

18 Appendices

18.1 Pesticide Data

Table 18.1.1. Common names, product names, formulations, and days-to-harvest for pesticides used on tree fruits.

Common Names/ Products Formulations	DAYS TO HARVEST (A)					
	<i>Apples</i>	<i>Apricots</i>	<i>Cherries</i>	<i>Peaches</i>	<i>Pears</i>	<i>Plums</i>
Insecticides and Acaricides						
*abamectin						
*Agri-Mek 0.15EC	28	—	—	—	28	21
acequinocyl						
Kanemite 15SC	14	—	—	—	14	—
acetamiprid						
Assail 70WP, 30SG	7	—	—	—	7	—
§azadirachtin						
Aza-Direct	0	0	0	0	0	0
Azatin XL	0	0	0	0	0	0
Neemix 4.5 L	0	0	0	0	0	0
*azinphos-methyl						
*Guthion 50WS	14-21(A)	—	15	—	14-21(A)	—
bifenazate						
Acramite 50WS	7	3	3	3	7	3
*bifenthrin						
*Brigade WSB	—	—	—	—	14	—
*Fanfare 2EC	—	—	—	—	14	—
§Bt (<i>Bacillus thuringiensis</i>)						
Deliver 18WG	0	0	0	0	0	0
Dipel DF	0	0	0	0	0	0
Biobit XL	0	0	0	0	0	0
Javelin WG	0	0	0	0	0	0
Agree WG	0	—	—	0	0	0
carbaryl						
Sevin 4F, XLR Plus, 80S, 80WSP	3	3	3	3	3	3
chlorpyrifos						
Lorsban 50W	DD/28(A)	—	14(C)	—	—	—
*Lorsban 4EC	DD/28(A)	—	21	14	DD	DD
Lorsban 75 WG	PF/28(A)	—	DD/21(A)	DD/14 (A)	DD	DD
clofentezine						
Apollo 4SC	45	21	21	21	21	—
*cyfluthrin						
*Baythroid 2 XL	7	7	7	7	7	7
*diazinon						
50W	21	21	21	21	21	21
dicofol						
Kelthane 50WSP	7	—	—	—	7	—
dimethoate						
Dimethoate 4EC, 4E	—	—	—	—	28	—
*emamectin benzoate						
*Proclaim	14	—	—	—	14	—

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Common Names/ Products Formulations	DAYS TO HARVEST (A)					
	Apples	Apricots	Cherries	Peaches	Pears	Plums
*endosulfan						
Thionex 50W	21	21/30(A)	21	21/30(A)	7	7
Thionex 3EC	21	21/30(A)	21	21/30(A)	7	7
*esfenvalerate						
*Asana XL	21	14	14	14	28	14
etoxazole						
Zeal	14	—	—	—	14	—
*fenbutatin-oxide, hexakis						
*Vendex 50WP	14	—	14	14	14	14
*fenpropathrin						
*Danito1 2.4EC	14	—	—	—	14	—
fenpyroximate						
Portal 5EC	14	—	—	—	14	—
*gamma-cyhalothrin						
*Proaxis	21	14	14	14	21	14
§granulosis virus						
Carpovirusine	0	—	—	—	0	—
Cyd-X	0	—	—	—	0	0
hexythiazox						
Savey 50DF	28	28	28	28	28	28
*imidacloprid						
*Provado 1.6F	7	0	7	0	7	7
indoxacarb						
Avaunt	14	14	14	14	28	14
insecticidal soap						
M-Pede	0	0(G)	0(G)	0	0(G)	0(G)
§kaolin						
Surround WP	0	0	0	0	0	0
*lambda-cyhalothrin						
*Warrior	21	14	14	14	21	14
malathion						
Malathion 57EC, 5EC	—	7	3	7	—	—
*methidathion						
*Supracide 25W	DD	DD	DD	DD	DD	DD
*methomyl						
*Lannate LV, SP	14	—	—	4	7	—
*methoxyfenozide						
*Intrepid 2F	14	—	7	7	14	7
*oxamyl						
*Vydate L	14	—	—	—	14	—
*permethrin						
*Pounce 3.2EC, 25WP	PF	—	3	14	PB	—
*phosmet						
*Imidan 70W	7	14	7 (C)	14	7	7
§pyrethrin/rotenone						
PyGanic EC 1.4	0	0	0	0	0	0
Pyrenone	0	0	0	0	0	0
pyridaben						
Nexter 75WS	25	300	300	7	7	7

Table 18.1.1. Common names, product names, formulations, and days-to-harvest for pesticides used on tree fruits.

Common Names/ Products Formulations	DAYS TO HARVEST (A)					
	Apples	Apricots	Cherries	Peaches	Pears	Plums
pyriproxyfen Esteem 35WP	45	14	14	14	45	14
spinosad						
SpinTor 2SC	7	14	7	14	7	7
Entrust 80WP	7	14	7	14	7	7
spiroticlofen						
Envidor 2SC	7	7	7	7	7	7
*thiacloprid						
*Calypso 4F	30	—	—	—	30	—
thiamethoxam						
Actara	14/35 (A)	14	14	14	14/35 (A)	14
Fungicides and Bactericides						
azoxystrobin						
Abound	—	0	0	0	—	0
<i>Bacillus subtilis</i>						
Serenade ASO	0	0	0	0	0	0
captan						
Captan 50WP(E), 80WDG						
Captec 4L	0	0	0	0	—	0
chlorothalonil						
Bravo Weather Stik, Ultrex	—	SS	SS,PH	SS	—	SS
Echo 720, 90DF	—	SS	SS,PH	SS	—	SS
Chloronil 720	—	SS	SS,PH	SS	—	SS
Concorde	—	SS	SS,PH	SS	—	SS
Equus 500ZN	—	SS	SS,PH	SS	—	SS
Applause	—	SS	SS,PH	SS	—	SS
copper hydroxide						
Kocide 2000, 4.5LF, 101, DF	HIG	BL	BL(G)	21	BL	BL
Champ Formula 2F	GT	BL	BL(G)	21	BL	BL
NuCop 50DF,	HIG	BL	BL(G)	21	BL	BL
KOP-Hydroxide 50W	HIG	BL	BL(G)	21	BL	BL
Basicop	HIG	BL	BL(G)	21	BL	BL
copper oxychloride sulfate						
C-O-C-S WDG	HIG,BL(A)	PF	PF(G)	PF	BL	PF
copper salts						
Tenn-Cop 5E	GT	—	PF(C)	BL	—	—
copper sulfate						
Cuprofix Disperss	2C	BL	PH	SS	BL	BL
cyprodinil						
Vanguard WG	72	BL	BL(C)	BL	72	BL
DCNA						
Botran 75W	—	10	10(F)	10	—	BL
dodine						
Syllit 65WP, FL	7	—	0	15	7	—
fenarimol						
Rubigan EC	30	—	0	—	30	—
fenbuconazole						
Indar 75WSP	14	0	0	0	—	—

Table 18.1.1. Common names, product names, formulations, and days-to-harvest for pesticides used on tree fruits.

Common Names/ Products Formulations	DAYS TO HARVEST (A)					
	Apples	Apricots	Cherries	Peaches	Pears	Plums
fenhexamid Elevate 50WDG	—	0	0	0	—	0
ferbam Ferbam Granuflo	7	—	0	21	7	—
fosetyl-Al Aliette WDG	14	(B)	(B)	(B)	14	(B)
hydrogen dioxide OxiDate	0	0	0	0	0	0
iprodione Rovral 50WP, 4 Flowable, Iprodione 4L AG, 50WP AG	—	PF	PF	PF	—	PF
kresoxim-methyl Sovran 50WG	30	—	—	—	30	—
lime sulfur Allpro Lime Sulfur	0	—	0	0	0	0
Miller Lime Sulfur Solution	0	—	0	0	0	0
Sulforix Lime Sulfur	0	—	0	0	0	0
Suregard Lime Sulfur	0	—	0	0	0	0
Mancozeb Dithane F-45, M45, 75DF	BL,77(A)	—	—	—	BL,77(A)	—
Manzate 75DF, Flowable	BL,77(A)	—	—	—	BL,77(A)	—
Penncozeb 75DF, 80WP	BL,77(A)	—	—	—	BL,77(A)	—
mancozeb + copper hydroxide ManKocide	HIG	—	—	—	BL	—
Maneb Manex	BL,77(A)	—	—	—	—	—
Mefanoxam Ridomil Gold EC	GT	GT	GT	GT	—	GT
Metiram Polyram 80DF	BL,77(A)	—	—	—	—	—
myclobutanil Nova 40W	14	0	0	0	—	0
oxytetracycline Mycoshield, Flameout 17WP	—	—	—	21	60	—
	—	—	—	21	60	—
phosphite products Agri-fos	0	0	0	0	0	0
Fungi-Phite	0	0	0	0	0	0
Phostrol	0	0	0	0	0	0
Topaz	0	0	0	0	0	0
prohexadione calcium Apogee	45	—	—	—	—	—
propiconazole Orbit	—	0	0	0	—	0
pyraclostrobin + boscolid Pristine	0	0	0	0	0	0
pyrimethanil Scala	72	2	—	2	72	2

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Common Names/ Products Formulations	DAYS TO HARVEST (A)					
	<i>Apples</i>	<i>Apricots</i>	<i>Cherries</i>	<i>Peaches</i>	<i>Pears</i>	<i>Plums</i>
streptomycin						
Agri-mycin 17	50	—	—	—	30	—
Firewall	50	—	—	—	30	—
Streptrol 17WP	50	—	—	—	30	—
Agricultural streptomycin 17WP	50	—	—	—	30	—
sulfur						
Kumulus DF	PH,PF(A)	—	0	0	PH,PF(A)	0
Microthiol Disperss	PH,PF(A)	—	0	0	PH,PF(A)	0
Wettable sulfur	PH,PF(A)	—	0	0	PH,PF(A)	0
Thiolux Jet	PH,PF(A)	—	0	0	PH,PF(A)	0
tebuconazole						
Elite 45WP	—	—	0	0	—	—
thiophanate-methyl(E)						
Topsin M WSB, 70WDG, 70WP	0	1	1	1	1	1
Topsin 4.5L	1	1	1	1	—	1
T-methyl 70W WSB	0	1	1	1	1	1
Thiophanate Methyl 85WDG	0	1	1	1	1	1
thiram						
Thiram Granuflo	—	—	—	7	—	—
triadimefon						
Triadimefon 50DF	45	—	—	—	45	—
Bayleton	45	—	—	—	45	—
trifloxystrobin						
Flint	14	—	—	—	14	—
Gem 500 SC	—	1	1	1	—	1
triflumizole						
*Procure 50WS	14	—	1	—	14	—
ziram						
Ziram 76DF	14	30	14	14	14	—
Ziram Granuflo 76WDG	14	30	14	14	14	—

Key:**BL** Do not apply beyond bloom.**GT** Do not apply beyond green tip.**HIG** Do not apply beyond 1/2-in green.**PB** Prebloom applications only.**PF** Do not apply beyond petal fall.**PH** Postharvest applications allowed.**SS** Do not apply behind shuck split.**2C** Do not apply after 2d cover spray.**DD** Delayed dormant application**(A)** If more than one value is given, depends on rate, method and/or number of applications; check label.**(B)** Nonbearing trees only.**(C)** Tart cherries only.**(D)** Restricted entry interval: 96 hr (peaches), 72 hr (apples), 48 hr (pears).**(E)** Refer to label for details of restricted entry interval.**(F)** Sweet cherries only.**(G)** Refer to label for details on timing of application

— Not registered for use on crop.

* Restricted-use pesticide; may be purchased and used only by certified applicators, or used by someone under the supervision of a certified applicator.

§ Potentially acceptable in certified organic programs

Table 18.1.2. HERBICIDES - Common names, product names, formulations, pre-harvest intervals, restricted entry intervals, and personal protective equipment (PPE) for herbicides available for tree fruit crops.

Common Name (group) Product Name	Formulation	EPA Reg. Number	Crops	Pre-Harvest Interval (days)	REI (hrs)	Applicator PPE	Early Entry PPE
2,4-D (4)							
*2,4-D Amine 4	3.8 lb AI/gal	1381-103	Pome/Stone fruits	14/40	48	bdghij	bdghj
Amine 4	3.8 lb AI/gal	34704-120	Pome/Stone fruits	14/40	48	abch	bchk
Formula 40	3.67 lb AI/gal	228-357	Stone fruits	40	48	abchi	bchk
Unison	1.74 lb AI/gal	5905-542	Pome/Stone fruits	14/40	48	acfhi	cfhk
*Weedar 64	3.8 lb AI/gal	71368-1	Pome/Stone fruits	14/40	48	dfghij	dfghj
bromacil (5)							
*Hyvar X	80WP	352-287	Non-crop sites only	NA	until dry	acfo	cfk
*Hyvar X-L	2 lb AI/gal	352-346	Non-crop sites only	NA	until dry	acf	NA
carfentrazone-ethyl (14)							
Aim EC	2 lb AI/gal	279-3241	Pome/Stone fruits	3	12	abc	bck
Aim EW	1.9 lb AI/gal	279-3242	Pome/Stone fruits	3	12	abc	bck
clethodim (?)							
Select	2EC	59639-3	All	365	24	acfh	cdefh
clopyralid (?)							
Stinger	3 lb AI/gal	62719-73	Stone fruits	30	12	acfh	cfhk
dichlobenil (?)							
Casoron 4G	4G	400-168	Apple, pear, cherry	Follow label	12	Acf	cfk
diuron (7)							
Direx 4L	4 lb AI/gal	1812-257	Pome fruits/Peach	Follow label/20	12	acfl	cfk
Direx 80DF	80DF	1812-362	Pome fruits/Peach	Follow label/90	12	acf	cfk
Diuron 4L (Drexel)	4lb AI/gal	19713-36	Pome fruits/Peach	Follow label/90	12	acf	cfk
Diuron 4L (Agrisolutions)	4lb AI/gal	9779-329	Pome fruits/Peach	Follow label/90	12	acfh	cfhk
Diuron 4L (MANA)	4lb AI/gal	66222-54	Pome fruits/Peach	Follow label/90	12	acfl	cfk
Diuron 80DF (MANA)	80DF	66222-51	Pome fruits/Peach	Follow label/90	12	acfl	cfk
Diuron 80DF (Agrisolutions)	80DF	9779-318	Pome fruits/Peach	Follow label/90	12	ac	bck
Diuron 80WDG	80WDG	34704-648	Pome fruits/Peach	Follow label/90	12	acf	cfk
Karmex DF	80DF	352-692	Pome fruits/Peach	Follow label/20	12	abf	cfk
Karmex XP	80% AI	352-692	Pome fruits/Peach	Follow label/90	12	acfil	cfk
fluazifop-p-butyl (1)							
Fusilade DX	2lb AI/gal	100-1070	Pome/Stone fruits	365/14	12	acfhi	cfk
flumioxazin (14)							
Chateau WDG	51WDG	59639-119	All crops	60	12	acf	cfk
glufosinate-ammonium (?)							
Rely	1lb AI/gal	264-652	Apple	14	12	acfh	cfhk
glyphosate (9)							
Cornerstone	4 lb AI/gal	524-445-1381	Pome/Stone fruits	1/17	12	ac	bck
Credit (etc.)	4 lb AI/gal	71368-20	All	1/17	4	ac	d/e, f, c
Gly-4 Plus	4lb AI/gal	42750-61-72693	Pome/Stone fruits	1/17	4	ach	bchk
Roundup Original	4 lb AI/gal	524-445	Pome/Stone fruits	1/17	12	ach	cfhk
Roundup Original Max	5.5 lb AI/gal	524-539	Pome/Stone fruits	1/17	4	acf	cfk
Roundup Ultradry	64.9% AI	524-504	Pome/Stone fruits	1/17	4	ac	cfk
Roundup Weathermax	5.5 lb AI/gal	524-537	Pome/Stone fruits	1/17	4	acf	cfk

Table 18.1.2. HERBICIDES - Common names, product names, formulations, pre-harvest intervals, restricted entry intervals, and personal protective equipment (PPE) for herbicides available for tree fruit crops.

Common Name (group) Product Name	Formulation	EPA Reg. Number	Crops	Pre-Harvest Interval (days)	REI (hrs)	Applicator PPE	Early Entry PPE
glyphosate (9) (continued)							
Touchdown HiTech	5 lb AI/gal	100-1182	Pome/Stone fruits	1/17	12	ac	cfk
Touchdown IQ	3 lb AI/gal	100-1117	Pome/Stone fruits	1/17	12	ac	cfk
Touchdown Total	4.17 lb AI/gal	100-1169	Pome/Stone fruits	1/17	12	acf	cfk
glyphosate & 2,4-D (9, 4)							
Recoil	1.6 & 1 lb AI/gal	71368-35	Pome/Stone fruits	14/40	12	dfghi	fghk
isoxaben (?)							
Gallery	75DF	62719-145	All	365	12	a, c	d/e, b, c
napropamide (?)							
Devrinol 50DF	50DF	70506-36	All crops	35	12	Acf	cfk
norflurazon (?)							
Solicam DF	80DF	100-849	All crops	60	12	abc	bck
oryzalin (3)							
Oryzalin 4 A.S.	4 lb AI/gal	72167-17-73220	All crops	-	24	acfi	cfk
Surflan Dry Flowable	85% AI	70506-46	All crops	-	24	acf	cfk
Surflan A.S. (UPI)	4 lb AI/gal	70506-43	All crops	-	24	acfi	cfk
oxyfluorfen (14)							
Galigan 2E	2 lb AI/gal	66222-28	All crops	Follow label	24	dfghij	dfghj
Goal 2XL	2 lb AI/gal	62719-424	All crops	Follow label	24	efghij	efghj
*paraquat (22)							
*Gramoxone INTEON	2 lb AI/gal	100-1217	All	Follow label	12	acfhino	cfhk
*Gramoxone MAX	3 lb AI/gal	100-1074	Pome fruits	Follow label	12	acfhino	cfhk
*Gramoxone MAX	3 lb AI/gal	100-1074	Cherry, plum, apricot	28	12	acfhino	cfhk
*Gramoxone MAX	3 lb AI/gal	100-1074	Peach	14	12	acfhino	cfhk
pendimethalin (3)							
Prowl 3.3 EC	3.3 lb AI/gal	241-337	All crops	NB, 365	24	acf	cfk
Prowl H ₂ O	3.8 lb AI/gal	241-418	All crops	60	24	acf	cfk
rimsulfuron (2)							
Matrix FNV	25% DF	352-671	All	7 pome/14 stone	4		
*pronamide (?)							
*Kerb 50W	50WP	62719-397	Pome/Stone fruits	Follow label	24	bdgij	bdgi
sethoxydim (?)							
Poast	1.5EC	7969-58	Pome fruits	14	12	dfghij	dfghj
Poast	1.5EC	7969-58	Cherry, peach, apricot	25	12	dfghij	dfghj
Poast	1.5EC	7969-58	Plum	365	12	dfghij	dfghj
simazine (5)							
Princep Caliber 90	90WDG	100-603	Pome, peach/cherry, plum	-	12	acf	cfk
Princep 4L	4 lb AI/gal	100-526	Pome, peach/cherry, plum	-	12	acf	cfk
Simazine 4L (Drexel)	4 lb AI/gal	19713-60	Pome, cherry, peach, plum	-	12	acf	cfk
Simazine 90DF (Drexel)	90WDG	19713-252	Pome, cherry, peach, plum	-	12	acf	cfk

Table 18.1.2. HERBICIDES - Common names, product names, formulations, pre-harvest intervals, restricted entry intervals, and personal protective equipment (PPE) for herbicides available for tree fruit crops.

Common Name (group) Product Name	Formulation	EPA Reg. Number	Crops	Pre-Harvest Interval (days)	REI (hrs)	Applicator PPE	Early Entry PPE
simazine (5) (continued)							
Sim-Trol 90DF	90DF	35915-12-60063	Pome, cherry, peach, plum	-	12	abc	bck
Sim-Trol 4L	4 lb AI/gal	35915-11-60063	Pome, cherry, peach, plum	-	12	acf	cfk
terbacil (?)							
Sinbar	80 WP	352-317	Apple, peach	60	12	acf	cfk
Sinbar	80 WP	352-317	Nonbearing fruit trees	NB, 365	12	acf	cfk

Key:

* Restricted-use pesticide; may be purchased and used only by certified applicators, or used by someone under the supervision of a certified applicator.

- Pre-Harvest Interval information not listed on label except if tank mixed with other materials.

Pome fruits = apple, pear

Stone fruits = cherry, peach, apricot, plum

NB = Nonbearing

REI = Restricted entry interval

PPE = Personal protective equipment

a Long-sleeved shirt & long pants

b Waterproof gloves

c Shoes plus socks

d Coveralls over short-sleeved shirt & short pants

e Coveralls over long-sleeved shirt & long pants

f Chemical-resistant gloves; refer to label for specifics

g Chemical-resistant footwear & socks

h Protective eyewear

i Chemical-resistant apron when cleaning equipment, mixing or loading

j Chemical-resistant headgear for overhead exposure

k Coveralls

l Dust/mist filtering respirator (MSHA/NIOSH approval no. prefix TX-21C)

m Respirator with either an organic vapor-removing cartridge with a pre-filter approved for pesticides (MSHA/NIOSH approval no. prefix TC-3) or a canister for pesticides (MSHA/NIOSH approval no. prefix TC-14G)

n Face shield for mixing and loading

o Dust/mist filtering respirator (NIOSH approved) with any N, R, P or HE filter

Table 18.1.3. Common names, product names, formulations, and days-to-harvest for growth regulators.

Common Name/ Product Name	Formulation	EPA Reg. No.	Crop	Preharvest Interval
Amid-Thin W naphthalene-acetamide	8.4 WP	5481-426	Apple, pear	—
Apogee prohexadione calcium	27.5% DF	7969-188	Apple	45 days
Ethrel ethephon	2 lb/gal	264-267	Apple, cherries	7 days
Exilis Plus cytokinin	2.0% liquid	62097-9	Apple	86 days
Fruitone N naphthalene-acetic acid	3.1%	5481-427	Apple, pear	2 days
Maxcel cytokinin	1.9%	73049-407	Apple	86 days
Novagib gibberellin	1.0% liquid	62097-7	Apple	—
Perlan cytokinin+gibberellin	1.8% + 1.8% liquid	62097-6	Apple	—
Pro-Gibb gibberellic acid	4% liquid	73049-15	cherries	0 days
Pro-Gibb Plus 2X gibberellic acid	20% SP	73049-16	Sweet cherry	0 days
Pro-Vide gibberellin	2% liquid	73049-3	Apple	—
Pro-Vide gibberellin	10% SG	73049-409	Apple	—
Promalin cytokinin+gibberellin	1.8% + 1.8% liquid	73049-41	Apple, pear, sweet cherry	—
Retain AVG	15% SP	73049-45	Apple, pear	7 days
RiteSize cytokinin+gibberellin	1.8% + 0.18% liquid	55146-86	Apple	—
RiteWay cytokinin	1.9% liquid	71368-60	Apple	86 days
Tre-Hold RTU naphthalene-acetic acid	1.15%	5481-452	Apple, pear, nectarine	—
Typy cytokinin+gibberellin	1.8% + 1.8% liquid	55146-78	Apple	—

— Preharvest interval information not provided on label.

Table 18.1.4. EPA numbers and worker protection standard re-entry and personal protective equipment (PPE) guidelines.

Worker Notification: Under most circumstances, worker employers must make sure that workers are notified about areas where pesticide applications are taking place or where restricted-entry intervals are in effect. Some pesticide labels require you to notify workers BOTH orally AND with signs posted at entrances to the treated area. Unless the pesticide labeling requires both types of notification, notify workers EITHER orally OR by the posting of warning signs at entrances to treated areas. You must inform workers which method of notification is being used. For details on notification requirements both for these products and those not represented below, refer to the product label and the Worker Protection Standard, 40 CFR part 170.

INSECTICIDES & ACARICIDES Product	EPA Reg. No.	Common Name	REI (hrs)	Applicator PPE	Early Entry PPE
Acramite 50WS	400-503	bifenazate	12	ac	cfk
Actara	100-938	thiamethoxam	12	acf	cfk
§Agree WG	70051-47	Bt	4	abcp	bck
*Agri-Mek 0.15EC	100-898	abamectin	12	dfghij	dfghj
Apollo SC	66222-47	clofentezine	12	acf	cfk
*Asana XL	352-515	esfenvalerate	12	acfh	cfhk
Assail 70WP	8033-23	acetamiprid	12	abcj	bck
Avaunt	352-597	indoxacarb	12	acf	efg
§Aza-Direct	71908-1-10163	azadirachtin	4	abc	bck
§Azatin XL Plus	70051-27	azadirachtin	4	acfh	cfhk
*Baythroid 2	264-745	cyfluthrin	12	acfh	cfhk
*Baythroid XL 1E	264-840	beta-cyfluthrin	12	acfh	cfhk
§Biobit XL	73049-54	Bt	4	abcp	bck
*Brigade WSB	279-3108	bifenthrin	12	abc	bck
*Calypso 4F	264-806	thiacloprid	12	acf	cfk
§Carpovirusine 0.99SC	66330-55	granulosis virus	4	acfhlo	achf
§Checkmate OFM-F 24.6S	56336-24	pheromone	0	abc	—
§Cyd-X	70051-44	granulosis virus	4	ac	bck
*Danitol 2.4EC	59639-35	fenpropathrin	24	acfh	cfhk
§Deliver 18WG	70051-69	Bt	4	abcp	bck
*Diazinon 50W	66222-10	diazinon	96	abcj	efgj
Dimethoate 4EC	19713-231	dimethoate	48	afghjlmq	fghjk
Dimethoate 4E	51036-110	dimethoate	48	acfhjlmq	cfhjk
§Dipel DF	73049-39	Bt	4	abcp	bck
§Entrust 80WP	62719-282	spinosad	4	ac	bck
Envidor 2SC	264-831	spirodiclofen	12	abc	abc
Esteem 35WP	59639-115	pyriproxyfen	12	ac	bce
*Fanfare 2EC	66222-99	bifenthrin	12	acfh	cfk
*Guthion 50WS	66222-162	azinphos-methyl	14-15 days(E)	efghijm	efghj
*Imidan 70W	10163-169	phosmet	72	acfij	cfjk
*Intrepid 2F	62719-442	methoxyfenozide	4	acf	cfk
§Isomate LPTB	53575-23	pheromone	0	abc	—
§Isomate-M 100	53575-19	pheromone	0	abc	—
§Javelin WG	70051-66	Bt	4	abcp	bck

INSECTICIDES & ACARICIDES Product	EPA Reg. No.	Common Name	REI (hrs)	Applicator PPE	Early Entry PPE
Kanemite 15SC	66330-38	acequinocyl	12	acf	cfk
Kelthane 50WSP	62719-414	dicofol	48	bcehijl	bchk
§Kumulus DF	51036-352	sulfur	24	acfh	cfhk
*Lannate 90SP	352-342	methomyl	48-96(E)	acfhilq	cfhk
*Lannate LV 2.4L	352-384	methomyl	48-96(E)	acfhilq	cfhk
*Lorsban 4EC	62719-220	chlorpyrifos	96	dfgijlq	dfgj
Lorsban 50WS	62719-221	chlorpyrifos	96	dfgijlq	dfgj
Lorsban 75WG	62719-301	chlorpyrifos	96	dfgijlq	dfgj
Malathion 8 Aquamul	34704-474	malathion	12	acfh	cfhk
Malathion 5	9779-5	malathion	12	acfhj	cfhjk
§M-Pede 49L	62719-515	insecticidal soap	12	dfghij	bck
Nexter 75WS	81880-4	pyridaben	12	abchjlo	bchjklo
Portal Miticide/Insecticide	71711-19	fenpyroximate	12	acfhj	dfghij
*Pounce 3.2EC	279-3014	Permethrin	12	abc	bck
*Pounce 25 WP	279-3051	permethrin	12	abc	bck
*Proaxis	74921-3-34704	gamma-cyhalothrin	24	acfh	cfk
*Proclaim	100-904	emamectin benzoate	48	cef	cfhk
*Provado 1.6F	264-763	imidacloprid	12	acf	cfk
§PyGanic 1.4EC	1021-1771	pyrethrins	12	acf	cfk
§Pyrenone	432-1033	Pyrethrins/PBO	12	acf	cfk
Savey 50DF	10163-250	hexythiazox	12	abc	abc
Sevin 80S	264-316	carbaryl	12	abcj	bcjk
Sevin 80WSP	264-526	carbaryl	12	abcj	bcjk
Sevin XLR Plus	264-333	carbaryl	12	acfj	cfjk
Sevin 4F	264-349	carbaryl.	12	acfj	cfjk
SpinTor 2SC	62719-294	Spinosad	4	ac	cfk
*Supracide 25W	10163-244	methidathion	48/14 days(E)	abclq	bck
§Surround WP	70060-14	kaolin	4	aclo	ac
*Thionex 3EC	66222-63	endosulfan	24	efghijm	efghj
*Thionex 50W	66222-62	endosulfan	24	bcdhijm	bcjk
*Vendex 50WP	1812-413	hexakis	48	dfghijq	cfhk
*Vydate L	352-372	oxamyl	48	efghijm	cfk
*Warrior	100-1112	lambda-cyhalothrin	24	acfh	cfk
Zeal	59639-138	etoxazole	12	acf	acf

FUNGICIDES & BACTERICIDES Product	EPA Reg. No.	Common Name	REI (hrs)	Applicator PPE	Early Entry PPE
Abound	100-1098	azoxystrobin	4	acf	cfk
Ag Streptomycin	66222-121	streptomycin	12	acfo	efgo
Agri-mycin 17WP	55146-96	streptomycin	12	acf	efg
Agri-fos	71962-1	phosphite	4	abch	bcdh
Aliette WDG	264-516	fosetyl-Al	12	abch	bchk
Allpro Lime Sulfur	769-558	lime sulfur	48	efghijl	efghj

FUNGICIDES & BACTERICIDES Product	EPA Reg. No.	Common Name	REI (hrs)	Applicator PPE	Early Entry PPE
Apogee 27.5%	7969-188	prohexadione calcium	12	acf	cfk
Applause 720	50534-188	chlorothalonil	12	acfh	cfhk
Bac-Master	55146-80-5481	streptomycin	12	abcl	fchk
Bayleton 50DF	264-737-5481	triadimefon	12	acfj	cfk
Botran 75W	10163-189	dichloronitroaniline	12	ac	bck
Bravo Weather Stik	50534-188-100	chlorothalonil	12	acf	cfhk
Bravo Ultrex	50534-201-100	chlorothalonil	12	dfghijlo	dfghj
Captan 50WP (Microflo)	51036-166	captan	96(E)	abchilo	bchk
Captan 80WDG	66222-58-51036	captan	24(E)	acfhio	cfhk
Captec 4L	51036-181	captan	24(E)	acfi	cfhk
§Champ Formula-2 4.6F	55146-64	copper hydroxide	24(E)	acfh	cfhk
Chloronil 720	50534-188-100	chlorothalonil	12	acf	cfhk
C-O-C-S WDG	34704-326	opper oxychloride & basic copper sulfate	24	acfh	cfhk
§Cuprofix Ultra 40 Disperss	4581-413-82695	basic copper sulfate	12	ac	cfk
Dithane Rainshield DF	62719-402	mancozeb	24	cefhi	cef
Dithane F-45 Rainshield	62719-396	mancozeb	24	cefhi	cef
Dithane M45	62719-387	mancozeb	24	cefhi	cef
Echo 720	60063-7	chlorothalonil	12(E)	acfhm	cfhk
Echo 90DF	60063-10	chlorothalonil	12(E)	acfhm	bchk
Elevate 50WDG	66330-35	fenhexamid	12	acf	cfk
Elite 45WP	264-749	tebuconazole	12	acfh	acfh
Equus 500ZN	72167-27-66222	chlorothalonil	12	acfh	cfhk
Ferbam Granuflo	45728-7	ferbam	24	acfhjl	cfhjk
Firewall	80990-4-82695	streptomycin	12	acfq	cef
Flameout 17WP	80990-1-4581	oxytetracycline HCl	12	acfhq	cef
Flint	264-777	trifloxystrobin	12	acf	cfk
Fungi-Phite	83472-1	phosphite	4	abch	bchk
GEM 500 SC	264-826	trifloxystrobin	12	acf	cfk
Indar 75WSP	62719-421	fenbuconazole	12	acfj	cfk
Iprodione 4L AG	51036-340	Iprodione	24	efgijl	cef
§Kocide 2000	1812-358	copper hydroxide	24(E)	acfh	cfhk
§Kocide 4.5LF	1812-303	copper hydroxide	24(E)	acfh	cfhk
§Kocide 101	1812-288	copper hydroxide	24(E)	acfh	cfhk
§Kocide DF	1812-334	copper hydroxide	24(E)	acfh	cfhk
§Kumulus DF	51036-352	sulfur	24	acfh	cfhk
*Manzate 75DF	1812-414-352	mancozeb	24	cefhi	cef
Manzate Flowable	1812-416	mancozeb	24	cefhi	cef
ManKocide	352-690	mancozeb + copper hydroxide	24	cefhi	cef
Mertect 340-F	100-889	thiabendazole	12	ac	cfk
§Microthiol MZ Disperss	4581-373-82695	sulfur	24	abc	bchk
§Miller Lime Sulfur	66196-2-72	lime sulfur	48	efghijl	efghj
Mycoshield	55146-97	oxytetracycline HCl	12	acfh	cfhk

FUNGICIDES & BACTERICIDES Product	EPA Reg. No.	Common Name	REI (hrs)	Applicator PPE	Early Entry PPE
Nova 40W	62719-411	myclobutanil	24	acfh	cfhk
NuCop 50DF	45002-4	copper hydroxide	24	acfh	cfhk
Orbit	100-702	propiconazole	24	acfh	cfhk
OxiDate	70299-2	hydrogen dioxide	1	eg	bck
Penncozeb 75DF	4581-370	mancozeb	24	cefhi	cef
Penncozeb 4FL	4581-394	mancozeb	24	cefhi	cef
Phostrol	55146-83	phosphite	4	acfh	cfhk
Polyram 80DF	7969-105-34704	metiram	24	cefhi	cef
Pristine	7969-199	pyraclostrobin/boscalid	12	acf	cfk
*Procure 50WS	400-431	triflumazole	12	acf	cfk
Ridomil Gold EC	100-801	mefanoxam	48	acf	cfk
Rovral 50WP	264-453	iprodione	24	efgjil	cfk
Rovral 4 Flowable	264-482	iprodione	24	efgjil	cfk
Rubigan EC	10163-273	fenarimol	12	dfghij	dfghi
Scala	264-788	pyrimethanil	12	acf	ac
Scholar 50WP	100-969	fludioxonil	psthvst	acf	—
Serenade ASO	69592-12	<i>Bacillus subtilis</i>	4	abco	abc
Sovran	7969-154	kresoxim-methyl	12	acf	cfk
Streptrol	55146-80	streptomycin	4	acfl	cef
Suregard Lime Sulfur	769-558	lime sulfur	48	efghijl	efghj
Syllit FL	55260-6	dodine	48	acfhij	efgj
§Tenn-Cop 5E	1812-381	copper salts	12	cdfhij	cdfhj
T-methyl 70W WSB	51036-344	thiophanate-methyl	12-72(E)	ac	cfk
§Thiolux Jet	100-1138	sulfur	24	acfh	efg
Thiophanate Methyl 85WDG	72167-10-73220	thiophanate-methyl	12-72(E)	acf	cfk
Thiram Granuflo	45728-21	thiram	24	acfj	acfj
Topaz	68573-2-1381	phosphate	4	acfh	cef
Topsin M 70WDG	73545-18-82695	thiophanate-methyl	12-72(E)	acf	cfk
Topsin M 70WP	73545-11-82695	thiophanate-methyl	12-72(E)	acf	cfk
Triadimefon 50DF	264-737-45728	triadimefon	12	acfjo	cfjk
Vanguard WG	100-828	cyprodinil	12	acf	cfk
Wettable sulfur	5905-289	sulfur	24	acfh	cfhk
Ziram 76DF	4581-140	ziram	48	abchl	bchk
Ziram Granuflo 76WDG	45728-12	ziram	48	acfhjl	cfhjk

GROWTH REGULATORS Product	EPA Reg. No.	Common Name	REI (hrs)	Applicator PPE	Early Entry PPE
Amid-Thin W	5481-426	NAD	48	abc	bck
Apogee	7969-188	prohexadione Ca	12	afc	cfk
Ethrel	264-267	ethephon	48	acfh	efghj
Exilis Plus	62097-9	BA	12	acfhi	cfhk

GROWTH REGULATORS Product	EPA Reg. No.	Common Name	REI (hrs)	Applicator PPE	Early Entry PPE
Fruitone N	5481-427	NAA	48	acf	bck
Maxcel	73049-407	BA	12	acf	cfk
§Pro-Gibb 4%	73049-15	GA ₃	12	acfh	cfhk
§Pro-Gibb Plus 2X	73049-16	GA ₃	4	abc	bck
Pro-Vide PGR	73049-3	GA ₄₊₇	12	acfh	cfhk
Pro-Vide 10 SG	73049-409	GA ₄₊₇	12	acfh	cfhk
Promalin	73049-41	GA ₄₊₇ + BA	4	abch	bck
ReTain	73049-45	AVG	12	abc	bck
RiteSize	55146-86	BA + GA ₄₊₇	12	ach	bchk
RiteWay	71368-60	BA	12	acfh	cfhk
Tre-Hold RTU	5481-452	NAA	12	acfh	cfhk
Typy	55146-78	BA + GA ₄₊₇	12	dfghim	abch

Key:

- a Long-sleeved shirt & long pants
- b Waterproof gloves
- c Shoes plus socks
- d Coveralls over short-sleeved shirt & short pants
- e Coveralls over long-sleeved shirt & long pants
- f Chemical-resistant gloves; refer to label for specifics
- g Chemical-resistant footwear & socks
- h Protective eyewear
- i Chemical-resistant apron when cleaning equipment, mixing or loading
- j Chemical-resistant headgear for overhead exposure
- k Coveralls
- l Dust/mist filtering respirator (MSHA/NIOSH approval no. prefix TC-21C)
- m Respirator with either an organic vapor-removing cartridge with a pre-filter approved for pesticides (MSHA/NIOSH approval no. prefix TC-3) or a canister for pesticides (MSHA/NIOSH approval no. prefix TC-14G)
- n Face shield for mixing and loading
- o Dust/mist filtering respirator (NIOSH approved) with any N, R, P or HE filter
- p Dust/mist filtering respirator meeting NIOSH standards of at least N-95, R-95, and P-95
- q NIOSH approved respirator with any R, P, or HE filter
- PPE Personal protective equipment
- REI Re-entry interval
- (E) Refer to label for details of restricted entry interval
- psthvst Post-harvest use only
- § Potentially acceptable in certified organic programs
- * Restricted-use pesticide; may be purchased and used only by certified applicators, or used by someone under the supervision of a certified applicator.

Table 18.1.5. Spray Mixture Compatibility**Notes**

This information is offered only as a general guide, and does not apply to pesticidal efficacy of mixtures. Read the label for specific crops or situations. Compatibilities indicated may be changed by certain adjuvants, different formulations, combinations of more than 2 materials, and environmental factors such as temperature and humidity.

- When potential compatibility is indicated, mini-mum agitation should be provided in all cases.
- Designations apply to at least one formulation of specified products. In cases where compatibility differs among formulations, the most conservative designation has been given. Defer to respective labels in all cases.
- Unless otherwise noted on the label, use soon after mixing, preferably in systems with continuous agitation.
- Physical compatibility: Although there may be no chemical incompatibility between the active ingredients of 2 given pesticides, some formulations of these products may not be physically compatible. This is particularly true when mixing at high concentrations and when mixing wettable powders with emulsifiable concentrates. It is recommended that a small batch of a proposed mixture be prepared before making tank combinations, to check for unacceptable physical reactions.

Directions

- Each product is assigned its own number, which appears to the left of the product name along the left-hand side of the chart.
- The product numbers (but not their names) are also listed along the top of the chart.
- To find the symbol representing our best information about compatibility of two products, find one product's number along the side and the other along the top, and trace the perpendicular lines to intersect in the table body.
- The compatibility values, which are highlighted in alternate rows and columns for ease in counting, are defined in the Key at the bottom. Also note the following footnotes:
 - §Bt products include Agree, Biobit, Deliver, Dipel, and Javelin, among others.
 - §Fixed copper products include C-O-C-S, Kocide, Champ, Cuprofix Disperss, and Tenn-Cop, among others.
- The “Mancozeb/+rams” category includes Dithane, Manzate, Penncozeb, as well as Thiram and Ziram.
- The “Pyrethroids” category refers primarily to Ambush and Pounce (permethrin).
- “Sterol Inhibitors” includes Rubigan, Nova, Indar, Orbit, Procure, and Elite.

Suggested Mixing Sequence

Always mix different spray materials in the following order, starting with:

- water soluble bags (WS)
- water dispersible granules and dry flowables (WDG, DF)
- wettable powders (WP)
- liquid flowables (L, F, FC)
- sprayable concentrates (S, SC, LC)
- emulsifiable concentrates (EC)
- surfactants, oils, and adjuvants Do not add oils, surfactants, or emulsifiable concentrates prior to dry formulations, or lumping may occur.

Table 18.1.5. Spray Mixture Compatibility
(Courtesy of The Pennsylvania State University)

PRODUCT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1 Acramite	-	1	1	1	1	1	1	1	1	4	1	1	1	4	1	1	1	1	1	1	4	4	1
2 †Actara	1	-	1	1	1	1	1	1	1	4	1	1	1	4	1	1	1	1	1	1	4	4	1
3 Apollo	1	1	-	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	4	4	1
4 *Asana	1	1	1	-	1	1	1	1	1	4	1	1	1	4	1	1	1	1	1	1	4	4	1
5 Assail	1	1	1	1	-	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	4	4	1
6 *AgriMek	1	1	1	1	1	-	1	1	1	4	1	1	1	4	1	1	1	1	1	1	4	4	1
7 †Avaunt	1	1	1	1	1	1	-	1	1	4	1	1	1	4	1	1	1	1	1	1	4	4	1
8 *azinphosmethyl	1	1	1	1	1	1	1	-	1	4	1	1	1	4	1	1	1	1	1	1	1	1	1
9 §Bt	1	1	1	1	1	1	1	1	-	3	1	1	1	1	1	1	3	1	1	1	3	1	1
10 §Bordeaux mixture	4	4	4	4	4	4	4	4	3	-	3	1	3	1	1	4	3	3	3	4	2	1	4
11 captan	1	1	1	1	1	1	1	1	1	3	-	1	1	1	1	1	1	1	5	1	1	4	1
12 carbaryl	1	1	1	1	1	1	1	1	1	3	1	-	1	1	1	1	1	1	4	1	1	1	1
13 *Carzol	1	1	1	1	1	1	1	1	1	3	1	1	-	1	1	1	1	4	1	1	1	4	1
14 chlorothalonil	4	4	1	4	1	4	4	4	1	1	1	1	1	-	1	1	1	1	4	4	5	4	1
15 chlorpyrifos	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1
16 *Danitol	1	1	1	1	1	1	1	1	1	4	1	1	1	4	1	-	1	1	1	1	4	4	1
17 *diazinon	1	1	1	1	1	1	1	1	3	3	1	1	1	4	1	1	-	1	1	1	1	2	1
18 dimethoate	1	1	1	1	1	1	1	1	1	3	1	1	4	1	1	1	1	-	1	1	2	4	1
19 *endosulfan	1	1	1	1	1	1	1	1	1	3	5	4	1	4	1	1	1	1	-	1	1	1	1
20 Esteem	1	1	1	1	1	1	1	1	1	4	1	1	1	4	1	1	1	1	1	-	4	4	1
21 ferbam	4	4	4	4	4	4	4	1	1	2	1	1	1	5	1	4	1	2	1	4	-	1	1
22 §fixed copper	4	4	4	4	4	4	4	1	1	1	4	1	4	4	1	4	2	4	1	4	1	-	4
23 *Imidan	1	1	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	4	-
24 †Intrepid	1	1	1	1	1	1	1	1	1	4	1	1	1	4	1	1	1	4	1	1	4	4	1
25 Kelthane	1	1	1	1	1	1	1	1	1	4	1	1	1	4	1	1	1	4	1	1	4	4	1
26 *Lannate	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	4	1	4	1	1
27 lime	4	4	4	4	4	4	4	3	1	1	3	3	3	1	1	4	4	3	3	4	2	1	3
28 malathion	1	1	4	1	4	1	1	1	1	3	5	1	4	1	1	1	1	1	1	1	1	1	1
29 mancozeb/+rams	1	1	1	1	1	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1
30 †Nexter	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4	1	1	1	1
31 §oil	1	1	1	1	1	1	1	5	4	1	3	4	1	1	1	1	1	4	4	1	1	4	6
32 *Provado	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1
33 *pyrethroids	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	4	4	1
34 Rovral	4	4	4	4	4	4	1	1	1	1	1	1	1	4	1	1	1	1	1	4	1	1	1
35 Savey	1	1	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	4	4	1
36 Spintor	1	1	1	1	1	1	1	1	1	4	1	1	1	4	1	1	1	1	1	1	4	4	1
37 sterol inhibitors	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
38 §sulfur	1	1	1	1	1	1	5	1	3	1	6	1	1	1	1	1	1	1	1	1	1	1	1
39 *Supracide	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	4
40 §Surround	1	1	1	1	1	1	1	1	1	3	1	1	1	4	1	1	1	1	1	1	4	4	1
41 Syllit	1	1	1	1	1	1	1	5	1	3	1	1	1	4	4	1	1	1	5	1	1	4	1
42 Topsin	1	1	1	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	3	1	1
43 *Vendex	1	1	1	1	1	1	1	1	1	3	1	1	1	1	1	1	1	4	1	1	1	4	1
44 *Vydate	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45 *Warrior	1	1	1	1	1	1	1	1	1	4	1	1	1	4	1	1	1	1	1	1	1	1	4

KEY:

- 1 = Potentially compatible, if used as directed
- 2 = Decomposes on standing, residual action reduced
- 3 = Not compatible or causes general injury
- 4 = CAUTION: Compatibility not clear, or questionable or not known
- 5 = Use wettable powder forms
- 6 = May cause injury; refer to comments in "Fruit Crop Protectants" or crop's "General Pest Management Considerations"

Table 18.1.5. Spray Mixture Compatibility (continued)
 (Courtesy of The Pennsylvania State University)

	PRODUCT	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1	Acramite	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
2	†Actara	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
3	Apollo	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
4	*Asana	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
5	Assail	1	1	1	4	4	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
6	*AgriMek	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
7	†Avaunt	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
8	*azinphosmethyl	1	1	1	3	1	1	1	5	1	1	1	1	1	1	5	1	1	5	1	1	1	1
9	§Bt	1	b	1	1	1	1	1	4	1	1	1	1	1	1	3	1	1	1	1	1	1	4
10	§Bordeaux mixture	4	1	3	1	3	1	1	1	3	3	1	4	4	1	1	1	3	3	3	3	1	1
11	captan	1	4	1	3	5	1	1	3	1	1	1	1	1	1	6	1	1	1	1	1	1	1
12	carbaryl	1	1	1	3	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1
13	*Carzol	1	1	1	3	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	chlorothalonil	4	1	1	1	1	1	1	1	1	1	1	1	4	1	1	1	4	4	1	1	1	4
15	chlorypyrifos	1	4	1	1	1	1	1	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1
16	*Danitol	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	*diazinon	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	dimethoate	4	4	1	3	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1	4	1	1
19	*endosulfan	1	1	4	3	1	1	4	4	1	1	1	1	1	1	1	1	1	5	1	1	1	1
20	Esteem	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	1
21	ferbam	4	1	4	2	1	1	1	1	1	4	1	4	4	1	1	1	4	1	1	1	1	4
22	§fixed copper	4	4	1	1	1	1	1	1	4	4	1	4	4	1	1	1	4	4	3	4	1	4
23	*Imidan	1	1	1	3	1	1	1	6	1	1	1	1	1	1	1	4	1	1	1	1	1	1
24	†*Intrepid	-	1	1	4	1	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1
25	Kelthane	1	-	1	2	4	1	1	4	1	1	4	1	1	1	4	4	1	1	1	1	1	1
26	*Lannate	1	1	-	3	4	4	1	4	1	4	1	1	1	1	4	1	1	4	1	1	1	1
27	lime	4	2	3	-	3	1	1	1	3	3	1	4	4	1	1	1	4	3	3	4	1	4
28	malathion	1	4	4	3	-	5	1	1	1	1	1	4	1	1	1	1	1	1	1	6	1	1
29	mancozeb/+rams	1	1	4	1	5	-	1	4	1	4	1	1	1	1	1	1	1	1	1	1	1	1
30	†Nexter	1	1	1	1	1	1	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
31	§oil	4	4	4	1	1	4	1	-	4	1	1	1	4	1	3	1	1	1	1	1	1	1
32	*Provado	1	1	1	3	1	1	1	4	-	1	1	1	1	1	1	1	1	1	1	1	1	1
33	*pyrethroids	1	1	4	3	1	4	1	1	1	-	1	1	1	1	4	1	1	4	1	1	4	1
34	Rovral	1	4	1	1	1	1	1	1	1	1	-	4	4	1	1	1	4	1	1	1	4	4
35	Savey	1	1	1	4	4	1	1	1	1	1	4	-	1	1	1	1	1	1	1	1	1	1
36	Spintor	1	1	1	4	1	1	1	4	1	1	4	1	-	1	4	1	1	1	1	1	1	1
37	sterol inhibitors	1	1	1	1	1	1	1	1	1	1	1	1	1	-	1	1	3	1	1	1	1	1
38	§sulfur	4	4	4	1	1	1	1	3	1	4	1	1	4	1	-	1	1	6	1	1	1	1
39	*Supracide	1	4	1	1	1	1	1	1	1	1	1	1	1	1	1	-	4	1	1	1	1	1
40	§Surround	1	1	1	4	1	1	1	1	1	1	4	1	1	3	1	4	-	1	1	1	1	1
41	Syllit	1	1	4	3	1	1	1	1	1	4	1	1	1	1	6	1	1	1	-	1	1	1
42	Topsin	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	1	1	1
43	*Vendex	1	1	1	4	6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	-	4	1
44	*Vydate	1	1	1	1	1	1	1	1	1	4	4	1	1	1	1	1	1	1	1	4	-	1
45	*Warrior	4	1	1	4	1	1	1	1	1	1	4	1	1	1	1	1	1	1	1	1	1	-

KEY:

1 = Potentially compatible, if used as directed

2 = Decomposes on standing, residual action reduced

3 = Not compatible or causes general injury

4 = CAUTION: Compatibility not clear, or questionable or not known

5 = Use wettable powder forms

6 = May cause injury; refer to comments in "Fruit Crop Protectants" or crop's "General Pest Management Considerations"

Table 18.1.6. Tree Fruit Reference Materials.

Univ. Massachusetts Fact Sheets		Online at: www.umass.edu/fruitadvisor/factsheets/factsheets.html
F-101R	Controlling Growth of Apple Trees	
F-114R	Limb Positioning	
F-116R	Maintaining a Balance Between the Top and Bottom of Apple Trees	
F-118R	Thinning Apples Chemically	
F-119R	Foliar Calcium Sprays for Apples	
F-124	Nutrient Recommendations for Apples	
F-126	Prebloom Nutrient Application for Apple Trees	
F-127R	Apogee – A New Growth Retardant for Apples	
F-128	Expansion of the Apple Harvest Season	
F-129A	Late-season “Rescue” Thinning with Ethephon	
F-130	Apple Tree Pruning and Training (English & Spanish)	
F-131	Enhancing Return Bloom on Apple with Plant Growth Regulators	
	Predicting Delicious Storage Scald	
F-200	Peach Leaf Curl	
	Block-specific Spray Calibration Worksheet	
	Dogwood Borer in Dwarf Apples	

Univ. Vermont Fact Sheets	Online at: orchard.uvm.edu/
	IPM 'Quick' Summary for Monitoring Apple Arthropod Pests
	IPM Checklist for Vermont
	Key Arthropods and Diseases Affecting Apples: A Synopsis
	Apple Orchard Information for Beginners

Newsletters & Periodicals

Healthy Fruit Newsletter (UMass)	Online at: http://www.umass.edu/fruitadvisor/healthy_fruit/
Fruit Notes (UMass)	Online at: http://www.umass.edu/fruitadvisor/fruitnotes/FruitNotes.htm
Apple IPM News (UVM)	Online at: http://orchard.uvm.edu/uvmapple/pest/

Websites

- Pesticide labels and MSDS sheets for most registered pesticides: <http://www.cdms.net/manuf/manuf.asp> [NOTE: The labels at this site may or may not contain state-specific restrictions.]
- Up-to-date listing of maximum residue levels for countries that import U.S. fruits: <http://www.mrldatabase.com>
- Rhode Island Apple IPM: <http://www.uri.edu/research/ipm>
- Rhode Island Fruit Growers website: <http://www.rifruitgrowers.org>
- Rhode Island product registration: <http://state.ceris.purdue.edu/htm/ri.htm>
- UMaine Apple IPM : <http://pmo.umext.maine.edu/apple/>
- PRONewEngland: <http://pronewengland.org/>
- UMass Fruit Advisor: <http://www.umass.edu/fruitadvisor/> Provides resources for commercial tree- and small-fruit growers, including access to archives of *Healthy Fruit*, *Berry Notes*, and *Fruit Notes*, various fact sheets, videos, and other useful information for fruit growers.
- UConn IPM: <http://www.hort.uconn.edu/ipm> Provides timely information on fruit pests and other fruit topics including meeting announcements and the online version of Crop Talk, a newsletter for commercial fruit and vegetable growers.
- Univ. Vermont’s OrganicA: <http://www.uvm.edu/organica/> A resource for organic apple production in New England.
- Univ. Vermont’s Apple Program: <http://orchard.uvm.edu/> A website for commercial apple growers in Vermont.

Cornell Tree Fruit IPM Fact SheetsOnline at: www.nysipm.cornell.edu/factsheets/treefruit/

A series of fact sheets developed for insect and disease pests of tree-fruit crops. These outline the biology, monitoring, and management of various pests and include color photographs to aid in identification.

Insect IPM Fact Sheets

102GFSTF-I1	Pear Psylla. 1978.
102GFSTF-I2	Codling Moth. 1996.
102GFSTF-I3	Plum Curculio. 1980.
102GFSTF-I4	Green Fruitworm. 1980.
102GFSTF-I5	Obliquebanded Leafroller. 1980.
102GFSTF-I6	Peachtree Borer. 1980.
102GFSTF-I8	Apple Maggot. 1991.
102GFSTF-I9	Spotted Tentiform Leafminer. 1980.
102GFSTF-I10	European Red Mite. 1980.
102GFSTF-I11	Rosy Apple Aphid. 1980.
102GFSTF-I12	San Jose Scale. 1980.
102GFSTF-I13	White Apple Leafhopper. 1980.
102GFSTF-I14	Dogwood Borer. 1985.
102GFSTF-I15	Cherry Fruit Fly & Black Cherry Fruit Fly. 1988.
102GFSTF-I16	Woolly Apple Aphid. 1988.
102GFSTF-I17	Oriental Fruit Moth. 1988.
102GFSTF-I18	Beneficial Insects. 1989.
102GFSTF-I19	Redbanded Leafroller. 1989.
102GFSTF-I20	European Apple Sawfly. 1991.
102GFSTF-I21	Tarnished Plant Bug. 1991.
102GFSTF-I22	Comstock Mealybug. 1991.
102GFSTF-I23	Predatory Mites. 1995.
102GFSTF-I24	American Plum Borer. 1997.
102GFSTF-I25	Phytophagous Mirid Bugs. 1998.
102GFSTF-I26	Apple-Boring Beetles. 1999.

Disease IPM Fact Sheets

102GFSTF-D3	Fire Blight. 1994.
102GFSTF-D4	Powdery Mildew of Apple. 2004.
102GFSTF-D5	Cedar Apple Rust. 1981.
102GFSTF-D6	Black Knot of Plum. 1992.
102GFSTF-D7	Phytophthora Root and Crown Rots. 1992.
102GFSTF-D8	Cherry Leaf Spot. 1993.
102GFSTF-D9	Apple Scab. 1993.
102GFSTF-D10	Brown Rot of Stone Fruits. 1993.
102GFSTF-D11	Sooty Blotch and Flyspeck. 1994.
102GFSTF-D12	Perennial Canker. 1995.

Mammal IPM Fact Sheets

102GFSTF-M1	Meadow Vole and Pine Vole. 1988.
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Cornell Extension Bulletins

IB 219	Orchard Nutrition Management. 1991. hdl.handle.net/1813/3305
IB 221	Predicting Harvest Date for Apples. 1992. hdl.handle.net/1813/3299
IPM207	Apple IPM. 1999. nysipm.cornell.edu/publications/apple_man

Cornell's Scaffolds NewsletterOnline at: <http://www.nysaes.cornell.edu/ent/scaffolds/>**Cornell Food and Life Sciences Bulletins**Online at: <http://www.nysaes.cornell.edu/pubs/fls/>

FLS 50	Green Fruitworms. 1974.
FLS 58	Growth Stages in Fruit Trees - From Dormant to Fruit Set. 1976.
FLS 92	Biology and Control of Cytospora Fungi in Peach Plantings. 1982.
FLS 95	Blister Spot of Apple. 1982.
FLS 108	Diagnostic Keys for Diseases of Apple, Peach and Cherry. 1984.
FLS 116	Chemical Thinning of Apples. 1986.
FLS 117	Peach and Nectarine Varieties in New York State. 1986.
FLS 118	Preventing Decomposition of Agricultural Chemicals by Alkaline Hydrolysis in the Spray Tank. 1986.
FLS 123	Basing European Red Mite Control Decisions on a Census of Mites Can Save Control Costs. 1988.
FLS 124	Insects Associated with Apple in the Mid-Atlantic States. 1988.
FLS 127	Sweet and Tart Cherry Varieties: Descriptions and Cultural Recommendations. 1989.
FLS 128	Effects of Ground Cover Manipulations on Pest and Predator Mite Populations on Apple in Eastern NY. 1989.
FLS 142	Fruit Pest Events and Phenological Development According to Accumulated Heat Units. 1993.
FLS 143	Sampling Second Generation Spotted Tentiform Leafminer. 1993.
FLS 158	New York Integrated Fruit Production Protocol for Apples. 2006.

NRAES Publications

Available from NRAES, Natural Resource, Agriculture and Engineering Service, Cooperative Extension, P.O. Box 4557, Ithaca, NY 14852-4557, Tel: 607-255-7654 FAX: 607-254-8770

NRAES-37	Orchard Spraying: Getting Results. 1993.
NRAES-38	Hydraulic nozzles for boom sprayers. 1994.
NRAES-78	On-Farm Agrichemical Handling Facilities. 1995.
NRAES-169	Tree Fruit Field Guide to Insect, Mite and Disease Pests and Natural Enemies of Eastern North Amer. 2006.

18.2 Diagnostic and Analytical Services

To submit samples for insect or disease diagnosis or plant identification, contact:

UMaine Insect & Plant Disease Diagnostic Laboratory
University of Maine Cooperative Extension
Pest Management Office
491 College Avenue
Orono, ME 04473
Insect Inquiries: 207-581-2963
Disease Inquiries: 207-581-3883
<http://pmo.umext.maine.edu/ipddl/ipddl.htm>

UMass Extension Plant Diagnostics Laboratory
160 Holdsworth Way
Holdsworth Natural Resources Center
University of Massachusetts
Amherst, MA 01003
413-545-3208
<http://www.umass.edu/agland/diagnostics/>

UNH Arthropod Identification Center
G28 Spaulding Hall
University of New Hampshire
38 College Road
Durham, NH 03824
603-862-3200
<http://extension.unh.edu/Agric/AGPDTS/ArthroID.htm>

UNH Plant Diagnostic Laboratory
G37 Spaulding Hall
University of New Hampshire
38 College Road
Durham, NH 03824
603-862-3841
<http://extension.unh.edu/Agric/AGPDTS/PlantH.htm>

URI Plant Clinic
3 East Alumni Ave.
Cooperative Extension Education Center
Kingston, RI 02881
401-874-2900
<http://www.uri.edu/ce/ceec/plantclinic.html>

To submit soil or leaf tissue nutrient analysis samples, contact

Connecticut Agricultural Experiment Station
Slate Laboratory
P.O. Box 1106
New Haven, CT 06504
203-974-8521
<http://www.caes.state.ct.us/Soiloffice/soiltesting.htm>

UConn Soil Nutrient Analysis Laboratory
6 Sherman Place, U-102
University of Connecticut
Storrs, CT 06269-5102
860-486-4274
<http://www.soiltest.uconn.edu>

UMaine Analytical Laboratory
Maine Soil Testing Service
5722 Deering Hall
University of Maine
Orono, ME 04469
207-581-2945
<http://anlab.umesci.maine.edu/>

UMass Soil & Tissue Testing Laboratory
West Experiment Station
682 North Pleasant Street
University of Massachusetts
Amherst, MA 01003
413-545-2311
<http://www.umass.edu/soiltest/>

UNH Cooperative Extension Soil Testing Program
G28A Spaulding Life Science Center
38 College Road
University of New Hampshire
Durham, NJ 03824
603-862-3200
<http://extension.unh.edu/Agric/AGPDTS/SoilTest.htm>

UVM Agricultural & Environmental Testing Laboratory
209 Hills Building
University of Vermont
Burlington, VT 05405
802-656-3030
http://www.uvm.edu/pss/ag_testing/