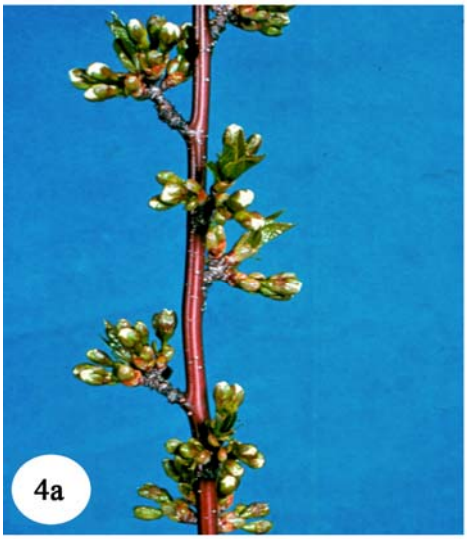

FIGURE 13.1.1

GROWTH STAGES IN TART CHERRY

1. Dormant
2. Swollen bud
3 Bud burst
4a. Early white bud
4b. White bud
5. Bloom
6. Petal fall
7. Fruit set

FIGURE 13.1.2

GROWTH STAGES IN SWEET CHERRY

1. Dormant
2. Swollen bud
3 Bud burst
4a. Early white bud
4b. White bud
5. Bloom
6. Petal fall
7. Fruit set

13 General Pest Management Considerations – Cherries

13.1 Diseases

Bacterial Canker (Pseudomonas syringae)

• Biology & Cultural

[1.1] The pathogen causing bacterial canker is favored by cool, wet weather (spring and fall). It can invade leaf scars in fall and fresh pruning wounds in spring if pruning is done under cool, wet conditions. 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.

The optimum timing and effectiveness of (§)copper applications for control of bacterial canker is during the fall (after leaf fall) and spring (before bud burst). Label directions specify one application in the fall "before heavy rains begin" and another at late dormant. A third application before bud burst in the spring is also recommended. (For more information on bacterial canker and control, see the fact sheet at: http://www.fruitadvisor.info/pubs/ bacterialcanker.pdf) Several other commercial copper formulations in addition to those listed may be labeled for this use on cherries. Although they have not been tested, research on other crops suggests that most copper formulations should give comparable rates of control at comparable rates of metallic copper.

• Pesticide Application Notes

[1.2] We recommend (§)copper applications at 20% and 80% leaf drop in the fall, and one application in the spring late dormant. Position the two applications around any fall pruning. If you are treating sweet cherries, just make one application at 50% leaf drop. Try to time these applications to a warm, dry period. An additional application is also labeled for use after harvest in orchards where disease is severe, although this application should be avoided on sweet cherries due to the potential for leaf injury. Several other commercial copper formulations in addition to those listed may be labeled for this use on cherries. Although they have not been tested, research on other crops suggests that most copper formulations should give comparable rates of control at comparable rates of metallic copper.

Black Knot

• Biology & Cultural

[2.1] Black knot has become an increasingly important problem on sour cherries in recent years. It is a difficult disease to control completely, but good sanitation—removing and destroying infected (knotted) limbs as they appear (make pruning cuts at least 6-8 in below visible swellings), destroying infected fence row trees and adjacent abandoned orchards (when possible)—is critical. Fungicide sprays are unlikely to provide satisfactory control without good sanitation practices. The most critical time for protecting against infection with fungicides is between white bud and shuck split. Black knot infection periods require rain and temperatures above 55° F; thus, fungicide sprays are most likely to be beneficial under these conditions.

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

• Pesticide Application Notes

[2.2] Bravo is the most effective fungicide for black knot control. Note that a minimum 10-day re-treatment interval is specified on the label.

Brown Rot (Blossom blight)

• Biology & Cultural

[3.1] Blossom blight is most likely to occur when the weather is warm (above 60° F) and wet during bloom or when large numbers of fruit were not harvested the previous year. Blossom blight may also be serious at lower temperatures if prolonged wetting periods occur. Blossom sprays on tart cherries may often be reduced or eliminated if none of these conditions occur. Blossom blight is much more serious on sweet cherry than on sour cherry.

[3.2] Sweet (but not sour) cherry fruit are very susceptible to brown rot for the first few weeks after they set. Protection is therefore important at this time, particularly in wet weather.

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

• Pesticide Application Notes

[3.3] When used at a rate of 10 oz/100 gal, Rovral 50W provides 24-48 hr kickback activity against blossom blight infections. Only 2 sprays of Rovral are allowed per season. Indar, Tebuzol, and Tilt also have significant kickback activity. For resistance management purposes, it is recommended that the SI fungicides (Indar, Tebuzol, Tilt, Rally) should not be used routinely throughout the season for BOTH blossom blight AND fruit rot control.

[3.4] More than one blossom blight spray is rarely needed unless disease pressure is extreme.

[3.5] Young sweet cherry fruit are very susceptible to brown rot. Thus, a petal fall spray is recommended on sweet cherries if weather is wet; much less necessary on sour cherries.

[3.6] Do not use chlorothalonil (Bravo, Applause, Concorde, Echo, Equus) after shuck split; may resume use after harvest. Chlorothalonil has much longer residual activity than other fungicides labeled at shuck split, and is recommended if prolonged protection is needed. Indar is the most effective fungicide against brown rot on cherries.

[3.7] Fruit becomes increasingly susceptible to brown rot during the last 3 wk before harvest. It is therefore recommended that spray intervals be tightened during this

period and that superior brown rot fungicides be used if disease pressure is high (warm and wet), especially on sweet cherries.

Indar is the most effective fungicide for control of brown rot under high disease pressure, and provides excellent residual activity. It may be applied at 7-10-day intervals as needed. Adament, Tebuzol, Tilt, and Pristine are also excellent brown rot fungicides with no preharvest interval restrictions. Sulfur, captan plus sulfur, and ferbam plus sulfur do not provide adequate control on sweet cherries. The maximum allowable rate of 4 lb/A for captan is inadequate on trees greater than 10 ft tall, particularly on sweet cherries.

Leaf Spot

• Pesticide Application Notes

[4.1] Primary leaf spot infections can occur from petal fall until after harvest; it is, therefore, important to maintain adequate spray deposits prior to infection periods (see Table 6.2.5) throughout this time. Chlorothalonil fungicides (Bravo, Applause, Concorde, Echo, Equus) have the longest residual activity. They also provide some control of black knot.

Vintage, Indar, and Tebuzol have approximately 3 days of post-infection activity, and can be used in this manner when necessary. However, leaf spot has shown resistance to SI fungicides in some orchards in Michigan, and regular use of post-infection timing will spread selection for resistance. Thiophanate-methyl (Topsin M) is no longer recommended for use on cherries because of widespread brown rot resistance and suspected leaf spot resistance. Captan may cause leaf injury on Schmidt, Emperor Francis, and Giant sweet cherries if used between petal fall and harvest. (§)Sulfur has short residual activity and must be reapplied frequently in wet seasons. Syllit has little effect against brown rot.

[4.2] Do not use chlorothalonil (Bravo, Applause, Concorde, Echo, Equus) after shuck split; may resume use after harvest. Chlorothalonil has much longer residual activity than other fungicides labeled at shuck split, and is recommended if prolonged protection is needed.

[4.3] Do not use captan on sensitive sweet cherry varieties in the preharvest sprays. Do not use chlorothalonil between shuck split and harvest.

[4.4] Do not use copper on sweet cherries.

Phytophthora Root, Crown, and Collar Rots

• Biology & Cultural

[5.1] Cherry rootstocks are significantly more susceptible to Phytophthora root, crown, and collar rots than are apples. Mahaleb is more susceptible than Mazzard or Colt. The Gisela rootstocks (G.5, G.6) are not particularly susceptible. 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 marginal sites or very wet years, berms are much more effective than tiling. Highly susceptible rootstocks (e.g., Mahaleb) also should be avoided on marginal sites. However, Ridomil will provide additional protection in wet years, on marginal sites, or in wetter sections of the orchard. See comment **5.2** about applications.

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

• Pesticide Application Notes

[5.2] Ridomil 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 ensure good coverage (material is moved into the soil by subsequent rain or irrigation). Do not apply Ridomil to newly planted trees. See label for further details.

Powdery Mildew

• Pesticide Notes

[6.1] To control mildew, include an appropriate fungicide in each spray from 2nd fruit fly spray through the postharvest application. Rally is most effective.

[6.2] Do not use copper on sweet cherries.

X-Disease

• Pesticide Application Notes

[6.1] Refer to "Additional Summer Sprays" section in Pesticide Spray Table for Peaches and Nectarines.

13.2 Insects and Mites

American Plum 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.

• Pesticide Application Notes

[8.1] Application recommended against newly emerging adults, shortly after petal fall. If fresh borer activity is noted in early July, follow up with an additional application by mid-July. For *Lorsban Advanced, *Lorsban 4E and Asana, apply as a coarse, low-pressure spray to give uniform coverage of tree trunks and lower limbs. Pounce not labeled for American plum borer. Avoid Lorsban contact with foliage in sweet cherries or premature leaf drop may occur. Rate of *Baythroid for lesser peachtree borer: 1.4-2.0 fl oz/A; for American plum borer: 2.4-2.8 fl oz/A.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as *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.

[8.2] The July and August lesser peachtree borer sprays will additionally provide control of 2nd brood American plum borer. Refer to comment [13.2].

Black Cherry Aphid

• Pesticide Application Notes

[9.1] Prebloom spray recommended, just before blossoms open, and during summer if needed. Because of toxicity to bees, Sevin is not recommended for prebloom aphid treatments. Movento must be used with an organosilicone or nonionic spray adjuvant. Do not apply§ M-Pede to sweet cherries between fruit formation and harvest.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as *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: 4 infested terminals/tree.

[9.2] No separate spray recommended at petal fall. See comment [15.1].

[9.3] Thionex and other endosulfan insecticides produced after December, 2010 do not include plums, prunes, apricots or tart cherries on the labels. Old product with these crops on the label may be used until July 31, 2012, according to label directions. Sweet cherries are on the newer labels with increased REI values. The last use date for sweet cherries is also July 31, 2012.

Black Cherry Fruit Fly, Cherry Fruit Fly

• 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 these pests.

• Pesticide Application Notes

[10.1] Make 1st spray 7 days after flies emerge (when Early Richmond starts to color); 2nd and 3rd sprays at 7- to 10-day intervals. Sevin is recommended as an emergency treatment near harvest. Imidan is for use on tart cherries only; not registered for black cherry fruit fly.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as *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.

[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 cherries are for fresh market, discontinue application of Surround when fruit are half size (approx. ¼ inch) if no washing is available.

[10.3] Use of Imidan on tart cherries only.

European Red 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

[11.1] Apply oil against overwintering eggs.

[11.2] Do not apply Nexter, Portal, Vendex or Zeal more than 2 times per season.

[11.3] Use lower rate of Nexter for European red mite, higher rate for twospotted spider mite (see label). For postharvest use only; 300 day pre-harvest interval.

[11.4] Apollo, Envidor, Onager and Savey limited to 1 application per season.

[11.5] Portal for non-bearing trees only.

Japanese Beetle

• Biology & Cultural

[12.1] Adults emerge from the soil between early July and mid-August to feed on numerous trees and shrubs. In cherry trees, beetles devour the tissue between the veins, leaving a lace-like skeleton. 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

[12.2] 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 Provado; repeated applications may be required.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as *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.

Lesser Peachtree Borer, 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

[13.1] Hang (§)pheromone ties at shuck split before moth flight begins. Use Isomate PTB-Dual at a rate of 150 ties 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.

• Pesticide Application Notes

[13.2] For Lorsban and pyrethroids, apply as a coarse spray to trunk and lower limbs in up to 3 sprays; June 1-10, July 7-15, and August 1-10. Or use *Lorsban as a single post harvest spray. Do not spray fruit. The July and August sprays will additionally provide control of 2nd brood American plum borer. Best control with Thionex is obtained with a single, post-harvest application after the leaves have dropped.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as *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.

[13.3] Thionex and other endosulfan insecticides produced after December, 2010 do not include plums, prunes, apricots or tart cherries on the labels. Old product with these crops on the label may be used until July 31, 2012, according to label directions. Sweet cherries are on the newer labels with increased REI values. The last use date for sweet cherries is also July 31, 2012.

Obliquebanded Leafroller

• Biology & Cultural

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

• Pesticide Application Notes

[14.1] Apply in early July when larvae are small (approximately 360-450 DD [base 43° F] after 1st trap catch.

[14.2] For best effectiveness and insecticide resistance management, the use of pre-mixes such as *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.

Plum Curculio

• Biology & Cultural

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

• Pesticide Application Notes

[15.1] Apply sprays when last petals are falling (early fruit set) and at 8- to 10-day intervals. Use 2-4 sprays. Sweet cherry fruit will incur considerable damage from the early migration of plum curculio if not protected with a recommended insecticide. Imidan is for use on tart cherries only; causes severe foliage injury to sweet cherries. Sevin and Imidan will also control black cherry aphid.

[15.2] 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 cherries are for fresh market, discontinue application of Surround when fruit are half size (approx. ¼ inch) if no washing is available.

[15.3] Do not apply Actara between the prebloom (swollen bud) and post bloom (petal fall) growth stages.

For best effectiveness and insecticide resistance management, the use of pre-mixes such as *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.

[15.4] The maximum application rate for Guthion is 1.5 lb product per acre per year for 2010-2012. 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 an area in cherries treated with Guthion for the entire growing season.

[15.5] 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.

Scales, including European Lecanium and San Jose Scale

Pesticide Application Notes

[16.1] Apply oil at budburst against overwintering immatures; thorough coverage improves efficacy.

[16.2] One application 4-6 weeks after shuck split against crawler stages. Movento must be used with an organosilicone or nonionic spray adjuvant.

Storage Rots

• Pesticide Application Notes

[17.1] A postharvest treatment with Scholar SC via 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.

13.3. Cherry Spray Table

Table 13.3.1. Pesticide Spray Table – Cherries

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

Pest		Product	Rate/100 gal	Rate/A	REI (hrs)	PHI (days)	Comments (see text)
Late Dormant							
Bacterial canker ***Pseudomonas syringae***		Kocide 3000		3.5-7.0 lb/A	48	BL, PH	[1.1]
	OR	Cuprofix Disperss 40DF		5.0-8.0 lb/A	48	BL, PH	
		or other (§)coppers	see comments				
Phytophthora root, crown and collar rots		Ridomil Gold SL 4EC	1.5 fl oz/1,000 sq ft treated	2.0 qt/A	48	0	[5.2]
Bud Burst							
European red mite, Scale insects		§oil	2 gal/100 gal		12	0	[11.1], [16.1]
White Bud							
Brown rot (blossom blight)		Adament 50 WG		4.0-8.0 oz/A	12	1	[3.1], [3.2]
	OR	Bravo WeatherStik	1.0-1.4 pt/100 gal	3.1-4.1 pt/A	12 hr/7 days (E)	SS	
		or other chlorothalonil formulations (see labels)					
	OR	Captan 50WP	2 lb/100 gal	4 lb/A	24	0	
	OR	Echo 720 6F	1.1-1.4 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			
	OR	Elevate 50WDG		1.5 lb/A	12	0	
	OR	Indar 2F		6.0 fl oz/A	12	0	[3.3]
	OR	Tilt 3.6EC		4.0 fl oz/A	12	0	
	OR	Pristine 38WDG		10.5-14.5 oz/A	12	0	
	OR	Quash 50 WDG		2.5-3.5 oz/A	12	14	
	OR	Rally 40 WSP		2.5-6.0 oz/A	24	0	
	OR	Rovral 4F		1.0-2.0 pt/A	24	PF	
	OR	§Sulfur 92WP	5-10 lb/100 gal		24	0	
	OR	Tebuzol 45DF	2.0 oz/100 gal	4.0-8.0 oz/A	120	0	
Black cherry aphid		Asana XL 0.66 EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	
	OR	Assail 30 SG		2.5-5.3 oz/A	12	7	
	OR	§Aza-Direct 1.2L		1.0-2.0 pt/A	4	0	
	OR	Azatin XL		10-16 fl oz/A	4	0	
	OR	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7	
	OR	Beleaf 50 SG		2.0-2.8 oz/A	12	14	
	OR	*Leverage 2.7 SE		4.4-5.1 fl oz/A	12	7	[9.1]
	OR	Malathion 57EC		1.5 pt/A	12	3	
	OR	§M-Pede 49L	2 gal/100 gal		12	0	[9.1]
	OR	Movento		6.0-9.0 fl oz/A	24	7	[9.1]
	OR	*Proaxis 0.5 CS		2.6-5.1 fl oz/A	24	14	
	OR	*Thionex 3EC	0.67 qt/100 gal	2.67-3.3 qt/A	7 days	21	[9.3]
		or *Thionex 50WP	1 lb/100 gal	4.0-5.0 lb/A	20 days	21	[9.3]

Table 13.3.1. Pesticide Spray Table – Cherries
Refer to back of book for key to abbreviations and footnotes.

Pest		Product	Rate/100 gal	Rate/A	REI (hrs)	PHI (days)	Comments (see text)
White Bud (continued)							
Black cherry aphid (*continued*)	*OR*	*Voliam Xpress		6-12 fl oz/A	24	14	[9.1]
	OR	*Warrior II		1.3-2.6 fl oz/A	24	14	
Bloom							
Black knot		Bravo Ultrex 82.5WDG	0.9-1.25 lb/100 gal	2.8-3.8 lb/A	12 hr/7 days (E)	SS	[2.1], [2.2]
		or Bravo Weather Stik 6F	1.0-1.4 pt/100 gal	3.1-4.1 pt/A			
Brown rot (blossom blight)		See materials listed under White Bud					[3.1], [3.3], [3.4]
Petal Fall							
Black knot		See recommendations under Bloom					[2.1], [2.2]
Brown rot		See recommendations under White Bud					[3.3], [3.5]
Leafspot		Adament 50 WG		4.0-8.0 oz/A	12	1	
	OR	Bravo Ultrex 82.5WDG	0.9-1.25 lb/100 gal	2.8-3.8 lb/A	12 hr/7 days(E)	SS, PH	[4.1]
		or Bravo Weather Stik 6F	1.0-1.4 pt/100 gal	3.1-4.1 pt/A			
		or other chlorothalonil formulations (see labels)					
	OR	Captan 50WP	1-2 lb/100 gal	4 lb/A	24	0	
	OR	Captan 50WP *plus* Sulfur 95WP	1-1.5 lb/100 gal 3 lb/100 gal	4 lb/A	24	0	
	OR	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			
	OR	Gem 500SC		1.9-3.8 oz/A	12	1	
	OR	Indar 2F		6.0 fl oz/A	12	0	
	OR	Tilt 3.6EC		4.0 fl oz/A	12	0	
	OR	Pristine 38WDG		10.5-14.5 oz/A	12	0	
	OR	Rally 40 WSP		2.5-6.0 oz/A	24	0	
	OR	Vintage 1EC	3.0-4.0 fl oz/100 gal	6.0-12.0 fl oz/A	24	0	
	OR	§Sulfur 92WP	5-10 lb/100 gal		24	0	
	OR	Syllit FL		1.5-3.0 pt/A	48	7	
	OR	Tebuzol 45DF	2.0 oz/100 gal	4.0-8.0 oz/A	120	0/PH	
American plum borer, Lesser Peachtree borer		Asana XL 0.66 EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[8.1]
	OR	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7	
	OR	*Lorsban 4EC	1.5-3 qt/100 gal		96	21	
		or Lorsban 75WG	2.0-4.0 lb/100 gal		96	21	
		or *Lorsban Advanced 3.8EC	1.5-3 qt/100 gal		96	21	
	OR	*Pounce 25WP		6.4-12.8 oz/A	12	3	
	OR	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14	
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[8.1]

Table 13.3.1. Pesticide Spray Table – Cherries
Refer to back of book for key to abbreviations and footnotes.

Pest		Product	Rate/100 gal	Rate/A	REI (hrs)	PHI (days)	Comments (see text)
Petal Fall (continued)							
American plum borer,	*OR*	*Warrior II		1.3-2.6 fl oz/A	24	14	
	OR	Pheromone disruption ties:					
Lesser Peachtree borer (*continued*)		§Isomate PTB-Dual		150 ties/A			[13.1]
Black cherry aphid		(See comment 9.2)					[9.2]
Plum curculio		Actara		4.5-5.5 oz/A	12	14	[15.1], [15.3]
	OR	*Asana XL 0.66EC	2-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	
	OR	Avaunt 30 WDG		5.0-6.0 oz/A	12	14	
	OR	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7	
	OR	*Guthion 50WS	0.5 lb/100 gal	1.5 lb/A	15 days(E)	15	[15.4]
	OR	Imidan 70WP	0.75 lb/100 gal	2.1-2.5 lb/A	72	7(C)	[15.1], [15.5]
	OR	*Leverage 2.7 SE		4.4-5.1 fl oz/A	12	7	[15.3]
	OR	*Pounce 25WP		6.4-12.8 oz/A	12	3	
	OR	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14	
	OR	Sevin XLR Plus, 4F		2.0-3.0 qt/A	12	3	
	OR	§Surround 95WP		25-50 lb/A	4	0	[15.2]
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[15.3]
	OR	*Warrior II		1.3-2.6 fl oz/A	24	14	
Shuck Split							
Brown rot,		Adament 50WG		4.0-8.0 oz/A	12	1	
Leaf spot	*OR*	Bravo WeatherStik 6F or other chlorothalonil formulations (see labels)	1.0-1.4 pt/100 gal	3.1-4.1 pt/A	12 hr/ 7days(E)	SS	[3.2], [3.6]
	OR	Captan 50WP	2 lb/100 gal	4 lb/A	24	0	
	OR	Captan 50WP *plus* Sulfur 95WP	1 lb/100 gal 3 lb/100 gal		24	0	
	OR	Echo 720 6F or Echo 90DF	1.1-1.4 pt/100 gal 0.75-1.2 lb/100 gal	3.1-4.1 pt/A 2.25-3.5 lb/A	12 hr/7 days(E)	SS	
	OR	Ferbam Granuflo 76WDG	1.5 lb/100 gal	4.5 lb/A	24	0	
	OR	Ferbam Granuflo 76WDG *plus* Sulfur 95WP	1 lb/100 gal 3 lb/100 gal		24	0	
	OR	Gem 500SC		1.9-3.8 oz/A	12	1	
	OR	Indar 2F		6.0 fl oz/A	12	0	
	OR	Quash 50WDG		2.5-4.0 oz/A	12	14	
	OR	Rally 40 WSP		2.5-6.0 oz/A	24	0	
	OR	Tebuzol 45DF	2.0 oz/100 gal	4.0-8.0 oz/A	120	0/PH	

Table 13.3.1. Pesticide Spray Table – Cherries
Refer to back of book for key to abbreviations and footnotes.

Pest		Product	Rate/100 gal	Rate/A	REI (hrs)	PHI (days)	Comments (see text)
Shuck Split (continued)							
Black knot		Bravo Ultrex 82.5WDG or Bravo Weather Stik 6F or other chlorothalonil formulations (see labels)	0.9-1.25 lb/100 gal 1.0-1.4 pt/100 gal	2.8-3.8 lb/A 3.1-4.1 pt/A	12 hr/7 days (E)	SS	[2.1], [2.2]
Black cherry aphid		Asana XL 0.66 EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[9.1]
	OR	Assail 30 SG		2.5-5.3 oz/A	12	7	
	OR	§Aza-Direct 1.2L		1.0-2.0 pt/A	4	0	
	OR	Azatin XL		10-16 fl oz/A	4	0	
	OR	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7	
	OR	Beleaf 50 SG		2.0-2.8 oz/A	12	14	
	OR	*Leverage 2.7 SE		4.4-5.1 fl oz/A	12	7	[9.1]
	OR	Malathion 57EC		1.5 pt/A	12	3	
	OR	§M-Pede 49L	2 gal/100 gal		12	0	
	OR	Movento		6.0-9.0 fl oz/A	24	7	
	OR	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14	
	OR	Provado 1.6F		4.0-8.0 fl oz/A	12	7	
	OR	Sevin XLR Plus, 4F		2.0-3.0 qt/A	12	3	
	OR	*Thionex 3EC	0.67 qt/100 gal	2.67-3.3 qt/A	7 days	21	[9.3]
		or *Thionex 50WP	1 lb/100 gal	4.0-5.0 lb/A	20 days	21	[9.3]
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[9.1]
	OR	*Warrior II		1.3-2.6 fl oz/A	24	14	
Plum curculio		See materials under Petal Fall					[15.1]
Additional Summer Sprays							
Brown rot		Adament 50WG		4.0-8.0 oz/A	12	1	
	OR	Captan 50WP	2 lb/100 gal	4 lb/A	24	0	[3.7]
	OR	Captan 50WP *plus* Sulfur 95WP	1 lb/100 gal 3 lb/100 gal		24	0	
	OR	Ferbam Granuflo 76WDG	1.5 lb/100 gal	4.5 lb/A	24	0	
	OR	Ferbam Granuflo 76WDG *plus* Sulfur 95WP	1.5 lb/100 gal 3 lb/100 gal		24	0	
	OR	Elevate 50WDG		1.5 lb/A	12	0	
	OR	Indar 2F		6.0 fl oz/A	12	0	
	OR	Tilt 3.6EC		4.0 fl oz/A	12	0	
	OR	Pristine 38WDG		10.5-14.5 oz/A	12	0	
	OR	Quash 50 WDG		2.5-3.5 oz/A	12	14	
	OR	Rally 40 WSP		2.5-6.0 oz/A	24	0	
	OR	Tebuzol 45DF	2.0 oz/100 gal	4.0-8.0 oz/A	120	0	
Leaf spot		Choose from materials listed at Petal Fall except for Bravo or other chlorothalonil products which can't be used after shuck split					[4.2]

Table 13.3.1. Pesticide Spray Table – Cherries
Refer to back of book for key to abbreviations and footnotes.

Pest		Product	Rate/100 gal	Rate/A	REI (hrs)	PHI (days)	Comments (see text)
Additional Summer Sprays (continued)							
Powdery mildew		Adament 50 WG		4.0-8.0 oz/A	12	1	[6.1]
	OR	Rally 40 WSP		2.5-6.0 oz/A	24	0	
	OR	Tilt 3.6EC		4.0 fl oz/A	12	0	
	OR	Vintage 1EC	3.0-4.0 fl oz/100 gal	6.0-12.0 fl oz/A	24	0	
	OR	§Sulfur 92WP	5-10 lb/100 gal		12	0	
	OR	*Procure 50W		8.0-16.0 oz/A	12	1	
	OR	Gem 500SC		1.9-3.8 oz/A	12	1	
	OR	Pristine 38WDG		10.5-14.5 oz/A	12	0	
	OR	Quash 50 WDG		2.5-4.0 oz/A	12	14	
	OR	Quintec 2.08 EC		7 fl oz/A	12	7	
American plum borer	*OR*	Asana XL 0.66 EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[8.1]
	OR	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7	
	OR	*Leverage 2.7 SE		4.4-5.1 fl oz/A	12	7	[8.1]
	OR	*Lorsban 4EC	1.5-3 qt/100 gal		96	21	
		or *Lorsban Advanced	1.5-3 qt/100 gal		96	21	
		or Lorsban 75WG	2.0-4.0 lb/100 gal		96	21	
	OR	*Proaxis 0.5CS	2.6-5.1 fl oz/A		24	14	
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[8.1]
	OR	*Warrior II		1.3-2.6 fl oz/A	24	14	
Black cherry fruit fly **Cherry fruit fly**		Actara 25WDG		4.5-5.5 oz/A	12	14	[10.1]
	OR	*Asana XL 0.66EC	2-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[10.1]
	OR	Assail 30 SG		5.3-8.0 oz/A	12	7	
	OR	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7	
	OR	Delegate 25 WG		4.5-7.0 oz/A	4	7	
	OR	*Diazinon 50WP	0.5-1 lb/100 gal		96	21	
	OR	*Guthion 50WS	0.5 lb/100 gal	1.5 lb/A	15 days (E)	15	[15.4]
	OR	Imidan 70WP	0.75 lb/100 gal	2.1-2.5 lb/A	72	7(c)	[10.3],[15.5]
	OR	*Leverage 2.7SE		4.4-5.1 fl oz/A	12	7	[10.1]
	OR	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14	
	OR	Sevin XLR Plus, 4F		2.0-3.0 qt/A	12	3	
	OR	§Surround 95WP		25-50 lb/A	4	0	[10.2]
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[10.1]
	OR	*Warrior II		1.3-2.6 fl oz/A	24	14	
European red mite, **Twospotted spider mite**		Apollo 4SC		2.0-8.0 oz/A	12	21	[11.4]
	OR	Envidor 2 SC		16.0-18.0 fl oz/A	12	7	
	OR	Nexter 75 WS		4.4-10.7 oz/A	12	300(PH)	[11.3]
	OR	Onager 1 EC		12-24 oz/A	12	7	
	OR	Portal		2.0 pt/A	12	365	[11.5]
	OR	Savey 50DF		3.0-6.0 oz/A	12	28	[11.4]

Table 13.3.1. Pesticide Spray Table – Cherries
Refer to back of book for key to abbreviations and footnotes.

Pest		Product	Rate/100 gal	Rate/A	REI (hrs)	PHI (days)	Comments (see text)
Additional Summer Sprays (continued)							
European red mite, Twospotted spider mite (*continued*)	*OR*	*Vendex 50WP		1.5-3.0 lb/A	48	14	[11.2]
	OR	Zeal 72 WS		2.0-3.0 oz/A	12	7	
Japanese beetle		Assail 30 SG		5.3-8.0 oz/A	12	7	[12.2]
	OR	*Leverage 2.7 SE		3.6-4.4 fl oz/A	12	7	[12.2]
	OR	Provado 1.6 F		4.0-8.0 fl oz/A	12	7	
	OR	Sevin XLR Plus, 4F		2.0-3.0 qt/A	12	3	
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[12.2]
Lecanium scale, San Jose scale		*Centaur 0.7WDG		34.5-46.0 oz/A	12	14	[16.2]
	OR	Esteem 35 WP		4.0-5.0 oz/A	12	14	
	OR	Movento 240 SC		6.0-9.0 fl oz/A	24	7	
Lesser peachtree borer		Pheromone disruption ties: §Isomate PTB-Dual		150 ties/A			[13.1]
	OR	*Asana XL 0.66EC	2.0-5.8 fl oz/100 gal	4.8-14.5 fl oz/A	12	14	[13.2]
	OR	*Lorsban 4EC	1.5-3 qt/100 gal		96	21	
		or *Lorsban Advanced	1.5-3 qt/100 gal		96	21	
		or Lorsban 75WG	2.0-4.0 lb/100 gal		96	21	
	OR	*Pounce 25WP		6.4-12.8 oz/A	12	3	
	OR	*Proaxis 0.5CS		2.6-5.1 fl oz/A	24	14	
	OR	*Thionex 3EC	1 qt/100 gal	2.67-3.3 qt/A	7 days	21	[9.3]
		or *Thionex 50WP	1.5 lb/100 gal	4.0-5.0 lb/A	20 days	21	[9.3]
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[13.2]
	OR	*Warrior II		1.3-2.6 fl oz/A	24	14	
Obliquebanded leafroller		Altacor 35 WDG		3.0-4.5 oz/A	4	10	[14.1]
	OR	*Baythroid XL 1EC		2.4-2.8 fl oz/A	12	7	
	OR	Belt SC		3.0-4.0 fl oz/A	12	7	
	OR	§Biobit HP		0.5-2.0 lb/A	4	0	
	OR	*Danitol 2.4EC		10.7-21.3 fl oz/A	24	3	
	OR	Delegate 25 WG		4.5-7.0 oz/A	4	7	
	OR	§Deliver 18WG		0.5-2.0 lb/A	4	0	
	OR	§Entrust 80WP		1.25-2.5 oz/A	4	7	
	OR	§Javelin WG		0.25-4.0 lb/A	4	0	
	OR	*Leverage 2.7 SE		4.4-5.1 fl oz/A	12	7	[14.2]
	OR	*Voliam Xpress		6-12 fl oz/A	24	14	[14.2]
Postharvest							
Leaf spot		Bravo Ultrex 82.5 WDG	0.9-1.25 lb/100 gal	2.8-3.8 lb/A	12 hr/ 7days (E)	SS,PH	
		or Bravo Weather Stik 6F	1.0-1.4 pt/100 gal	3.1-4.1 pt/A			
	OR	Captan 50WP	2 lb/100 gal	4 lb/A	24	0	

Table 13.3.1. Pesticide Spray Table – Cherries
Refer to back of book for key to abbreviations and footnotes.

Pest		Product	Rate/100 gal	Rate/A	REI (hrs)	PHI (days)	Comments (see text)
Postharvest (continued)							
Leaf spot (*continued*)	*OR*	C-O-C-S WDG *plus* hydrated lime	1.5 lb/100 gal 3 lb/100 gal		24	PH(C)	[4.4]
	OR	Echo 720 6F or Echo 90DF	1.0-1.4 pt/100 gal 0.75-1.2 lb/100 gal	3.1-4.1 pt/A 2.25-3.5 lb/A	12 hr/7days (E)	SS, PH	
	OR	Rally 40WSP		2.5-6.0 oz/A	24	0	
	OR	Vintage 1EC	3.0-4.0 fl oz/100 gal	6.0-12.0 fl oz/A	24	0	
	OR	Syllit FL		1.5-3.0 pt/A	48	7	
	OR	Gem 500SC		1.9-3.8 oz/A	12	1	
	OR	Pristine 38WDG		10.5-14.5 oz/A	12	0	
Powdery mildew		C-O-C-S WDG *plus* hydrated lime	1.5 lb/100 gal 3 lb/100 gal		24	PF, PH(C)	[4.4]
	OR	Rally 40WSP		2.5-6.0 oz/A	24	0	
	OR	Vintage 1EC	3.0-4.0 fl oz/100 gal	6.0-12.0 fl oz/A	24	0	
	OR	§Sulfur 92WP	5-10 lb/100 gal		12	0	
	OR	*Procure 50W		8.0-16.0 oz/A	12	1	
	OR	Gem 500SC		1.9-3.8 oz/A	12	1	
	OR	Pristine 38WDG		10.5-14.5 oz/A	12	0	
	OR	Quash 50 WDG		2.5-4.0 oz/A	12	14	
European red mite, **Twospotted spider mite**		Nexter 75WS		4.4-10.7 oz/A	12	300 (PH)	
Storage rots		Scholar SC	16-32 fl oz/100 gal (see comments & label)				[17.1]
Autumn							
Bacterial canker (Pseudomonas syringae)		Kocide3000		3.5-7.0 lb/A	24	BL, PH (C)	[1.2]
		or Kocide 2000		6.0-12.0 lb/A	24	BL, PH (C)	
		or Cuprofix Ultra Disperss 40DF		5.0-8.0 lb/A	12	BL. PH	
		or other coppers	(see comments)				

Table 13.3.2. Growth Regulator Uses in Cherries
Refer to back of book for key to abbreviations and footnotes.

Timing	Product	Concentration Product	Rate of Formulated
***Promote Lateral Branching in Tart Cherry:** (to counteract the adverse effects of tart cherry yellows virus on formation of vegetative buds)*			
14-21 days after petal fall	§Pro-Gibb 4%, Falgro 4L	10-15 ppm	4-6 fl oz/100 gal
	§Pro-Gibb Plus 2X, Falgro 20SP	10-15 ppm	0.67-1 oz (lb)/100 gal
Apply at the 3-5 leaf stage or 1-3 inches of terminal extension on bearing trees. Apply with a nonionic surfactant as a dilute spray using 200-300 gal/acre. Use low rate on vigorous trees and high rate on low vigor trees.			
Promote Vegetative Growth of Young Non-Bearing Trees			
2-4 weeks after bloom	§Pro-Gibb 4%, Falgro 4L	50-100 ppm	20-40 fl oz/100 gal
	§Pro-Gibb Plus 2X, Falgro 20SP	50-100 ppm	3.34-6.67 oz (lb)/100 gal
Apply at the 5-7 leaf stage. Reduces crop in year after treatment. Do not spray first year trees. For low vigor trees make two applications no closer than 7 days apart.			
Induction of Lateral Branching in Nursery Trees			
SWEET CHERRIES			
When terminal shoot is 26-32" long	Promalin, Perlan, Typy	250-1,000 ppm	0.5-2 qt/5 gal
Include a non-ionic surfactant and apply as a directed spray to top part of tree after trees have reached a terminal height at which lateral branching is desired.			
Induction of Lateral Branching in Young Non-Bearing Trees			
SWEET CHERRIES			
Bud Swell	Promalin, Perlan, Typy	5,000-7,500 ppm	3.2-5.3 fl oz/1pt latex paint
Mix with latex paint and paint on buds. Do not apply the Promalin-latex paint mixture after bud break which may cause some injury to tender shoot tips. The best results are obtained by scoring above the bud and then painting the cut and the bud with the Promalin-latex paint mixture.			
Delay Harvest and Increase Firmness and Size of Sweet Cherries			
Fruit is light green to straw color (about 3-4 weeks before harvest)	§Pro-Gibb 4%, Falgro 4L	10-30 ppm	16-48 fl oz/acre
	§Pro-Gibb Plus 2X, Falgro 20SP	10-30 ppm	80-240g/acre
	§Pro-Gibb 40%	10-15ppm	40-120g/acre
High rates may delay fruit color development but give the maximum delay in harvest. Apply lower rates for less delay in ripening and less inhibition of color. Do not apply within 1 week of harvest.			
Promote Fruit Loosening for Mechanical Harvesting			
TART CHERRIES			
7-14 days before anticipated harvest	Ethrel	150 ppm	0.5 pt/100 gal
Apply with a nonionic surfactant. Do not apply to weak trees or trees under heat or moisture stress.			
SWEET CHERRIES			
7-14 days before anticipated harvest	Ethrel	300-450 ppm	1-1.5 pt/100 gal
Apply with a nonionic surfactant. Do not apply to weak trees or trees under heat or moisture stress.			

* To convert ounces (lb) to grams multiply ounces by 28.3. To convert fluid ounces to milliliters multiply fluid ounces by 29.57.