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Fungicides for Tree Fruits

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This guide is a decision-making tool to help growers select fungicides from different chemical classes (FRAC).[1] Additional information can be found in a number of UK Cooperative Extension Service publications, including ID-92, or by contacting county Extension agents.

FRAC Code Fungicide Group[1]	Chemical	Fungicide
1 Benzimidazoles	Locally systemic. Combine with a protectant fungicide. Fungicide resistance risk high. Tank mix with fungicides from a different fungicide group (FRAC) to prevent or delay resistance development. Do not mix with copper. *Apple diseases controlled:* black rot, sooty blotch, flyspeck, white rot. *Peach diseases controlled:* cherry leaf spot, peach scab .	
	Topsin M	thiophanate-methyl
2 Dicarboximide	Locally systemic, long protection period during wet conditions. Broad spectrum fungicide with multi-site modes of action; high risk for resistance development. Do not apply more than 2 applications per season. *Stone fruit diseases controlled:* brown rot, blossom blight, jacket rot, peach scab, shot hole.	
	Rovral	iprodione
	Nevado	iprodione
	Iprodione	iprodione
3 Sterol Inhibitors (SI)	Locally systemic. Rainfast in 2 hrs. Some curative activity. High risk of resistance, apply no more than 5 applications per season. *Apple diseases controlled:* flyspeck, powdery mildew, rusts, scab, sooty blotch, . *Stone fruit diseases controlled:* brown rot, blossom blight, cherry leaf spot, peach scab, powdery mildew.	
	Bumper	propiconazole
	Indar	fenbuconazole
	Inspire Super*	difenoconazole + cyprodinil
	Orbit	propiconazole
	Procure	triflumizole
	Propimax	propiconazole
	Quash	metconazole
	Rally	myclobutanil
4 PhenylAmides	Systemic fungicide effective against oomycetes (water molds) such as *Phytophthora* , *Pythium* , and downy mildew. High risk for fungicide resistance development. During wet years, apply just before growth starts in spring and at 2 to 3 month intervals (as long as conditions are wet) to protect against Phytophthora diseases.	
	Ridomil	mefenoxam

FRAC Code Fungicide Group[1]	Chemical	Fungicide
7 Succinase Dehydrogenase Inhibitors	Locally systemic fungicide. Do not exceed more than 4 applications per season for pome fruit and 5 applications per season for stone fruit. Fluxapryoxad, marketed as Xemium, is more mobile in plants, and is reported to provide a broader spectrum of disease control. Fluopyram, marketed as Luna, is reported to be extremely effective when mixed with trifloxystrobin; research suggests that disease control leads to elimination of inoculum that leads to longer storage. *Apple diseases controlled:* bitter rot, black rot, frogeye leaf spot, powdery mildew, rusts, scab, sooty blotch/flyspeck, white rot. *Stone fruit diseases controlled:* Alternaria leaf spot, anthracnose, blossom blight, brown rot, leaf spot, powdery	
	Pristine*	boscalid + pyraclostrobin
	Fontelis	penthiopyrad
	Luna Sensation*	fluopyram + trifloxystrobin
	Merivon*	fluxapryoxad + pyraclostrobin
9 Anilino-Pyrimidines	Locally systemic. Medium risk for resistance development. Apply no more than 3 applications per season. *Pome fruit disease controlled:* scab. *Stone fruit diseases controlled:* brown rot, blossom blight, jacket rot, shot hole.	
	Scala	pyrimethanil
	Vangard	cyprodinil
11 Strobilurins or QoI	Locally systemic. High risk for resistance development. Do not make more than 4 applications per season. *Pome fruit diseases controlled:* bitter rot, powdery mildew, rust, sooty blotch/fly speck, white rot. *Stone fruit diseases controlled:* Alternaria spot and fruit rot, anthracnose, brown rot, powdery mildew, rust, scab, shot hole.	
	Abound	azoxystrobin
	Flint	pyraclostrobin
	Gem	trifloxystrobin
	Luna Sensation*	fluopyram + trifloxystrobin
	Merivon*	pyraclostrobin + fluxapryoxad
	Pristine*	pyraclostrobin + boscalid
	Sovran	kresoxim-methyl
17 Hydroxyanilides	Locally systemic. Maximum 3 applications per season. *Pome fruit disease controlled:* fruit rot of pear. *Stone fruit diseases controlled:* blossom blight, brown rot, gray mold on cherry, twig blight.	
	Elevate	fenhexamid
33 Phosphonates	Fully systemic; when applied to leaves, product can translocate to lower parts. Low risk for fungicide resistance development. *Pome fruit disease controlled:* Phytophthora collar and root rot. *Stone fruit disease controlled:* Phytophthora collar and root rot.	
	Aliette	fosetyl-AL
	Agri-Fos	phosphorus acid
	Phostrol	phosphorus acid
	ProPhyt	phosphorus acid
	Rampart	phosphorus acid

FRAC Code Fungicide Group[1]	Chemical	Fungicide
M Multi-site Inhibitors	Effective as protectants on a broad range of fungi. Best applied early-season as a protectant before infection. Not systemic, washes off in the rain. Low risk for development	
	Bravo	chlorothalonil
	Captan	captan
	Copper	copper
	Koverall	mancozeb
	Mancozeb	mancozeb
	Manzate	mancozeb
	PenncoZeb	mancozeb
	Sulfur	sulfur
	Syllit	dodine
	Ziram	ziram
Bactericides	Antibiotics for control of bacterial pathogens. Resistance to streptomycin is widespread. Do not apply more than 3 to 4 applications of streptomycin per season. Do not use streptomycin after symptoms have developed or to control the shoot blight phase of fire blight. Dormant sprays of copper help reduce bacterial populations and should be used as part of a fire blight protection program. No resistance to oxytetracycline has been reported. Do not apply more than 5 applications of oxytetracycline per season. *Pome fruit disease controlled:* fire blight. *Stone fruit disease controlled:* bacterial spot in peach.	
	Agri-Mycin	streptomycin
	Agri-Strep	streptomycin
	Flameout	oxytetracycline
	Mycoshield	oxytetracycline

Notes

[1] FRAC codes group fungicides by their mode of action and resistance risk.
Fungicide groups should be rotated in order to prolong the effectiveness of fungicides.

* Chemical contains more than one active ingredient, thus more than one FRAC code is assigned.

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Check fungicide labels for specific host information, possible phytotoxicity, rates, re-entry intervals, and resistance management information. Always follow label instructions.