Nebraska Registered Fungicides for Hops

	Active Ingredient (FRAC code)	Trade Name	Diseases on label	REI/PHI
Single site	cyazofamid (21)	Ranman, Ranman 400 SC		12h/3d
	cymoxanil (27)	Curzate 60 DF	DM	12h/7d
	fluopyram (7)	Luna Privilege, Velum Prime	PM	12h/7d
	mefenoxam (4)	Orondis Gold B, Ridomil Gold SL, Ultra Flourish	DM	48h/45d
	metalaxyl (4)	MetaStar 2E, MetaStar 4S	DM	48h/45d
	quinoxyfen (13)	Quintec	PM	12h/21d
	tebuconazole (3)	Onset 3.6L, Teb 360XL, Folicur 3.6F, Monsoon, Offset 3.6F, Tebuconazole 3.6F, Orius 3.6F, Quarry, Tebucon 3.6F, Tebuconazole 3.5F T&O, Tebuconazole 3.6 AG, Tebuconazole 3.6 Select, Tebu-Crop 3.6F, Tebucure Fungicide 3.6, Tebustar 3.6L, Tebuzol 3.6F, Tebu 3.6F, Toledo 3.6F, Viathon, Vibe, Willowood Teb 3.6SC, Willowood Tebucon 3.6 SC	DM, PM	12h/14d
	trifloxystrobin (11)	Flint, Flint Extra, Gem 500 SC	PM	12h/14d
	triflumizole (3)	Procure 480SC, Trionic 4SC	PM	12h/7d
Multi-site	basic copper sulfate (M1)	Cuprofix Ultra 40, Cuproxat FL, Cuproxat, Mastercop	DM	check label
	copper octanoate (M1)	Camelot O, Copper Soap, *Cueva, *Monterey Liquid Copper RTU	DM, PM	4h/0d
	copper hydroxide (M1)	Nu-Cop XLR, Champ DP, Champ Formula 2 Flowable, *Champ WG, ChampION^{++}, Cupro 5000, Kocide 2000, Kocide 3000, Kocide HCU, Nu-Cop 30 HB, Nu-Cop 3L, *Nu-Cop 50DF, Nu-Cop HB, Previsto	DM	48h/14d
	copper oxychloride + copper hydroxide (M1)	Badge SC, *Badge X2	DM	48h/14d
	dimethomorph (40)	Forum	DM	12h/7d
	metrafenone (U8)	Vivando	PM	12h/3d
Premix	boscalid (7) + pyraclostrobin (11)	Pristine	DM, PM	12h/14d
	famoxadone (11) + cymoxanil (27)	Tanos	DM	12h/7d
	fluopyram (7) + tebuconazole (3)	Luna Experience	PM	12h/14d
	ametoctradin (45) + dimethomorph (40)	Zampro	DM	12h/7d

Plant Defense Inducers	fosetyl-Al (33)	Aliette WDG, Fosetyl-Al 80 WDG	DM	12h/24d
	mono- and dibasic sodium, potassium, and ammonium phosphites (33)	Phostrol	DM	4h/0d
	mono- and di-potassium salts of phosphorous acid (33)	Agri-Fos 400, Reliant	DM	4h/0d
	potassium phosphite	Elixor, Fosphite, Fungi-Phite, Oxi Phos, Rampart	DM	4h/0d
Biopesticides	*Bacillus amyloliquefaciens* strain D747 (44)	*Double Nickel 55, *Double Nickel LC, *Defguard, *Monterey Complete Disease Cntrl, *Revitalize, *Triathlon BA	PM	4h/0d
	Ibacillus pumilus strain QST 2808 (44)	*Sonata (includes Ballad Plus)	DM, PM	4h/0d
	Bacillus subtilis (44)	*Cease, Rhapsody (greenhouse only), *Serenade, *Serenade ASO, *Serenade Max	PM	4h/0d
	neem oil	*Trilogy	DM, PM	4h/0d
	hydrogen dioxide/peroxyacetic acid	Oxidate 2.0, StorOx 2.0	DM, PM	when dry/ 5d
	paraffinic oil	Ferti-lome horticultural oil, *Monterey horticultural oil, *Suffoil-x	PM	4h/0d
	potassium bicarbonate	*Agricure, *Greencure EZ, *Greencure Fungicide, *Kaligreen, *Milstop, *Milstop SP	DM, PM	check label
	Reynoutria sachalinensis extract (P5)	*Regalia	DM, PM	4h/0d
	borax	Prev-Am Ultra	DM, PM	12h/0d
	Streptomyces lydicus WYEC 108	*Actinovate AG	Verticillium wilt, DM, PM	1h/0d

The fungicide resistance action committee (FRAC) assigns a number and/or letter to group active ingredients that have the same mode of action and target site. Repeated application with the same mode of action and target site greatly increases a pathogen's ability to develop resistance. Refer to pesticide labels and FRAC codes for assistance in rotating active ingredients. These codes can often be found in the upper corner of a fungicide label. Rotating active ingredients and modes of action, using of tank mixes with multi-site activity, and integrating non-chemical controls assist in managing fungicide resistance. DM = Downy Mildew, PM = Powdery Mildew | REI = Restricted Entry Interval in hours, PHI = Preharvest Interval in days.

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