

# 15 Apricots

## 15.1 Insecticides and Fungicides for Apricots

See sections 15.2, 15.3, and 15.4 for comments related to this table.

**Table 15.1.1. Pesticide Spray Table – Apricots.**

Refer to inside back cover for key to abbreviations and footnotes.

Pest	Product	Amt/100 gal	Amt/A	REI (hrs)	PHI (days)	Comments (see text)	
<b>Late Dormant</b>							
<b>Phytophthora root, crown and collar rots</b>	Ridomil Gold SL 4EC		2 qt/A	48	0	[5.2]	
<b>Bacterial canker (<i>Pseudomonas syringae</i>)</b>	Kocide 2000		6-12 lb/A	48	PH,BL	[1.1]	
	or Kocide 3000		3.5-7.0 lb/A	48	PH,BL		
	or Cuprofix Ultra 40 Disperss		5.0-8.0 lb/A	48	BL,PH		
	Badge SC		5-14 pt/A	48	BL		
	§Badge X2		3.5-7 lb/A	48	BL		
	§Champ WG		8-16 lb/A	48	21		
<b>European red mite, Scale insects</b>	(§)oil	2 gal/100 gal	See label	12	0	[6.1, 11.1]	
	Centaur		34.5 oz/A	12	14		
<b>Popcorn</b>							
<b>Brown rot (Blossom blight)</b>	Bravo Weather Stik 6F	1.0-1.3 pt/100 gal	3.1-4.1 pt/A	12 hr/7 days(E)	SS	[2.1]	
	or other chlorothalonil formulations (see labels)						
	Captan 50WP	2 lb/100 gal	3.0-5.0 lb/A	24	0		
	or Captec 4L	0.75-1 qt/100 gal	2.5 qt/A	24	0		
	Echo 720 6F	1.0-1.4 pt/100 gal	3.1-4.1 pt/A	12 hr/7 days (E)	SS		
	or Echo 90DF	0.75-1.2 lb/100 gal	2.25-3.5 lb/A				
	Elevate 50WDG		1.5 lb/A	12	0		
	Fontelis 1.67		14-20 fl oz/A	12	0		
	Indar 2F		6 fl oz/A	12	0		
	Inspire Super		16-20 fl oz/A	12	2		
	Merivon		4.0-6.7 fl oz/A	12	0		
	Meteor 4F		1-2 pt/A	24	PF		
	Pristine 38 WDG		10.5-14.5 oz/A	12	0		
	Quash		2.5-3.5 oz/A	12	14		
	Rally 40 WSP		2.5-6.0 oz/A	24	0		
	Rovral 4F		1.0-2.0pt/A	24	PF		
	Scala 600SC		9.0-18.0 fl oz/A	12	2		
	Badge SC		5-14 pt/A	48	BL		
	§Badge X2		3.5-7 lb/A	48	BL		
	Tilt 3.6EC		4 fl oz/A	12	0		
<b>Tarnished plant bug</b>	See materials listed under Petal Fall, except DO NOT USE Actara until Petal Fall.					[14.1]	
<b>Bloom</b>							
<b>Brown rot (blossom blight)</b>	See materials and comments listed under Popcorn.						
<b>Petal Fall</b>							
<b>Brown rot</b>	See materials and comments listed under Popcorn, except Vanguard, which cannot be used after bloom.						

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Refer to inside back cover for key to abbreviations and footnotes.

Pest	Product	Amt/100 gal	Amt/A	REI (hrs)	PHI (days)	Comments (see text)	
<b>Petal Fall (continued)</b>							
<b>Plum curculio</b>	Actara		4.5-5.5 oz/A	12	14	[10.1]	
	Avaunt 30 WDG		5.0-6.0 oz/A	12	14		
	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7		
	Exirel		13.5-20.5 fl oz/A	12	3		
	Apta		21-27 fl oz/A	12	14		
	Imidan 70W	0.75-1 lb/100 gal	2.1-4.25 lb/A	7-14 days	14	[10.3]	
	Sevin XLR Plus, 4F		2.0-3.0 qt/A	12	3		
	§Surround 95WP		25-50 lb/A	4	0	[10.2]	
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.						
		*Leverage 360		2.4-2.8 fl oz/A	12	7	[10.1]
	Voliam Flexi WDG		4.0-7.0 oz/A	12	14	[10.1]	
	*Voliam Xpress		6-12 fl oz/A	24	14	[10.1]	
<b>Peachtree borer and Lesser peachtree borer)</b>	(\$)Pheromone disruption ties:						
	Isomate-PTB-Dual	150 ties per acre				[9.1]	
<b>Tarnished plant bug</b>	Actara		4.5-5.5 oz/A	12	14	[14.3]	
	*Asana XL 0.66EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[14.2]	
	Assail 30SG		5.3-8.0 oz/A	12	7		
	*Baythroid XL 1 EC		2.0-2.4 fl oz/A	12	7		
	Beleaf 50SG		2.0-2.8 oz/A	12	14		
	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14		
	*Warrior II		1.3-2.6 fl oz/A	24	14		
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.						
		*Endigo ZC		5-5.5 fl oz/A	24	14	
		*Leverage 360		2.4-2.8 fl oz/A	12	7	
	*Voliam Xpress		6-12 fl oz/A	24	14		
<b>Western flower thrips</b>	Delegate WG		4.5-7 oz/A	4	14		
	§Entrust 80WP	0.4-0.8 oz/100 gal	1.25-2.5 oz/A	4	14	[15.2]	
	§PFR 97		1-2 lb/A	4	0		
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.						
		*Endigo ZC		5-5.5 fl oz/A	24	14	
		Voliam Flexi WDG		4.0-7.0 oz/A	12	14	[10.1]
	*Voliam Xpress		6-12 fl oz/A	24	14	[15.2]	
<b>Shuck Split</b>							
<b>Brown rot</b>	Bravo Weather Stik 6F or other chlorothalonil formulations (see labels)	1.0-1.3 pt/100 gal	3.1-4.1 pt/A	12hr/7 days (E)	SS	[2.2]	

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Pest	Product	Amt/100 gal	Amt/A	REI (hrs)	PHI (days)	Comments (see text)
<b>Shuck Split (continued)</b>						
<b>Brown rot</b> (continued)	Captan 50WP	2 lb/100 gal	3.0-5.0 lb/A	24	0	
	or Captec 4L	0.75-1 qt/100 gal	2.5 qt/A	24	0	
	Echo 720 6F	1.0-1.4 pt/100 gal	3.1-4.1 pt/A	12hr/7	SS	
	or Echo 90DF	0.75-1.2 lb/100 gal	2.25-3.5 lb/A	days (E)		
	Fontelis 1.67		14-20 fl oz/A	12	0	
	Inspire Super		16-20 fl oz/A	12	2	
	Merivon		4.0-6.7 fl oz/A	12	0	
	Pristine 38WDG		10.5-14.5 oz/A	12	0	
	Quash		2.5-3.5 oz/A	12	14	
Rally 40 WSP		2.5-6.0 oz/A	24	0		
<b>Peach Scab</b>	Any of the products listed above (except Fontelis, Merivon or Quash) for brown rot at shuck split.					[3.1]
	Gem 500SC		1.9-3.8 fl oz/A	12	1	
<b>Additional Summer Sprays</b>						
<b>Brown rot</b>	Captan 50WP	2 lb/100 gal	3.0-5.0 lb/A	24	0	[2.3]
	or Captec 4L	0.75-1 qt/100 gal	2.5 qt/A	24	0	
	Elevate 50WDG		1.5 lb/A	12	0	
	Fontelis 1.67		14-20 fl oz/A	12	0	
	Indar 2F		6.0 fl oz/A	12	0	
	Inspire Super		16-20 fl oz/A	12	2	
	Merivon		4.0-6.7 fl oz/A	12	0	
	Pristine 38WDG		10.5-14.5 oz/A	12	0	
	Quash		2.5-3.5 oz/A	12	14	
	Rally 40 WSP		2.5-6.0 oz/A	24	0	
Tilt 3.6EC		4 fl oz/A	12	0		
<b>European red mite, Twospotted spider mite</b>	Acramite 50WS		0.75-1.0 lb/A	12	3	[6.2]
	Apollo 4SC		2.0-8.0 oz/A	12	21	[6.2]
	§Des-X		2% vol	12	0	
	Envidor 2SC		16-18 fl oz/A	12	7	[6.2]
	Nexter 75WS		4.4-10.7 oz/A	12	300 (PH)	[6.3]
	Onager 1 EC		12.0-24.0 oz/A	12	7	[6.2]
	§PFR 97		1-2 lb/A	4	0	
	Portal		2 pts/A	12	365	[6.4]
	Savey 50DF		3.0-6.0 oz/A	12	28	[6.2]
	Zeal 72 WS		2.0-3.0 oz/A	12	7	
<b>Japanese Beetle</b>	Admire Pro		1.4-2.8 fl oz/A	12	0	[7.2]
	Assail 30SG		5.3-8.0 oz/A	12	7	
	Exirel		13.5-20.5 fl oz/A	12	3	
	Provado 1.6F		4.0-8.0 fl oz/A	12	0	
	Sevin XLR Plus, 4F		2-3 qt/A	12	3	
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.					
	*Endigo ZC		5-5.5 fl oz/A	24	14	

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Pest	Product	Amt/100 gal	Amt/A	REI (hrs)	PHI (days)	Comments (see text)	
<b>Additional Summer Sprays (continued)</b>							
<b>Japanese Beetle</b> (continued)	*Leverage 360		2.4-2.8 fl oz/A	12	7		
	*Voliam Express		6-12 fl oz/A	24	14		
<b>Lecanium scale,</b> <b>San Jose scale</b>	Centaur 0.7WDG		34.5-46.0 oz/A	12	14	[11.2]	
	§Des-X		2% vol	12	0		
	Esteem 35WP		4.0-5.0 oz/A	12	14	[11.2]	
	§Grandevo DF		3 lb/A	4	0		
	Movento SC		6.0-9.0 fl oz/A	24	7		
	§Venerate XC		1-8 qt/A	4	0		
<b>Oriental fruit moth</b>	(§)Pheromone disruption:					[8.1]	
	Checkmate OFM-F or §Checkmate OFM Dispenser or Isomate-M 100		1.3-2.9 fl oz/A 100-200 dispensers/A 100 ties/A				
	Altacor 35WDG		3.0-4.5 oz/A	4	10	[8.2]	
	*Asana XL 0.66EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14		
	Assail 30SG		5.3-8.0 oz/A	12	7		
	Avaunt 30 WDG		6.0 oz/A	12	14		
	*Baythroid XL 1EC		2.0-2.4 fl oz/A	12	7		
	*Danitol 2.4EC		10.7-21.3 fl oz/A	24	3		
	Delegate 25 WG		6.0-7.0 oz/A	4	14		
	§Deliver		0.5-2 lb/A	4	0		
	§Entrust 80WP	0.4-0.8 oz/100 gal	1.25-2.5 oz/A	4	14		
	Exirel		10-20.5 fl oz/A	12	3		
	Intrepid 2F		10-16 fl oz/A	4	7		
	§Madex HP		0.5-3 oz/A	4	0		
	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14		
	Sevin XLR Plus, 4F		2.0-3.0 qt/A	12	3		
	*Warrior II		1.3-2.6 fl oz/A	24	14		
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.						
		*Endigo ZC		5-5.5 fl oz/A	24	14	
		*Leverage 360		2.4-2.8 fl oz/A	12	7	
		Voliam Flexi WDG		4.0-7.0 oz/A	12	14	[10.1]
	*Voliam Xpress		6-12 fl oz/A	24	14		
<b>Peachtree borer,</b> <b>Lesser peachtree borer</b>	*Asana XL 0.66EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[9.2]	
	*Baythroid XL 1EC		1.4-2.0 fl oz/A	12	7		
	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14		
	*Warrior II		1.3-2.6 fl oz/A	24	14		
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.						
	*Endigo ZC		5-5.5 fl oz/A	24	14		
	*Leverage 360		2.4-2.8 fl oz/A	12	7		
	*Voliam Xpress		6-12 fl oz/A	24	14		

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Pest	Product	Amt/100 gal	Amt/A	REI (hrs)	PHI (days)	Comments (see text)	
<b>Additional Summer Sprays (continued)</b>							
<b>Spotted wing Drosophila</b>	Actara		4.5-5.5 oz/A	12	14		
	Admire Pro		1.4-2.8 oz/A	12	0		
	Assail	5.3-8 oz/100 gal		12	7		
	*Baythroid XL 1 L		2.0-2.4 fl oz/A	12	7		
	*Danitol 2.4EC		10.7-21.3 fl oz/A	24	3		
	Delegate 25WG		4.5-7 oz/A	4	14	[12.3]	
	*Diazinon AG500	1 pt/100 gal		96	21		
	§Entrust 80WP		1.25-2.5 oz/A	4	14	[12.3]	
	§Grandevo DF		3 lb/A	4	0		
	Imidan 70W		2.13-4.25 lb/A	7 days	14	[12.4]	
	Malathion 5EC		2 pts/A	12	6		
	Mustang Max		4 oz./A	12	14		
	Pyganic		1 pt- 2 qt/A	12	0	[12.3]	
	Sevin XLR Plus		2-3 qts/A	12	3		
The following pre-mix product is also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.							
	*Leverage 360		2.4-2.8 fl oz/A	12	7		
<b>Stink bugs, including Brown marmorated stink bug</b>	Actara 25WDG		4.5-5.5 oz/A	12	14	[13.2]	
	*Danitol 2.4EC		10.7-21.3 fl oz/A	24	3	[13.2]	
	*Warrior IICS		1.28-2.56 fl oz/A	24	14		
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.						
		*Endigo ZC		5-5.5 fl oz/A	24	14	
		*Leverage 360		2.4-2.8 fl oz/A	12	7	
		Voliam Flexi		6-7 fl oz/A	12	14	
<b>Tarnished plant bug</b>	Actara		4.5-5.5 oz/A	12	14	[14.3]	
	*Asana XL 0.66EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[14.2]	
	Assail 30SG		5.3-8.0 oz/A	12	7		
	*Baythroid XL 1EC		2.0-2.4 fl oz/A	12	7		
	Beleaf 50 SG		2.0-2.8 oz/A	12	14		
	*Danitol 2.4EC		10.7-21.3 fl oz/A	24	3		
	Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14		
	*Warrior II		1.3-2.5 fl oz/A	24	14		
	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.						
		*Endigo ZC		5-5.5 fl oz/A	24	14	
		*Leverage 360		2.4-2.8 fl oz/A	12	7	
		Voliam Flexi WDG		4.0-7.0 oz/A	12	14	
	*Voliam Xpress		6-12 fl oz/A	24	14		
<b>Western flower thrips</b>	§Entrust 80WP	0.4-0.8 oz/100 gal	1.25-2.5 oz/A	4	14	[15.2]	
	Delegate WG		4.5-7.0 oz/A	4	14		
	§PFR 97		1-2 lb/A	4	0		

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Pest	Product	Amt/100 gal	Amt/A	REI (hrs)	PHI (days)	Comments (see text)
<b>Additional Summer Sprays (continued)</b>						
<b>Western flower thrips (continued)</b>	The following pre-mix products are also labeled for use against this pest; however, for best effectiveness and insecticide resistance management, their use should be reserved for situations when multiple pest species are present and appropriately matched to the combination of active ingredients and modes of action contained in the product.					
	*Endigo ZC		5-5.5 fl oz/A	24	14	
	Voliam Flexi WDG		4.0-7.0 oz/A	12	14	
	*Voliam Xpress		6-12 fl oz/A	24	14	
<b>Postharvest</b>						
<b>European red mite, Twospotted spider mite</b>	Nexter 75WS		4.4-10.7 oz/A	12	300 (PH)	[6.3]
<b>Control of Storage Disorders</b>						
<b>Storage rots</b>	Scholar SC	16 fl oz/100 gal (see comments and label)				[16.1]
<b>Autumn</b>						
<b>Bacterial canker (<i>Pseudomonas syringae</i>)</b>	Kocide 2000		6-12 lb/A	48	BL,PH	[1.1]
	or Kocide 3000		3.5-7.0 lb/A	48	BL,PH	
	or Cuprofix Ultra 40 Disperss		5-8 lb/A	48	BL,PH	
	or §Champ WG		8-16 lb/A	48	PH	
	or other (§)coppers	See comments				

## 15.2 Diseases

### 15.2.1 Bacterial Canker (*Pseudomonas syringae*)

#### • Biology & Cultural

See the description of pathogen biology and (§)copper spray timing for this disease under “Cherries—Diseases.” No recent research has been done on bacterial canker in apricots under east coast conditions. However, this pathogen is probably responsible for much of the early tree death that follows limb die-back and trunk cankers that commonly develop in young apricot plantings. *P. syringae* can also cause a severe blossom blast on apricots if pathogen populations are high when a bloom-time frost occurs. Blossom blast can kill most of the spurs on affected trees.

When pruning, make sure to leave a 6-inch stub, especially when removing scaffold branches as the bacteria appear to be arrested within the stub. Avoid flush cut pruning.

To minimize the potential for severe losses from bacterial canker, apricot plantings should not be located adjacent to old sweet cherry orchards nor close to hedgerows or woodlots that contain wild Prunus (especially wild black cherry, *Prunus serotina*). Copper sprays should be applied in spring and fall as for sweet cherries. The spring copper spray may be even more important on apricot than on sweet cherry because apricots appear more sensitive to blossom blast. Entry of the pathogen through pruning wounds can be minimized if pruning is done during hot, dry

weather after bloom or after harvest, because *P. syringae* is suppressed by hot weather. Trunks and scaffolds on apricot trees should be painted with white latex paint in autumn to reduce the potential for winter injury, as *P. syringae* can also enter where bark is injured during winter.

#### • Pesticide Application Notes

[1.1] Optimum timing and effectiveness of (§)copper applications for control of bacterial canker and blossom blast of apricots has not been determined under eastern conditions. However, applying copper at the maximum labeled rates at the late dormant stage should increase the likelihood that effective copper residues will remain on the trees throughout the bloom period. Copper applications are especially important on young trees because trees less than five years old can be killed by bacterial canker if infections reach the main trunk.

### 15.2.2 Bacterial Spot (*Xanthomonas arboricola* pv. *pruni*)

#### • Biology & Cultural

Bacterial spot can be devastating to apricots. Apricot varieties developed in drier climates and then grown in the more humid climate of New England are the most likely to be susceptible. This disease will be more severe in the warmer southern portions of New England, in wet years, in orchards with lighter (sandy) soils, and in windy orchard sites. The bacterial spot pathogen, *Xanthomonas arboricola* pv. *pruni* infects leaf scars at leaf

drop and overwinters in infected twigs. Bacteria populations subsequently multiply during warm weather and ooze out during spring rains. Immature tissues are less susceptible to the bacterial infection, and as such, infections will not begin until petal fall/shuck split. Early season copper applications applied to manage bacterial canker are quite effective for controlling the bacterial spot populations, but also likely to induce phytotoxicity if one is not careful.

- **Pesticide Application Notes**

Unfortunately, there are no materials registered for bacterial spot on apricots. Despite the effectiveness, do not make a dormant (\$)copper application for bacterial spot. Copper applications to manage bacterial canker and bacterial blast are still allowed whether or not the planting has bacterial spot.

### 15.2.3 Brown Rot

- **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 disease. *Monilinia laxa* commonly referred to as European brown rot is present in the region and can cause extensive blossom and shoot blight in cool wet weather at bloom. *M. laxa* is primarily a problem on European or dark-fleshed tart cherry varieties, but in wet years causes considerable problems in apricots.

- **Pesticide Application Notes**

[2.1] Apricots are much more susceptible to blossom blight than any other stone-fruit species. At least 1 protective spray should be applied each year; repeat at full bloom and/or petal fall if wet weather prevails during bloom. Pristine, Gem, Indar, Rally, Quash and Tilt are generally more effective than captan or Bravo. When used at a rate of 10 oz/100 gal dilute, Rovral 50WP provides 24-48 hr kickback activity against blossom blight infections at 68° F; Indar and Tilt also have significant kickback activity. Scala, Vanguard, and Elevate have not been tested on apricots, but they have been effective for blossom blight on peaches.

[2.2] The shuck split application is an important spray. Chlorothalonil (Bravo, Echo) provides a longer period of protection than either captan or sulfur, but do not use chlorothalonil after shuck split. Also, chlorothalonil has a limited effect on *Monilinia laxa*, and should be used in combination with a material from 2.1 in orchards where both *M. laxa* and *M. fructicola* are present.

[2.3] Fruit are very susceptible to brown rot prior to pit hardening and the last 3 wk before harvest. It is recommended that spray intervals be shortened during the preharvest period and that Indar, Tilt, Quash, or Pristine be used if disease pressure is high (warm, wet). Indar and Tilt are registered for use beginning 3 weeks before harvest. Of these materials, Indar has the longest residual activity.

- **Pesticide Resistance**

[2.4] For resistance management purposes, the SI fungicides (Indar & Tilt) should not be used routinely throughout the season for BOTH blossom blight AND fruit

rot control. Where stone fruits within the same block ripen over an extended season, continued use of SI fungicides as preharvest sprays for successive varieties will also create selection pressure for fungicide resistance. Use captan or Pristine to break the string of preharvest SI fungicides applied to varieties with varied ripening or harvest dates.

### 15.2.4 Peach Scab

- **Biology & Cultural**

Peach scab can severely damage apricot if spring weather is warm and wet and no fungicides are applied at shuck split and first cover. The disease is more common following a year when spring frosts caused a crop failure, because trees grown for an entire summer without fungicides are more likely to carry peach scab infections the following year.

- **Pesticide Application Notes**

[3.1] Apply 2 or 3 sprays at 10-14-day intervals beginning at shuck split. Under light disease pressure, a single application of Bravo or Echo applied at shuck split may provide season-long control. Bravo and Echo cannot be applied after shuck split.

### 15.2.5 Perennial (Cytospora, Valsa) Canker

- **Biology & Cultural**

[4.1] See discussion of this disease under Peaches. Also, 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 disease.

### 15.2.6 Phytophthora Root, Crown, and Collar Rots

- **Biology & Cultural**

[5.1] Apricot rootstocks are perhaps more susceptible to Phytophthora root, crown, and collar rots than any other fruit tree rootstock grown in New England. The main defenses against these diseases should be providing good soil drainage through proper site selection and physical manipulations such as tiling or planting on berms. In general, berms are much more effective than tiling. See comment [5.2] about pesticide applications.

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 disease.

- **Pesticide Application Notes**

[5.2] In addition to the cultural practices noted in comment [5.1], Ridomil will provide additional protection in wet years, on marginal sites, or in wetter sections of the orchard. Applications should be made just before growth starts in the spring and at 2-3 month intervals thereafter if soil conditions are very wet. Apply to the soil beneath the tree canopy in sufficient water to assure good coverage (material is moved into the soil by subsequent rain or irrigation). See label for further details.

## 15.3 Insects and Mites

**15.3.1 Brown Marmorated Stink Bug** – refer to section on Stink Bugs

### 15.3.2 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**

[6.1] Apply (S)oil against overwintering eggs.

[6.2] Apply as mites appear in a minimum of 50 gal/A. Acramite, Apollo, Envidor, Onager and Savey limited to 1 application per season.

[6.3] Use lower rate of Nexter for European red mite, and higher rate of Nexter, for twospotted spider mite (see label). Apricots can only be treated with Nexter after harvest and have a 300 day pre harvest interval.

[6.4] Portal Has a supplemental label for stone fruits.

### 15.3.3 Japanese Beetle

**• Biology & Cultural**

[7.1] Adults emerge from the soil between early July and mid-August to feed on numerous trees and shrubs. In peach trees, beetles devour the tissue between the veins, leaving a lace-like skeleton, and also feed on the surface of the fruit. Severely injured leaves turn brown and often drop. Adults are most active during the warmest parts of the day and prefer to feed on plants that are fully exposed to the sun.

**• Pesticide Application Notes**

[7.2] Although pheromone traps are available and can be hung in the orchard in early July to detect the beetles' presence, they are generally NOT effective at trapping out the beetles. Fruit and foliage may be protected from damage by applying Sevin, Assail, \*Leverage, or Admire Pro; repeated applications may be required. For best effectiveness and insecticide resistance management, the use of pre-mixes such as \*Endigo, \*Leverage and \*Voliam Xpress should be reserved for those situations when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product.

### 15.3.4 Oriental Fruit 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.

**• Biological & Non-chemical Control**

[8.1] (S)Pheromone disruption is economically justified if 2-3 sprays are normally applied, and if no other

insecticide sprays are routinely needed for other pests after petal fall. For this reason, disruption may not be economical for the 1st brood, as plum curculio sprays at this time normally would also control oriental fruit moth.

Pheromones should be applied in mid-June before initiation of the 2nd flight; the need for re-application depends on residual field life of specific formulations: Isomate-M 100 and SCheckmate OFM Dispenser, 90 days; Checkmate OFM-F, 30 days. Insecticide sprays or a double rate of pheromone may be needed in orchards adjacent to sources of adult immigration or in other high pressure situations.

**• Pesticide Application Notes**

[8.2] 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. In high pressure blocks, a final spray should be applied 2 wk before harvest to control late season larvae.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as \*Endigo, \*Leverage, Voliam Flexi and \*Voliam Xpress should be reserved for those situations when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product.

Suggested action threshold: Avg. of >10 adults/week caught per pheromone trap.

### 15.3.5 Peachtree Borers (including Lesser peachtree borer)

**• 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.

**• Biological & Non-chemical Control**

[9.1] Hang (S)pheromone ties at shucksplit before moth flight begins. Pruning should be done before hanging dispensers. Use Isomate PTB-Dual at a rate of 150 per acre. Use a higher rate (200-250/A) for outside edges of border blocks; areas that haven't been disrupted before and have high populations; and in blocks smaller than 5 acres. Isomate PTB-Dual is effective on both Peachtree Borer and Lesser Peachtree Borer.

**• Pesticide Application Notes**

[9.2] Up to 3 sprays of pyrethroids to trunk and scaffold limbs against larvae: June 1-10, July 7-15, and August 1-10 (do not spray fruit). \*Baythroid not labeled for peachtree borer.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as \*Endigo, \*Leverage and \*Voliam Xpress should be reserved for those situations when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product.

Suggested action threshold: 1st emergence of adults plus 8 days (in blocks with a history of damage), or 1-2 larvae or pupal cases/tree.



### 15.3.6 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.

#### • **Monitoring and Forecasting**

Monitor for adults beginning at bloom using beating trays. Examine fruit, especially along border rows, beginning at shuck-split. Suggested threshold is 1-2 % new damage. Use degree day model to determine when immigration into orchard should be complete. This is at 308 DD (base 50<sup>0</sup>) from apple petal fall.

#### • **Pesticide Application Notes**

**[10.1]** 2-3 applications. Begin at fruit set (shucks on) and follow at 8-10-day (for Sevin) or 10-14-day (for other products) intervals. Do not apply Actara between the pre-bloom (swollen bud) and post bloom (petal fall) growth stages.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as \*Leverage, Voliam Flexi and \*Voliam Xpress should be reserved for those situations when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product.

**[10.2]** Frequent applications (7-10-day intervals) of §Surround and maximal coverage (minimum of 100 gal/A) are advised while there is active foliar growth. If fresh market stone fruit cannot be washed according to label instructions, discontinue sprays when the fruit are approximately 3/4 inch in diameter.

**[10.3]** Persons not covered by the Worker Protection Standard (WPS), such as members of the general public involved in “pick-your-own”, “U-Pick” or similar operations, cannot enter a treated area for 14 days after application of Imidan.

### 15.3.7 Scales, including European Lecanium and San Jose Scale

#### • **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 San Jose scale.

#### • **Pesticide Application Notes**

**[11.1]** Apply (§)oil against overwintering immatures.

**[11.2]** One application 4-6 weeks after shuck split, against newly hatched crawlers. Movento must be used with an organosilicone or nonionic spray adjuvant.

### 15.3.8 Spotted Wing Drosophila

#### • **Biology & Cultural**

**[12.1]** This is an exotic species of vinegar fruit fly, a group normally attracted to damaged and rotting fruit. But in contrast to endemic Drosophila fruit flies, it has a

serrated ovipositor and will lay eggs in intact ripening fruit on the tree and on the farmstand shelf. It is also a pest of berry fruit crops. Originally known from Japan, it has been found throughout New England since 2011. Refer to the reference materials list (17.4) at the end of this publication for fact sheets containing details on the biology and management of this species.

#### • **Monitoring**

**[12.2]** Vinegar-baited traps are not effective as an indicator of first emergence. Contact your local Cooperative Extension for information on the latest trapping techniques. Once adult SWD are trapped and fruit begin to ripen, apply insecticides weekly through harvest, rotating between insecticide classes. Choose insecticides based on efficacy and pre-harvest interval. Most insecticides will be made more effective by adding sugar to stimulate SWD feeding. Add 1-2 pounds of white sugar per 100 gallons of spray mixture. Inspect ripening fruit for larvae.

#### • **Pesticide Application Notes**

**[12.3]** Apply at first signs of adult activity. If repeated applications are necessary, rotate active ingredients to avoid promoting resistance in local populations. Pyganic can provide adult knockdown but has a very short residual of 0-2 days.

**[12.4]** Persons not covered by the Worker Protection Standard (WPS), such as members of the general public involved in “pick-your-own”, “U-Pick” or similar operations, cannot enter a treated area for 14 days after application of Imidan.

### 15.3.9 Stink Bugs (including Brown Marmorated Stink Bug)

#### • **Biology & Cultural**

**[13.1]** A number of native stink bug species (Brown, Dusky and Green Stink Bugs) can sometimes cause fruit damage in all tree fruits under conditions that are not fully understood. Adult feeding during bloom and shuck split can cause the fruit to abort, and feeding later in the summer can cause a deep catfacing injury such as that caused by tarnished plant bug, or depressed, dimpled, corky or water-soaked areas on the skin. All tree fruits are attacked, especially peaches and apples. Other species of stink bugs are predators. Elimination of alternate host broadleaf weeds, especially legumes, in the orchard will contribute to management efforts. If control is needed, insecticides should be timed to kill immigrating adults as they appear in the orchards to prevent feeding damage and subsequent mating and egg laying.

The brown marmorated stink bug is an invasive species from Asia that was first documented in Allentown, PA in 2001. It has caused extensive damage to apple and peach crops in the mid-Atlantic states in recent years. It has a wide host range and is more likely to reproduce in orchards as compared to native species. This insect has spread across a number of eastern US States, and now extends to the west coast as well. It was first documented in Connecticut in 2008.

BMSB is known to be in all New England states and in 2014 became an agricultural pest in Connecticut. Refer to the reference materials list (17.4) at the end of this publication for fact sheets containing details on the biology and management of brown marmorated stink bug.

• **Pesticide Application Notes**

[13.2] A provisional threshold has been established. Apply pesticides when trap captures are 10 BMSB adults/trap or 1 BMSB per 100 ft of orchard perimeter border. BMSB are very mobile pests, and may re-infest the treated area quickly. If repeated applications are necessary, rotate active ingredients to avoid promoting resistance in local populations. For best effectiveness and insecticide resistance management, the use of pre-mixes such as \*Endigo, \*Leverage, Voliam Flexi and \*Voliam Xpress should be reserved for those situations when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product.

### 15.3.10 Tarnished Plant Bug

• **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. Satisfactory control requires adequate management of orchard weeds that attract this pest and act as alternate hosts.

• **Monitoring & Forecasting**

[14.1] Most catfacing injury is caused before shuck split. Later season feeding generally results in only minor surface scarring.

[14.2] Apply spray as insects or damage appears and if action threshold is reached. Suggested action threshold: 3 bleeding sites/tree or 1-2% of fruit with new injury.

• **Pesticide Application Notes**

[14.3] At 10-14-day intervals as needed in midsummer. Do not apply Actara between the pre-bloom (swollen bud) and post bloom (petal fall) growth stages. For best effectiveness and insecticide resistance management, the use of pre-mixes such as \*Leverage, Voliam Flexi and \*Voliam Xpress should be reserved for those situations

when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product.

### 15.3.11 Western Flower Thrips

• **Biology & Cultural**

Drought conditions and high temperatures may encourage damaging populations. Adults move from alternate weed or crop hosts to fruit just prior to and during harvest, feed on the fruit surface in protected sites, such as in the stem end, the suture, under leaves and branches, and between fruit. Feeding results in silver stippling or patches; injury is particularly obvious on highly colored varieties.

• **Pesticide Application Notes**

[15.1] In orchards with severe infestations, a petal fall application may be warranted against thrips feeding in fruit clusters. Control may be improved by addition of an adjuvant.

[15.2] An application immediately after harvest may prevent subsequent losses; however, an additional application may be needed if pressure is severe. Control with Entrust or Delegate may be improved by addition of an adjuvant. Note 14 day pre-harvest interval.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as \*Leverage, Voliam Flexi and \*Voliam Xpress should be reserved for those situations when the pest complex to be treated is appropriately matched to the combination of active ingredients and modes of action contained in the product.

### 15.4 Storage Rots

• **Pesticide Application Notes**

[16.1] A postharvest treatment with Scholar SC via dipping, flooders, T-jet, or similar system for control of storage rots is recommended for fruit coming from orchards where sporulating brown rot was observed, or when one hopes keep fruit in cold storage for a few days prior to sale. Holding tanks in postharvest treatment equipment must have excellent agitation to keep fungicides in suspension. Solutions must be replenished regularly as directed on the product label. Never expose treated fruit to direct sunlight. This will cause the fungicide to break down.

## 15.5 Growth Regulation of Apricots

**Table 15.3.2. Plant Growth Regulator Use in Apricots**

*Refer to inside back cover for key to abbreviations and footnotes.*

Timing	Product	Concentration	Rate of Formulated Product	Comments
<b>Preharvest Fruit Drop Control</b>				
1-2 weeks before anticipated harvest	ReTain	132 ppm	0.74 lb/acre or 333 g/acre (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.