OKLAHOMA COOPERATIVE EXTENSION SERVICE CR-6241
0115 Rev.
Current Report

Commercial Apple Insect and Disease Control — 2015

Jackie Lee
Extension Entomologist

Phil Mulder
Extension Entomologist

Read and follow all label directions

In the following tables, the quantity of materials to mix to apply to apples is the amount of spray volume needed to cover one acre of well pruned, standard size trees. In Oklahoma, application rates will vary from 25-200 gallons per acre. Effectiveness of spray volumes will be determined by several factors including: tree sizes, tree densities, canopy density, and nozzle type. Irrespective of the amount of liquid per acre applied, use the amount of chemical per acre listed below as a guide for mixing. Numerous insecticides are labeled for use and are effective against insect and mite pests on apples. See the list of labeled insecticides for materials we have been able to determine are labeled for current use. However, registrations and use patterns are constantly changing and all recommendations should be offered with the advice to R**EAD THE LABEL** of any and all pesticides to be used on any crop.

Application and Timing	*Pests Involved*	*Amount of Materials Needed*		*Comments*
		*Material[1] (MOA Group)**	*Per Acre*	
DORMANT: Apply when trees are dormant and temperature is above 40°F.	San Jose Scale Forbes Scale European red mite Apple aphid	Superior Summer Oil[2] (*)	See label	For scale insect control apply a minimum of 150 gallons of liquid per acre.
		Microthiol Special (M) (Mites only)	10-20 lbs	Delayed dormant application
		Apollo SC (10)	4-8 oz	
		Battalion 0.2EC[r] (3)	14.1 oz	
		Beleaf 50SG (9C)	2.0-2.8 oz	Suppression of aphids.
		Lorsban 4E (1B)	1.5 pts	Aphids only.
GREEN TIP:	Scab	Flint (11)	2-3 oz	
		Nova 40 W (3)	5-8 oz	
		Rubigan EC (3)	8-12 oz	
		Sovran (11)	4-6.4 oz	
		Topsin-M 70W (1)	1-1.5 lb	
		Ziram 76DF (M4)	6-8 lb	
	Powdery Mildew	Nova 40W (3)	5-8 oz	
		Rubigan EC (3)	8-12 oz	
		Topsin-M 70W (1)	1-1.5 lb	
		Ziram 76DF (M4)	6-8 lb	
	Cedar Apple Rust	Nova 40W (3)	5-8 oz	
		Rubigan EC (3)	8-12 oz	
		Ziram 76DF (M4)		6-8 lb

Application and Timing	*Pests Involved*	*Amount of Materials Needed* *Material[†] (Group)**	*Per Acre*	*Comments*
GREEN TIP: (cont'd)	Scale or Mites	Battalion 0.2EC[r] (3)	7.0-14.1 oz	Scale only.
		Superior Oil or highly refined summer oil (*)	See label	If application is delayed until tight cluster to pink, reduce oil to ½-1 gal per 100 gal.
		Pasada 1.6F (4A)	8 oz	
		Provado 1.6 F (4A)	8 oz	
		Danitol 24EC[r] (mites only) (3)	16.0-21.33 oz	Superior Oil, Pasada, Provado and Danitol kill
		Zeal (10B)	2-3 oz	overwintering eggs of mites.
		Apollo SC (mites only) (10)	4 oz	
		Savey 50WP (mites only) (10A)	3 oz	
		Acramite 50WS (mites only) (25)	0.75-1.0 lb	
PREBLOOM: When flower buds first show pink.	Scab	Same as Green Tip		
	Powdery Mildew	Same as Green Tip		
	Cedar Apple Rust	Same as Green Tip		
	Cankerworm	Asana XL (3)	4.8-14.5 oz	
	Aphids	Assail 70WP (4A)	1.1-1.7 lbs	
		Ambush 2EC[r] (3)	6.4-25.6 oz	
		Battalion 0.2EC[r] (3)	7.0-14.1 oz	Aphids only.
		Beleaf 50SG (9C)	2.0-2.8 oz	Aphids only.
		Danitol 2.4EC[4] (3)	10.66-21.33 oz	
		Dimethoate 4EC (1B)	2-4 pt	
		Lannate LV[r] (1A)	2 pt	
		Lorsban 4E[r] (1B) (No preharvest interval, because labeled use is prior to fruiting.)	1.5 pt	
		Mustang-Max[r] (3)	1.28-4.0 oz	
		Pasada 1.6F (4A)	8 oz	
BLOOM STAGE: When the first blossoms open. To protect bees do not use insecticide during the bloom stage.	Fireblight	Agri-Strep	See label	
	Scab, Powdery Mildew, Cedar Apple Rust	Same as Green Tip		
	Codling moth	Do not apply insecticides.		
		Isomate CT or	400	See footnote 3
		Checkmate CM	200	
PETAL FALL: When most of the petals have fallen.	Scab, Powdery Mildew, Cedar Apple Rust	Same as Green Tip		
Sevin should not be applied until 30 days after full bloom to avoid thinning of fruit.	Codling Moth, Plum Curculio	Ambush 25W[r] (3)	6.4-25.6 oz	
		Asana XL[r] (3)	4.8-14.5 fl oz	
		Assail 70WP (4A)	1.7-3.4 lbs	
		Battalion 0.2EC[r] (3)	7.0-14.1 oz	
		Calypso 4F (4A)	4-8 oz	
		Danitol 2.4EC[r] (3)	16.0-21.33 oz	
		Dimethoate 4EC (1B) (codling moth)	1 pt	

Application and Timing	*Pests Involved*	*Amount of Materials Needed* *Material[r] (Group)**	*Per Acre*	*Comments*
		Entrust (5)	2-3 oz	
		Guthion 50WP[r] (1B)	2-3 lb	
		Imidan 70WP[6] (1B)	2.13-5.33 lb	
		Intrepid 2F (18)	10-16 oz	
		Javelin (11B2)	0.5-4.0 lb	Javelin, Intrepid and Entrust are for
		Lannate LV[r] (1A)	2 pt	codling moth and other caterpillar
		Mustang-Max[r] (3)	1.28-4.0 oz	pests only.
		Pounce 3.2EC[r] (3)	4-8 oz	
		Rimon 0.83EC (15)	30-50 oz	
		Warrior[r] (3)	2.56-5.12 oz	
FIRST COVER: Two weeks after petal fall.	Scab, Cedar Apple Rust, Powdery Mildew		Same as Green Tip	
	Codling Moth	Assail 70WP (4A)	1.7-3.4 lbs	
		Asana XL[r] (3)	4.8-14.5 fl oz/A	
		Battalion 0.2EC[r] (3)	7.0-14.1 oz	
		Calypso 1.4F (4A)	4-8 oz	
		Danitol 2.4EC[r] (3)	16.0-21.33 oz	
		Dimethoate 4Ec (1B)	1 pt	
		Guthion 50WP[r] (1B)	3 lb	
		Imidan 70WP[6] (1B)	2.13-5.33 lb	
		Intrepid 2F (18)	12-16 oz	
		Javelin (11B2)	0.5-4.0 lb	
		Lannate LV[r] (1A)	2 pt	
		Mustang-Max[r] (3)	1.28-4.0 oz	
		Rimon 0.83 EC (15)	20-50 oz	Rimon is effective for leafrollers. See
		Seize 35 WP (7D)	4-5 oz	label for specific rates.
		Thiodan 3EC (2A)	6 pt	
	Aphids	Asana XL (3)	4.8-14.5 oz	Aphids only.
	Scale	Beleaf 50SG (9C)	2.0-2.8 oz	Aphids only.
		Danitol 2.4EC[r] (3)	10.66-21.33 oz	
		Dimethoate 4EC (1B)	2 pt	Aphids only.
		Movento(23)	6.0-9.0 oz	Aphids only.
		Mustang-Max[r] (3)	1.28-4.0 oz	
		Pasada 1.6F (4A)	8 oz	
		Provado 1.6F (4A)	8 oz	
		Seize 35WP (7D)	3-5 oz	
SECOND COVER: Ten days after first cover.	Black Rot (Frog Eye Leaf Spot), Sooty Blotch, Bitter Rot, Flyspeck	Captan 50WP (M4)	4-8 lb	
		Flint (11)	2-3 oz	
		Sovran (11)	4-6.4 oz	
		Topsin-M 70W (1)	1-1.5 lb	
		Ziram 76DF (M4)	6-8 lb	
	Codling Moth Aphids	Same as First Cover.		
THIRD COVER: Ten days after second cover.	Sooty Blotch, Scab, Bitter Rot	Same as Second Cover.		
	Codling Moth	Same as First Cover plus Sevin[4]	1 lb	
FOURTH COVER: Ten days after third cover. About June 1.	Bitter Rot	Same as Second Cover.		
	Codling Moth	Same as First Cover plus Sevin.[4]	1 lb	
	Mites	Abacus[r] (6)	10-20 oz	For best results use Abacus[r] with
		Acramite 50WS (25)	0.75 - 1.0 lbs	horticultural spray oil, not a dormant oil. Limited to a period

Application and Timing	*Pests Involved*	*Amount of Materials Needed* *Material[r] (Group)**	*Per Acre*	*Comments*
FOURTH COVER: (cont'd)		Agri-Mek[5] 0.15 EC (6)	10-20 oz	extending from petal fall through six
		Carzol SP (1A)	1-1.5 lb	weeks following petal fall.
		Dicofol 4E (20)	4 pt	
		Onager 1EC (10A)	12-24 oz	
		Pyramite 60 WP (21)	4.4-13.2 oz	
		Summer oil*	½-1% solution	
		Wettable Sulfur (M)	5-15 lb	
		Vendex 50WP[r] (12B)	1-2 lb	
		Zeal (10B)	2-3 oz	
FIFTH AND LATER COVERS: At 10 day intervals until 2 weeks before harvest.	Codling Moth	Same as First Cover plus Sevin.[4]		1 lb
	Mites	Same as Fourth Cover Sprays.		

* Horticultural oils are physical toxicants which act as suffocant and entrapment insecticides.[r] Restricted Use Pesticide.

MOA Group Tables start on page 43 of the handbook.

1 Check Table 1 for date of last application prior to harvest.

2 Scale insects may not be a problem if trees were regularly sprayed in cover applications with Guthion in the previous year. Horticultural oils act as suffocant and entrapment insecticides.

3 Mating disruption dispensers are only recommended in orchards with low codling moth populations and not in blocks of less than 5 acres. Isomate CT releases pheromone for a minimum of 100 days, but Checkmate CM dispensers release pheromone for only 75 days. Two applications of Checkmate CM per season should be made.

4 Avoid use of Sevin from bloom to 30 days after full bloom, unless fruit thinning is desired, then follow directions on the label. Avoid use of Sevin in areas exhibiting heavy mite infestation.

5 Do not exceed 20 fl oz per acre per application or 40 fl oz per acre in a growing season. Do not make more than 2 applications per growing season. Do not apply in less than 40 gals of water per acre. If second application is needed, do not re-treat within 21 days. See label for additional precautions about certain varieties.

6 Imidan is very sensitive to alkaline hydrolysis; therefore, check the pH of the tank mix and add a buffering agent if necessary, to adjust the pH to 6.0 or lower. Do not attempt to acidify solutions containing copper compounds.

TABLE 1 LIMITATIONS
NUMBER OF DAYS BEFORE HARVEST

DAYS FROM LAST APPLICATION TO HARVEST

CHEMICALS**	DAYS	CHEMICALS**	DAYS
Abacusr	28	Movento	7
Acramite 50WS	7	Mustang-Maxr	14
Agri-Mek	28	Nova	14
Agri-Strep	50	Omite	7
Ambushr	Do not apply after petal fall.	Onager	28
		Pasada	7
Apollo SC	45	Pouncer	Do not apply after petal fall.
Asana XLr	21		
Battalionr	21	Provado	7
Beleaf	21	Pyramite 60WP	25
Calypso	30	Rimon	14
Captan	0	Rubigan EC	30
Carzol SP	7	Savey WP	Do not apply after pink stage.
Danitol 2.4EC	14		
Dimethoate 4EC	28	Sevin	3
Dicofol	7	Sovran	30
Flint	30	Summer Oil	0
Guthion 50Wr	14	Thiodan	21
Imidan	7	Topsin-M 70W	0
Javelin	0	Vendexr	14
Lannate LV	14	Wettable Sulfur	7
Lorsban 4Er14	14	Zeal	28
Lorsban 50Wr	28	Ziram	14

**See labels for other limitations.

[r] Restricted use pesticide.

MITES. The most important mites of this region are red spider mites and two spotted spider mites. Red mites pass the winter as somewhat spherical eggs of a bright red to orange color on twigs and smaller branches of the tree. Two spotted mites generally over winter as orange, hibernating females in protected locations of cover crops or other debris. They then migrate to the foliage of the trees in the spring and summer. Mites overwintering on the tree may be controlled by delayed dormant oil sprays. In the event control is not satisfactory, one should rotate between Kelthane, Omite or Guthion sprays.

WOOLY APPLE APHID. The winter is spent as eggs and young nymphs on elm trees. After two spring generations on elm, they migrate to apples, usually in late June or early July. Several generations are produced on apples during the remainder of the summer. These aphids are purplish and characteristically covered with white, waxy secretion. Their presence can be detected by visual observations of the scaffold limbs. They are usually found where there are wounds from pruning or at the base of water sprouts. Chemicals, such as Guthion, applied to control other aphids usually suppress populations of this pest as well.

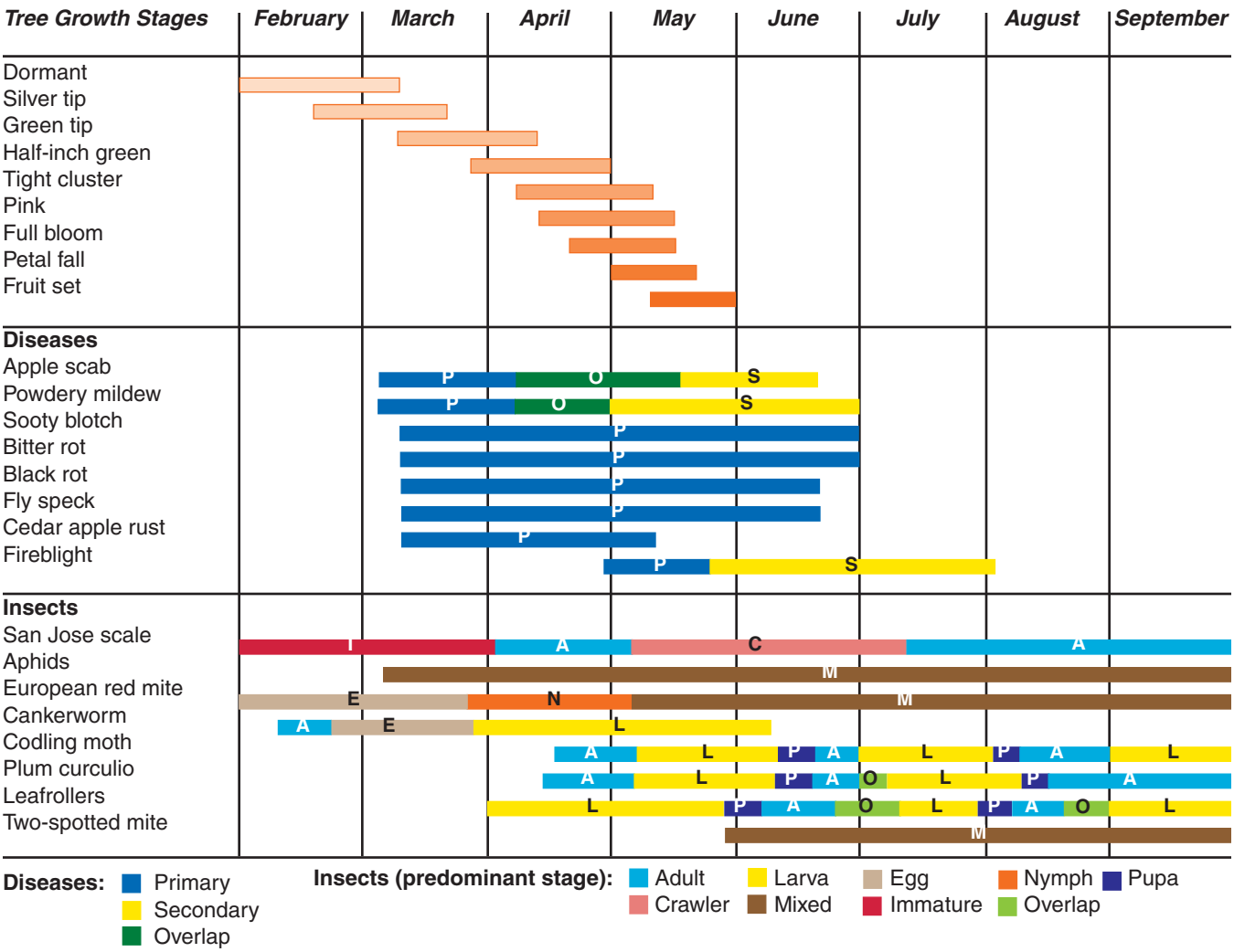
For detailed information on using pesticides safely, see OSU Extension Fact Sheets EPP-7451, “Agricultural Pesticide Storage;” EPP-7454, “Check Your Pesticide Labels;” and EPP-7457, “Toxicity of Pesticides.”

* See labels for other limitations.
[r] = Restricted use pesticide.

Apple

1. Dormant
2. Silver tip
3. Green tip
4. Half-inch green
5. Tight cluster
6. Pink
7. Bloom
8. Petal fall
9. Fruit set

Calendar of Events of Apple (pome fruit) in Oklahoma.



The Oklahoma Cooperative Extension Service
Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 42 cents per copy. Revised 0515 GH.