



This is a section from the

2023/2024

New Jersey Commercial Tree Fruit Production Guide

The recommendations are **NOT** for home gardener use.

The **full guide** can be found on the Rutgers New Jersey Agricultural Experiment Station (NJAES) website at: <https://njaes.rutgers.edu/pubs/publication.php?pid=e002>. The guide is revised biennially.

Cooperating Agencies: Rutgers, The State University of New Jersey, U.S. Department of Agriculture, and New Jersey Board of County Commissioners. Rutgers Cooperative Extension, a unit of the Rutgers New Jersey Agricultural Experiment Station, is an equal opportunity program provider and employer.

PESTICIDE USE DISCLAIMER

THE LABEL IS THE LAW

A pesticide applicator is legally bound by the labeling found on and with the pesticide container in their possession. Before using a pesticide, check and always follow the **labeling distributed with the product at the point of sale for legally enforceable rates and restrictions.**

In addition to the pesticide products listed in this Production Guide, other formulations or brands with the same active ingredient(s) may be commercially available.

ALWAYS CHECK THE LABELING ON THE PRODUCT CONTAINER ITSELF:

- a) to ensure a pesticide is labeled for the same use,
- b) to ensure the pesticide is labeled for the desired crop,
- c) for differences in rates and percent active ingredient, and
- d) additional restrictions.

Check the physical product label for the maximum amount of pesticide per application and the maximum number of applications per year.

IMPORTANT: DO NOT RELY ON ELECTRONIC LABELING (unless it is “web labeling” found directly on the product container). *Online pesticide labels may not be the same as the labeling distributed with the product. Some services include: Proagrica’s CDMS <http://www.cdms.net/>; Agworld DBX powered by Greenbook <https://www.greenbook.net/>; or Agrian <https://www.agrian.com/labelcenter/results.cfm>.*

These electronic label services provide use disclaimers, and in some cases legally binding User Agreements assigning ALL liability to USER of service. For example, Agrian’s webpages* cite (in red): *The material and content contained in the Agrian Label Database is for general information only. Agrian Inc. does not provide any guarantee or assurance that the information obtained through this service is accurate, current, or correct, and is therefore not liable for any loss resulting, directly or indirectly, from reliance upon this service. This Label Database does not replace the official manufacturer issued label. Users of this database must read and follow the actual product label affixed to the container before use of the product. Use of the Label Database is subject to the Terms of Use and Privacy Policy * [date accessed: 12/23/2022].*

See a detailed regulatory discussion of this and other essential information on Pesticide Safety and the Pesticide Label in Chapter 1. Electronic labeling is discussed in section 1.3.1.

If you are having a **medical emergency** after using pesticides, always **call 911** immediately.



In Case of an Accident

- Remove the person from exposure
- Get away from the treated or contaminated area immediately
- Remove contaminated clothing
- Wash with soap and clean water
- Call a physician and/or the National Poison Control Center (1-800-222-1222).
Your call will be routed to your State Poison Control Center.
- **Have the pesticide label with you!**
- Be prepared to give the **EPA registration number** to the responding center/agency

11 Pears

11.1 European Pears

European Pear Cultivars

Disease Resistant Cultivars

The bacterial disease fire blight is one of the biggest challenges for European pear production. Planting resistant cultivars is one of the most effective methods of control for this disease. The following fire blight-resistant cultivars are recommended for planting in New Jersey (in order of ripening): Harrow Delight, Potomac, Harvest Queen, Moonglo, and Honeysweet.

Red Skinned Cultivars

Some nurseries have mutations and selections of Bosc with a brighter and more complete cinnamon-russet color, *e.g.*, Bronze Beauty, Golden Russet, and Noble Russet. These cultivars may be more desirable than Bosc.

Red-skinned strains of Bartlett and D'Anjou are also available from many fruit tree nurseries. These strains are generally not as vigorous and are more susceptible to low winter temperatures than standard-colored Bartlett and D'Anjou. It is important to note though that Red Bartlett strains lose their color rapidly when exposed to temperatures above 90°F. They also slowly revert to the standard cultivar coloring when trees are maintained in a vigorous condition.

Clapp's Favorite is an old cultivar with excellent flavor that is early but does not store. Red Clapp's, Kalle, and Starkrimson are additional attractive red skinned strains, but they are very susceptible to fire blight.

Additional Recommended Cultivars

Other cultivars, not resistant to fire blight but popular in wholesale marketing channels, include the original Bartlett, Bosc, and D'Anjou. These cultivars should only be cultivated if growers are willing to take the exacting steps to control fire blight. Other fire blight-susceptible cultivars with excellent dessert quality and recommended for commercial trial plantings are Aurora, Highland, and Seckel.

European Pear Rootstocks

Bartlett Seedlings

Historically most European pear trees sold in the eastern United States were propagated on open pollinated seedlings of Bartlett pears. Bartlett seedling rootstocks are generally less sensitive to wet and poorly drained soils than many other rootstocks, and they are reasonably tolerant to low winter temperatures. However, Bartlett seedlings are fire blight-susceptible. They are not notable as dwarfing rootstocks, however, they are variable in their growth patterns.

Old Home x Farmingdale

This series of rootstocks is derived from a cross of the cultivars Old Home x Farmingdale. Both parent cultivars are highly resistant to fireblight. Rootstocks in this series are well-anchored, winter hardy, productive, and compatible with most varieties. The following rootstocks are offered by commercial nurseries:

- *OH x F 40*[®] - OH X F40 has replaced OH X F51 as the most dwarfing stock to be planted. It has shown resistance to fireblight, crown rot, wooly pear aphids, and pear decline. It is not recommended to be grown under Bosc as it will not be as fruitful.
- *OH x F 87*[™] - This rootstock is slightly smaller than Bartlett seedling rootstocks and is considered a semi-dwarf. This rootstock is noted as being an excellent producer and shows tolerance to fireblight and pear decline.
- *OH x 97* - OH x 97 is slightly larger than OH x 87. It is a very hardy tree that shows resistance to pear decline.

Pyrodwarf®

Pyrodwarf® is a very precocious and dwarf rootstock of *Pyrus communis* originating from Germany. It performed well in Pacific Northwest orchards. European cultivars on Pyrodwarf® are suggested for trial plantings because of their early bearing and smaller tree size.

Quince Seedlings

Some commercial fruit tree nurseries offer various quince rootstock seedlings. The performance of pears on quince rootstock has been shown to be very variable. Quince rootstocks are also very poorly anchored, sensitive to low winter temperatures, fire blight-susceptible, and incompatible with Bartlett, Bosc, Seckel and D'Anjou cultivars. **Quince rootstocks are not recommended in commercial plantings.**

European Pear Pollination

European pears require honeybees for adequate pollination. Because pears have so little sugar in their nectar, honeybees prefer to visit other flowers. Therefore, it is especially important to eliminate dandelions, mustard, and other competing flowers from the vicinity of pear orchards. Growers should supply two to three colonies of bees for each acre of pears. For general comments on honeybee pollination, see section 10.4, Apple Pollination.

All recommended pear cultivars require cross-pollination. Some cultivars like Honeysweet and Seckel are considered self-fruitful but set better crops with cross-pollination. Red Bartlett cultivars will not pollinate Bartlett. Red D'Anjou cultivars will not pollinate D'Anjou. Russet Bosc will not pollinate Bosc. Red Clapp's will not pollinate Clapp's Favorite. Asian pear cultivars will not pollinate any of the recommended European cultivars.

11.2 Asian Pears

Cultivated Asian pears were developed from the species *Pyrus ussuriensis* and *Pyrus pyrifolia*. Most of our cultivars have not been subjected to low winter temperatures, so care should be taken to plant on sites with good air drainage and a low temperature history.

Asian Pear Cultivars

There are many Asian pear cultivars. Some may do very well in New Jersey. The following cultivars have been grown and tested in southern New Jersey. **The cultivars are listed in order of ripening.**

Hosui. The fruit is large, 3¼ to 3½ inches in diameter, and globular. Ripening in early to mid-August, the fruit has a cinnamon bronzed russet skin. The flesh is coarse, white and juicy. The flavor is very pleasing with excellent quality. This cultivar has a medium storage life of about three months. The tree is vigorous, spreading, precocious, and productive on *Pyrus betulaefolia* rootstock. Hosui is susceptible to fire blight.

Yoinashi. The fruit is large, about 3¼ to 3½ inches in diameter, globular, with a light bronze skin. Fruit ripens in early September with smooth, fine-grained, off-white flesh that is juicy and sweet with a very good quality. Fruit handles and stores well. The tree is upright to spreading, precocious, and heavy bearing on *Pyrus betulaefolia* rootstock. Yoinashi is susceptible to fire blight.

Niitaka. The fruit is medium sized, about 2½ to 3 inches in diameter, globular in southern New Jersey, with an attractive bronze russet skin. Ripening in mid-September to early October, fruit flesh is coarse, juicy and mildly sweet with fair to good quality. It handles and stores well. The tree is more upright and moderately vigorous on *Pyrus betulaefolia* rootstock. Niitaka is moderately susceptible to fire blight. Pollen is sterile, and therefore, Niitaka will not pollinize other cultivars.

Shin Li. This fruit is large to very large, about 3½ to 4 inches in diameter, and globular in southern New Jersey. Fruit ripens about a week before Shinko's. The fruit is green to green-yellow, with heavy lenticels and some russetting. The flesh is white, crispy, juicy and of excellent flavor and quality. Fruit handles and stores well. The

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tree is precocious, heavy bearing, moderately vigorous, and upright in growth habit. Shin Li is susceptible to fire blight, although it has not been observed to be a problem in southern New Jersey.

Seuri. The fruit is large and globular with a yellow-green color overlaid with streaks of russeting and prominent lenticels. Fruit ripens just before Shinko's. The flesh is coarse, crisp, and aromatic with a mild, sweet flavor of excellent quality. The tree is moderately precocious, heavy bearing, and upright in growth habit. Seuri is moderately tolerant of fire blight. In New Jersey, Seuri will bloom very early.

Shinko. This fruit is large to very large, 3 ¼ to 4 inches in diameter, with a rich bronze russeted skin. It ripens in early to mid-October in southern New Jersey. The flesh is coarse, juicy, very sweet and aromatic and of excellent quality. The fruit holds well on the tree, and fruit stores well. The tree is early bearing, productive, and grows upright and vigorously on most rootstocks. Shinko is one of the most fire blight tolerant cultivars.

Korean Giant. (Ar Ri Rang) Also known as Olympic in commercial nursery catalogs. This late maturing cultivar looks and grows very much like Shinko but is larger. Fruit flesh is coarse, juicy, sweet, and of excellent quality if left on the tree to mature. It also keeps excellent quality in storage. Fruit has one of the best flavors in our taste tests

The following cultivars have been tested in southern New Jersey but are not suggested for planting: **Chojuro**, **Tsu Li**, and **Ya Li**.

The following cultivars are available for planting, but have not been tested (in order of ripening): **Ichiban Nashi**, **Kosui**, **Seigyoko**, **Kikusui**, **Daisui Li**, and **Okusankichi**.

Asian Pear Rootstocks

Asian pears are available from nurseries on a number of clonal selections of Old Home x Farmingdale. Only the most vigorous cultivars are recommended on OH x F40, and only with irrigation. The vigorous OH x F clones are recommended where the soil is well drained and early winter, low temperatures may be a problem. The OH x F clones do not do well in heavy or poorly drained soils.

Several commercial plantings in southern New Jersey are on *Pyrus betulaefolia* seedling rootstocks. These rootstocks are widely compatible with Asian pears and tolerate wet or poorly drained soils. Trees on this rootstock are also deep rooted on sandy soils and tolerate drought.

Pyrus betulaefolia and the OH x F clones are all tolerant of fire blight. *P. betulaefolia* can render cultivars more susceptible to early low winter temperatures.

Asian Pear Pollination

Cross-pollination is recommended for commercial orchardists. Any two cultivars with overlapping bloom periods will be cross compatible, although some cultivars produce more compatible pollen. Asian pears are not generally compatible with *Pyrus communis* cultivars. The placement of pollinizers should be similar to apple orchards, with at least one pollinizer per 8 trees to pollinate. Note that trees to pollinate should not be more than two trees or rows from the pollinizer. Hosui, Shinseiki, and Twentieth Century are the best pollinizers because they bloom during the middle of the bloom period and are compatible with other cultivars. Much more must be learned about compatibility.

Asian Pear Fruit Thinning

This cultural practice is a must, because many Asian pear cultivars have a tendency to set up heavily and require thinning to get the good fruit size that the market demands. Fruit set can be as high as twelve pears per fruit spur, or 3-6 per flower cluster. Fruit should be thinned as early as possible to one per cluster. Recommendations for the thinning of European pears DO NOT hold up for Asian pears. Hand thinning of fruit should be started after bloom and completed by 6 weeks after bloom.

For Hosui and Kosui pears, some chemical thinning can be achieved by using MaxCell at the maximum label rate of 200 ppm for pears (see Table 11.1). It should be applied between 10-15 mm average fruit diameter during

a warming trend. MaxCel should not be applied at temperatures of 80°F or warmer or if 80°F temperatures are forecast for the 3 days following application or over-thinning may occur. MaxCel plant growth regulator can provide up to 50% of the thinning needed and increase fruit size. Follow-up hand thinning may have to be undertaken to get the desired spacing, which will affect fruit shape and size. MaxCel has not been evaluated on all Asian pear cultivars. Follow the label directions and precautions. See also the publication “Cost-Effective Asian Pear Thinning for Productivity and Fruit Quality,” at: <https://www.sare.org/wp-content/uploads/Cost-Effective-Asian-Pear-Thinning-for-Productivity-and-Fruit-Quality.pdf>

Asian Pear Pest Problems

A pear spray schedule similar to the schedule listed for European pears should be followed. However, some of the problems experienced with European pears are not seen at the same levels on certain varieties of Asian pears.

Bacterial Blossom Blast. The pathogen that causes this disease, *Pseudomonas syringae*, does not cause the blossom blast phase in New Jersey. However, the bacterium can infect spurs and branches. Cankers may result from low temperature injury and bark cracking during late fall. Avoid late fertilization or cultural practices that will reduce acclimation to winter temperature. Infected cankers should be pruned out of wood.

Codling Moth. This has been reported to be a problem in Maryland and Oregon. We have not seen codling moth on Asian pears in southern New Jersey.

Fabraea Leaf Spot. This has been observed in plantings of Korean Giant and Shinko. In periods of heavy pressure, follow the pear guidelines for leaf spot.

Fire Blight. Most Asian pear cultivars are susceptible and should be sprayed, particularly in periods of heavy pressure. The relative susceptibility or resistance is listed under each cultivar description (see above).

Pear Psylla. Many Asian pear cultivars are resistant to pear psylla. However, pear psylla has been observed in Asian pear blocks in southern New Jersey. If the pears are planted near blocks of *Pyrus communis*, follow the pear spray guidelines.

Phytophthora Root Rot. Asian pears are susceptible to crown and root rot and should be planted on a raised berm or row to improve soil drainage.

San Jose Scale. This has been observed in Asian pear orchards in New Jersey. Follow the oil spray guidelines.

11.3 Use of Plant Growth Regulators in Pear Orchards

European pear trees can frequently set more fruit than the tree can size and mature. If too many fruit set and stay on the tree, they may be small and have lower sugar levels. Pear wood is brittle, and with over-cropping, limbs may break. Over-cropping also reduces vigor and flower bud differentiation for next year’s crop.

Thinning research and experiences in this guide are limited to the eastern United States. The use of materials at rates recommended in other parts of the country is not supported by Eastern data.

Like apples, vigorous trees are more difficult to thin, and weak-growing trees thin more easily. The optimal temperature for applying chemical thinners to pears is 70 to 80°F (similar to apples), when temperatures are expected to remain in that range for 3 to 4 days. Other environmental conditions may also affect consistency of thinners on pears. Please refer to the following tables that summarize the use of plant growth regulators in European and Asian pears for fruit thinning (Table 11.1), managing harvest and fruit quality (Table 11.2), and branching (Table 11.3).

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Table 11.1 Plant Growth Regulators for Pear Fruit Thinning

Spray Timing	Chemical Name	Trade Name	Rate per 100 gal dilute TRV ¹	Special Considerations
Petal fall through 5 to 7 days after petal fall	Naphthalene acetamide	Amid-Thin® W	1.6-8 oz (10-50 ppm)	Labeled on Bartlett and Bosc
14 to 21 days after full bloom	Naphthaleneacetic Acid-Sodium	Fruitone®-N, Fruitone®-L, PoMaxa®, Refine™ 3.5 WSG, Refine® 3.5L	4-6 oz (10-15 ppm)	Labeled for use on Bartlett, Bosc, and Comice. Apply as soon as fruit set is apparent.
8-14 mm fruit size (7-28 days after bloom)	6-Benzyladenine	MaxCel®, RiteWay®	80-128 fl oz (75-200 ppm)	Recommended rate on Bartlett is 150 ppm and Bosc 75 ppm. Recommended rate on Hosui and Kosui Asian pears is 200 ppm, spray timing is at 10-15 mm fruit size.
		Exilis® Plus	46-122 fl oz (75-200 ppm)	
		Exilis® 9.5 SC	9.6-25.6 fl oz (75-200 ppm)	

¹Tree Row Volume Gallonage (TRV)= (Tree Height X Tree Width X 43,560 X 0.7) / (Between Row Spacing X 1,000).

Table 11.2 Plant Growth Regulators for Pear Harvest Management and Fruit Quality

11.3 Spray Timing	Chemical Name	Trade Name	Concentration	Rate	Special Considerations
7- 14 days before anticipated harvest	Aminoethoxyvinylglycine Hydrochloride	ReTain®	–	1 pouch per acre	–
5-7 days before harvest	Naphthaleneacetic Acid-Sodium	Fruitone®-N, Fruitone®-L, PoMaxa®, Refine™ 3.5 WSG, Refine® 3.5L	10-15 ppm	4-6 oz per 100 gal	Apply 7 days before harvest to D'Anjou, Bosc, and Bartlett.
5-7 days before harvest	Naphthaleneacetic Acid-Potassium	Refine 24.2 L		2-4 fl oz per acre	Bartlett, Bosc only. Effective in 3-4 days after application and controls drop for 2 weeks.
Apply 3-21 days prior to anticipated harvest	1-Methylcyclopropene	Harvista™ ¹	–	48-242 fl oz/A, but no more than 242 fl oz/crop	–

¹Harvista requires a specialized sprayer, or custom application by Agrofresh- contact your Agrofresh sales representative for more information.

Table 11.3 Plant Growth Regulators for Pear Branching

Spray Timing	Chemical Name	Trade Name	Concentration
Apply to 1 year old wood prior to budbreak	6-Benzyladenine	MaxCel®, Exilis® Plus, Exilis® 9.5 SC	5,000 ppm, see label for rate
	6-Benzyladenine plus Gibberellic Acid (4+7)	Promalin®, Typy®	
Apply to 1 year old wood after budbreak	6-Benzyladenine	MaxCel®, Exilis® Plus, Exilis® 9.5 SC	500 ppm, see label for rate
	6-Benzyladenine plus Gibberellic Acid (4+7)	Promalin®, Typy®	

11.4 Pear Disease and Pest Management

Pears Disease Management Program – Fungicide and Bactericide Timing

DISEASE	Dormant	Delayed Dormant	Tight Cluster Bud through White Bud to Popcorn; after BudSeparation but before Petals Show	Bloom	Petal-Fall	Covers
Fire Blight						
Fabraea Leaf Spot						
Pear Scab						
Powdery Mildew						
Bitter Rot						
Sooty Bloth/Flyspeck						
Black Rot and White Rot						

Pears Insect and Mite Pest Management Program – Insecticide and Acaricide Timing

INSECT AND MITE PESTS	Dormant	Delayed Dormant	White Bud to Popcorn; after Bud Separation but before Petals Show	Bloom	Petal-Fall	Covers
Pear Psylla				Do not apply insecticides during Bloom!		
Scale Insects						
Native Stink Bugs						
Tarnished Plant Bug						
Aphids						
Codling Moth						
Mealy Bug						
Plum Curculio						
San Jose Scale						
Oriental Fruit Moth						
Red-Banded Leafrollers						
Brow Marmorated Stink Bug						
European Red Mite						
Pear Rust Mite						
Two-Spotted Spider Mite						

Key: = Optimum timing

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The Label is the Law

A pesticide applicator is legally bound by the labeling found on and with the pesticide container in their possession. Before using a pesticide, check and always follow the **labeling distributed with the product at the point of sale** for legally enforceable rates and restrictions. See the Pesticide Use Disclaimer on page 2.

Observe cautions on the product label to minimize potential exposure to bees and other pollinating insects.

Abbreviations

Pome Fruit Preharvest Interval Key		Units of Measurement	
D	Dormant application only	/A	per acre
DD	Delayed dormant application only	d	day(s)
TC	No later than tight cluster	fl oz	fluid ounce(s)
P	No later than pink	gal	gallon(s)
PB	No later than prebloom	h	hour(s)
FB	No later than full bloom	lb	pound(s)
PF	No later than petal-fall	oz	ounce(s)
NTL	No time limit (usually up to the day of harvest) - consult label	pt	pint(s)
		qt	quart(s)
NA	Not applicable		

DORMANT					PEARS
DISEASE	Fire Blight				
Product and Formulation ¹	Product Efficacy Rating ² and Rate/A ³				REI PHI
Bordeaux mixture (lb/100 gal)	++ 8, 8				24 h D
Champ Formula 2.79F ⁴ (gal)	++ 0.66-1.33				24 h D
Cuprofix Ultra 40DF ⁴ (lb)	++ 7.5-10.0				24 h D
Kocide 3000 30DF ⁴ (lb)	++ 5.25-7.0				24 h D
Nu-Cop 50DF (lb)	++ 8.0-16.0				24 h D

¹ Copper materials cause injury if applied beyond half-inch green. Kocide, Champ, Nu-Cop are copper hydroxide products; Cuprofix is basic copper sulfate. ² ++++ = excellent, +++ = good, ++ = fair, + = poor, - = ineffective or not rated. ³ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval. ⁴ Generic products and/or alternate formulations available.

DORMANT				PEARS
INSECT OR MITE PEST	INSECTS		MITES	
	Pear Psylla	Scale	European Red Mite	
Product and Formulation	Product Efficacy Rating ¹ and Rate/A ²			REI PHI
Superior Oil ³ (gal)	++++ 6.0	++++ 6.0	++++ 6.0	4 h 0 d

¹ ++++ = excellent, +++ = good, ++ = fair, + = poor, - = ineffective or not rated. ² Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval. ³ Oil inhibits pear psylla egg laying. Good coverage is essential.

DELAYED DORMANT				PEARS	
INSECT OR MITE PEST	INSECTS		MITES		
	Pear Psylla	Scale Insects	European Red Mite		
Product and Formulation ¹	Product Efficacy Rating ² and Rate/A ³				REI PHI
Superior Oil ⁴ (gal)	++++ 4.0-6.0	++++ 4.0-6.0	++++ 4.0-6.0		4 h 0 d
Centaur WDG (oz)	+++ 34.5	++++ 34.5	–		12 h 14 d
Venerate XC (qt)	–	+++ 1.0-2.0	–		4 h 0 d
PLUS ONE OF THE FOLLOWING:					
Agri-Flex (fl oz)	++++ 5.5-8.5	–	++++ 5.5-8.5		12 h 35 d
Ambush 25W ¹ (oz)	+++ 13.0-25.0	–	–		12 h PB ⁷
Asana XL ¹ (fl oz)	+++ 12.0-16.0	–	–		12 h 28 d
Assail 30SG (oz)	+++ 4.0-8.0	–	–		12 h 7 d
Besiege (fl oz)	+++ 6.0-12.0	–	–		24 h 21 d
Delegate 25WG (oz)	+++ 6.0-7.0	–			4 h 7 d
Esteem 35WP (oz)	+++ ⁵ 4.0-5.0	++++ 4.0-5.0	–		12 h 45 d
Gladiator (fl oz)	++++ 19.0	–	++ 19.0		12 h 28 d
Lambda-Cy (fl oz)	+++ 2.56-5.12	–	–		24 h 21 d
Minecto Pro (fl oz)	++++ 8.0-12.0	–	++++ 8.0-12.0		12 h 28 d
Perm-UP (fl oz)	+++ 8.0-16.0	–	–		12 h PB ⁷
Pounce 3.2EC ¹ (oz)	+++ 10.0-14.0	–	–		12 h DD ⁷
Surround WP (lb)	+++ ⁶ 50.0	–	–		4 h 0 d
Voliam Flexi (oz)	+++ 7.0	–	–		12 h 35 d
Warrior II ¹ (fl oz)	+++ 1.28-2.56	–	–		24 h 21 d

¹ When noted, generic products are available. Only one application of any chlorpyrifos product may be made per year.

² ++++ =excellent, +++ = good, ++ = fair, + = poor, – = ineffective or not rated.

³ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval.

⁴ Oil inhibits pear psylla egg laying. Good coverage is essential.

⁵ Use 5.0 oz application Delayed Dormant through Pink or two applications of 4.0-5.0 oz Delayed Dormant through Petal-Fall

⁶ Prebloom: 3 applications 7-10 days apart starting at DD through Green Cluster Bud.

⁷ PHI Key: DD= Delayed dormant application only, PB=No later than prebloom

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TIGHT CLUSTER BUD THROUGH WHITE BUD TO POPCORN; AFTER BUD SEPARATION BUT BEFORE PETALS SHOW					PEARS
DISEASE	Fabraea Leaf Spot	Pear Scab	Powdery Mildew		
Product and Formulation ¹	Product Efficacy Rating ² and Rate/A ³				REI PHI
PROTECTANT FUNGICIDES¹					
Ferbam 76WDG (lb)	–	++ 4.5	–		24 h 7 d
Mancozeb 75DF ⁴ (lb)	++++ 6.0	+++ 6.0	–		24 h FB ⁶
Ziram 76DF (lb)	++++ 6.0	++ 6.0	–		48 h 14 d
RESISTANCE RISK FUNGICIDES¹					
Aprovia 0.83EC (fl oz)	–	+++ 5.5-7.0	–		12 h 30 d
Cevya 3.34SC (fl oz)	–	++++ 3.0-5.0	++ 3.0-5.0		12 h 0 d
Flint Extra 4.05SC (fl oz)	+++ 2.5-2.9	++++ 2.5-2.9	+++ 2.5-2.9		12 h 14 d
Fontelis 1.67SC (fl oz)	–	+++ 16.0-20.0	++ 16.0-20.0		12 h 28 d
Inspire Super 2.82EW (fl oz)	–	++++ 12.0	+++ 12.0		12 h 14 d
Luna Sensation 4.2SC (fl oz)	–	+++ 4.0-5.8	+++ 5.0-5.8		12 h 14 d
Luna Tranquility 4.16SC (fl oz)	–	++ 11.2-16.0	++ 11.2-16.0		12 h 72 d
Merivon 4.18SC (fl oz)	–	++++ 4.0-5.5	+++ 4.0-5.5		12 h 0 d
Miravis 1.67SC (fl oz)	–	++++ 3.4	++ 3.4		4 h 30 d
Pristine 38WG (oz)	++++ 15.0-18.5	+++ 15.0-18.5	+++ 15.0-18.5		12 h 0 d
Procure 50WS (oz)	–	++++ 8.0-16.0	++++ 8.0-16.0		12 h 14 d
Sovran 50WG (oz)	+++ 5.0-6.0	+++ 5.0-6.0	+++ 4.0-6.0		12 h 30 d
Syllit 3.4F (pt)	+++ 3.0	+++ 1.5-3.0	–		48 h 7 d
Topsin M WSB (lb)	+++ 1.0	+++ 1.0	+++ 1.0		48 h 1 d
Vanguard 75WG ⁵ (oz)	–	+++ 3.0-5.0	++ 3.0-5.0		12 h 0 d
Vintage 1SC (fl oz)	–	++++ 8.0-12.0	++++ 8.0-12.0		24 h 30 d

¹ Combine or alternate protectant fungicides and resistance risk fungicides. Use half rate of protectant fungicides when using in combination. Generic products and/or alternate formulations available.

² ++++ =excellent, +++ = good, ++ = fair, + = poor, – = ineffective or not rated.

³ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval.

⁴ EBDC fungicides: Prebloom schedule allows applications at full rate through bloom. Do not combine or integrate pre-bloom schedule with the extended schedule (mixture of ½ rate of protectant and resistance risk fungicide). Mancozeb products: Dithane, Manzate, and Penncozeb. See label for rates.

⁵ Only apply Vanguard to pears as a tank-mix combination with another fungicide, typically a protectant fungicide.

⁶ PHI Key: FB=No later than full bloom.

WHITE BUD TO POPCORN; AFTER BUD SEPARATION BUT BEFORE PETALS SHOW					PEARS
INSECT PEST	Pear Psylla	Native Stink Bugs	Tarnished Plant Bug		
Product and Formulation ¹	Product Efficacy Rating ² and Rate/A ³				REI PHI
Actara WG ⁴ (oz)	++++ 4.5-5.5	–	–		12 h 14/35 d
Ambush 25W ¹ (oz)	+++ 13.0-25.0	+++ 13.0-25.0	+++ 13.0-25.0		12 h PB ⁵
Asana XL ¹ (fl oz)	+++ 12.0-16.0	+++ 12.0-16.0	+++ 12.0-16.0		12 h 28 d
Assail 30SG (oz)	+++ 4.0-8.0	+++ 4.0-8.0	+++ 4.0-8.0		12 h 7 d
Beleaf 50SG (oz)	–	+++ 2.0-2.8	++++ 2.0-2.8		12 h 21 d
Besiege (fl oz)	+++ 6.0-12.0	+++ 6.0-12.0	+++ 6.0-12.0		24 h 21 d
Brigade/Bifenthrin 2EC (fl oz)	–	++ 2.6-12.8	++ 2.6-12.8		12 h 14 d
Centaur WDG (oz)	+++ 34.5	–	–		12 h 14 d
Danitol 2.4EC (fl oz)	+++ 16.0-21.0	++++ 16.0-21.0	++++ 16.0-21.0		24 h 14 d
Delegate 25WG (oz)	++++ 6.0-7.0	–	–		4 h 7 d
Endigo ZC (fl oz)	++ 5.0-6.0	++++ 5.0-6.0	++++ 5.0-6.0		24 h 35 d
Lambda-Cy (fl oz)	+++ 2.56-5.12	+++ 2.56-5.12	+++ 2.56-5.12		24 h 21 d
Perm-UP 3.2EC (fl oz)	+++ 8.0-16.0	+++ 8.0-16.0	+++ 8.0-16.0		12 h PB ⁵
Pounce 3.2EC ¹ (oz)	+++ 10.0-14.0	+++ 10.0-14.0	+++ 10.0-14.0		12 h DD ⁵
Sivanto Prime (fl oz)	+++ 10.5-14.0	–	–		4 h 14 d
Voliam Flexi (oz)	+++ 7.0	+++ 6.0-7.0	+++ 6.0-7.0		12 h 35 d
Warrior II ¹ (fl oz)	+++ 1.28-2.56	+++ 1.28-2.56	+++ 1.28-2.56		24 h 21 d

¹ When noted, generic products are available. ² ++++ = excellent, +++ = good, ++ = fair, + = poor, – = ineffective or not rated. ³ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval. ⁴ 35 day PHI for use rates greater than 2.75 oz/A; 14 day PHI for rates equal to or less than 2.75 oz/A. ⁵ PHI Key: DD= Delayed dormant application only, PB=No later than prebloom

BLOOM					PEARS
DISEASE	Fabraea Leaf Spot	Fire Blight ¹	Pear Scab	Powdery Mildew	
Product and Formulation ²	Product Efficacy Rating ³ and Rate/A ⁴				REI PHI
BACTERICIDES					
Agri-Mycin 17WP ⁵ (oz)	–	+++ 24.0-48.0	–	–	12 h 30 d
Agri-Mycin 17WP ⁵ (oz) plus Glycerin (qt)	–	+++ 12.0-24.0 plus 4.0	–	–	12 h 30 d
Agri-Mycin 17WP ⁵ (oz) plus Regulaid (oz)	–	+++ 12.0-24.0 plus 8.0	–	–	12 h 30 d

Bloom DISEASE Bactericides- continued on next page

PEARS

Bloom DISEASE **Bactericides**- continued

BLOOM					PEARS
DISEASE	Fabraea Leaf Spot	Fire Blight ¹	Pear Scab	Powdery Mildew	
Kasumin 2L (fl oz)	–	+++ 64	–	–	12 h PF ⁷
Mycoshield 17WP ⁵ (oz)	–	+++ 16.0	–	–	12 h 60 d
PROTECTANT FUNGICIDES²					
Ferbam 76WDG (lb)	–	–	++ 4.5	–	24 h 7 d
Mancozeb 75DF ^{1,8} (lb)	++++ 6.0	–	+++ 6.0	–	24 h FB ⁷
Ziram 76DF (lb)	++++ 6.0	–	++ 6.0	+ 6.0	48 h 14 d
RESISTANCE RISK FUNGICIDES²					
Aprovia 0.83EC (fl oz)	–	–	++++ 5.5-7.0	++ 5.5-7.0	12 h 30 d
Cevya 3.34SC (fl oz)	–	–	++++ 3.0-5.0	++ 3.0-5.0	12 h 0 d
Flint Extra 4.05SC (fl oz)	+++ 2.5-2.9	–	++++ 2.5-2.9	+++ 2.5-2.9	12 h 14 d
Fontelis 1.67SC (fl oz)	–	–	+++ 16.0-20.0	++ 16.0-20.0	12 h 28 d
Inspire Super 2.82EW (fl oz)	–	–	++++ 12.0	+++ 12.0	12 h 14 d
Luna Sensation 4.2SC (fl oz)	–	–	+++ 4.0-5.8	+++ 5.0-5.8	12 h 14 d
Luna Tranquility 4.16SC (fl oz)	–	–	++ 11.2-16.0	++ 11.2-16.0	12 h 72 d
Merivon 4.18SC (fl oz)	–	–	++++ 4.0-5.5	+++ 4.0-5.5	12 h 0 d
Miravis 1.67SC (fl oz)	–	–	++++ 3.4	++ 3.4	4 h 30 d
Pristine 38WG (oz)	++++ 15.0-18.5	–	+++ 15.0-18.5	+++ 15.0-18.5	12 h 0 d
Procure 50WS (oz)	–	–	++++ 8.0-16.0	++++ 8.0-16.0	12 h 14 d
Sovran 50WG (oz)	+++ 5.0-6.0	–	+++ 5.0-6.0	+++ 4.0-6.0	12 h 30 d
Syllit 3.4F (pt)	+++ 3.0	–	+++ 1.5-3.0	–	48 h 7 d
Topsin M WSB (lb)	+++ 1.0	–	+++ 1.0	+++ 1.0	48 h 1 d
Vanguard 75WG ⁶ (oz)	–	–	+++ 3.0-5.0	++ 3.0-5.0	12 h 0 d
Vintage 1SC (fl oz)	–	–	++++ 8.0-12.0	++++ 8.0-12.0	24 h 30 d

¹ Apply sprays for fire blight when first blossoms open; repeat sprays at 3-7 day intervals during bloom. Use dilute, complete sprays for thorough coverage. Alternate Agri-mycin with Mycoshield for resistance management. Some Asian pears are sensitive to Mycoshield or FireLine and may show injury. FireLine 17WP can be substituted for Mycoshield at similar rates; both contain oxytetracycline. FireWall 17WP or Streptrol 17WP can be substituted for Agri-Mycin 17WP at similar rates; all contain streptomycin. ² Combine or alternate protectant fungicides and resistance risk fungicides. Use half rate of protectant fungicides when using in combination. ³ ++++ = excellent, +++ = good, ++ = fair, + = poor, – = ineffective or not rated. ⁴ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval. ⁵ Generic products and/or alternate formulations available. ⁶ Only apply Vanguard to pears as a tank-mix combination with another fungicide, typically a protectant fungicide. ⁷ PHI Key: FB=No later than full bloom; PF= No later than petal fall ⁸ EBDC fungicides: Prebloom schedule allows applications at full rate through bloom. Do not combine or integrate pre-bloom schedule with the extended schedule (mixture of 1/2 rate of protectant and resistance risk fungicide). Mancozeb products: Dithane, Manzate, and Pencozeb. See label for rates.)

BLOOM		PEARS
INSECT PEST	Do not apply insecticides during bloom!	

PETAL FALL					PEARS
DISEASE	Fabraea Leaf Spot	Fire Blight ¹	Pear Scab	Powdery Mildew	
Product and Formulation ²	Product Efficacy Rating ³ and Rate/A ⁴				REI PHI
BACTERICIDES					
Agri-Mycin 17WP ⁵ (oz)	–	+++ 24.0-48.0	–	–	12 h 30 d
Agri-Mycin 17WP ⁵ (oz) plus Glycerin (qt)	–	+++ 12.0-24.0 plus 4.0	–	–	12 h 30 d
Agri-Mycin 17WP ⁵ (oz) plus Regulaid (oz)	–	+++ 12.0-24.0 plus 8.0	–	–	12 h 30 d
Kasumin 2L (fl oz)	–	+++ 64	–	–	12 h PF ⁷
Mycoshield 17WP ⁵ (oz)	–	+++ 16.0	–	–	12 h 60 d
PROTECTANT FUNGICIDES²					
Ferbam 76WDG (lb)	–	–	++ 4.5	–	24 h 7 d
Mancozeb 75DF ^{1,8} (lb)	++++ 6.0	–	+++ 6.0	–	24 h FB ⁷
Ziram 76DF (lb)	++++ 6.0	–	++ 6.0	+ 6.0	48 h 14 d
RESISTANCE RISK FUNGICIDES²					
Aprovia 0.83EC (fl oz)	–	–	++++ 5.5-7.0	++ 5.5-7.0	12 h 30 d
Cevya 3.34SC (fl oz)	–	–	++++ 3.0-5.0	++ 3.0-5.0	12 h 0 d
Flint Extra 4.05SC (fl oz)	+++ 2.5-2.9	–	++++ 2.5-2.9	+++ 2.5-2.9	12 h 14 d
Fontelis 1.67SC (fl oz)	–	–	+++ 16.0-20.0	++ 16.0-20.0	12 h 28 d
Inspire Super 2.82EW (fl oz)	–	–	++++ 12.0	+++ 12.0	12 h 14 d
Luna Sensation 4.2SC (fl oz)	–	–	+++ 4.0-5.8	+++ 5.0-5.8	12 h 14 d
Luna Tranquility 4.16SC (fl oz)	–	–	++ 11.2-16.0	++ 11.2-16.0	12 h 72 d
Merivon 4.18SC (fl oz)	–	–	++++ 4.0-5.5	+++ 4.0-5.5	12 h 0 d
Miravis 1.67SC (fl oz)	–	–	++++ 3.4	++ 3.4	4 h 30 d
Pristine 38WG (oz)	++++ 15.0-18.5	–	+++ 15.0-18.5	+++ 15.0-18.5	12 h 0 d
Procure 50WS (oz)	–	–	++++ 8.0-16.0	++++ 8.0-16.0	12 h 14 d
Sovran 50WG (oz)	+++ 5.0-6.0	–	+++ 5.0-6.0	+++ 4.0-6.0	12 h 30 d
Syllit 3.4F (pt)	+++ 3.0	–	+++ 1.5-3.0	–	48 h 7 d

Petal Fall DISEASE Resistant Risk Fungicides - continued on next page

PEARS

Petal Fall DISEASE Resistant Risk Fungicides - continued

PETAL FALL					PEARS
DISEASE	Fabraea Leaf Spot	Fire Blight ¹	Pear Scab	Powdery Mildew	
RESISTANCE RISK FUNGICIDES²					
Topsin M WSB (lb)	+++ 1.0	–	+++ 1.0	+++ 1.0	48 h 1 d
Vanguard 75WG ⁶ (oz)	–	–	+++ 3.0-5.0	++ 3.0-5.0	12 h 0 d
Vintage 1SC (fl oz)	–	–	++++ 8.0-12.0	++++ 8.0-12.0	24 h 30 d

¹ Apply sprays for fire blight when first blossoms open; repeat sprays at 3-7 day intervals during bloom. Use dilute, complete sprays for thorough coverage. Alternate Agri-mycin with Mycoshield for resistance management. Some Asian pears are sensitive to Mycoshield or FireLine and may show injury. FireLine 17WP can be substituted for Mycoshield at similar rates; both contain oxytetracycline. FireWall 17WP or Streptrol 17WP can be substituted for Agri-Mycin 17WP at similar rates; all contain streptomycin. ² Combine or alternate protectant fungicides and resistance risk fungicides. Use half rate of protectant fungicides when using in combination. ³ ++++ =excellent, +++ = good, ++ = fair, + = poor, – = ineffective or not rated. ⁴ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval. ⁵ Generic products and/or alternate formulations available. ⁶ Only apply Vanguard to pears as a tank-mix combination with another fungicide, typically a protectant fungicide. ⁷ PHI Key: FB=No later than full bloom; PF= No later than petal fall ⁸ EBDC fungicides: Prebloom schedule allows applications at full rate through bloom. Do not combine or integrate pre-bloom schedule with the extended schedule (mixture of 1/2 rate of protectant and resistance risk fungicide). Mancozeb products: Dithane, Manzate, and Pencozeb. See label for rates.)

PETAL FALL See also table: Miticides for Postbloom Use. Avoid killing bees on blooming ground cover.						PEARS
INSECT PEST	Aphids	Codling Moth	Mealy-bug	Pear Psylla	Plum Curculio	
Product and Formulation	Product Efficacy Rating ¹ and Rate/A ²					REI PHI
Actara WG ³ (oz)	++++ 4.5-5.5	–	++++ 4.5-5.5	++++ 5.5	+++ 4.5-5.5	12 h 14/35 d ³
Admire Pro - foliar ⁴ (fl oz)	++++ 1.4-2.8	–	++++ 1.4-2.8	+++ 1.4-2.8	–	12 h 7 d
Agri-Flex (fl oz)	++++ 5.5-8.5	–	–	++++ 5.5-8.5	+++ 5.5-8.5	12 h 35 d
Altacor (oz)	–	++++ 2.5-4.5	–	–	+ 2.5-4.5	4 h 5 d
Assail 30SG (oz)	++++ 2.5-4.0	+++ 4.0-8.0	++++ 4.0-8.0	+++ 4.0-8.0	+++ 8.0	12 h 7 d
Avaunt (oz)	–	+++ 5.0-6.0	–	–	++++ 5.0-6.0	12 h 28 d
Baythroid XL (fl oz)	–	++++ 2.0-2.4	–	–	++ 2.4-2.8	12 h 7 d
Belay 2.13SC (fl oz)	++++ 4.0-6.0	–	–	+++ 6.0-12.0	++ 6.0	12 h 7 d
Beleaf 50SG (oz)	+++ 2.0-2.8	–	++++ 2.0-2.8	–	–	12 h 21 d
Brigade/Bifenthrin 2EC (fl oz)	++ 2.6-12.8	++ 2.6-12.8	–	++ 2.6-12.8	++ 2.6-12.8	12 h 14 d
Centaur WDG (oz)	–	–	–	+++ 34.5	–	12 h 14 d
Cormoran (fl oz)	++++ 20.0-28.0	++++ 20.0-28.0	–	+ 20.0-28.0	++ 20.0-28.0	12 h 14 d
Danitol 2.4EC (fl oz)	–	+++ 16.0-21.3	–	++++ 16.0-21.3	++ 16.0-21.3	24 h 14 d
Delegate 25WG (oz)	–	++++ 4.5-6.0	–	++++ 6.0-7.0	++ 6.0-7.0	4 h 7 d

Petal Fall INSECT PESTS - continued on next page

Petal Fall INSECT PESTS - continued

PETAL FALL See also table: Miticides for Postbloom Use. Avoid killing bees on blooming ground cover.							PEARS
INSECT PEST	Aphids	Codling Moth	Mealy-bug	Pear Psylla	Plum Curculio		
Endigo ZC (fl oz)	++ 5.0-6.0	+++ 5.0-6.0	+ 5.0-6.0	++ 5.0-6.0	++ 5.0-6.0		24 h 35 d
Esteem 35WP (oz)	-	+++ ⁵ 4.0-5.0	-	+++ 4.0-5.0	-		12 h 45 d
Exirel (fl oz)	-	+++ 8.8-17.0	-	+ 13.5-20.5	++ 13.5-20.5		12 h 3 d
Gladiator (fl oz)	+ 19.0	-	-	++++ 19.0	++ 19.0		12 h 28 d
Imidan 70W (lb)	-	++++ 3.0	-	-	++++ 3.0		7/14 d ⁷ 7 d
Intrepid 2F (fl oz)	-	+++ ⁵ 16.0	-	-	-		4 h 14 d
Lambda-Cy (fl oz)	-	++++ 2.56-5.12	-	++++ 2.56-5.12	++ 2.56-5.12		24 h 21 d
Leverage 360 (fl oz)	++++ 2.4-2.8	+++ 2.4-2.8	-	-	++ 2.4-2.8		12 h 7 d
Madex HP (fl oz)		++++ 0.5-3.0					4 h 0 d
Minecto Pro (fl oz)	+ 8.0-12.0	+++ 8.0-12.0	-	++++ 8.0-12.0	++ 8.0-12.0		12 h 28 d
M-Pede ⁶ (1 part product to 50 parts water)	+++ 1 / 50	-	+++ 1 / 50	++++ 1 / 50	-		12 h 0 d
Movento (fl oz)	++++ 6.0-9.0	-	+++ 6.0-9.0	++++ 6.0-9.0	-		24 h 7 d
Sivanto Prime (fl oz)	++++ 10.5-14.0	-	-	+++ 10.5-14.0	-		4 h 14 d
Venerate XC (qt)	-	-	-	-	S 1.0-2.0		4 h 0 d
Versys (fl oz)	++++ 1.5	-	-	-	-		12 h 7 d
Warrior II ⁴ (fl oz)	-	++++ 1.28-2.56	-	++++ 1.28-2.56	++ 1.28-2.56		24 h 21 d

¹ ++++ = excellent, +++ = good, ++ = fair, + = poor, S = suppressive, - = ineffective or not rated. ² Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval. ³ 35 d PHI for use rates greater than 2.75 oz/A; 14 day PHI for rates equal to or less than 2.75 oz/A. ⁴ When noted, generic products are available. ⁵ Esteem and Intrepid are ovicides and need to be applied at 75-100 degree-days (about petal-fall) after first codling moth (Biofix). ⁶ M-Pede may russet fruit. It has caused phytotoxicity on Asian pear cultivars in southern New Jersey. ⁷ Imidan REI 7 d for farm labor, but 14 d for u-pick operations.

COVERS							PEARS	
DISEASE	Bitter Rot	S. Blotch / Flyspeck	Fabraea Leaf Spot	Fire Blight ¹	Pear Scab	Powdery Mildew	Black Rot and White Rot	
Product and Formulation ²	Product Efficacy Rating ³ and Rate/A ⁴							REI PHI
BACTERICIDES								
Agri-Mycin 17WP ⁵ (oz)	-	-	-	+++ 24.0-48.0	-	-	-	12 h 30 d
Agri-Mycin 17WP ⁵ (oz) plus Glycerin (qt)	-	-	-	+++ 12.0-24.0 plus 4.0	-	-	-	12 h 30 d
Agri-Mycin 17WP ⁵ (oz) plus Regulaid (oz)	-	-	-	+++ 12.0-24.0 plus 8.0	-	-	-	12 h 30 d

Covers DISEASE Protectant and Resistant Fungicides - on next page

PEARS

Covers DISEASE Protectant and Resistant Fungicides

COVERS								PEARS
DISEASE	Bitter Rot	S. Blotch / Flyspeck	Fabraea Leaf Spot	Fire Blight ¹	Pear Scab	Powdery Mildew	Black Rot and White Rot	
PROTECTANT FUNGICIDES²								
Ferbam 76WDG⁶ (lb)	+++ 4.0-6.0	++ 4.0-6.0	-	-	++ 4.5	-	++ 4.0-6.0	24 h 7 d
Mancozeb 75DF⁷ (lb)	+++ 3.0	++ 3.0	++++ 3.0	-	+++ 3.0	-	++ 3.0	24 h 77 d ⁷
Mycosshield 17WP⁵ (oz)	-	-	-	+++ 16.0	-	-	-	12 h 60 d
Ziram 76DF (lb)	++ 6.0	+++ / ++ 6.0	++++ 6.0	-	++ 6.0	+ 6.0	- 6.0	48 h 14 d
RESISTANT RISK FUNGICIDES²								
Aprovia 0.83EC (fl oz)	++ 5.5-7.0	+++ / ++++ 5.5-7.0	-	-	++++ 5.5-7.0	++ 5.5-7.0	+++ 5.5-7.0	12 h 30 d
Cevya 3.34SC (fl oz)	+ 3.0-5.0	++++ 3.0-5.0	-	-	++++ 3.0-5.0	++ 3.0-5.0	-	12 h 0 d
Flint Extra 4.05SC (fl oz)	++ 3.0	+++ 2.0-2.5	+++ 2.5-2.9	-	++++ 2.5-2.9	+++ 2.5-2.9	++ 2.0-2.5	12 h 14 d
Fontelis 1.67SC (fl oz)	++ 16.0-20.0	+ / - 16.0-20.0	-	-	+++ 16.0-20.0	++ 16.0-20.0	++ 16.0-20.0	12 h 28 d
Inspire Super 2.82EW (fl oz)	++ 12.0	++++/++++ 12.0	-	-	++++ 12.0	+++ 12.0	+++ 12.0	12 h 14 d
Luna Sensation 4.2SC (fl oz)	+++ 4.0-5.8	+++ / ++++ 4.0-5.8	-	-	+++ 4.0-5.8	+++ 5.0-5.8	++++ 4.0-5.8	12 h 14 d
Luna Tranquility 4.16SC (fl oz)	+++ 11.2-16.0	++ / ++++ 11.2-16.0	-	-	++ 11.2-16.0	++ 11.2-16.0	+++ 11.2-16.0	12 h 72 d
Merivon 4.18SC (fl oz)	+++ 4.0-5.5	++++/++++ 4.0-5.5	-	-	++++ 4.0-5.5	+++ 4.0-5.5	++++ 4.0-5.5	12 h 0 d
Miravis 1.67SC (fl oz)	+ 3.4	-	-	-	++++ 3.4	++ 3.4	-	4 h 30 d
Pristine 38WG (oz)	+++ 15.0-18.5	++ / ++ 15.0-18.5	++++ 15.0-18.5	-	+++ 15.0-18.5	+++ 15.0-18.5	++++ 15.0-18.5	12 h 0 d
Procure 50WS (oz)	-	-	-	-	++++ 8.0-16.0	++++ 8.0-16.0	-	12 h 14 d
Sovran 50WG (oz)	++ 4.0-6.0	++++ 4.0-6.0	+++ 5.0-6.0	-	+++ 5.0-6.0	+++ 4.0-6.0	+++ 4.0-6.0	12 h 30 d
Syllit 3.4F (pt)	-	-	+++ 3.0	-	+++ 1.5-3.0	-	-	48 h 7 d
Topsin M WSB (lb)	-	++++ 1.0	+++ 1.0	-	+++ 1.0	+++ 1.0	+++ 1.0	48 h 1 d
Vanguard 75WG⁸ (oz)	-	-	-	-	+++ 3.0-5.0	++ 3.0-5.0	-	12 h 0 d
Vintage 1SC (oz)	-	-	-	-	++++ 8.0-12.0	++++ 8.0-12.0	-	24 h 30 d

¹ If disease pressure is high and/or cultivar is highly susceptible, apply antibiotics from petal fall through 2nd cover at 10-14 d intervals to control twig blight. Rotate Argri-mycin, Mycosshield, and Kasumin for resistance management. Some Asian pears are sensitive to Mycosshield or FireLine and may show injury. FireLine 17WP can be substituted for Mycosshield at similar rates; both contain oxytetracycline. FireWall 17WP or Streptrol 17WP can be substituted for Agri-Mycin 17WP at similar rates; all contain streptomycin. ² Combine or alternate protectant fungicides and resistance risk fungicides. Use half rate of protectant fungicides when using in combination. ³ ++++ = excellent, +++ = good, ++ = fair, + = poor, - = ineffective or not rated. ⁴ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval. ⁵ Generic products and/or alternate formulations available. ⁶ Use of Ferbam on late cover sprays (third cover and beyond) may affect fruit finish on light colored pear cultivars. ⁷ When extended schedule is used, Mancozeb can be applied at half rate through second cover. Do not combine pre-bloom schedule with extended schedule. ⁸ Only apply Vanguard to pears as a tank-mix combination with another fungicide, typically a protectant fungicide. ⁹ PHI Key: FB=No later than full bloom; PF= No later than petal fall.

COVERS See also table: Miticides for Postbloom Use. Avoid killing bees on blooming ground cover.											PEARS
INSECT PEST	Aphids	Codling Moth	Mealy-bug	Oriental Fruit Moth	Pear Psylla	Plum Curculio	Red-banded Leafrollers	San Jose Scale	Brown Marmorated Stink Bug	Native Stink Bugs, Tarnished Plant Bug	
Product and Formulation	Product Efficacy Rating ¹ and Rate/A ²										REI PHI
Actara WG ³ (oz)	++++ 4.5-5.5	-	++++ 4.5-5.5	-	++++ 5.5	+++ 4.5-5.5	-	-	+++ 5.5	+++ 5.5	12 h 14/35 d ³
Admire Pro - foliar (fl oz)	++++ 2.8	-	++++ 7.0	-	+++ 7.0	-	-	++ 2.8	+++ 2.8	-	12 h 7 d
Admire Pro - soil (fl oz)	++++ 7.0-10.5	-	-	-	-	-	-	-	-	-	12 h 21 d
Agri-Flex (fl oz)	++++ 5.5-8.5	-	-	-	++++ 5.5-8.5	+++ 5.5-8.5	-	-	+ 5.5-8.5	+++ 5.5-8.5	12 h 35 d
Altacor (oz)	-	++++ 2.5-4.5	-	++++ 2.5-4.5	-	+ 2.5-4.5	++++ 2.5-4.5	-	-	-	4 h 5 d
Apta/Bexar (fl oz)	++++ 17.0-21.0	-	++ 21.0-27.0	-	+++ 21.0-27.0	+++ 21.0-27.0	++ 21.0-27.0	-	-	-	12 h 14 d
Assail 30SG (oz)	++++ 2.5-4.0	+++ 4.0-8.0	++++ 4.0-8.0	+++ 4.0-8.0	+++ 4.5-5.5	++ 8.0	-	+++ 8.0	++ 8.0	+++ 6.0-8.0	12 h 7 d
Avaunt (oz)	-	+++ 5.0-6.0	-	+++ 5.0-6.0	-	++++ 5.0-6.0	+++ 5.0-6.0	-	+ 6.0	++ 5.0-6.0	12 h 28 d
Baythroid XL (fl oz)	-	++++ 2.0-2.4	-	++++ 2.0-2.4	-	++ 2.4-2.8	++++ 2.4-2.8	+ 2.4-2.8	+++ 2.4	++++ 2.0-2.4	12 h 7 d
Belay 2.13SC (fl oz)	++++ 4.0-6.0	++ 6.0-12.0	-	++ 6.0-12.0	+++ 6.0-12.0	++ 6.0	+ 6.0-12.0	-	++++ 6.0-12.0	-	12 h 7 d
Beleaf 50SG (oz)	+++ 2.0-2.8	-	-	-	-	-	-	-	-	+++ 2.0-2.8	12 h 21 d
Besiege (fl oz)	+ 9.0-12.0	++++ 6.0-12.0	-	++++ 6.0-12.0	++ 9.0-12.0	++ 9.0-12.0	++++ 6.0-12.0	+ 9.0-12.0	+++ 6.0-12.0	+++ 6.0-13.0	24 h 21 d
Brigade/Bifenthrin2EC (fl oz)	++ 2.6-12.8	+++ 2.6-12.8	-	+++ 2.6-12.8	+++ 2.6-12.8	+ 2.6-12.8	+++ 2.6-12.8	+ 2.6-12.8	++++ 12.8	+++ 2.6-12.8	12 h 14 d
Centaur WDG (oz)	-	-	-	-	+++ 34.5	-	-	+++ 34.5	-	-	12 h 14 d
Cormoran (fl oz)	++++ 20.0-28.0	++++ 20.0-28.0	+ 20.0-28.0	++++ 20.0-28.0	+++ 20.0-28.0	++ 20.0-28.0	++++ 20.0-28.0	+++ 20.0-28.0	++ 20.0-28.0	+++ 20.0-28.0	12 h 14 d
Danitol 2.4EC (fl oz)	-	+++ 16.0-21.3	-	+++ 16.0-21.3	++++ 16.0-21.3	++ 16.0-21.3	++++ 16.0-21.3	-	+++ 16.0-21.3	+++ 16.0-21.3	24 h 14 d
Delegate 25WG (oz)	-	++++ 4.5-7.0	-	++++ 4.5-7.0	++++ 6.0-7.0	+ 6.0-7.0	++++ 4.5-7.0	-	+ 4.5-7.0	-	4 h 7 d

Covers INSECT PESTS - continued on next page

PEARS

COVERS INSECT PESTS - continued (FOOTNOTES ON NEXT PAGE)

INSECT PEST	Aphids	Codling Moth	Mealy-bug	Oriental Fruit Moth	Pear Psylla	Plum Curculio	Red-banded Leafrollers	San Jose Scale	Brown Marmorated Stink Bug	Native Stink Bugs, Tarnished Plant Bug	REI PHI
Endigo ZC (fl oz)	++++ 5.0-6.0	+++ 5.0-6.0	+++ 5.0-6.0	++++ 5.0-6.0	++++ 5.0-6.0	+++ 5.0-6.0	–	++ 5.0-6.0	++++ 6.0	+++ 5.0-6.0	24 h 35 d
Entrust SC (fl oz)	–	+ 6.0-8.0	–	+ 8.0	–	–	++++ 4.0-6.0	–	–	–	4 h 7 d
Gladiator (fl oz)	+ 19.0	–	–	–	++++ 19.0	++ 19.0	+++ 19.0	–	++ 19.0	–	12 h 28 d
Imidan 70W (lb)	–	++++ 3.0	–	++++ 3.0	–	+++ 3.0	+++ 3.0	+ 3.0	–	++ 3.0	7/14 d ⁶ 7 d
Intrepid 2F (fl oz)	–	+++ 16.0	–	+++ 16.0	–	–	++++ 10.0	–	–	–	4 h 14 d
Lambda-Cy (fl oz)	–	++++ 2.56-5.12	–	++++ 2.56-5.12	++++ 2.56-5.12	++ 2.56-5.12	++++ 2.56-5.12	–	+++ 2.56-5.12	+++ 2.56-5.12	24 h 21 d
Lannate SP (lb)	+++ 0.5-1.0	+++ 1.0	–	+++ 1.0	++ 1.0	++ 1.0	++++ 1.0	–	+++ 1.0	++++ 1.0	72/96 h 7 d
Leverage 360 (fl oz)	++++ 2.4-2.8	+++ 2.4-2.8	–	+++ 2.4-2.8	+++ 2.4-2.8	++ 2.4-2.8	++++ 2.4-2.8	+++ 2.4-2.8	+++ 2.4-2.8	+++ 2.4-2.8	12 h 7 d
M-Pede ⁴ (1 part product to 50 parts water)	+++ 1 / 50	–	+++ 1 / 50	–	++++ 1 / 50	–	–	+++ 1 / 50	++ 1 / 50	–	12 h 0 d
Madex HP (fl oz)	–	++++ 0.5-3.0	–	++++ 0.5-3.0	–	–	–	–	–	–	4 h 0 d
Minecto Pro (fl oz)	+ 8.0-12.0	+++ 8.0-12.0	–	++++ 8.0-12.0	++++ 8.0-12.0	++ 8.0-12.0	++++ 8.0-12.0	–	–	–	12 h 28 d
Movento (fl oz)	++++ 6.0-9.0	–	+++ 6.0-9.0	–	++++ 6.0-9.0	–	–	++++ 8.0-9.0	–	–	24 h 7 d
Mustang Maxx (fl oz)	++ 1.28-4.0	+++ 1.28-4.0	–	++++ 1.28-4.0	+++ 1.28-4.0	+ 1.28-4.0	++++ 1.28-4.0	–	+++ 4.0	++++ 1.28-4.0	12 h 14 d
Proaxis (fl oz)	++ 2.56-5.12	+++ 2.56-5.12	–	++++ 2.56-5.12	++++ 2.56-5.12	+++ 2.56-5.12	++++ 2.56-5.12	–	++ 2.56-5.12	+++ 2.56-5.12	24 h 21 d
Sivanto Prime (fl oz)	++++ 10.5-14.0	–	–	–	+++ 10.5-14.0	–	–	++ 10.5-14.0	–	–	4 h 14 d
Swagger (fl oz)	++++ 7.6-25.6	+++ 10.2-25.6	–	–	–	+ 10.2-25.6	+++ 7.6-25.6	–	–	+++ 7.6-25.6	12 h 14 d
Venerate XC ⁷ (qt)	–	–	–	+++ 1.0-2.0	–	S 1.0-2.0	–	+++ ⁷ 1.0-2.0	+++ 1.0-2.0	+++ 1.0-2.0	4 h 0 d
Voliam Flexi WG (oz)	++++ 6.0-7.0	++++ 4.0-7.0	+++ 6.0-7.0	++++ 4.0-7.0	++++ 7.0	+++ 6.0-7.0	++++ 4.0-7.0	–	+++ 7.0	+++ 6.0-7.0	12 h 35 d
Warrior II ⁵ (fl oz)	–	++++ 1.28-2.56	–	++++ 1.28-2.56	++++ 1.28-2.56	++ 1.28-2.56	++++ 1.28-2.56	–	+++ 1.28-2.56	+++ 1.28-2.56	24 h 21 d

Covers INSECT PESTS - FOOTNOTES

¹ +++++=excellent, +++ = good, ++ = fair, + = poor, S = suppressive, – = ineffective or not rated.

² Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval.

³ 35 d PHI for use rates greater than 2.75 oz/A; 14 day PHI for rates equal to or less than 2.75 oz/A.

⁴ M-Pede may russet fruit. It has caused phytotoxicity on Asian pear cultivars in southern New Jersey.

⁵ When noted, generic products are available.

⁶ Imidan REI 7 d for farm labor, but 14 d for u-pick operations.

⁷ If using Venerate to control Scale insects, make two applications 7 days apart starting a week after crawler emergence.

MITICIDES FOR POSTBLOOM USE					PEARS	
INSECT OR MITE PEST	INSECTS	MITES			IRAC Class	REI PHI
	Pear Psylla	European Red Mite	Pear Rust Mite	Two-Spotted Spider Mite		
Product and Formulation ^{1,2}	Product Efficacy Rating ³ and Rate/A ⁴				IRAC Class	REI PHI
Acramite 50WS ⁵ (lb)	–	++++ 12.0-16.0	–	++++ 12.0-16.0	20D	12 h 7 d
Agri-Flex ⁸ (fl oz) plus Adjuvant ⁶	++++ 5.5-8.5	++++ 5.5-8.5	++++ 5.5-8.5	++++ 5.5-8.5	6 + 4A	12 h 35 d
Agri-Mek SC (fl oz) plus Paraffinic Spray Oil	++++ 2.25-4.25	++++ 2.25-4.25	++++ 2.25-4.25	++++ 2.25-4.25	6	12 h 28 d
Apollo SC ⁹ (oz)	–	++++ 4.0-8.0	–	++++ 4.0-8.0	10A	12 h 21 d
Envidor (oz)	–	++++ 16.0-18.0	++++ 16.0-18.0	++++ 16.0-18.0	23	12 h 14 d
Kanemite 15SC (oz)	–	++++ 21.0-31.0	–	++++ 21.0-31.0	20B	12 h 14 d
Nealta (fl oz)	–	++++ 13.7	–	++++ 13.7	25	12 h 7 d
Nexter 75WP ⁷ (oz)	++ 6.6-10.6	++++ 4.4-10.6	++++ 5.2-10.6	+++ 6.6-10.6	21A	12 h 7 d
Onager EC (oz)	–	++++ 12.0-24.0	–	++++ 12.0-24.0	10A	12 h 28 d
Portal XLO ² (pt)	+++ 2.0	++++ 1.0-2.0	+++ 1.0-2.0	++++ 1.0-2.0	21A	12 h 14 d
Savey 50DF ⁹ (oz)	–	++++ 3.0-6.0	–	++++ 3.0-6.0	10A	12 h 28 d
Vendex 50WP (lb)	–	+++ 1.0-2.0	++++ 1.0-2.0	+++ 1.0-2.0	12B	48 h 14 d
Vydate 2L ⁸ (pt)	+ 2.0-3.0	+++ 2.0-3.0	++ 2.0-3.0	+++ 2.0-3.0	1A	48 h 14 d
Zeal (oz)	–	++++ 2.0-3.0	–	++++ 2.0-3.0	10B	12 h 14 d

¹ Do not use the same miticide “back-to-back”; rotate miticides with different modes-of-action.

² When noted, generic products are available.

³ +++++=excellent, +++ = good, ++ = fair, + = poor, – = ineffective or not rated.

⁴ Rates are in amount of formulated product per acre, unless otherwise noted. REI=Restricted Entry Interval. PHI=Preharvest Interval.

⁵ Acramite requires spray water to be corrected for pH and hardness. See label.

⁶ For Agri-Mek, use a minimum of 1.0 gal of oil/A, and apply no later than 6 weeks after petal-fall. Oil or oil based products may cause phytotoxicity on Asian pear cultivars. Other silicone-based penetrants may be substituted, but efficacy may not be as good as adding oil.

⁷ Use higher rates if Two-Spotted Spider Mites are present.

⁸ Do not apply Vydate within 30 days of bloom to avoid thinning.

⁹ Do not rotate Apollo and Savey with each other.

