



Figure 12.1.1

GROWTH STAGES IN PEAR

1. Dormant
2. Swollen Bud
3. Bud Burst
4. Green cluster
5. White bud
6. Bloom
7. Petal fall
8. Fruit set



12 General Pest Management Considerations – Pears

12.1 Diseases

Fabraea Leaf Spot

- **Biology & Cultural**

[1.1] Bosc and Seckel are much more susceptible than Bartlett.

- **Pesticide Application Notes**

[1.2] It is important to prevent the establishment of early primary infections. Sprays should start at green cluster if the year is wet and disease was prevalent last year; otherwise, wait until white bud. Continue sprays at 10- to 14-day intervals through 1st or 2nd cover. In orchards with high inoculum, apply a mancozeb spray at 7-day intervals after petal fall until reaching either the 77-day PHI or the limit on the number of sprays per season. A 3-wk summer spray schedule will normally maintain control if early infections have been prevented. Summer applications of Sovran, Flint or Pristine to control scab or sooty blotch should also control Fabraea leaf spot. For resistance management, do not apply more than four applications per year of Sovran (Group 11), Flint (Group 11), Pristine (Group 7+11) or those with similar modes of action. Do not make more than two sequential applications before alternating to a fungicide with another mode of action. Pear psylla may facilitate the spread of leaf spot during summer, so controlling psylla is important in high-pressure orchards. Using summer oils to suppress pear psylla may also suppress spread of Fabraea leaf spot during late summer.

Fire Blight

- **Biology & Cultural**

[2.1] Fire blight is an even more serious disease on pears than it is on apples. In general, the control strategies recommended for apples apply equally to pears. Bartlett, Bosc, Clapps Favorite, and Gorham are all extremely susceptible varieties. D’Anjou is slightly less susceptible, but comparable to the most highly susceptible apple variety; Seckel is considered moderately susceptible. Refer to the discussion of this disease in the “General Pest Management Considerations for Apples” section.

[2.2] The best program for reducing summer spread of fire blight is good psylla control.

Refer to the reference materials list at the end of this publication for a Fact Sheet containing more details on the biology and management of this pest. Also see Pear Psylla in this section.

- **Pesticide Application Notes**

[2.3] While specifically labeled for control of pseudomonas blight, a copper spray also will assist with control of fire blight. However, it will not eliminate the need for streptomycin at bloom. It is effective in reducing the population of overwintering fire blight bacteria, and is a useful component in an overall fire blight control program.

Thorough coverage of the entire tree is necessary for maximum effectiveness, so high-gallonage sprays are preferred. Leaf burning may occur if applied beyond bud burst, especially under slow drying conditions. The oil should be added at a rate of 1 qt per 100 gal of actual spray solution in the tank (i.e., do not concentrate the oil). If using Bordeaux mix, prepare as described in the “Fungicides” section of “Characteristics of Crop Protectants.” Add the oil after adding lime, but before making up to volume. The 1 qt of oil is added to increase the efficiency of the copper compounds and is not sufficient for good psylla control. A separate oil application can be made for psylla, or 3 gal of oil can be used with the copper sprays. Several other commercial copper formulations in addition to those listed are labeled for this use on pears. Although they have not been tested, research on other crops suggests that most copper formulations should give comparable rates of control at comparable rates of metallic copper.

[2.4] Streptomycin is not recommended for routine summer use, but is strongly recommended for use within 24 hr after the start of a hail storm.

Pear Scab

- **Biology & Cultural**

[3.1] Seckels are very susceptible to scab; Bosc and D’Anjou, somewhat less so; Bartlett is relatively resistant.

- **Pesticide Application Notes**

[3.2] If scab developed the previous year, sprays should begin at green cluster and continue at 7- to 10-day intervals through 2nd cover. In blocks with little history of scab, applications from white bud through 1st cover should provide sufficient protection. Additional cover sprays will be necessary if scab becomes established and the season remains wet. Use of Topsin M and Thiophanate-methyl should be limited during the early season if substantial use is anticipated later in the season for control of sooty blotch and Fabraea leaf spot. Note: Topsin M and Thiophanate-methyl have a 3-day (72 hr) REI.

[3.3] Mancozeb fungicides are more effective than ferbam or ziram. Mancozeb is labeled for use on pears in one of two different ways: (i) at a rate of 1.5–2 lb/100 gal (maximum 6 lb/A, no more than 24 lb/A per year), not to be applied after bloom; OR (ii) at a reduced rate of 3 lb/A (maximum 21 lb/A per year), which may be applied to within 77 days of harvest.

The latter program is particularly valuable where Fabraea leaf spot and sooty blotch must be controlled in the early summer. It is illegal to combine or integrate the two treatment regimes or to use any mancozeb sprays after bloom if any of the earlier sprays were applied at more than 3 lb/A of formulated product.

[3.4] Sovran and Flint are excellent protectants, and will be most reliable when used in this manner. They

have 48–72 hr post infection activity against pear scab. They significantly reduce spore production from the lesions that develop when the fungicides are applied several days after the start of an infection period. Sovran, Flint and Pristine are not registered for control of *Fabraea* leaf spot but they should control leaf spot when applied during the summer. They provide good control of black rot on apples, but they are not registered for control of this disease on pears and experience with control of black rot on pears is lacking. The strobilurins are prone to resistance development, and it appears that resistance to one member of this class of materials confers resistance to other products in the class (cross-resistance). The primary strategies for reducing the resistance risk are to: (i) rotate these materials with unrelated fungicides; and (ii) limit the number of seasonal applications of a strobilurin (the labels say limit to four per year).

CAUTION: Sovran has caused moderate to severe phytotoxicity (leaf burning) on several sweet cherry varieties when applied directly onto them at high labeled rates. The *most sensitive varieties are: Somerset, Sweetheart, Valera, Van, and Vandalay*; these varieties might also be injured by spray drift containing Sovran. Minor to moderate injury occurred on Cavalier, Coral Champagne, Emperor Francis, Royalton, Schmidt, Summit, and Viva; there is less danger of injury due to spray drift on these varieties. Many other sweet and sour cherry varieties (including Bing, Brooks, Cashmere, Gold, Hardy Giant, Hartland, Hedelfingen, Hudson, Kristin, Lapins, Lambert, Montmorency, Napoleon, Nelson Black Sweet, Rainier, Royal Ann, Sam, Stark Crimson, Stella, Sue, Tehranivee, Tulare, Ulster, Vega, Vic, Viscount, and Windsor) showed no injury when applied directly with high labeled rates. The Sovran manufacturer recommends: (i) Do not apply Sovran near or allow drift onto cherries in the highly sensitive group (Somerset, etc.); and (ii) thoroughly rinse spray equipment (tanks, hoses, nozzles) after spraying Sovran and before using this equipment on sensitive cherry varieties.

[3.5] Note that Rubigan is not labeled until petal fall (potential fruit shape problems if used earlier). Rubigan has 72–96 hr postinfection activity but limited protectant activity. It should be combined with mancozeb to improve fruit scab control and protect against other diseases such as sooty blotch and *Fabraea* leaf spot. Note the mancozeb restrictions listed in [3.3].

[3.6] The risk of primary scab is greatly reduced after 1st or 2nd cover. Where scab has been well controlled and there is no history of leaf spot problems, it is possible to extend fungicide spray intervals to 14–21 days after the 3rd cover has been applied. If these diseases have not been controlled, fungicides should be applied at 10- to 14-day intervals throughout the summer, except during drought periods. Observe mancozeb restrictions detailed in [3.3].

Sooty Blotch

• Biology & Cultural

[4.1] Sooty blotch develops gradually during periods of rain, dew, and very high humidity. The disease is

favored by frequent showers, poor air circulation, and proximity to sources of inoculum such as woods and brushy hedgerows. Fungicide control programs should begin around 1st cover, depending upon weather and inoculum pressure. Pruning to improve air circulation through the canopy will reduce the total fungicide need in most years. See [3.3] above, and remark [10.1] in the General Pest Management Considerations for Apples section for additional information about sooty blotch.

12.2 Insects and Mites

Aphids, Including Spirea Aphid

• Pesticide Application Notes

[5.1] Do not exceed 2 applications of *Thionex per season.

[5.2] *Calypso applied at petal fall will also control Comstock mealybug.

Codling Moth

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[6.1] Summer sprays should be timed to start approximately at the 10% hatch point, 175–200 DD (base 45°F) after the first adult catch of the second brood, with a second application in 10–14 days. Use of a non-ionic surfactant is recommended with Assail. Pyrethroid insecticides applied during summer against pear psylla will control codling moth. If Guthion is applied, the user shall not authorize any person who is not covered by the Worker Protection Standard (WPS), such as members of the general public involved in "pick-your-own," to enter a treated area after application of this product for the entire growing season. Suggested action threshold: when commercial trap catch exceeds that in abandoned orchard and night temperature is at least 55°F.

• Biological Control

Carpovirusine and Cyd-X (granulosis virus) registered only in Vermont at this time. Isomate C (pheromone mating disruption) only registered in Vermont and Maine.

Comstock Mealybug

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[7.1] Sprays recommended at petal fall and 7d later, against newly emerged crawlers. Research suggests that treatments against 2nd generation crawlers are more

effective, but petal fall sprays may be of use in keeping populations low. Actara and *Calypso will also control plum curculio and pear psylla when applied at petal fall. Do not make more than one application of Actara per season. A maximum of two applications of diazinon are allowed per year: 1) a maximum of one as a dormant application and 2) a maximum of one as an in-season foliar application regardless of target pest.

[7.2] Two sprays recommended for the 2nd generation, 7 days apart, against newly hatched crawlers. Begin approximately Aug. 1. Do not make more than one application of Actara per season. Suggested action threshold: 5% calyx infestation of previous year's crop.

European Red Mite, Twospotted Spider Mite

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[8.1] Applications advised as needed in summer. Acramite and Apollo are not effective against rust mite. Kanemite and Portal limited to a maximum of 2 applications per season; not registered for pear rust mite. Use 10.7 oz/A of Nexter if treatment is only for twospotted spider mite; use lower rate for European red mite. Nexter, Savey, Onager, Envidor and Acramite limited to 1 application per season. Pear psylla may also be controlled if Portal is used at the 2 pt/A rate or if Nexter is used at the 6.6 oz/A rate. Suggested action threshold: 6 motile forms/leaf.

Green Fruitworms

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[9.1] Growers can usually wait until petal fall to assess the need for treatment. Only 2 applications of *Lannate permitted per season. Lannate cannot be used after a "pick-your-own" site is opened for public entry. It is recommended that pyrethroids not be used more than 1–2 times per season in any orchard. Suggested action threshold: 3 larvae/tree on large trees (27–40 trees/A); 1 larva/tree at density of 140 trees/A.

Obliquebanded Leafroller

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest

• Pesticide Application Notes

[10.1] Spray recommended when last petals are falling. Only 2 applications of *Lannate permitted per season. Lannate cannot be used after a "pick-your-own" site is opened for public entry. Will also help control Comstock mealybug. A pyrethroid applied now against pear psylla will also control obliquebanded leafroller. Suggested action threshold: 5–10% infested clusters.

[10.2] For 1st summer brood in July, begin applications approximately 360 DD [base 43° F] after 1st adult trap catch. Only 2 applications of *Lannate permitted/season. Lannate cannot be used after a "pick-your-own" site is opened for public entry.

Pear Midge

• Pesticide Application Notes

[11.1] Two spray applications between the swollen bud and white bud stages. If Guthion is applied, the user shall not authorize any person who is not covered by the Worker Protection Standard (WPS), such as members of the general public involved in "pick-your-own," to enter a treated area after application of this product for the entire growing season.

Pear Psylla

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[12.1] To inhibit egg-laying by psylla, apply oil as soon as first eggs are laid in the spring; timing is especially critical (not effective if >20% of spring oviposition has occurred). Make 2nd application in 7 days if adults are still present. If 2 sprays are anticipated, drop rate to 2 gal for both. The 3 gal rate can also help reduce overwintering populations of European red mite, pearleaf blister mite, and Comstock mealybug. Suggested action threshold for pear psylla: 1 egg in a 3-minute inspection of buds.

[12.2] Apply insecticide from swollen bud through white bud. Pear rust mite may build up with repeated pyrethroid use. Seasonal maximum for *Pounce is 0.8 lb a.i./A; for *Asana, up to 0.2 lb a.i./A during the dormant to white bud stage and up to 0.225 lb a.i./A between bloom and harvest (but no more than 0.375 lb total a.i./A per season). Esteem 35WP may be applied once prebloom at 5 oz/A, or once prebloom and once at petal fall at 4–5 oz/A. Warrior provides suppression only. Improved activity of Delegate may be obtained by addition of an adjuvant such as horticultural mineral oil. Suggested action threshold before white bud: 6–10% of spurs with eggs.

[12.3] M-Pede can provide suppression when used in a seasonal program. Uniform drying conditions are required to prevent droplet residue on fruit; short residual period.

[12.4] One spray of oil at 2 gal rate, or 2 sprays at 1 gal rate, recommended through tight cluster.

[12.5] Nexter limited to a maximum of 1 application per season. Esteem 35WP may be applied once prebloom at 5 oz/A, or once prebloom and once at petal fall at 4-5 oz/A. Suggested action threshold after fruit set: Avg of 1–2 nymphs per terminal leaf. *Agri-Mek can be used anytime from petal fall to about 4 weeks afterward, but is most effective when applied before foliage begins to harden off, generally within the first 2 weeks after petal fall. Should be applied in combination with a horticultural spray oil (not a dormant oil) or other penetrating surfactant. Improved activity of Delegate may be obtained by addition of an adjuvant such as horticultural mineral oil. Actara and *Calypso will also control plum curculio and Comstock mealybug when applied at petal fall. Do not make more than one application of Actara per season.

[12.6] Frequent applications (7–10-day intervals) of Surround and maximal coverage (minimum of 100 gal/A) are advised while there is active foliar growth.

• Pesticide Resistance

[12.7] Variable levels of pear psylla tolerance or resistance to pyrethroids have been seen in New York (and are likely in New England), so growers should alternate use of pyrethroids with other materials to delay the development of resistance in their orchards. The preferred strategy would be to withhold their use until (and unless) needed in the summer.

Pear Rust Mite

• Pesticide Application Notes

[13.1] In blocks with a history of rust mite infestations, a preventive petal fall spray might be advisable. Nexter limited to a maximum of 1 application per season. Also, see [8.1].

Pearleaf Blister Mite

• Pesticide Application Notes

[14.1] A spray of oil plus diazinon or oil plus *Thionex, in the spring, just before the green tissue begins to show. A maximum of two applications of diazinon are allowed per year: a maximum of one as a dormant application and 2) a maximum of one as an in-season foliar application regardless of target pest. See [12.1].

[14.2] A fall application post-harvest, when there is no danger of frost for at least 24-48 hr after the spray.

Plum Curculio

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[15.1] Sprays recommended at petal fall and 10 days later. 1st brood codling moth is also controlled by these materials; (see [6.1] for 2nd brood control). Imidan also controls fruit tree leafroller. Actara will also control pear psylla and Comstock mealybug when applied at petal fall. Do not make more than one application of Actara per season.

Redbanded Leafroller

• Biology & Cultural

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[16.1] Two sprays, from mid-July to early August, for 2nd brood control in problem blocks; note PHI restrictions. If Guthion is applied, the user shall not authorize any person who is not covered by the Worker Protection Standard (WPS), such as members of the general public involved in "pick-your-own," to enter a treated area after application of this product for the entire growing season.

Tarnished Plant Bug, Pear Plant Bug

Refer to the reference materials list at the end of this publication for a Fact Sheet containing details on the biology and management of this pest.

• Pesticide Application Notes

[17.1] Recommended spray timing is from green cluster to white bud. . If Guthion is applied, the user shall not authorize any person who is not covered by the Worker Protection Standard (WPS), such as members of the general public involved in "pick-your-own," to enter a treated area after application of this product for the entire growing season.

Suggested action threshold: plant bugs—3 bleeding sites/tree, or a cumulative catch of 7 adults by white bud stage (white sticky-board trap). See [12.7].

12.3 Pear Spray Table

Table 12.3.1. Pesticide Spray Table – Pears

Refer to back of book for key to abbreviations and footnotes.

Pest	Product	Rate	REI (hrs)	PHI (days)	Comments (see text)
Dormant					
Fire blight and Pseudomonas spur blight	§Bordeaux mixture, 8-8-100 (copper sulfate)	8 lb/100 gal	24	BL	[2.3]
	(spray lime)	8 lb/100 gal			
	<i>plus</i> §oil	1 qt/100 gal			
	<i>OR</i> §C-O-C-S	2-4 lb/100 gal	24	BL	
	<i>OR</i> §Cuprofix Ultra 40 Disperss	7.5 – 10 lb./A	12	GT	
	<i>OR</i> §Kocide 2000 or other coppers	2-4 lb/100 gal see comments	24	HIG	
Pear psylla, European red mite	§oil	3 gal/100 gal	12	0	[12.1]
Pearleaf blister mite	oil	1-1.5 gal/100 gal			[14.1]
	<i>plus</i> *Diazinon 50WP	1 lb/100 gal	96	21	
	<i>OR</i> oil	1-1.5 gal/100 gal			
	<i>plus</i> *Thionex 50WP	0.5-1 lb/100 gal	96	7	
Swollen Bud					
Pear midge	*Guthion 50WS	0.5-0.75 lb/100gal	14 days (E)	14	[11.1]
Pear psylla	Actara 25WDG	5.5 oz/A	12	35	[12.2]
	<i>OR</i> *Asana XL 0.66EC	7.3-12.8 fl oz/100 gal	12	28	
	<i>OR</i> Assail 30SG	4.0-8.0 oz/A	12	7	
	<i>OR</i> *Calypso 4F	1-2 fl oz/100 gal	12	30	
	<i>OR</i> *Danitol 2.4EC	16-21.3 fl oz/A	24	14	
	<i>OR</i> Delegate 25WG	6.0-7.0 oz./A	4	7	[12.2]
	<i>OR</i> Esteem 35WP	4-5 oz/A	12	45	
	<i>OR</i> §M-Pede 49L	2 gal/100 gal	12	0	[12.3]
	<i>OR</i> §oil	1-2 gal/100 gal	12	0	[12.4]
	<i>OR</i> *Pounce 3.2EC or *Pounce 25WP	8-16 fl oz/A 12.8-25.6 oz/A	12	PB	
	<i>OR</i> *Proaxis 0.5CS	2.6-5.1 fl oz/A	24	21	
	<i>OR</i> §Surround 95WP	50 lb/A	4	0	[12.6]
	<i>OR</i> *Warrior 1CS or Warrior II 2.08 CS	2.6-5.1 fl oz/A 1.28-2.56 fl. oz/A	24 24	21 21	[12.2]
Green Cluster					
Fabraea leaf spot	Same materials as recommended for pear scab				[1.2]
Pear scab	Topsin M 70WSB	4 oz./100 gal	72	1	[3.2]
	or Thiophanate-methyl 85WDG	3.2 oz./100 gal	72	1	
	or Rubigan 4EC	4 fl oz./100 gal			
	or Procure 50WP	4 oz./100gal			
	or Inspire Super MP				

Table 12.3.1. Pesticide Spray Table – Pears

Refer to back of book for key to abbreviations and footnotes.

Pest	Product	Rate	REI (hrs)	PHI (days)	Comments (see text)
Pear scab (continued)	<i>plus</i> Dithane/*Manzate/ Penncozeb 75DF	1 lb/100 gal	24	BL, 77 (A)	[3.3]
	<i>OR</i> Dithane/*Manzate/ Penncozeb 75DF	1-2 lb/100 gal	24	BL, 77 (A)	[3.3]
	<i>OR</i> Ziram 76DF	1.5-2 lb/100 gal	48	14	
Pear Midge	*Guthion 50WS	0.5-0.75 lb/100 gal	14 days(E)	14-21(A)	[11.1]
Tarnished plant bug, Pear plant bug	*Asana XL 0.66EC	2-5.8 oz/100 gal	12	28	[17.1]
	<i>OR</i> *Baythroid XL 1E	2.0-2.4 fl oz/A	12	7	
	<i>OR</i> Beleaf 50SG	2.0-2.8 oz/A	12	21	
	<i>OR</i> *Brigade 10WS	6.4-32 oz/A	12	14	
	<i>OR</i> *Danitol 2.4EC	16-21.3 fl oz/A	24	14	
	<i>OR</i> *Guthion 50WS	0.5-0.75 lb/100 gal	14 days(E)	14-21(A)	
	<i>OR</i> Leverage2.7SE	3.6-4.4 fl oz/A	12	7	
	<i>OR</i> *Pounce 3.2E	8-16 fl oz/A	12	PB	
	<i>OR</i> *Proaxis 0.5CS	2.6-5.1 fl oz/A	24	21	
	<i>OR</i> *Warrior 1CS or Warrior II 2.08 CS	2.6-5.1 fl oz/A 1.28-2.56 fl oz/A	24 24	21 21	
White Bud					
Fabraea leaf spot	See Green Cluster sprays				
Pear scab	Choose from materials listed under Green Cluster				
	<i>OR</i> Flint 50WG	0.67-0.8 oz/100 gal	12	14	[3.4]
	<i>OR</i> Sovran 50WG	1.0-1.6 oz/100 gal	12	30	
Pear psylla	See Swollen Bud sprays				[12.2, 12.4]
Bloom					
Fire blight	§Agri-mycin 17WP or Streptrol 17WP or Firewall 17WP	0.5 lb/100 gal	12	30	[2.1]
	<i>OR</i> §Agri-mycin 17WP or Streptrol 17WP or Firewall 17WP	0.25 lb/100 gal	12	30	
	<i>plus</i> Glycerine (CP or USP grade) or Regulaid	2 qt/100 gal 0.25 pt/100 gal			
Pear scab, Fabraea leaf spot	Choose from materials listed previously				
Petal Fall					
Pear scab, Fabraea leaf spot	Choose from materials listed previously				
	<i>OR</i> Rubigan 1EC	3 fl oz/100 gal	12	30	[3.5]
	<i>plus</i> Dithane/*Manzate/Penncozeb 75DF	1 lb/100 gal	24	BL/77(A)	[3.3]
Aphids, including spirea aphid	Assail 30SG	2.5-4.0 oz/A	12	7	
	<i>OR</i> §Aza-Direct 1.2L	16-32 fl oz/A	4	0	

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Refer to back of book for key to abbreviations and footnotes.

Pest	Product	Rate	REI (hrs)	PHI (days)	Comments (see text)
Aphids, including spirea aphid (continued)	OR Beleaf 50SG	2.0-2.8 oz/A	12	21	
	OR *Calypso 4F	1-2 fl oz/100 gal	12	30	[5.2]
	OR *Dimethoate 4EC	0.5 pt/100 gal	48	28	
	OR *Leverage 2.7SE	3.6-4.4 fl oz/A	12	7	
	OR §M-pede 49L	1-2 gal/100gal	12	0	
	OR *Provado 1.6F	5 fl oz/100 gal	12	7	
	OR *Thionex 50WP	1 lb/100 gal	96	7	[5.1]
Comstock mealybug	Actara 25WDG	4.5-5.5 oz/A	12	35	[7.1]
	OR Assail 30SG	4.0-4.8 oz/A	12	7	
	OR *Calypso 4F	1-2 fl oz/100 gal	12	30	
	OR *Diazinon 50WP	1 lb/100 gal	96	21	
	OR *Provado 1.6F	5 fl oz/100 gal	12	7	
Green fruitworms	*Asana XL 0.66EC	2-5.8 fl oz/100 gal	12	28	[9.1]
	OR *Assail 30SG	4.0-8.0 oz/A	12	7	
	OR Baythroid XL 1E	1.4-2.0 fl oz/A	12	7	
	OR *Lannate 2.4L	0.75 pt/100 gal	48-96(E)	7	
	OR *Leverage 2.7SE	3.0-3.6 fl oz/A	12	7	
	OR *Proaxis 0.5CS	2.6-5.1 fl oz/A	24	21	
	OR *Proclaim 5SG	0.8-1.2 oz/100 gal	12	14	
	OR *Thionex 50WP or Thionex 3EC	1 lb/100 21.3 oz/100 gal	96 48	7 7	
	OR *Warrior 1CS or Warrior II 2.08 CS	2.6-5.1 fl oz/A 1.28-2.56 fl oz/A	24 24	21 21	
	Pear psylla	Actara 25WDG	5.5 oz/A	12	35
OR *Agri-Mek 0.15EC		2.5-5.0 fl oz/100 gal	12	28	[12.5]
OR *Asana XL 0.66EC		2.0-5.8 fl oz/100 gal	12	28	
OR Assail 30SG		4.0-8.0 oz/A	12	7	
OR *Calypso 4F		1-2 fl oz/100 gal	12	30	
OR *Danitol 2.4EC		16- 21.3 fl oz/A	24	14	
OR Delegate 25WG		6.0-7.0 oz./A	4	7	[12.5]
OR Esteem 35WP		4-5 oz/A	12	45	
OR §M-Pede 49L		1-2 gal/100 gal	12	0	
OR *Proaxis 0.5CS		2.6-5.1 fl oz/A	24	21	
OR *Provado 1.6F		20 fl oz/A	12	7	
OR Nexter 75WS		6.6-10.7 oz/A	12	7	
OR §Surround 95WP		50 lb/A	4	0	
OR *Warrior 1CS or Warrior II 2.08 CS		2.6-5.1 fl oz/A 1.28-2.56 fl oz/A	24 24	21 21	[12.2]
Pear rust mite		*Agri-Mek 0.15EC	2.5-5.0 fl oz/100 gal	12	28
	OR Nexter 75WS	5.2-10.7 oz/A	12	7	
	OR *Vendex 50WP	6-8 oz/100 gal	48	14	

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Refer to back of book for key to abbreviations and footnotes.

Pest	Product	Rate	REI (hrs)	PHI (days)	Comments (see text)
Plum curculio	Actara 25WDG	4.5-5.5 oz/A	12	35	
	<i>OR</i> *Asana XL 0.66EC	2.0-5.8 fl oz/100 gal	12	28	
	<i>OR</i> *Baythroid XL 1E	2.4-2.8 fl oz/A	12	7	
	<i>OR</i> *Brigade 10WSB	6.4-32 oz/A	12	14	
	or Brigade 2EC	2.6-12.8 fl oz/A	12	14	
	<i>OR</i> *Guthion 50WS	0.5-0.75 lb/100 gal	14 days (E) 14-21 (A)		
	<i>OR</i> *Imidan 70WP	0.75-1 lb/100 gal	72	7	
	<i>OR</i> *Leverage 2.7SE	4.4-5.1 fl oz/A	12	7	
	<i>OR</i> *Proaxis 0.5CS	2.6-5.1 fl oz/A	24	21	
	<i>OR</i> §Surround 95WP	50 lb/A	4	0	[12.6]
	<i>OR</i> *Warrior 1CS	2.6-5.1 fl oz/A	24	21	
or Warrior II 2.08 CS	1.28-2.56 fl oz/A	24	21		
Obliquebanded leafroller	§Agree WG 3.8WS	1-2 lb/A	4	0	[10.1]
	<i>OR</i> §Biobit XL 2.1FC	1.5-5.5 pt/A	4	0	
	<i>OR</i> Delegate 25WG	4.5-7.0 oz/A	4	7	
	<i>OR</i> §Deliver 18WG	0.5-2 lb/A	4	0	
	<i>OR</i> §Dipel 10.3DF	0.5-2 lb/A	4	0	
	<i>OR</i> Entrust 80WP	0.67-1.0 oz/100 gal	4	7	
	<i>OR</i> *Intrepid 2F	8-16 fl oz/A	4	14	
	<i>OR</i> §Javelin 7.5 WDG	0.5-4 lb/A	4	0	
	<i>OR</i> *Lannate 2.4L	0.75 pt/100 gal	48-96(E)	7	
	or *Lannate 90SP	0.25 lb/100 gal			
<i>OR</i> *Proclaim 5SG	0.8-1.2 oz/100 gal	12	14		
<i>OR</i> Spintor 2SC	1.25-2.5 fl oz/100 gal	4	7		
Additional Summer Sprays					
Fire blight (ONLY after a hailstorm)	§Agri-mycin 17WP or Streptrol 17WP or Firewall 17WP	0.5 lb/100 gal	12	30	[2.4]
Pear scab, Fabraea leaf spot, Sooty blotch, Black rot	Topsin M 70WSB	4 oz/100 gal	72	1	
	<i>OR</i> Thiophanate-methyl 85WDG	3.2oz/100 gal	72	1	
	<i>plus</i> Dithane/*Manzate/Penncozeb as listed for pear scab under Green Cluster		24	BL/77 (A)	[3.6]
	<i>OR</i> Rubigan 1EC	3 fl oz/100 gal	12	30	
	<i>plus</i> Dithane/*Manzate/ Penncozeb 75DF	1 lb/100 gal	24	BL/77 (A)	[2.4]
	<i>OR</i> Flint 50WG	0.67-0.8 oz/100 gal	12	14	[3.4]
	<i>OR</i> Sovran 50WG	1.0-1.6 oz/100 gal	12	30	
	<i>OR</i> Pristine 38WG	14.5-18.5 oz/A	12	0	
<i>OR</i> Ziram 76DF	1.5-2 lb/100 gal	48	14		
Codling moth	Assail 30SG	4.0-8.0 oz/A	12	7	[6.1]
	<i>OR</i> *Baythroid XL 1E	2.0-2.4 fl oz/A	12	7	
	<i>OR</i> §Biobit XL 2.1FC	1.5-5.5 pt/A	4	0	

Table 12.3.1. Pesticide Spray Table – Pears

Refer to back of book for key to abbreviations and footnotes.

Pest	Product	Rate	REI (hrs)	PHI (days)	Comments (see text)
Codling moth <i>(continued)</i>	OR *Calypso 4F	1-2 fl oz/100 gal	12	30	
	OR §Carpovirusine 0.99SC	0.5-1 pt/100 gal	4	0	
	OR §Cyd-X 0.06SC	1-6 fl oz/A	4	0	
	OR *Danitol 2.4EC	16-21.3 fl oz/A	24	14	
	OR Delegate 25WG	4.5-7.0 oz/A	4	7	
	OR §Deliver 18WG	0.5-2 lb/A	4	0	
	OR §Dipel 10.3DF	0.5-2 lb/A	4	0	
	OR §Entrust 80WP	0.67-1.0 oz/100 gal	4	7	
	OR *Guthion 50WS	0.5-0.75 lb/100 gal	14	14-21 (A)	
				days(E)	
	OR *Imidan 70WP	0.75-1 lb/100 gal	72	7	
	OR §Javelin 7.5WDG	0.5-4 lb/A	4	0	
	OR *Leverage 2.7SE	3.6-4.4 fl oz/A	12	7	
OR Spintor 2SC	1.25-2.5 fl oz/100 gal	4	7		
Comstock mealybug	Actara 25WDG	4.5-5.5 oz/A	12	35	[7.1, 7.2]
	OR Assail 30SG	4.0-8.0 oz/A	12	7	
	OR *Calypso 4F	1-2 fl oz/100 gal	12	30	
	OR *Diazinon 50WP	1 lb/100 gal	96	21	
	OR *Provado 1.6F	20 fl oz/A	12	7	
European red mite, Twospotted spider mite, Pear rust mite	Acramite 50WS	0.75-1 lb/A	12	7	
	OR Apollo 4SC	4-8 oz/A	12	21	[8.1, 13.1]
	OR *Brigade 10WS	12.8-32 oz/A	12	14	
	OR Envidor 2SC	16-18 fl oz/A	12	7	
	OR Portal 5EC	1-2 pt/A	12	14	
	OR Kanemite 15SC	21-31 fl oz/A	12	14	
	OR Nexter 75WS	4.4-10.7 oz/A	12	7	
	OR Onager 1EC	12-24 fl oz/A	12	28	
	OR Savey 50DF	3-6 oz/A	12	28	
	OR *Vendex 50WP	6-8 oz/100 gal	48	14	
	OR Zeal 72WS	2-3 oz/A	12	14	
Obliquebanded leafroller	§Agree WG 3.8WS	1-2 lb/A	4	0	[10.2]
	OR *Baythroid XI 1E	2.4-2.8 fl oz/A	12	7	
	OR §Biobit XL 2.1FC	1.5-5.5 pt/A	4	0	
	OR Delegate 25WG	4.5-7.0 oz/A	4	7	
	OR §Deliver 18WG	0.5-2 lb/A	4	0	
	OR §Dipel 10.3DF	0.5-2 lb/A	4	0	
	OR §Entrust 80WP	0.67-1.0 oz/100 gal	4	7	
	OR *Intrepid 2F	8-16 fl oz/A	4	0	
	OR §Javelin 7.5WDG	0.5-4 lb/A	4	0	
	OR *Lannate 2.4L	0.75 pt/100 gal	48-96(E)	7	

Table 12.3.1. Pesticide Spray Table – Pears

Refer to back of book for key to abbreviations and footnotes.

Pest	Product	Rate	REI (hrs)	PHI (days)	Comments (see text)
Obliquebanded leafroller (continued)	or *Lannate 90SP	0.25 lb/100 gal			
	OR *Leverage 2.7SE	4.4-5.1 fl oz/A	12	7	
	OR *Proclaim 5SG	0.8-1.2 oz/100 gal	12	14	
	OR Spintor 2SC	1.25-2.5 fl oz/100 gal	4	7	
Pear psylla	Choose from materials listed under Petal Fall, except for Esteem				[12.5]
Pearleaf blister mite	Sevin XLR Plus, 4F	1.5-3 qt/A	12	3	[14.2]
	or Sevin 80S, *80WS	1.88-3.75 lb/A			
	OR §oil	1-1.5 gal/100 gal			
	plus *Diazinon 50WP	1 lb/100 gal	96	21	
	OR §oil	1-1.5 gal/100 gal			
plus *Thionex 50WP	0.5-1 lb/100 gal	96	7		
Redbanded leafroller	§Agree WG 3.8WS	1-2 lb/A	4	0	[16.1]
	OR *Baythroid XL 1E	2.4-2.8 fl oz/A	12	7	
	OR §Biobit XL 2.1FC	1.5-5.5 pt/A	4	0	
	OR Delegate 25WG	4.5-7.0 oz/A	4	7	
	OR §Deliver 18WG	0.5-2 lb/A	4	0	
	OR §Dipel 10.3DF	0.5-2 lb/A	4	0	
	OR *Guthion 50WS	0.5-0.75 lb/100 gal	14 days (E) 14-21 (A)		
	OR *Imidan 70WP	0.75-1 lb/100 gal	72	7	
	OR §Javelin 7.5WDG	0.5-4 lb/A	4	0	
	OR *Leverage 2.7SE	4.4-5.1 fl oz/A	12	7	
OR *Proclaim 5SG	0.8-1.2 oz/100 gal	12	14		

Table 12.3.2. Growth Regulator Uses in Pears.

Refer to back of book for key to abbreviations and footnotes.

Timing	Product	Concentration	Rate Of Formulated Product
CHEMICAL THINNING			
Petal Fall to 5-7 days after petal fall	Amide-Thin W (NAD)	25-50 ppm	4-8 oz (lb) / 100 gal
Do not use on Bosc. Apply at petal fall or within 5–7 days after petal fall.			
7-28 days after full bloom	Fruitone-N	10-15 ppm	4-6 oz (lb)/100 gal
Labeled for use on Bartlett, Bosc and Comice. NAA is more effective at early timings and should be applied as soon as fruit set is apparent for greatest success. Late applications may result in reduced fruit size. Do not apply when temperature is below 60°F or above 85°F. NAA will not usually adequately thin Bartlett, but the addition of a surfactant will improve thinning.			
CONTROL OF WATERSPROUTS AROUND PRUNING CUTS			
Dormant	Tre Hold RTU (NAA)	1.5% (15,000 ppm)	Ready-to-use product
Mix NAA with 2 pt latex paint / gal and apply any time after dormant pruning but before growth begins in spring. Apply with paint brush or cloth pad to thoroughly coat exposed wood and edges of bark around pruning cuts.			

Table 12.3.2. Growth Regulator Uses in Pears.*Refer to back of book for key to abbreviations and footnotes.*

Timing	Product	Concentration	Rate Of Formulated Product
CONTROL OF ROOTSUCKERS			
Dormant or 6-12” Sucker height	Tre Hold RTU (NAA)	1.5% (15,000 ppm) (Do not dilute)	Ready-to-use product
Apply during dormant season after pruning existing suckers and before resprouting or apply when new sprouts are 6–12” high. Thorough wetting of stubs or new sprouts is essential.			
INDUCTION OF LATERAL BRANCHING IN YOUNG TREES			
1-2” of Terminal Shoot Growth	Promalin, Perlan, Typy	125-1000 ppm	0.25-2 pt / 5 gal
Include a non-ionic surfactant and apply as a directed spray to areas where additional branching is desired. This practice is more effective in the second and third growing seasons after planting. Response on weak or low-vigor trees is usually disappointing. For nursery stock treat after trees have reached a terminal height at which lateral branching is desired.			
PREHARVEST FRUIT-DROP CONTROL			
3 weeks before anticipated harvest	ReTain	132 ppm	0.74 lb / acre or 333 g / acre or (1 pouch)
Apply in sufficient water to ensure thorough but not excessive coverage. An organosilicone surfactant (12 oz / 100 gal) should be used with ReTain.			
5-7 days before harvest	Fruitone-N	10-15ppm	4-6 oz (lb)/100 gal
Apply 7 days before harvest on D’Anjou, Bosc, and Bartlett. Make separate sprays to early and late maturing varieties.			
* To convert ounces to grams multiply ounces by 28.3. To convert fluid ounces to milliliters multiply fluid ounces by 29.57.			