ALMOND: FUNGICIDE EFFICACY - CONVENTIONAL

Fungicide	Resistance risk (FRAC)[1,7]	Brown rot	Jacket rot	Anthrac-nose	Shot hole	Scab[3]	Rust[3]	Leaf blight	Alternaria leaf spot [3]	PM-like[5]	Hull rot[16]
Adament	medium (3/11)	5	4	4	5	4	5	ND	4	4	4
Axios	high (52)[7]	5	4	ND	4	3	ND	ND	3	ND	4
Bumper**, Tilt, Propicure, Propiconazole[4]	high (3)	5	1	5	3	3	4	ND	3	4	3
Cevya	high (3)	5	1	5	5	3/4	4	ND	4	ND	4
Fontelis[3]	high (7)[7]	5	5	3	5	3	3	ND	4	ND	0
Kenja[4]	high (7)[7]	5	5	3	5	4	0	ND	4	ND	0
Parade*	high (7)[7]	5	5	ND	5	3	ND	ND	3	ND	1
Indar	high (3)	5	1	4	3	3	NL	ND	2	ND	0
Inspire	high (3)	5	3	5	3	4	5	ND	5	ND	4
Protocol[2]	med.-high (1/3)	5	5	ND	4	4	5	ND	3	ND	2
Inspire Super[4]	medium (3/9)	5	5	ND	4	4	5	ND	5	ND	4
Luna Experience[3]	medium (3/7)	5	4	5	4	5	5	ND	5	4	4
Fervent	medium (3/7)	5	4	5	4	5	5	ND	5	4	4
Luna Sensation[3]	medium (7/11)	5	5	5	5	5	5	ND	5	4	4
Miravis Duo	medium (3/7)	5	4	5	4	5	5	ND	5	4	4
Miravis Prime	medium (7/12)	5	4	5	5	5	5	ND	5	5	4
Merivon[3]	medium (7/11)	5	5	5	5	5	4	ND	5	5	4
Pristine[3]	medium (7/11)	5	5	5	5	5	4	ND	4	4	4
Quadris Top[3]	medium (3/11)	5	5	5	4	5	5	ND	4	4	4
Quilt Xcel, Avaris 2XS[3]	medium (3/11)	5	4	5	4	5	5	ND	4	4	4
Quash[4]	high (3)	5	3	5	4	4	5	ND	5	4	4
Rovral + oil[8, 9]	low (2)	5	5	0	4	1	3	ND	4	ND	0
Scala[3, 10]	high (9)[7]	5	5	ND	3	0	ND	ND	2	0	0
Tebucon,Toledo, Teb, Tebuconazole**	high (3)	5	1	4	3	3	4	ND	2	ND	3
Viathon	medium (3, P 07/33)	5	1	4	3	3	4	ND	2	ND	3
Topsin-M, T-Methyl, Incognito, Cercobin**[2,6,8]	high (1)[7]	5	5	0	0	4	2	4	0	3	0
Vangard[3, 7,9, 10]	high (9)	5	5	ND	3	0	ND	ND	2	0	0
Quadris, (Abound discontinued)	high (11)[7]	4	2	5	4	5	5	4	4	4	4
Aproach[3,4]	high (11)[7]	4	2	5	4	5	5	4	4	4	4
CaptEvate**	low (M 04/17)	4	4	4	4	4	0	4	2	0	0
Elevate[7]	high (17)	4	5	0	2	ND	ND	ND	ND	ND	0
Gem[3,4]	high (11)[7]	4	0	5	4	5	5	4	4	4	4
Laredo, Rally[13]	high (3)	4	0	3	3	0	2	4	0	4	0
Luna Privilege**	high (7)[7]	4	3	3	3	4	4	ND	4	3	3
Rovral[9], Meteor[9], Iprodione**, Nevado**	low (2)	4	4	0	4	0	0	ND	3	0	0
Regev*	high (3/BM 01)	5	2	4	3	4	4	ND	4	ND	4
Rhyme	high (3)	4	1	ND	2	3	ND	ND	3	ND	ND
Bravo, Chlorothalonil, Equus, Echo[11, 12, 15]	low (M 05)	3	NL	4	4	4	5	NL	NL	0	0
Captan[4, 6, 12]	low (M 04)	3	3	4	4	3	0	4	2	0	0
Mancozeb	low (M 03)	3	3	4	4	3	4	4	2	0	0
Ph-D	medium (19)	3	4	0	3	4	4	ND	5	ND	4
Ziram	low (M 03)	3	2	4	4	4	0	3	2	0	0
Syllit	medium (U 12)	2	0	ND	4	5	ND	ND	2	ND	0
Copper[14,15]	low (M 01)	1	1	0	2	2	0	0	ND	0	0
Lime sulfur[12,15]	low (M 02)	1	NL	0	1	3	3	NL	NL	0	0
Sulfur[4,12]	low (M 02)	1	1	0	0	3	3	0	0	4	0
Copper + oil[14,15]	low (M 01)	ND	ND	0	2	4	0	0	ND	0	0

FUNGICIDE EFFICACY - PHYTOPTHORA ROOT AND CROWN ROT (PRCR) USING CONVENTIONAL TREATMENTS

Fungicide	Resistance risk (FRAC code)[1]	PRCR
Orondis	high (49)	5
Revus*	high (40)	5
Presidio	high (43)	4
Elumin*	high (22)	4
Ridomil**, Metalaxyl**	high (4)	3
Ridomil Gold, ProPhyt, Mefenoxam***	high (4)	4
Aliette***, Fungi-Phite, K-Phite	low-medium (P07/33)	4

Rating: 5 = excellent and consistent, 4 = good and reliable, 3 = moderate and variable, 2 = limited and/or erratic, 1 = minimal and often ineffective, 0 = ineffective, NL = not on label, and ND = no data.

*** Registration pending in California.**
****Not registered, label withdrawn or inactive in California.**
***** - 12-month PHI**

[1] Code numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions (for more information, see http://www.frac.info/). Fungicides with a different Code number are suitable to alternate in a resistance management program. In California, make no more than one application of fungicides with mode-of-actions (MOA) with high resistance risk before rotating to a fungicide with a different MOA (Code number); for other fungicides, make no more than two consecutive applications before rotating to fungicide with a different MOA (Code number).

[2] Strains of the brown rot fungi *Monilinia laxa* and *M. fructicola* resistant to Topsin-M and T-Methyl have been found in some California almond orchards. MBC-resistant strains of the jacket rot fungus, *Botrytis cinerea* and powdery mildew fungi, have been reported in California on crops other than almond and stone fruits and may have the potential to develop in almonds with overuse of fungicides with similar chemistry. MBC-resistant strains of the scab fungus, *Venturia* (*Fusicladium, Cladosporium*) *carpophila*, have been found in California.

[3] Field resistance of *Alternaria* sp. and *Fusicladium carpophilum* to QoI and SDHI fungicides has been detected in almond orchards. AP-resistant populations of *Monilinia* spp. have been found on other stone fruit crops in California.

[4] Of the materials listed, only sulfur, Captan (FRAC Code M 02, M 04), Kenja (FRAC Code 7), Aproach, Gem, Quadris (FRAC Code 11), and some of the DMI fungicides (FRAC Code No. 3) are registered for use in late spring and early summer when treatment is recommende.

[5] PM-like refers to a powdery mildew-like disease on almond fruit. Information suggests an *Acremonium* species is involved.

[6] Excellent control obtained when combinations of Topsin-M or T-Methyl and Captan are used.

[7] To reduce the risk of resistance development, start treatments with a fungicide with a multi-site mode of action; rotate or mix fungicides with different mode of action FRAC numbers for subsequent applications, use labeled rates (preferably the upper range), and limit the total number of applications per season.

[8] Oils recommended include "light" summer oil, 1-2% volume/volume.

[9] Do not use later than 5 weeks after petal fall.

[10] Efficacy reduced at high temperatures and relative humidity.

[11] Bravo Ultrex, Bravo WeatherStik, Echo, and Chlorothalonil are currently registered.

[12] Dormant applications with oil are highly effective against scab, Do not use in-season combinations with oil or shortly before or after oil treatment.

[13] Efficacy is better in concentrate (80–100 gal/acre) than in dilute sprays.

[14] The low rates necessary to avoid phytotoxicity in spring reduce the efficacy of copper.

[15] "Burns out" scab twig lesions when applied at delayed dormant. (Chlorothalonil can be applied with dormant oil during tree dormancy).

[16] Hull rot ratings are for the disease caused by *Rhizopus stolonifer*. Ratings for the disease caused by *Monilinia* or *Aspergillus* spp. will be provided in the future.

[17] PlantShield is best used for wood-exposing wounds to prevent silverleaf and wood decay.

ALMOND: FUNGICIDE EFFICACY - BIOCONTROLS AND NATURAL PRODUCTS

Trade name	Biocontrol or natural product (FRAC code)[1,6]	Brown rot	Jacket rot	Anthrac-nose	Shot hole	Scab	Rust	ALS[2]	Hull rot[3]	PM-like[4]	Silver leaf	Bac. Spot, Bac. Blast
Botector	*Aureobasidium pullulans* (BM 02)	3	2	NL	NL	NL	NL	NL	NL	NL	NL	NL
Double Nickel 55	*Bacillus amyloliquefaciens* D747 (BM 02)	2	2	ND	2	NL	NL	NL	NL	NL	NL	2
Serifel	*B. amyloliquefaciens* MBI600 (BM 02)	2	2	NL	2	2	1	1	1	ND	ND	2
Sonata	*B. pumilis* QST2808 (BM 02)	2	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
Serenade	*B. subtilis* QST 713 (BM 02)	3	3	2	2	1	1	1	NL	ND	NL	3
Aviv	*B. subtilis* IAB/BS03 (BM 02)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Theia	*B. subtilis* AFS03232 (BM 02)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dart	capric and caprylic acids (BM 01)	3	2	ND	2	1	1	2	2	ND	0	3
Cinnacure, Seican, Cinnerate	Cinnamaldehyde/Cinnamon oil (BM 03)	1	1	NL	NL	NL	NL	NL	NL	NL	NL	2
EF400	clove, rosemary, peppermint oils (BM 01)	1	2	1	NL	ND	NL	NL	NL	NL	NL	NL
Vectorite	*Clonostachys rosea* CR-7 (BM 02)	4	2	ND	2	ND	ND	ND	ND	ND	ND	ND
BacStop-OPL,-XL	quaternary ammonia (NC-sanitizer)	1	1	1	NL	ND	NL	NL	NL	NL	NL	3
Employ	harpin (P unspecified)	NL	1	NL	NL	NL	NL	NL	NL	NL	NL	NL
Kasumin*	kasugamycin (24)[1] – Section 18 registr.	0	0	0	0	0	0	0	0	0	0	4
ProBLAD Verde	*Lupinus albus* (BM 01)	3	2	NL	NL	NL	NL	NL	NL	NL	NL	NL
Timorex (Act, Gold)	natural oil (BM 01)	1	1	2	1	2	2	1	ND	2	NL	NL
Trilogy, Rango	neem oil (BM 01)	1	1	1	1	1	2	1	ND	2	NL	NL
Oxidate 5.0	peroxyacetic acid (NC)	1	2	1	1	NL	NL	1	ND	ND	NL	2
Milstop	potassium bicarbonate (NC)	NL	NL	NL	NL	1	NL	NL	ND	3	NL	NL
All Phase	potassium sorbate (NC)	NL	NL	NL	NL	2	NL	NL	NL	NL	NL	NL
Howler	*Pseudomonas chlororaphis* strain AFS009 (BM 02)	2	1	NL	NL	NL	NL	NL	NL	NL	NL	3
Regalia	*Reynoutria sachalinensis* (P 05)	2	2	1	1	1	1	1	ND	2	NL	3
Actinovate AG	*Streptomyces lydicus* (BM 02)	1	1	NL	NL	NL	NL	NL	NL	1	NL	2
EcoSwing	*Swinglea glutinosa* (BM 01)	3	2	NL	NL	1	NL	1	NL	ND	NL	ND
PlantShield**	*Trichoderma harzianum* (BM 02)	NL	NL	NL	NL	NL	NL	NL	NL	NL	4	0
Vintec	*Trichoderma atroviride* (BM 02)[5]	NL	NL	NL	NL	NL	NL	NL	NL	NL	4	0
Procidic	citric acid (NC)	ND	ND	ND	NL	NL	NL	ND	NL	NL	NL	NL

Rating: 5 = excellent and consistent, 4 = good and reliable, 3 = moderate and variable, 2 = limited and/or erratic, 1 = minimal and often ineffective, 0 = ineffective, NL = not on label, and ND = no data.

* **Registration pending in California.**

** **Not registered, label withdrawn or inactive in California.**

[1] Alphabetically arranged organic treatments. Note that kasugamycin is a fermentation (natural) product, but not an organic treatment. FRAC Codes are also provided as BM-, NC, or P-number codes. NC = not coded in FRAC. In general, sulfur compounds are fungicidal and may affect applications of fungal biocontrols (e.g., Botector); whereas copper may affect applications of bacterial biocontrols (e.g., Actinovate, Double Nickel 55, and Serenade). Rotations must consider these factors.

[2] ALS = Alternaria Leaf Spot caused by *Alternaria alternata* and *A. arboresscens*.

[3] Hull rot ratings are for the disease caused by *Rhizopus stolonifer*.

[4] PM refers to a powdery mildew disease.

[5] Labeled for *Eutypa* sp., *Botryosphaeria* sp., *Cytospora* sp., and other trunk diseases of almond.

[6] Sodium laruryl sulfate is not organically approved for crop production (synthetic substance approved for noncrop areas); All Phase is not organic. Cinnacure, PlantShield and Vintec do not have OMRI/WSDA certification and do not claim to be compliant, but their active ingredients are allowed for organic production.

ALMOND: TREATMENT TIMING

Note: Not all indicated timings may be necessary for disease control.

		Bloom			Spring[1]		Summer	
Disease	Dormant	Pink bud	Full bloom	Petal fall	2 wks	5 wks	May	June/ July
Alternaria	0	0	0	0	0	2	3	3
Anthracnose[2]	0	2	3	3	3	3	3	2
Bacterial spot	1	0	2	3	3	2	1	0
Brown rot	0	2	3	1	0	0	0	0
Green fruit rot	0	0	3	2	0	0	0	0
Hull rot[7]	0	0	0	0	0	0	0	3
Leaf blight	0	0	3	2	1	0	0	0
Rust	0	0	0	0	0	3	3	1[6]
Scab[3]	2	0	0	2	3	3	1	0
Shot hole[4]	1[5]	1	2	3	3	2	0	0

Disease	At planting	Spring root flush	Summer	Fall root flush
Phytophthora root and crown rot	3	3	2	3

Rating: 3 = most effective, 2 = moderately effective, 1 = least effective, and 0 = ineffective

[1] Two and five weeks after petal fall are general timings to represent early postbloom and the latest time that most fungicides can be applied. The exact timing is not critical but depends on the occurrence of rainfall.

[2] If anthracnose was damaging in previous years and temperatures are moderate (63°F or higher) during bloom, make the first application at pink bud. Otherwise, treatment can begin at or shortly after petal fall. In all cases, application should be repeated at 7- to 10-day intervals when rains occur during periods of moderate temperatures. Treatment should, if possible, precede any late spring and early summer rains. Rotate fungicides, using different fungicide classes, as a resistance management strategy.

[3] Early treatments (during bloom) have minimal effect on scab; the 5-week treatment usually is most effective. Treatments after 5 weeks are useful in northern areas where late spring and early summer rains occur. Dormant treatment with liquid lime sulfur improves efficacy of spring control programs.

[4] If pathogen spores were found during fall leaf monitoring, apply a shot hole fungicide during bloom, preferably at petal fall or when young leaves first appear. Reapply when spores are found on new leaves or if heavy, persistent spring rains occur. If pathogen spores were not present the previous fall, shot hole control may be delayed until spores are seen on new leaves in spring.

[5] Dormant copper treatment seldom reduces shot hole infection but may be useful in severely affected orchards and must be followed by a good spring program.

[6] Treatment in June is important only if late spring and early summer rains occur.

[7] Make application at 1 to 5% hull split to manage hull rot caused by *Rhizopus stolonifer*; use earlier June timings for hull rot caused by *M. fructicola.* Apply a second application, mid-way through hull split especially if hull split is progressing slowly.

ALMOND: SUGGESTED DISEASE MANAGEMENT PROGRAMS BY FRAC[1] CODES - CONVENTIONAL GROWERS

Note: Not all indicated timings may be necessary for disease control (*see* Treatment Timing Table). If treatments are needed based on host phenology, weather monitoring, inoculum models, or environmental-disease forecasting models, suggested fungicide Codes are listed for each timing.

How to use this table:

1) Identify the disease(s) that need(s) to be managed. Know the disease history of the orchard, especially from the last season.
2) Select one of the suggested fungicide Codes. *Numbers separated by slashes are pre-mixtures, whereas numbers separated by pluses are tank mixtures.* If several diseases need to be managed, select a Code that is effective against all diseases. Refer to the fungicide efficacy table for fungicides belonging to each FRAC Code. Code numbers are listed in numerical order within the suggested disease management program.
3) Rotate Codes for each application within a season and, if possible, use each Code only once per season, except for multi-site mode-of-action materials (e.g., M 02).

Disease	Dormant	Bloom			Spring		Summer	
		Pink bud	Full bloom	Petal fall	2 weeks	5 weeks	May	June/July
Alternaria	----	----	----	----	----	2	3, 7, 11, 19, 3/7, 3/9, 3/11, 3+P 07/33, 7/11, 52	3, 3/7, 7, 3/9, 3/11, 3+P 07/33, 7/11, 11, 19, 52
Anthracnose	----	3, 3/7, 3/9, 3/11, 3+P 07/33, 7	3, 3/7, 3/9, 3/11, 3+P 07/33, 7, 7/11, 11	3, 3/9, 3/7, 3/11, 3+P 07/33, 11, M3, M4, M5	3, 3/9, 3/11, 3/7, 7, 7/11, 3+P 07/33, 11, M3, M4, M5	3, 3/7, 3/9, 3/11, 3+P 07/33, 7, 7/11, 11 M3, M4, M5	3, 3/7, 3/9, 3/11, 3+P 07/33, 7, 7/11, 11, M4	3, 3/7, 3/9, 3/11, 3+P 07/33, 7, 7/11, 11, M4
Bacterial spot	M1, M1+M3	----	M1, M1+M3	M1, M1+M3	M1, M1+M3	M1, M1+M3	M1	----
Brown rot	----	1[2], 2+oil, 3, 3/7, 3/9, 3/11, 3+P 07/33, 9, 52	1[2], 2+oil, 3, 3/7, 3/9, 3/11, 3+P 07/33, 7, 7/11, 9, 11, 19, 52	1[2], 2+oil, 3/11, 3+P 07/33, 7, 7/11, 9, 19, 52	----	----	----	----
Jacket rot	----	----	1[2], 2 +oil, 3/7, 3/9, 3/11, 7, 7/11, 9, 19, 52	1[2], 2+oil, 3/7, 3/9, 3/11, 7, 7/11, 9, 19, 52	----	----	----	----
Hull rot[5]	----	----	----	----	----	----	3, 3/7, 3/9, 3/11, 7/11, 11, 19, 52	3, 3/7, 3/9, 3/11, 7/11 11, 19, 52
Leaf blight	----	----	1[2], 2, 3, 3/7, 3/9, 3/11, 3+P 07/33, 11	1[2], 2, 3, 3/7, 3/9, 3/11, 3+P 07/33, 11, M3, M4, M5	3, 3/7, 3/9, 3/11, 3+P 07/33, 11, M3, M4, M5	----	----	----
Rust	----	----	----	----	----	3, 3/7, 3/11, 3+P 07/33[1], 7, 7/11, 11, 19, M3	3, 3/7, 3/11, 3+P 07/33, 7, 7/11, 11, 19	3, 3/7, 3/11, 3+P 07/33, 7, 7/11, 11, 19
Scab[4]	M1+oil, M2[3], M5+oil	----	----	1[2], 3/7, 3/9, 3+P 07/33, 3/11, 7, 7/11[2], 11[2] M3, M4, M5	1[2], 3/7, 3/9, 3+P 07/33, 3/11,7, 7/11[2], 11[2] M3, M4, M5	3, 3/7, 3/9, 3/11, 3+P 07/33, 7, 7/11[2], 11[2] M2[3], M3, M4	M2[3], M4	----
Shot hole	M1	2, 3, 3/7, 3/9, 3/11, 7, 9, 11, 52	2, 3, 3/7, 3/9, 3/11,7, 7/11, 9, 11, 19, 52	2, 3, 3/7, 3/9, 3/11, 7, 7/11 9, 11, 19, 52	7, 7/11, 11, 19, 52, M3, M4, M5	7, 7/11,11, 19, 52, M3, M4, M5	----	----

[1] Code numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions (for more information, see http://www.frac.info/). Code numbers are listed in numerical order within the suggested disease management program. Fungicides with a different Code number are suitable to alternate in a resistance management program. Refer to the fungicide efficacy table for fungicides belonging to each FRAC Code. Note: FC 33 is currently P 07 but it is indicated as P 07/33.

[2] Strains of *Monilinia fructicola* and *M. laxa* resistant to Topsin-M and T-Methyl are present in some California almond orchards. Resistant strains of the jacket rot fungus, *Botrytis cinerea*, and powdery mildew fungi have been reported in California on crops other than almond and stone fruits and may have the potential to develop in almond with overuse of fungicides with similar chemistry.

[3] Use liquid lime sulfur in dormant applications and wettable sulfur at and after pre-bloom.

[4] Apply petal-fall treatments based on twig-infection sporulation model.

[5] Effective hull rot management is dependent on integrated strategies including dust control, reduced irrigation, and limiting nitrogen fertilization prior to and during hull split, as well as ensuring adequate air circulation (appropriate pruning or hedging practices) in the orchard.

ALMOND: SUGGESTED DISEASE MANAGEMENT PROGRAMS BY FRAC[1] CODES - ORGANIC GROWERS

Note: Not all indicated timings may be necessary for disease control (*see* Treatment Timing Table). If treatments are needed based on host phenology, weather monitoring, inoculum models, or environmental-disease forecasting models, suggested fungicide Codes are listed for each timing.

How to use this table:

1) Identify the disease(s) that need(s) to be managed. Know the disease history of the orchard, especially from the last season.
2) Select one of the suggested fungicide Codes. If several diseases need to be managed, select a Code that is effective against all diseases. Refer to the fungicide efficacy table for fungicides belonging to each FRAC Code. Code numbers are listed in numerical order within the suggested disease management program.
3) Rotate Codes for each application within a season and, if possible, use each Code minimally per season.

Disease	Dormant	Bloom			Spring		Summer	
		Pink bud	Full bloom	Petal fall	2 weeks	5 weeks	May	June/July
Alternaria	----	----	----	----	----	BM 01, -02, -03,oxidizer	BM 01, -02, -03,oxidizer	BM 01, -02, -03,oxidizer
Anthracnose	----	BM 01, -02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer
Bacterial spot	M1 + BM 01 (oil)	----	BM 01,-02, -03, M1, oxidizer	BM 01,-02, -03, M1, oxidizer	BM 01,-02, -03, M1, oxidizer	BM 01,-02, -03, M1, oxidizer	BM 01,-02, -03, M1, oxidizer	----
Brown rot	----	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	----	----	----	----
Jacket rot	----	----	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	----	----	----	----
Hull rot[2]	----	----	----	----	----	----	----	BM 01,-02, -03,
Leaf blight	----	----	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	----	----	----
Rust	----	----	----	----	----	BM 01,-02, -03, P 05, M2	BM 01,-02, -03, P 05, M2	BM 01,-02, -03, P 05, M2
Scab[3,4]	M1 + BM 01 (oil), M2	----	----	BM 01,-02, -03, P 05, NC	BM 01,-02, -03, P 05, NC	BM 01,-02, -03, P 05, NC	BM 01,-02, -03, P 05, NC	----
Shot hole	M1 + BM 01 (oil)	M1+BM 01 (oil)	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	BM 01,-02, -03, P 05, oxidizer	----	----

[1] Code numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions (for more information, see http://www.frac.info/). Code numbers are listed in numerical order within the suggested disease management program. Fungicides with a different Code number are suitable to alternate in a resistance management program. Refer to the fungicide efficacy table for fungicides belonging to each FRAC Code. NC = not coded in FRAC.

[2] Effective hull rot management is dependent on integrated strategies including dust control, reduced irrigation, and limiting nitrogen fertilization prior to and during hull split, as well as ensuring adequate air circulation (appropriate pruning or hedging practices) in the orchard.

[3] Use liquid lime sulfur in dormant applications and wettable sulfur at and after pre-bloom.

[4] Apply petal-fall treatments based on twig-infection sporulation model.