruiting structures of the fungus. Spores are produced within the specks during warm and moist weather.	The fruiting structures survive between seasons on infected twigs. Spores are dispersed by wind.	Well-pruned trees will develop less disease during dry to moderately wet weather. Thin fruit to promote air flow and improve fungicide coverage. Follow a pear spray schedule.
Crown gall (<i>Agrobacterium tumefaciens</i>)	Affects roots and crown of host plant, causing galling of tissue and reduction in the movement of water and nutrients through the plant. Galls may be spongy or hard.	This bacterium lives in the soil.	Check planting stock for galls or swelling and rogue-infected plants. Avoid planting new plants in the same site for several years. Treat before planting with Galltrol.
Leaf spots (various fungi)	Leaf spots vary in size depending on the pathogen. Severely infected leaves turn yellow and drop from the tree.	Fungus may overwinter on diseased leaves or twig cankers. Spores are released in the spring and dispersed by rain or irrigation water. Secondary infections can occur during warm and wet periods during the summer.	Rake and bury or burn diseased leaves. Dispersion can be reduced by increasing space between trees. Use labeled fungicides.
Powdery mildew (<i>Podosphaera leucotricha</i>)	Symptoms first appear on the underside of leaves as grayish-white patches. Chlorotic (yellowing) spots appear in the upper surface of the leaves. As the disease progresses, grayish-white patches form on the upper leaf surface. Severely infected leaves curl and drop from the tree. Flower buds may also become infected and infected buds open 5-8 days later than non-infected buds. Symptoms also appear on fruit.	The fungus overwinters in dormant buds infected the previous season. Spores are released in the air during the day and germinate during dry weather.	Dormant season pruning will reduce the number of potentially infected buds. During the season, prune and destroy severely diseased shoots. Fungicides applied during the season will reduce the release of spores and spread within the tree.

Disease	Symptoms	Source of Inoculum	Management
Pear scab (<i>Venturia pirina</i>)	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.	The fungus overwinters mainly in infected leaves on the ground, but it may also survive in infected twigs.	Rake and burn fallen leaves. Begin sprays in April after leaves have unfolded. Follow a pear spray schedule.
Quince rust (<i>Gymnosporangium clavipes</i>)	Dark green spots form on the calyx end of fruit and extend internally to the core. Fruit are distorted and drop prematurely.	Affects fruit of apple, crabapple, pear, hawthorne and quince. This fungus must have eastern red cedar or 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 apples and other host crops.	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 are formed. A combination of the above measures may be necessary.
Sooty blotch (<i>Gloeodes pomigena</i> and other fungi)	Olive green, soot-like smudges on mature fruit. Fungal fruiting bodies are produced in the thallus.	The fungus survives between seasons on infected twigs of apple and woody plants common to hedgerows and woodlots. Spores are spread during the spring and early summer by rain. Disease develops throughout the growing season.	Well-pruned trees will develop less disease during dry to moderately wet weather. Thin fruit to promote air flow and improve fungicide coverage. Follow a pear spray schedule.

Table 1: Seasonal fungicide spray schedule for pears.

Developmental Stage	Diseases
Dormant	Fire blight
Dormant	Blossom blast
Tight (or green) cluster	Pear scab
Tight (or green) cluster	Early leaf spot
Tight (or green) cluster	Powdery mildew
Pink	Pear scab
Pink	Early leaf spot
Pink	Powdery mildew
Bloom	Early leaf spot
Bloom	Fire blight
Bloom	Pear scab
Bloom	Powdery mildew
Petal fall	Fire blight
Petal fall	Pear scab
Petal fall	Leaf spots
Petal fall	Powdery mildew
Cover sprays	Pear scab
Cover sprays	Leaf spots
Cover sprays	Powdery mildew
Cover sprays	Sooty blotch
Cover sprays	Fly speck

Table 2: Pear scab

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Pristine	boscalid + pyraclostrobin	7, 11	14.5-18.5 oz	0	74 oz
Rubigan EC	fenarimol	3	8-12 fl oz	30	84 fl oz
Vintage SC	fenarimol	3	4-12 fl oz	30	48 fl oz
Merivon	fluxapyroxad + pyraclostrobin	7, 11	4-5.5 fl oz	0	22 fl oz
Luna Sensation	fluopyram + trifloxystrobin	7, 11	4-5.8 fl oz	14	21 fl oz
Sovran	kresoxim-methyl	11	3.2-6.4 oz	30	25.6 oz
Dithane F45 Rainshield ⁵	mancozeb	M3	4.8 qt	See label	19.2 qt
Dithane M45 ⁵	mancozeb	M3	6 lb	See label	24 lb
Manzate Flowable ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Manzate Max ⁵	mancozeb	M3	2.4-4.8 qt	See label	16.8-19.2 qt
Manzate Pro-stick ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Penncozeb 75DF ⁵	mancozeb	M3	3.2-6.4 lb	See label	22.4-25.6 lb
Penncozeb 80WP ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Roper Rainshield ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Fontelis	penthiopyrad	7	16-20 fl oz	28	61 fl oz
Scala SC	pyrimethanil	9	7-10 fl oz (alone), 5 fl oz (tank mix)	72	40
Liquid Sulfur Six ⁵	sulfur	M2	0.75-3.5 pt/100 gal	NA	See label
Microfine Sulfur ⁵	sulfur	M2	10-60 lb	NA	See label
Microthiol Disperss ⁵	sulfur	M2	10-20 lb	NA	See label
Yellow Jacket Wettable Sulfur ⁵	sulfur	M2	10-60 lb	NA	See label
Tebuconazole 45DF	tebuconazole	3	4-8 oz	75	3 lb
Adament 50WG	tebuconazole + trifloxystrobin	3, 11	4-5 oz	75	22 oz
T-Methyl 70WSB	thiophanate-methyl	1	1 lb	1	4 lb
Thiophanate-methyl 85WDG	thiophanate-methyl	1	0.8 lb	1	3.2 lb
Topsin M 70WP	thiophanate-methyl	1	1 lb	1	4 lb
Topsin M WSB	thiophanate-methyl	1	1 lb	1	4 lb

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Procure 480SC	triflumizole	3	8-16 fl oz	14	64 fl oz
Flint	trifloxystrobin	11	2-2.5 oz	14	11 oz
Strike Plus 50WDG ⁶	trifloxystrobin+ triadimefon	11, 3	3-9 oz/100 gal	1 year	207 oz
Ziram 76DF	ziram		6 lb	14	42.4 lb

¹ Reference to commercial or trade names is made with the understanding that no discrimination is intended nor endorsement of a particular product by LSU or the LSU AgCenter is implied.

² Mode of action groups are determined by the Fungicide Resistance Action Committee (FRAC).

³ Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴ Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

⁵ See labels for variety restrictions and the potential to damage (i.e., russeting) fruit.

⁶ Non-bearing only, garden center and nursery stock only.

Table 3: Flyspeck

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Pristine	boscalid + pyraclostrobin	7, 11	14.5-18.5 oz	0	74 oz
Inspire Super	difenoconazole+ cyprodinil	3, 9	12 fl oz	14	60 fl oz
Merivon	fluxapyroxad + pyraclostrobin	7, 11	4-5.5 fl oz	0	22 fl oz
Luna Sensation	fluopyram + trifloxystrobin	7, 11	4-5.8 fl oz	14	21 fl oz
Adament 50WG	tebuconazole + trifloxystrobin	3, 11	4-5 oz	75	22 oz
T-Methyl 70WSB	thiophanate-methyl	1	1 lb	1	4 lb
Thiophanate-methyl 85WDG	thiophanate-methyl	1	0.8 lb	1	3.2 lb
Topsin M 70WP	thiophanate-methyl	1	1 lb	1	4 lb
Topsin M WSB	thiophanate-methyl	1	1 lb	1	4 lb
Flint	trifloxystrobin	11	2-2.5 oz	14	11 oz
Ziram 76DF	ziram	M3	6 lb	14	42.4 lb

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Table 4: Powdery mildew

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Pristine	boscalid + pyraclostrobin	7, 11	14.5-18.5 oz	0	74 oz
Inspire Super	difenoconazole+ cyprodinil	3, 9	12 fl oz	14	60 fl oz
Rubigan EC	fenarimol	3	8-12 fl oz	30	84 fl oz
Vintage SC	fenarimol	3	4-12 fl oz	30	48 fl oz
Merivon	fluxapyroxad + pyraclostrobin	7, 11	4-5.5 fl oz	0	22 fl oz
Luna Sensation	fluopyram + trifloxystrobin	7, 11	5-5.8 fl oz	14	21 fl oz
Sovran	kresoxim-methyl	11	3.2-6.4 oz	30	25.6 oz
Fontelis	penthiopyrad	7	16-20 fl oz	28	61 fl oz
Alude	phosphite (phosphorous acid salts)	33	1.25-2.5 qt	See label	See label
Confine Extra	phosphite (phosphorous acid salts)	33	1-3 qt	See label	See label
Fosphite	phosphite (phosphorous acid salts)	33	1-3 qt	See label	See label
Fungi-phite	phosphite (phosphorous acid salts)	33	1-2 qt	See label	See label
Rampart	phosphite (phosphorous acid salts)	33	1-3 qt	See label	See label
Liquid Sulfur Six ⁵	sulfur	M2	0.75-3.5 pt/100 gal	NA	See label
Microfine Sulfur ⁵	sulfur	M2	10-60 lb	NA	See label
Microthiol Disperss ⁵	sulfur	M2	10-20 lb	NA	See label
Yellow Jacket Wettable Sulfur ⁵	sulfur	M2	10-60 lb	NA	See label
Tebuzol 45DF	tebuconazole	3	4-8 oz	75	3 lb
Adament 50WG	tebuconazole + trifloxystrobin	3, 11	4-5 oz	75	22 oz
T-Methyl 70WSB	thiophanate-methyl	1	1 lb	1	4 lb
Thiophanate-methyl 85WDG	thiophanate-methyl	1	0.8 lb	1	3.2 lb
Topsin M 70WP	thiophanate-methyl	1	1 lb	1	4 lb
Topsin M WSB	thiophanate-methyl	1	1 lb	1	4 lb
Flint	trifloxystrobin	11	2-2.5 oz	14	11 oz
Strike Plus 50WDG ⁶	trifloxystrobin+ triadimefon	11, 3	3-9 oz/100 gal	1 year	207 oz

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³Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

⁵See labels for variety restrictions and the potential to damage (i.e., russetting) fruit.

⁶Non-bearing only, garden center and nursery stock only.

Table 5: Quince rust

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Pristine ⁵	boscalid + pyraclostrobin	7, 11	14.5-18.5 oz	0	74 oz
Inspire Super	difenoconazole+ cyprodinil	3, 9	12 fl oz	14	60 fl oz
Merivon ⁵	fluxapyroxad + pyraclostrobin	7, 11	4-5.5 fl oz	0	22 fl oz
Luna Sensation	fluopyram + trifloxystrobin	7, 11	4-5.8 fl oz	14	21 fl oz
Sovran ⁵	kresoxim-methyl	11	3.2-6.4 oz	30	25.6 oz

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³ Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴ Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

⁵ Suppression only.

Table 6: Sooty blotch

Product Name ¹	Chemical Name	Product Mode of Action Group ²	Rate ³	PHI ⁴	Maximum Use
Pristine	boscalid + pyraclostrobin	7, 11	14.5-18.5 oz	0	74 oz
Inspire Super	difenoconazole+ cyprodinil	3, 9	12 fl oz	14	60 fl oz
Merivon	fluxapyroxad + pyraclostrobin	7, 11	4-5.5 fl oz	0	22 fl oz
Luna Sensation	fluopyram + trifloxystrobin	7, 11	4-5.8 fl oz	14	21 fl oz
Adament 50WG	tebuconazole + trifloxystrobin	3, 11	4-5 oz	75	22 oz
T-Methyl 70WSB	thiophanate-methyl	1	1 lb	1	4 lb
Thiophanate-methyl 85WDG	thiophanate-methyl	1	0.8 lb	1	3.2 lb
Topsin M 70WP	thiophanate-methyl	1	1 lb	1	4 lb
Topsin M WSB	thiophanate-methyl	1	1 lb	1	4 lb
Flint	trifloxystrobin	11	2-2.5 oz	14	11 oz
Ziram 76DF	ziram	M3	6 lb	14	42.4 lb

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³ Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴ Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

Table 7: Postharvest rots

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Captan 50WP ⁵	captan	M4	2.5 lb/100 gal	1 app	NA
Captan 80WDG	captan	M4	1.6 lb/100 gal	1 app	NA
Mertect 340F ⁶	thiabendazole	1	16 fl oz/100 gal	1 app	NA

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³ Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴ Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

⁵ Can only be used for mechanical fruit dips.

⁶ Harvested fruit only.

Table 8: Fire blight

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Badge SC ^{6,7}	copper hydroxide	MI	0.9 pt	See Label	56.3 pt
Badge X2 ^{OG, 6,7}	copper hydroxide	MI	0.5 lb	See Label	16 lb
Champ WG ^{6,7}	copper hydroxide	MI	1 lb	See Label	32 lb
Champ Formula 2 ^{6,7}	copper hydroxide	MI	0.66 pt	See Label	44 pt
Kentan DF ^{6,7}	copper hydroxide	MI	1 lb	See Label	16 lb ai
Kocide 3000 ^{6,7}	copper hydroxide	MI	0.5 lb	See Label	53.3 lb
Kocide 2000 ^{6,7}	copper hydroxide	MI	0.75 lb	See Label	45.7 lb
ManKocide ^{5,6,7}	copper hydroxide+ mancozeb	M1, M3	1.5 lb	See Label	53.3 lb
Cuprofix Ultra 40 Dispers ^{6,7}	copper sulfate	MI	0.75 lb	See Label	40 lb
Cuproxtat ^{6,7}	copper sulfate	MI	0.75 pt	See Label	78.8 pt
Mastercop ^{6,7}	copper sulfate	MI	0.5 lb	See Label	12 lb
Top Cop with Sulfur ^{6,7}	copper sulfate	MI	2 qt	See Label	See Label
C-O-C-S WDG ^{6,7}	copper sulfate + copper oxychloride	MI	12-15.6 lb (dormant) 0.5-1 lb (bloom)	See Label	1 app 31 lb
Aliette WDG	fosetyl-al	33	2.5-5 lb/100 gal	1 year	20 lb
Dithane F45 Rainshield ⁷	mancozeb	M3	See label	See label	See label

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Dithane M45 ⁷	mancozeb	M3	See label	See label	See label
Manzate Flowable ⁷	mancozeb	M3	See label	See label	See label
Manzate Max ⁷	mancozeb	M3	See label	See label	See label
Manzate Pro-stick ⁷	mancozeb	M3	See label	See label	See label
Penncozeb 75DF ⁷	mancozeb	M3	See label	See label	See label
Penncozeb 80WP ⁷	mancozeb	M3	See label	See label	See label
Roper Rainshield ⁷	mancozeb	M3	See label	See label	See label
Mycoshield	oxytetracycline	41	1 lb/100 gal	60	10 app
Alude	phosphite (phosphorous acid salts)	33	1.25-2.5 qt	See label	See label
Confine Extra	phosphite (phosphorous acid salts)	33	1-3 qt	See label	See label
Fosphite	phosphite (phosphorous acid salts)	33	1-3 qt	See label	See label
Fungi-phite	phosphite (phosphorous acid salts)	33	1-2 qt	See label	See label
Rampart	phosphite (phosphorous acid salts)	33	1-3 qt	See label	See label
Agri-Mycin 17	streptomycin	25	24-48 oz	See label	30

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² Mode of action groups are determined by the Fungicide Resistance Action Committee (FRAC).

³ Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴ Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

⁵ Do not apply after bloom.

⁶ See labels for correct application timings and rates to manage blossom blight.

⁷ See labels for variety restrictions and the potential to damage (i.e., russetting) fruit.

Table 9: Blossom blast

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Badge SC ^{5,6}	copper hydroxide	MI	0.9 pt	See Label	56.3 pt
Badge X2 ^{OG, 5,6}	copper hydroxide	MI	0.5 lb	See Label	16 lb
Champ WG ^{5,6}	copper hydroxide	MI	1 lb	See Label	32 lb
Champ Formula 2 ^{5,6}	copper hydroxide	MI	0.66 pt	See Label	44 pt
Kentan DF ^{5,6}	copper hydroxide	MI	1 lb	See Label	16 lb ai
Kocide 3000 ^{5,6}	copper hydroxide	MI	0.5 lb	See Label	53.3 lb
Kocide 2000 ^{5,6}	copper hydroxide	MI	0.75 lb	See Label	45.7 lb
ManKocide ^{5,6}	copper hydroxide+ mancozeb	M1, M3	1.5 lb	See Label	53.3 lb
Cuprofix Ultra 40 Disperss ^{5,6}	copper sulfate	M1	7.5-10 lb	See Label	1 app
Cuproxtat ^{5,6}	copper sulfate	M1	15-20 pt	See Label	2 app
Mastercop ^{5,6}	copper sulfate	M1	4-6 lb	See Label	1 app
C-O-C-S WDG	copper sulfate + copper oxychloride ^{5,6}	MI	12-15.6 lb (dormant) 0.5-1 lb (bloom)	See Label	1 app 31 lb

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³ Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴ Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

⁵ See labels for correct application timings and rates to manage blossom blight.

⁶ See labels for variety restrictions and the potential to damage (i.e., russetting) fruit.

Table 10: Early leaf spot

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Dithane F45 Rainshield ⁵	mancozeb	M3	4.8 qt	See label	19.2 qt
Dithane M45 ⁵	mancozeb	M3	6 lb	See label	24 lb
Manzate Flowable ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Manzate Max ⁵	mancozeb	M3	2.4-4.8 qt	See label	16.8-19.2 qt
Manzate Pro-stick ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Penncozeb 75DF ⁵	mancozeb	M3	3.2-6.4 lb	See label	22.4-25.6 lb
Penncozeb 80WP ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Roper Rainshield ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
T-Methyl 70WSB	thiophanate-methyl	1	1 lb	1	4 lb
Thiophanate-methyl 85WDG	thiophanate-methyl	1	0.8 lb	1	3.2 lb
Topsin M 70WP	thiophanate-methyl	1	1 lb	1	4 lb
Topsin M WSB	thiophanate-methyl	1	1 lb	1	4 lb
Flint	trifloxystrobin	11	2-2.5 oz	14	11 oz
Strike Plus 50WDG ⁶	trifloxystrobin+ triadimefon	11, 3	3-9 oz/100 gal	1 year	207 oz
Ziram 76DF	ziram	M3	6 lb	14	42.4 lb

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⁵ See labels for variety restrictions and the potential to damage (i.e., russetting) fruit.

⁶ Non-bearing only, garden center and nursery stock only

Table 11: Rusts

Product Name ¹	Chemical Name	Product Mode of Action Group (FRAC) ²	Rate ³	PHI ⁴	Maximum Use
Rubigan EC	fenarimol	3	8-12 fl oz	30	84 fl oz
Dithane F45 Rainshield ⁵	mancozeb	M3	4.8 qt	See label	19.2 qt
Dithane M45 ⁵	mancozeb	M3	6 lb	See label	24 lb
Manzate Flowable ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Manzate Max ⁵	mancozeb	M3	2.4-4.8 qt	See label	16.8-19.2 qt
Manzate Pro-stick ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Penncozeb 75DF ⁵	mancozeb	M3	3.2-6.4 lb	See label	22.4-25.6 lb
Penncozeb 80WP ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Roper Rainshield ⁵	mancozeb	M3	3-6 lb	See label	21-24 lb
Fontelis	penthiopyrad	7	16-20 fl oz	28	61 fl oz

¹ Reference to commercial or trade names is made with the understanding that no discrimination is intended nor endorsement of a particular product by LSU or the LSU AgCenter is implied.

² Mode of action groups are determined by the Fungicide Resistance Action Committee (FRAC).

³ Rates are the amount of formulation per acre unless otherwise indicated. Usually, 100 gallons of water are required to give good coverage with boom sprayers.

⁴ Postharvest interval (PHI) is the minimum number of days allowed between the last application and harvest.

⁵ See labels for variety restrictions and the potential to damage (i.e., russetting) fruit.

The pear section was revised October 2023 by R. Singh.