



CUCURBIT FUNGICIDES (Labeled & Rates/A) as of JULY 2014

T. A. Zitter, Dept. Plant Pathology, Cornell University, Ithaca, NY

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Underlined are Registered in NYS for Agricultural Use; Group Nos. appear before the Trade Name and are from the Fungicide Resistance Action Committee and EPA, and last no. = Days to harvest ex. [^{FRAC no. 40} Product ^{4DTH}] (ALL) means for all cucurbits unless noted otherwise; (*Fungicide Resistance* concerns are given in RED italics*) (*Important comments also in red*); *Strobilurins are no longer effective for *PM*, because of widespread resistance, and should not be relied upon for *DM* or *GSB**. Systemic fungicides are in **BOLD**. OMRI listed products are indicated and are also registered in NYS.

Major fungicide groups have been color coded to aid in finding and are categorized by MOA (mode of action): *Phosphorous acids* = Blue; *Strobilurins* or Group 11 (translaminar) = violet; *chlorothalonils* = black; *coppers* = green; and *sulfurs* = orange. Fungicide usage for soil application or foliar or greenhouse use.

Alphabetical Fungicide List for Cucurbits

- ⁴⁰ Acrobat 50WP⁰ (*dimethomorph*) See **Forum**.
- ^{Bio} Actinovate AG⁰, OMRI and SP ⁰, OMRI (EPA 73314-1), REI 1 hr or till dry as foliar application (*Streptomyces lydicus* WYEC 108, biological) (Natural Industries) (ALL) AG as Soil drench at planting, seedling or transplanting for *Fusarium*, *Rhizoctonia*, *Pythium*, *Phytophthora*, 3-12 oz/A in sufficient water; Foliar treatment for PM, Downy mildew, *Botrytis*, *Alternaria*, 3-12 oz/20-150 gal/A. 0 DTH. SP as Greenhouse drench 4-6 oz in 100 gal water (smaller quantities use at rate of 1 gal per cubic foot of growing media, saturated soil w/o runoff) or 1 tsp. /2 gallons water for smaller treatments; SP as Greenhouse foliar, 6-12 oz in 50-100 gal water and applied to foliage. 0 DTH.
- ^{Bio} Actino-Iron⁰ Biological Fungicide (EPA 73314-2), REI 4 hrs. (*Streptomyces lydicus* WYEC 108, biological) (Natural Industries) (ALL); for *Fusarium*, *Rhizoctonia*, *Pythium*, *Phytophthora* in Greenhouse potting mix at rate of 5 lbs/cubic yard; In-furrow application, 10-15 lbs/A; also used as a side-dress followed by watering in. 0 DTH.
- ³³ Agri-Fos⁰ (EPA 71962-1) REI 4 hrs (*phosphorous acid*) (Liquid Fertilizer) (ALL) *Phytophthora* root and fruit rot, 1-3 qts/100gal; DM, 1 1/4-2 qts combined with mancozeb/A. 0 DTH.
- ³³ Aliette 80% WDG^{12hrs} (EPA 264-516) REI 12 hrs. (*fosetyl-AI*) (limit 7 applications) (Bayer) (ALL) **DM**, *Phytoph* Root and Fruit Rot 2-5 lb. (*Do not mix with copper*); **12 hrs DTH**.
- ^M Armicarb⁰ (EPA 5905-541-AA) REI 4 hrs (*potassium bicarbonate*) (Church & Dwight, Helena); (C, M, WM, SS, P, Acorn squash), primarily for PM (several species), but also for An, Alt, DM 2.5-5 lbs/A. 0 DTH. (Also for greenhouse use).
- ^M Armicarb O⁰, Ecomate (EPA 5905-541) REI 4 hrs (*potassium bicarbonate, 85%*) (Helena) (ALL see above). 0 DTH. (may be used in GH).
- ^{M1} Badge SC⁰ (EPA 80289-3) REI 48 hrs (*copper oxychloride + copper hydroxide, 20% metallic equiv. w/w*) (Isagro) (ALL) 1-2.5 pts. /A for Alt LS, Angular LS, anthracnose, DM, GSB, PM. **0 DTH**. (Greenhouse and shadehouse use for crops on label; ie. for cucumber Ang LS and DM, 1-2.5 TBS/1000 sq ft.)
- ^{M1} Badge X₂⁰, OMRI DF (EPA 80289-12) REI 48hrs. (*copper oxychloride + copper hydroxide, 28% metallic equiv. w/w*) (Isagro) (ALL) multiple diseases, 0.5-1.25 lbs/A, limit to 5.25lb/A. **0 DTH** (Greenhouse and shadehouse use for crops on label; ie. for cucumber Ang LS and DM, 0.5-0.8 TBS/1000 sq ft.)
- ^{M1} Basic Copper 53⁰, OMRI (EPA 45002-8), REI 24 hrs (*basic copper sulfate, 53% metallic equiv.*) (Albaugh) (ALL) Ang LS, Alt LS, Anth, DM, PM, GSB, **Scab** 2 lb/A. **0 DTH**.



- ^{M1} Basic Copper Sulfate⁰ (EPA 46923-9) REI 24 hrs (*basic copper sulfate*, 53% metallic equiv.) (Old Bridge) (ALL) Ang LS, Anth, Alternaria LS, Bac. wilt (does nothing), DM, PM, GSB, **Scab**, 2 lbs/A. 0 DTH.
- ^{Bio} Bio-Tam⁰ (EPA 80289-9-69592) (AgraQuest/Isagro) (ALL) BIO-TAM is a biofungicide containing naturally occurring and selected strains of antagonistic fungi, *Trichoderma asperellum* strain ICC 012 and *Trichoderma gamsii* strain ICC 080. For **soil application** in assorted ways. See label for details. 0 DTH.
- ^{M5} Bravo Weather Stik 6SC⁰ (EPA 50534-188-100) REI 12 hrs (*chlorothalonil*) (limit 21 pts.) (Syngenta) (ALL) **Plectosporium 2ee** for Ultrex, AN, DM; 1 ½-2 pts; GSB, Alternaria L. B., **Scab**, PM 2-3 pts. 0 DTH. (Not for greenhouse-grown crops).
- ^{M5} Bravo Ultrex 82.5 WDG⁰ (EPA 50534-201-100) REI 12 hrs (*chlorothalonil*) (limit 19.1 lbs.) (Syngenta); (ALL) **Plectosporium 2ee** AN, DM 1.4-1.8 lbs/A; GSB, Alternaria L. B., **Scab**, PM 1.8-2.7 lb. 0 DTH (Not for greenhouse-grown crops). See also Bravo ZN
- ¹¹ Cabrio EG⁰ (EPA 7969-187 REI 12 hrs (*pyraclostrobin*) (limit 64 oz) (BASF) (*No aerial application in NYS*) (ALL) *DM* 8-12 oz; Alternaria L. B., AN, *GSB*, **Plectosporium**, *PM* 12-16 oz; *Because of resistance to *PM* in NY, do not use QoI fungicides specifically for *PM* control; *Do not use for *GSB* control if resistance to QoI exists; For *DM* resistance concerns choose an alternative product listed for DM control; Do not make more than 1 application before alternate to a labeled fungicide with diff. MOA and limit to 4 applications per season. 0 DTH. (Not for greenhouse use or in transplant production).
- ^{M1} Camelot 0⁰, **OMRI** (EPA 67702-2-67690) REI 4 hrs. (10% octanoic acid, copper salt) (W. Neudorff) 0 DTH.
- ^{M5 + 33} Catamaran⁰ (EPA 42519-31) REI 12h (*chlorothalonil*, 16.7% + **potassium phosphite**, 38.9%) (limit 50 pts.) (Luxembourg-Pamol) ALL, Anth, DM, Target spot in south, 4 pts/A; Cercospora leaf spot (south), Gummy Stem blight, Alternaria LS, **Scab**, 6 pts/A. 0 DTH.
- ^{Bio} Cease⁰, **OMRI** (EPA 69592-19-68539), REI 4h, (*B. subtilis*, biological) (Bayer/BioWorks); (ALL), ALS, Anth, DM, GSB, PM, 3-6 qts/A. 0 DTH.
- ^{M1} Champ Formula 2F⁰ (EPA 55146-64) Champ WG **OMRI**, REI 24 hrs. (*copper hydroxide* 37.5%, or 24.4 % metallic equiv.) (Nufarm) (ALL) Alt LS, Ang LS, Anth, DM, PM, GSB, 1 1/3 pt. 0 DTH (for **greenhouse crops as listed**, ex. Cucumber Ang LS and DM, 1.25-1.5 tbs/1,000 sq ft).
- ^{M5} Chlorothalonil 720 SC⁰ (EPA 66330-362) REI 12 hrs (54% *chlorothalonil*) (limit 21 pts.) (Arysta) (ALL), Anth, DM, 1 ½ -2 pts/A; GSB, Alt LB, Alt. LS, **Scab**, PM 2-3 pts/A. 0 DTH. (Note on spraying mature watermelons).
- ^{M1} C-O-C-S WDG⁰ (EPA 34704-326) REI 48 hrs. (74.8% *copper oxychloride* + 14.2% *basic copper sulfate*, 50% metallic equiv.) (Loveland). (ALL), DM, Leaf spots, Anthracnose, 2-4 lbs/A. 0 DTH. (limit of 10.2 lbs/A)
- ^{Bio} Contans WG⁰, **OMRI** (EPA 72444-1), REI 4 hrs (*Coniothyrium minitans*, biological) (Sylvan Bioproducts/Prophyta); (ALL) WM in **agricultural and greenhouse soils**, 1-4 lbs/A or 0.75-1.5 oz per 1000 sq ft. 0 DTH.
- ^{M1} Cueva⁰, **OMRI** Fungicide Concentrate (EPA 67702-2-70051) REI 4 hrs. (10% *copper octanoate*) (Neudorff/Certis) (ALL) multiple diseases on generic label, 0.5-2 gal/100 gal. 0 DTH. (limit of 1750 gal diluted spray per year)



- ^{M1} Cuprofix Ultra 40 Dispers⁰ (EPA 70506-201) REI 48 hrs (40% equiv. basic *copper sulfate* 71.1%) (UPI) (ALL) Alt l. s., Ang. L. s. AN, DM, GSB, **PM**, 1.25-2 lbs/A. (may also be used on **plants grown in a greenhouse or shadehouse**) (limit of 13 lbs/A/yr). 0 DTH.
- ²⁷ Curzate 60DF ^{Must Tank-Mix 3or5} (EPA 352-592) REI 12 hrs (*cymoxanil*) (limit 30 oz) (**locally systemic**) (DuPont) + **protectant**; **DM** (3.2 oz) + mancozeb or chlorothalonil = (**ALL crops**); **3 or 5 DTH as determined by mixing protectant chosen.**
- ¹⁷ Decree 50WDG⁰ (EPA 66330-35) REI 12 hrs (*fenhexamid*) (Arysta/SePro); For Cucumber only on transplants and greenhouse production. **Botrytis Gray mold**; stand-alone (1.5 lbs/A) or tank mixed with product approved for **gray mold** (1-1.5lb/A); (For **greenhouse crops** or **transplant production**; *Do not apply in the field; do not make more than 2 consecutive sprays*). 0 DTH.
- ^{M3} Dithane M-45⁵ (EPA 62719-387) The most complete vegetable label w/o the need for supplemental labels; REI 24 hrs (80% *mancozeb*) (limit 24 lbs.) (Dow) (ALL) for Altern LS, Anth, DM, GSB, **Plectosporium**, **Scab** at 2-3 lbs. **5 DTH.**
- ^{M3} * Dithane F-45 Rainshield⁵ (EPA 62719-396) REI 24 hrs (75% *mancozeb*) (limit 19.2 qtrs.) (Dow); (ALL) Anth, Alternaria L. B., **DM**, **GSB**, **Scab** 2-3 lb. 5 DTH. Also Dithane DF Rainshield (EPA 62719-402)
- ^{Bio} Double Nickel 55 WDG 0, **OMRI** (EPA 70051-108) REI 4 hrs (*Bacillus amyloliquefaciens* strain D 747) (Certis) (ALL) **Foliar Application**: for Powdery mildew (*Erysiphe and Sphaerotheca* spp.) Downy mildew (*Pseudoperonospora* spp.) Gummy stem blight (*Didymella bryoniae* and *Phoma cucurbitacearum*), apply as a spray at a rate of **0.25 to 3 pounds per acre** in sufficient water to achieve thorough coverage; **Soil application**: for Vine decline (*Monosporascus cannonballus*) Charcoal rot (*Macrophomina phaseoli*) “Damping off,” seedling blights, and root or crown diseases caused by *Pythium*, *Rhizoctonia*, *Fusarium*, *Phytophthora*, or *Verticillium* spp. (suppression only), apply Double Nickel 55 at **0.125 to 1 pound per acre** (see label for full explanation). 0 DTH. Double Nickel LC⁰, **OMRI** (EPA 70051-107) is also registered on (ALL).
- ^{M5} Echo 720⁰ (EPA 60063-7) REI 12 hrs (54% *chlorothalonil*) (limit 15.75 lbs. ai) (Sipcam); (ALL) Ant, DM, 1 ½ - 2 pts; GSB, Alt l. b., **Scab**, **PM**, 2-3 pts. 0 DTH (OLF Echo 90DF) (*Do not use on greenhouse-grown crops*)
- ⁷ Endura⁰ (EPA 7969-197) REI 12h (*boscalid*) (limit 26 oz, 4 applic.) (BASF) (ALL) Alt LB, GSB, **resistance for PM**. 0 DTH.
- ^{M5} Equus 720 SST⁰ (EPA 66222-154) REI 12 hrs (54% *chlorothalonil*) (limit 21 pts.) (MAMA); (ALL) Ant, DM, 1.5-2 pts; GSB, Alt l b, **Scab**, **PM**, 2-3 pt. 0 DTH. (OLF are Equus 500 ZN and Equus DF) (*Do not use on greenhouse-grown food crops; do not apply more than 21 pts per season*).
- ¹¹ Flint 50WG⁰ (EPA 264-777) REI 12 hrs (*trifloxystrobin*) (limit 16 oz) (Bayer) (*No aerial application in NYS*); ***PM*** 1.5-2 oz (ALL); ***DM*** suppression 4 oz; **Plectosporium 2ee 2 oz**; ***Because of resistance to *PM* in NY, do not use QoI fungicides specifically for PM control; For *DM* resistance concerns, choose an alternative product listed for DM control.** 0 DTH. (Not for greenhouse use).
- ⁷ Fontelis¹ (EPA 352-834) REI 12hrs.(*penthiopyrad*) (Limit to 67 fl oz/season) (DuPont) ALL, Altern LS, Gray mold, GSB, **PM** at 12-16 fl oz; Sclerotinia stem rot, 16 fl oz.. **Do not make more than 2 sequential applications of product before rotating to a fungicide with a different MOA. In the case of GSB, Tank Mix Fontelis with 1.5 lbs ai of chlorothalonil.** 1 DTH.



- ⁴⁰ **Forum 4.18 SC⁰** (EPA 241-427) REI 12 hrs (43.1% *dimethomorph*, (limit to 30 fl oz) **replaces Acrobat 50WP**) (BASF) (ALL as determined by protectant) (*Must be tanked mixed with protectant; do not make more than 2 sequential applications before alternating with another material for specific control of DM or Phytophthora for at least one application; Do not make more than 5 applications per season*). **DM**, 6 fl oz/A; Phytophthora blight and crown rot, 6 oz/A. **0 DTH. (Not for greenhouse crops or transplant production).**
- ^{*33} **Fosphite⁰** (EPA 68573-2) REI 4 hrs (53% mono- and dipotassium salts of *phosphorous acid*) (JH Biotech) (ALL) Phytophthora, DM, 1-3 qts/min. 20 gal/A, *Do not use at intervals of less than 3 days; Do not apply Fosphite foliarly to plants treated with copper at less than 20 day interval.* **0 DTH**
- ³³ **Fungi-Phite⁰** (EPA 83472-1) REI 4 hrs (45.5% mono- and di-potassium slats of *phosphorous acid*) (Plant Protectant) (ALL) Phytophthora and Pythium, DM, 1-2 qts in a minimum of 30 gal water. **0 DTH.**
- ^{*22+M3} **Gavel 75DF⁵** (EPA 10163-6414) REI 48 hrs (*zoxamide* 8.3% and *mancozeb* 66.7%) (limit 16 lbs.) (Gowan) (ALL) Alternaria, **DM**, **Phytophthora Fruit and Stem rot 2ee**; 1.5-2 lb. 5 DTH. (**Use preventatively for DM control**); (*Not for greenhouse crops or transplant production*).
- ^{1 + Prot} **Incognito 85 WDG¹** (EPA 66222-145) REI 24 hrs. (thiophanate-methyl) (limit 2.5 lbs.) (MANA) (C, M, P, WS, SS) Anth, GSB, **Res. PM**, Belly rots) **1 DTH.**
- ^{M5} **Initiate 720⁰** (EPA 34704-881) REI 12 hrs, (*chlorothalonil*, 54%) (limit 21 pts.) (Loveland) (ALL); Anth, DM, Target Spot, 1 1/2 – 2 pts; GSB, Alternaria leaf blight, **Scab**, Powdery mildew, 2-3 pts/A. **0 DTH.** Also ^{M5} **Initiate ZN⁰**.
- ³⁺⁹ **Inspire Super⁷** (EPA 100-1317) REI 12hrs (8.4% *difenoconazole* + 24.1% *cyprodinil*) (limit 80 fl oz) (**Vanguard**) (Syngenta) (ALL) (**ground application only**); Multiple diseases including **PM**, Alt. leaf blight, and leaf spot, Anthracnose, Gummy stem blight, Septoria leaf blight, **Plectosporium blight**, 16-20 fl oz/A (**No more than 2 sequential applications before alternating to another fungicide with a different MOA.** **7 DTH.**
- ^{NC} **JMS Stylet-Oil⁰. OMRI** (EPA 65564-1) REI 4 hr, (*paraffinic oil*, Not classified) (JMS Flower Farms) (ALL) Alternaria blight, **PM**, GDB, mites, whiteflies, 3-6 qts/A. **0 DTH** (*may be used in GH; see label for compatibility information*)
- ^M **Kaligreen¹. OMRI** (EPA 11581-2), REI 4 hrs (*potassium bicarbonate* 82%) (Toagosei); **PM** for ALL cucurbits 2 1/2 -5 lbs/A. **1 DTH. (May be used in GH).**
- ^{M1} **Kentan DF⁰** (EPA 80289-2) REI 48 hr, (*copper hydroxide* 61.3% = 40% metallic cu) (Isagro); (ALL), Ang LS, Alt LS, Anth, DM, GSP, **PM**, 1-2.62 lbs (*limit of 5.25 lbs*). **0 DTH.** *May be used for **greenhouse crops** on label.*
- ³³ ***Kphite7LP⁰** (EPA 68573-2) REI 4 hrs. (53% Mono & di-potassium salts of *phosphorous acid*) (Plant Food Systems); (ALL) Generic label for Phytophthora and Pythium and DM, 1-3 qts in 20 gal water. **0 DTH.**
- ^{M1} **Kocide 3000⁰** (EPA 352-662), REI 48 hrs. (*copper hydroxide* 46.1% = 30% metallic equiv.) (DuPont); (ALL) Alt LS, Ang LS, Anth, DM, GSB, **PM**, 0.5-1.25 lb. **0 DTH.** (**Limit to 17.5 lbs**); *May be used **for greenhouse crops** ie. cucumber and others on label; 1 level TBS per 1000 sq. ft. is equivalent to 0.5 lbs per A).* See also **Kocide 101** and **Kocide 2000**.



- ^{M2} **Kumulus DF⁰, OMRI** (EPA 51036-352), REI 24 hrs. (80% sulfur) (Arysta). (C, M, S) Rates vary by cucurbit. 0 DTH.
- ⁷⁺³ Luna Experience⁷ (EPA 264-1091) REI 12hrs. (*fluopyram + tebuconazole*) (Limit to 34 fl oz/season) (Bayer); currently only on watermelon, 6-17 fl oz PM, 8-17 fl oz Altern LS, suppression of GSB, Belly rot and Anthracnose at 17 fl oz. **Do not make more than 2 sequential applications of this and other Gr. 7 or 3 containing fungicides before rotating to a fungicide with a different MOA. 7 DTH.**
- ⁷ Luna Privilege⁰ used as spray (EPA 264-1078) REI 12hrs. (*fluopyram*) (Limit to 13.7 fl oz/season) (Bayer); currently only registered on watermelon, 2.4-6.84 fl oz PM; 6.84 fl oz for GSB, Gray mold, Altern.LS. **Do not make more than 2 sequential applications of this or other Gr. 7 containing fungicides before rotating to a fungicide with a different MOA. 0 DTH.**
- ⁷⁺¹¹ Luna Sensation⁰ used as spray (EPA 264-1090) REI 12hrs. (*fluopyram + trifloxystrobin*) (Limit to 27.1 fl oz/season or 4 applications/season) (Bayer); currently only for watermelon, PM, 4-7.6 fl oz; Botrytis Gray mold, Alternaria LS, Anthracnose, 7.6 fl oz. **Do not make more than 2 sequential applications of this or other Gr. 7 or 11 containing fungicides before rotating to a fungicide with a different MOA. 0 DTH.**
- ^M **M-Pede⁰, OMRI** Insecticide & Miticide (EPA 10163-324) REI 12 hrs (49% potassium salts of fatty acids) (Gowan); (ALL) Insects and PM, **Greenhouse and field**; (*avoid close contact with sulfur*). 0 DTH.
- ^{M3+M1} **ManKocide⁵** (EPA 352-690) REI 48 hrs (*mancozeb + copper hydroxide, metallic copper equiv. 30%*) (limit 24 lbs.) (DuPont) (C, M, WM, Sm Squ), Ang LS, DM, GSB, Anth, PM, varies 2-3 lbs/A. 5 DTH.
- ^{M3} **Manzate Pro-Stick⁵** (EPA 70506-234) REI 24 hrs (75% DG, *mancozeb*) (limit 24 lbs.) (UPI); (ALL), Anth, Alt LS, DM, GSB, **Scab**, 2-3 lbs/A. 5 DTH. (**Not for Gr. Hs. Use**).
- ^{M1} **Mastercop⁰** (EPA 55272-18-66222) REI 48 hrs. (*copper sulfate pentahydrate, 21.5%*) (limit 7 pts.) (MANA) (ALL) Alt LS, Ang. LS, Anth. DM, GSB, PM. 0 DTH.
- ^{Bio} **MeloCon WG** (EPA 72444-2) REI 4 hrs. (*Paecilomyces lilacinus* strain 251) (Prophyta) For control of **plant-parasitic nematodes in the soil**, as soil application before planting or transplanting, to transplants, or to soil after planting. 0 DTH.
- ^{M2} **Microfine Sulfur⁰** Not labeled for cucurbits due to injury.
- ^{M2} **Microthiol Disperss⁰, OMRI** (EPA 70506-187) REI 24 hrs. (80% sulfur) (UPI); (C, M, P, Sm Wn Squash), **PM 5-10 lbs**; for use in alternating weeks following other effective sprays for PM control; *do not use if temperature will exceed 90 F within 3 days following the spray*. 0 DTH.
- ^{M2} **Micro Sulf⁰, OMRI** (EPA 55146-75) REI 24 hrs. (*sulfur*) (Nufarm) C = 2-4 lbs (limit to 2 lbs if temps exceed 95 F; Sq = 5-10lb, avoid use on sulfur sensitive varieties. 0 DTH.
- ^M **MilStop⁰, OMRI** (EPA 70870-1-68539) REI 1 hrs (*potassium bicarbonate*), (BioWorks); (ALL), 2.5-5 lbs/100 gal. 0 DTH. (**May be used in Gr. Hs.**)
- ^{Bio} **Mycostop⁰, OMRI** (EPA 64137-5) REI 4 hrs (*Streptomyces griseoviridis*, biological) (Verdera Oy) (ALL) **Product may be used in a variety of application methods per label; for a variety of root pathogens.** 0 DTH. **Also** ^{Bio} **Mycostop Mix⁰**.
- ^{M1} **Nordox75WG⁰, OMRI** (EPA 48142-4) REI 12 hrs. (cuprous oxide) (limit not given) (Nordox) Alt LS, Ang. LS, Anth, DM, GSB, PM, 1-1 ¼ lbs. /A. 0 DTH.



- ^{M1} Nu-Cop 50WP^{0, OMRI} (EPA 45002-7) REI 24 hrs (*cupric hydroxide*, 77%, 50% metallic equiv.) (limit not given) (Albaugh). (ALL) Ang LS, PM, DM, rates vary 1.5-3 lbs/A. 0 DTH (greenhouse and shadehouse crops, for ex. cucumber Ang LS and DM, on other copper labels). See Also Nu-Cop 3L and Nu-Cop HB^{OMRI}.
- [?] Nutrol⁰ (EPA 70644-1) REI 4 hrs. (100% *potassium dihydrogen phosphate*, Group ?) (Lidochem) (ALL) for PM control, 10-20 lb. 0 DTH.
- ^M Oxidate^{0, OMRI} (EPA 70299-2) REI 1 hr (*hydrogen peroxide*) also ^M Oxidate 2.0^{OMRI} (BioSafe Systems); (ALL) Belly rot, root rots, Fus. Wilt, Alt, AN, DM, GSB, PM (see label for specifics). 0 DTH.
- ^{M3} Penncozeb 75DF⁵ (EPA 70506-185) REI 24 hrs (75% *mancozeb*) (limit of 24 lbs.) (UPI); (ALL), AN, Alt. 1. s., DM, GSB, Scab, 1.5-3 lbs/A. 5 DTH. (**Not for Gr. Hs. use**). Also Penncozeb 4FL 37% (EPA 70506-194); Penncozeb 80WP, 80% (EPA 70506-183).
- ³³ Phostrol⁰ (EPA 55146-83) REI 4 hrs. (Mono- and dibasic Na, K and NH₃ phosphites = *phosphorus acid* 6.69 lbs ai/gal = 4.32 lbs./gal) (limit 7 applications/season) (Nufarm); (ALL) Phy Root and Fruit Rot, DM 2.5-5 pts/8-50 gal/A (use 7 days hi risk). 0 DTH.
- ^{*43} Presidio² (EPA 59639-140). REI 12 hrs (**fluopicolide**) (limit of 12 fl oz) (**Valent**). (mesosystemic) (ALL) Use for the control of selective oomycetes. DM, Phytophthora blight (*P. capsici*) 3-4 fl oz/A. (**must be tank mixed with another fungicide with a different MOA; no more than 2 sequential applications before alternating to another effective fungicide; make no more than 4 applications per season; do not apply to Gr Hs food crops or Gr Hs transplants**). **2 DTH**.
- ^{Bio} Prestop WP^{0, OMRI} (EPA 64137-11) REI 0 hrs. (*Gliocladium catenulatum* Strain J1446, 32%) (Verdera Oy) (ALL) PRESTOP controls seed-borne and soil-borne plant diseases such as damping-off, root and stem rot, and wilt caused by *Alternaria*, *Cladosporium*, *Fusarium*, *Penicillium*, *Phytophthora*, *Plicaria*, *Pythium*, *Rhizoctonia* and *Verticillium*. Incorporate into potting media, or use as soil drench; For foliar application for control of *Didymella* and *Botrytis*. 0 DTH.
- ^M Prev-Am Ultra⁰ (EPA 72662-3) REI 12 hrs (sodium tetraborohydrate decahydrate, *borax*) (Citrus Oil); (C, M, P, S) DM, PM, 50 fl oz/100 gal. water (also insects). **0 DTH**.
- ^{*28} Previcur Flex² (EPA 264-678) REI 12 hrs (*propamocarb*) (limit 6 pts.) (**systemic used with protectant (Bayer); Field (ALL); DM**, 1.2 pts OR 0.6 – 1.2 pts when tank-mixed with chlorothalonil and fixed copper **2 DTH**, with mancozeb **5 DTH**; Pythium root rot and Phytophthora see label; Greenhouse use as soil treatment for *Pythium* and *Phytophthora* spp.
- ¹¹⁺⁷ Pristine⁰ (EPA 7969-199) REI 12 hrs (*pyraclostrobin + boscalid*) (limit 74 oz) (BASF); (ALL); 12.5-18.5oz/A; Alt, ***DM***, ***PM***, ***GSB***; AN 18.5 oz; *Use as an alternative product when *PM*, *GSB*, or *DM* resistance is an issue; Do not make more than 1 application before alternating to a non-strobilurin fungicide; Use at the highest rate is recommended; No aerial application within 100' of surface water in NYS; Not for use in Greenhouse or transplant production*. 0 DTH
- ^{*3} Procure 480 SC⁰ REI 12 hrs (*triflumizole*, [imidazole]) (limit 40 fl oz) (**Chemtura**); **PM** (ALL), 4-8 oz; *Use in an alternating program because of *PM* resistance; used at the highest rate of 8 oz and mixed with protectant like chlorothalonil; Also for greenhouse cucurbit transplants; Restricted due to toxicity for fish*. **0 DTH**.



- ³³ ProPhyt⁰ Helena (EPA 42519-22-AA-5905) REI 4 hrs (54.5% potassium phosphite equiv *phosphorus acid* = 34.3%) (Luxembourg-Pamol, Helena); DM for (ALL), 2-4 pts/A tank mixed with dithiocarbamate approved for crop; Phytophthora see label. 0 DTH.
- ¹¹ Quadris F¹ (EPA 100-1098) REI 4 hrs (*azoxystrobin*) (limit of 92.3 fl oz) (Syngenta); (ALL) 11-15.4 fl oz (0.18-0.25 lbs ai) AN, Belly Rot, *DM*, *GSB*, Alternaria, *PM* ; *Because of resistance to *PM* in NY, do not use QoI fungicides specifically for *PM* control; Do not use for *GSB* control if resistance to QoI exists; For *DM* resistance concerns choose an alternative product listed for DM control* (Do not apply sprays near apples; Do not apply Quadris or other QoI fungicide before alternating with a fungicide with a diff. MOA, and limit to 4 applications per season). 1 DTH. (Not for use for greenhouse-grown food crops).
- ^{11+M5} Quadris Opti F¹ (EPA 100-1171) REI 12 hrs (4.6 % *azoxystrobin* + 46% *chlorothalonil*) (limit see label) (Syngenta); 3.2 pts (0.1 lbs ai azoxy; 1 lb ai chloro); (ALL) AN, Belly Rot, *DM*, *GSB*, Alternaria L. B., *PM* ; *Because of resistance to *PM* in NY, do not use QoI fungicides specifically for PM control; Do not use for *GSB* control if resistance to QoI exists; For DM resistance concerns, choose an alternative product listed for DM control;* (Do not apply sprays near apples; Do not apply Quadris Opti or other QoI fungicide before alternating with a fungicide with a diff. MOA, and limit to 4 applications per season). 1 DTH.
- ¹¹⁺³ Quadris Top¹ (EPA 100-1313) REI 12hrs (*azoxystrobin* + *difenoconazole*) (limit 56 fl oz) (Syngenta); (ALL) Alt LB, Alt LS, Anth, Belly Rot, Cercospora LS, DM, GSB, Plectosporium Blt, PM, Septoria LB 12-14 fl oz/A. 1 DTH.
- ¹³ Quintec 2.08 SC³ (EPA 62719-375) REI 12 hrs (*quinoxifen*) (limit see label) (Dow); (Muskmelon and other spec. melons and watermelon) (with new section 3 also for Winter squash, gourds and pumpkins); PM, 4-6 fl oz, 10-14 day schedule; *Rotate to a product with a different mode of action than Quintec after application using highest rate; apply the alternate product within at least 14 days of the Quintec.* 3 DTH.
- ³ Rally 40WSP⁰ (EPA 62719-375) REI 24 hrs (*myclobutanil* [triazole]) (limit 1.5 lbs.) (Dow) *PM* 2.5-5 oz for (ALL); *Use in an alternating program because of *PM* resistance; used at the highest rate of 5 oz and mixed with protectant like chlorothalonil.* 0 DTH. (Not for Gr. Hs. use).
- ³³ Rampart⁰ (EPA 34704-924) REI 4 hrs (Mono- and dipotassium salts of *phosphorous acid*) (Loveland); (ALL), generic label for Phytophthora blight, Pythium and Downy mildew, 1-3 quarts in a minimum of 20 gal water/A; do not apply at intervals less than 3 days. 0 DTH.
- ²¹ Ranman 400SC⁰ (EPA 71512-3) REI 12 hrs (*cyazofamid*) (limit 16.5 fl oz) (ISK/FMC); (ALL) DM, 2.1 to 2.75 fl oz/A; Phytophthora blight, 2.75 fl oz/A (*alternate sprays with a different MOA; mix Ranman with an organosilicone surfactant when water volumes are up to 60 gal/A.*) 0 DTH.
- ¹¹ †Reason 500 SC¹⁴ †NOT labeled in Nassau or Suffolk Co. (EPA 264-695) REI 12 hrs (*fenamidone*) (limit 22 fl oz) (Bayer); (ALL) 5.5 oz; *DM* and Alternaria L. B.; *For DM resistance concerns, alternate with chlorothalonil or mancozeb or choose an alternative product listed for DM control; Do not use QoI fungicides specifically for PM control.* 14 DTH.
- ^{SAR} Regalia EC⁰, OMRI (EPA 84059-3) REI 4h, (*Reynoutria sachalinensis* extract, biological SAR) (Marrone) (ALL); PM, DM, GSB, 2-4 qts/50-100gal. 0 DTH.



- *³³Resist 57⁰ (EPA 82940-1) REI 4 h. (mono- and dipotassium salts of *phosphorous acid*) (Actagro); (ALL) Foliar Generic label for Phytophthora blight and DM, 1-3 quarts in a minimum of 20 gal water/A. 0 DTH.
- ⁴⁰Revus⁰ (EPA 100-1254) REI 12 hrs. (*mandipropamid*) (limit 32 fl oz) (Syngenta) (ALL) Suppression only for DM and Phytophthora blight, 8 fl oz (*silicone-based adjuvant recommended (i.e. Silwet L-77)*); *For DM, make no more than 1 consecutive application of Revus tank-mixed with another DM fungicide with a different MOA before switching to an effective fungicide other than Group 40; For Phytophthora, apply Revus in a mixture with copper and alternate with another effective fungicide. Not for use on transplants.* 0 DTH.
- ⁴Ridomil Gold SL⁰ (EPA 100-1202) REI 48 hrs (*mefenoxam*) (Syngenta); (ALL); Damping off, cottony leak; pre-plant, soil surface spray 1-2 pts; **Not in transplant water for dipping; not for GH use.** 0 DTH; Pythium root rot, directed soil spray, 0.25-0.4 pt. 5 DTH.
- ^{4+M5}Ridomil Gold Bravo SC⁰ (EPA 100-1221) REI 48 hrs (*mefenoxam + chlorothalonil*) (limits see label) (Syngenta) (ALL) DM, 2 lbs; An, GSB, Alt L. B., Scab, 2-3 lbs; *avoid late season applications when plants begin senescence.* 0 DTH.
- ^{Bio}RootShield Granules^{0, OMRI} (EPA 68539-3) 0 REI if soil incorporated (*Trichoderma harzianum* Rifai strain T-22, 1.15%) (BioWorks); in-furrow 2.5-6.0 lbs/1/2 A
- ^{Bio}RootShield WP^{0, OMRI} (EPA 68539-7), 0 hrs or until dry REI (1.15% *Trichoderma harzianum* Rifai strain KRL-AG2) (BioWorks); Gr Hs soil drench, Tsp. starter solution, Chemigation (Gr Hs or Field), rates vary; provides protection against plant root pathogens such as *Pythium*, *Rhizoctonia*, *Fusarium*, *Cylindrocladium* and *Thielaviopsis*. 0 DTH.
- ^{Bio}RootShield Plus Granules^{0, OMRI} (EPA 68539-10), 0 REI if soil incorporated (*Trichoderma harzianum* Rifai strain T-22, 1.15% + *Trichoderma virens* strain G-41, 0.61%) (BioWorks), in-furrow 2.5-6.0 lbs/1/2 A. 0 DTH.
- ^{Bio}RootShield Plus WP^{0, OMRI} (EPA 68539-9), 4 hrs REI *Trichoderma harzianum* Rifai strain T-22, 1.15% + *Trichoderma virens* strain G-41, 0.61% (BioWorks); Gr Hs soil drench, Tsp. starter solution, Chemigation (Gr Hs or Field), rates vary, see label. 0 DTH.
- ^{M3}Roper DF³ Rainshield (EPA 34704-1063) REI 24 hrs. (58.1%, *mancozeb*) (Loveland) (ALL) Alt LS, Anth, DM, GSB, Scab at 2-3 lb (limit 25.6 lb). 5 DTH.
- ^{Bio}Serenade ASO^{0, OMRI} (EPA 264-1152) REI 4 hrs (*Bacillus subtilis*) (Bayer); (ALL) Field PM; 4-8 qts/A (*best if used with copper*). 0 DTH.
- ^{Bio}Serenade MAX WP^{0, OMRI} (EPA 264-1151) REI 4 hrs (*Bacillus subtilis*) (Bayer); (ALL) Field and Greenhouse (uses are the same) PM, GSB, DM, 1-3 lb/A/100gal. 0 DTH.
- ^MSil-Matrix^{0, OMRI} (EPA 82100-1) REI 4 hrs. (29% potassium silicate) (PQ Corp) (ALL) for use as a Fungicide/Miticide/Insecticide. 0 DTH.
- ^{Bio}Sonata^{0, OMRI} (EPA 264-1153) (*Bacillus pumilus*) REI 4 hrs (Bayer); (ALL) Field and Greenhouse (uses are the same) Foliar application for PM, DM, 2-4 qts/A/100gal. 0 DTH.
- ¹¹Sovran⁰ (EPA 7969-154) (*kresoxim-methyl*) (BASF); (ALL), *PM*, 3.2-4.8 oz/A; *GSB*, 4.8 oz/A. (*Not for use on Long Island*) *Do not use QoI fungicides specifically for PM or GSB control; do not make more than 1 application before to a non-strobilurin fungicide with a different mode of action.* 0 DTH.
- ^{M2}Sulfur 6L⁰ (EPA 66330-211), REI 24 (*sulfur*) (Arysta) (melons, cucumbers, squash), PM 4 gal/A. 0 DTH.
- ^{NC}Surround^{0, OMRI} (EPA 61842-18) REI 4hrs. (Tessenderlo) Kaolin clay (ALL) 0 DTH.



- †⁹⁺¹²**Switch 62.5WG¹** (EPA 100-953) REI 12h, (cyprodinil, 37.5% + fludioxonil, 25%) (limit 56 oz) (Syngenta); (ALL), Altern leaf blight, Altern leaf spot, Gummy Stem Blight, Powdery mildew, 11-14oz/A. **1 DTH. *Not for use on Long Island, only there for Onions and Strawberries.***
- ¹¹⁺²⁷**Tanos³** (EPA 352-604) REI 12 hrs (*famoxadone 25% + cymoxanil 25%*) (limit 72 oz) (DuPont) (ALL); for Alternaria L. B., AN, *DM**; use 8 oz; (*must be tank mixed with either mancozeb 5 DTH or fixed copper or chlorothalonil or OLF; Do not use Tanos for *PM* or *GSB*;* *for DM resistance concerns, alternate with chlorothalonil or mancozeb or choose an alternative product listed for DM control ie. Gavel; 2ee for suppression of Phytophthora blight* in the foliar and fruit phase only, use 8 oz/A, and tank mixed with a copper or mancozeb fungicide. **Do not make more than one application before rotating with a fungicide that has a different mode of action; do not make more than 4 applications of Tanos or other Group 11 fungicide per cropping cycle. (3 DTH).**
- ^{M2}**That Flowable Sulfur⁰** (EPA 57538-5) REI 24 hrs. (*Sulfur*) (Stoller); (ALL); PM, 2-4 pts/A. (*Do not use if air temperatures exceed 90F*). 0 DTH.
- ^{1+prot}**Thiophanate-methyl 85 WDG⁰** (EPA 66222-145) REI 12 hrs (*thiophanate-methyl + protectant recommended*) (limit 2.5 lbs.) (MANA) (C, M, SS, WS, P) AN, **GSB**, **Res. PM**, 0.2-0.4 lbs. /A; Belly rot, 0.4 lb/A. **0 DTH.**
- ^{1+prot}**Topsin M 70WP¹** (EPA 73545-11-70506) REI 12 hrs (*thiophanate-methyl + protectant is recommended*) (limit 3 lbs.) (UPI), (ALL); AN, **GSB**, **PM** (*Do not use specifically for these diseases*), Belly rots (Rhizoc. and Fusarium), 0.5 lb. **0 DTH.** Also Topsin M 70WSP.
- ^{U6}**Torino⁰** (EPA 8033-103-10163) REI 4hrs. (*cyflufenamid*) (Gowan); PM (ALL) 3.4 oz/A. **No more than once every 7 days and limit to 2 applications/year; Treat as a protectant, although translaminar and vapor action do exist. 0 DTH.**
- ^M**Trilogy⁰**, OMRI (EPA 70051-2) REI 4 hrs (70% clarified hydrophobic extract of *neem oil*) (Certis); (ALL), Listed for multiple diseases including PM and DM and insects, 0.5-1% in 25-100 gal/A. 0 DTH.
- ⁴**Ultra Flourish⁰ soil** (EPA 55146-73) REI 48 hrs (*mefenoxam*) (limits see label) (Nufarm) (ALL) Pythium DO, cottony leak, use 2-4 pts/A **at planting.** (*Do not dip plants in solution; do not use for gr. hs. crops*). **0 DTH.**
- †^{Nem}**Vydate L¹** (†*Not for use on Long Island*) (EPA 352-372) REI 48 hrs (*oxamyl*, insecticide/nematicide) (DuPont) (ALL) **for nematodes** (root knot, lesion, ring, sting and stunt) and insects, see label for preplant and foliar applications. **1 DTH.**
- 45+40 Zampro⁰ (EPA 7969-302), REI 12 hrs (ametoctradin + dimethomorph) (BASF); for DM and Phytophthora blight @ 14 fl oz. (limit to 42 fl oz/season). **0 DTH.**

This summary is provided as a helpful guide to most of the products that are available for Cucurbit Disease Control and is not a substitute for Pesticide Labels. Refer to the 2014 Cornell Vegetable Guidelines or the product label before buying any product. Every effort has been made to provide correct, complete, and up-to-date information at the time of this presentation/publication. Trade names used are for convenience only. No endorsement of products intended, nor is criticism of unnamed products implied. These recommendations are not a substitute for pesticide labeling. Always read the product label before applying any pesticide.

Abbreviations: ALL = registered for all the major cucurbit species (crops); † = **Restricted use pesticide prevented on LI**; * = **Restricted to commercial applicator use**; M = Multi-site activity; OLF = Other labeled formulation or OLP = Other labeled products exist; **PM**, **GSB**, **DM** = **Fungicide resistance concern with product for this particular disease pathogen.**

AN = Anthracose, *Colletotrichum obiculare*; Alternaria leaf blight = *Alternaria cucumerina*; **DM** = Downy mildew, *Pseudoperonospora cubensis*; **PM** = Powdery mildew, *Podosphaera fusca* (syn. *Podosphaera xanthii*), *Erysiphe cichoracearum* (not important); **GSB** = Gummy Stem Blight/Blk Rot, *Didymella bryoniae* (*Phoma cucurbitacearum*); Phytophthora blight, *P. capsici*; Plecto = Plectosporium blight, *Plectosporium tabacinum*; Scab, *Cladosporium cucumerinum*; Ang LS = Angular leaf spot, *Pseudomonas syringae* pv. *lachrymans*.



Overview of complete Cucurbit Fungicide Roster

See: <http://vegetableonline.ppath.cornell.edu> for more updates (underlined = labeled in NYS) [FRAC No. 40 Product 4DTH]

T. A. Zitter, Dept. Plant Pathology Ithaca, NY (JULY 2014)

Systemic fungicides are in BOLD, Protectants are listed first. Fungicides are for use on all cucurbits unless otherwise noted.

Protectants/Mixing Partners (Diseases listed on label or by 2ee)

- ^{M5} chlorothalonil⁰ (limits see labels) [Bravo WS & Ultrex (Plectosporium 2ee), Equus DF, Echo 720] (these are given first since they have the most complete labels for all vegetables); also Bravo Zn, Chloro. 720, Initiate 720 & Zn; Equus 720; Echo 90DF (An, Alt LB, DM, GSB, Scab, PM)
- ^{M3} mancozeb⁵ (limits see labels) Dithane M-45 (includes Plectosporium put called Microdochium), DF, F-45; Manzate Pro-Stick, Penncozeb 4FL, 75DF, 80WP, Roper DF (included Plecto, called Microdochium) (An, Alt LB, DM, GSB, Scab)
- ^{M1} fixed copper⁰ (see limits now set on newer labels) Badge SC, Badge X, OMRI, Basic Copper Sulfate & 53 OMRI, Camelot O OMRI, Champ Formula 2, C-O-C-S, Cueva OMRI, Cuprofix, Kentan DF, Kocide 101, 2000, 3000, Mastercop, Nordox 75WG, OMRI, Nu-Cop 50WP OMRI, 3L, HB OMRI, (AngLS, An, Alt, DM, PM, GSB, Scab per label, and by 2ee PhyBlt). Also ManKocide (limit 24 lb) (for AngLS, AltLS, DM, PM, GSB, Scab, 2ee PhyBlt)
- ^{Bio} Bacillus subtilis⁰ = Serenade MAX or ASO (PM, GSB, DM), both OMRI
- ^{Bio} Bacillus pumilus⁰, OMRI = Sonata (PM, DM)
- ^M K bicarbonate⁰ or ^{OMRI} = Armicarb, MilStop, Kaligreen¹ (PM)
- ^{M2} sulfur⁰ = Kumulus OMRI, Micro Sulf OMRI, Microthiol Dispers OMRI, Sulfur 6L, That F Sulfur (PM)

Group 11 Strobilurins and others (Strobilurins=Translaminal, are no longer effective for *PM*, because of widespread resistance, and should not be relied upon for *DM* or *GSB*)

- ¹¹ Quadris¹ (limit 92.3 fl oz) (azoxystrobin) (Plecto)^{11+M5} Quadris Opti¹ (limits see label) (azoxystrobin + chlorothalonil),¹¹⁺³ Quadris Top¹ (azoxystrobin + difenoconazole) (limit 56 fl oz) (Alt L Blt, Anth, Belly rot, Plecto, *PM*, *DM*, *GSB*)
- ¹¹ Flint⁰ (trifloxystrobin) (limit 16 oz) (*PM*, *DM*, Plectosporium)
- ¹¹ Cabrio⁰ (pyraclostrobin) (limit 64 oz) (Alt L Blight, Anth, Plectosporium, *PM*, *DM*, *GSB*)
- ¹¹ Sovran⁰ (kresoxim-methyl) (limit 4 appl.) (*PM*, *GSB*)
- ^{*11} Reason¹⁴ (fenamidone) (limit 22 fl oz) (Alt LB, *DM*)
- ¹¹⁺²⁷ Tanos³ (famoxadone + cymoxanil) (limit 72 oz) (Alt L. Blt., Anth, DM)
- ¹¹⁺⁷ Pristine⁰ (pyraclostrobin + boscalid) (limit 74 oz) (Alt L. Blt., Anth, *PM*, *DM*, *GSB*)

PM Preferred Sprays – “USED Preventatively”

- ¹³ Quintec³ (quinoxifen) (see label limits fl oz) (Winter squash, Pumpkin, Gourds, Melons, Wmelon, only) (for PM only)
- ^{U6} Torino⁰ (cyflufenamid) (PM, all cucurbits) (limit 2 appl/yr)
- ³ Rally⁰ (myclobutanil) (limit 1.5 lb) (*PM* Resistance concern, use highest rate)
- ^{*3} Procure⁰ (triflumizole) (limit 40 fl oz) (*PM* Resistance concern, use highest rate)
- ^{M2} Sulfurs⁰ (limits) (Kumulus OMRI, Microthiol Dispers OMRI, Micro Sulf OMRI, Sulfur 6L, That) (PM)
- ^M Armicarb⁰, MilStop⁰, OMRI, Kaligreen¹, OMRI (PM)
- ^M Trilogy⁰, OMRI (neem oil), (PM)
- ^M Mineral oils⁰ (JMS Stylet Oil OMRI) (PM)

PM Alternative Sprays & Multiple Disease Control

- ³⁺⁹ Inspire Super⁷ (difenoconazole + cyprodinil) (limit 80 fl oz) (PM, Alt, GSB, Septoria, Anthrac, Plectosporium)
- ⁹⁺¹² Switch 62.5WG¹ (cyprodinil + fludioxonil) (limit 56 oz) (Not on LI; only there for Onions and Strawberries) (Alt LB, GSB, PM)
- ⁷ Endura⁰ (boscalid) (limit 26 oz) (Alt LB, GSB, Res PM, suppr. only)
- ⁷ Fontelis⁰ (penhiopyrad) (limit 67 fl oz) (PM, Alt, GSG, Sclerotinia stem rot)
- ⁷⁺³ Luna Experience³ (fluopyram + tebuconazole) (limit 34 fl oz) (PM, Altern LS, GSB, Belly rot, Anthracnose)
- ⁷ Luna Privilege⁰ (fluopyram) (limit 13.7 fl oz) (PM, GSB, Gray mold, Altern LS)
- ⁷⁺¹¹ Luna Sensation⁰ (fluopyram + trifloxystrobin) (limit 27.1 fl oz) (PM, Gray mold, Altern. LS, Anth)

2014 Cucurbit Fungicide NYS

- ^{1+Prot} Topsin M¹ (OLP) (limits 2 lbs.) (tank-mix with protect. (*PM*, *GSB*), Anth, Belly rots (Rhiz and Fus)

DM and Phytophthora Options (# = DM used

“preventatively” or &=use “after disease is present”)

- ^{*22+M3} #Gavel⁵ (limit 16 lbs.) (zoxamide + mancozeb), (DM, Phytoph)
- ¹¹⁺²⁷ #&Tanos³ (famoxadone + cymoxanil) (limit 72 oz) (Alt LB, An, DM, Phytoph blt)
- ^{*28} #&Previcur Flex² (limit 6 pts) (propamocarb + protectant), (DM, Pythium root rots)
- ²¹ #&Ranman⁰ (limit 16.5 fl oz) (cyazofamid), (DM, Phytoph.)
- ^{*43} #&Presidio² (limit 12 fl oz) (fluopicolide) (DM, Phytoph. Blt)
- ⁴⁵⁺⁰ Zampro⁰ (ametoctradin + dimethomorph) (DM and Phytoph blight)

Others listed for DM and Phytophthora

- ²⁷ Curzate 60DF³ with protectant (DM)
- ^{M5+33} Catamaran¹ (phosphoric acid + chlorothalonil) (limit 50 pts.) (An, DM, GSB, Altern LS, Scab)
- ⁴⁰ Revus⁰ (mandipropamid) (limit 32 fl oz) (Suppression only for both DM and Phytoph blight)
- ⁴⁰ Forum⁰ (dimethomorph) (limit 30 fl oz), (DM, Phytoph)
- ³³ Alette^{12hrs} (fosetyl-AI) (limit 7 applic) (DM, Phytoph)
- ^{*411} Reason¹⁴ (fenamidone), (limit 22 fl oz) (*DM* only)
- ^{4+M5} Ridomil Gold Bravo⁰ (limit see label) (*DM* resistance concern)
- ³³ Agri-Fos⁰, *Fosphite: Fungi-Phite, *Kphite, Prohostol, ProPhyt, Rampart, *Resist 57 (phosphorous acid) (limits see labels) (DM, Phytophthora)
- ^M Prev-Am⁰ (borax) (DM)

Scab Products on labels

- ^{M5} Bravo⁰ or OLP (limits see labels)
- ^{M1} some coppers⁰, OMRI, ManKocide (limit 24 lb)
- ^{M3} mancozeb⁵ (limits see labels)
- ^{4+M5} Ridomil Gold Bravo⁰ (limits see label)

OTHER PRODUCTS (Pythium)

- ⁴ Ridomil Gold⁰, Ultra Flourish (mefenoxam) (see limits on label); (Pythium root rot)
- ^{Bio} Contans⁰, OMRI (Coniothyrium) (White mold)

GREENHOUSE Usage (Specified on label)

- ^{Bio} Actinovate SP⁰, OMRI (S. lydicus) Gr Hs drench or foliar application (Soilborne fungi and foliar fungi)
- ^{*28} Previcur Flex⁰ (propamocarb + protectant), (Pythium, Phytoph see label)
- ³ Procure⁰ (triflumizole) (all) PM
- ¹⁷ Decree⁰ (fenhexamid) (Cucumber only) (Gray mold)
- ^{Bio} Serenade MAX⁰, OMRI (PM, GSB, DM)
- ^{Bio} Sonata⁰, OMRI (PM, DM)
- ^M Armicarb⁰, Milstop⁰, OMRI, Kaligreen¹, OMRI (PM)
- ^M M-Pede⁰, OMRI (K salts of fatty acids), (PM)
- ^{M1} Badge SC, Badge X⁰, OMRI, Champ Formula 2F (assorted dis.), C-O-C-S WDG, Cueva OMRI, Cuprofix Ultra, Kentan DF, Kocide (assorted dis.), Nordox 75WB OMRI, Nu-Cop 50WP OMRI
- RootShield Granules OMRI Hydroponic Cucumber (soil fungi),
- ^M JMS Stylet Oil⁰, OMRI (PM, insects)

Current OMRI Listed Products & Reg. In NYS

- ^{Bio} Actinovate AG, SP⁰ (Streptomyces lydicus) Soilborne: (Pythium, Rhizoctonia, Phytophthora, Fusarium, Verticillium); Foliar: (PM, Botrytis, Alternaria)
- ^{Bio} Actino-Iron⁰ (S. lydicus) Biological soil additive
- ^{M1} Badge X⁰, Basic Copper 53 (Scab), Camelot O, Cueva Nordox 75WG, Nu Cop 50WP (coppers)
- ^{M5} Mycostop⁰ (S. griseoviridis) (root dis.)
- ^{SAK} Regalia EC⁰ (Reynoutria), (PM)
- ^M M-Pede⁰ (soap, PM); Trilogy⁰ (neem), (PM, DM)
- ^M MilStop⁰, Kaligreen¹ (K bicarbonate) (PM)
- ^{M2} Micro Sulf⁰, Kumulus DF, Microthiol Dis (all for PM) (sulfur)
- ^M Oxidate⁰ (hydrogen peroxide)
- ^{Bio} Serenade ASO and MAX, Cease (Bacillus subtilis), Sonata (Bacillus pumilus)
- ^M Organic JMS Stylet Oil⁰ (mineral oil, PM, white flies)
- ^{Bio} RootShield, RootShield Plus (Trichoderma) Plus = 2 strains
- ^{Bio} Contans⁰ (Coniothyrium) (White mold)

KEY: Orange = Sulfurs; Violet = Group 11 strobilurins; Blue = phosphorous acid salts; Black = chlorothalonils; Green = fixed coppers; * Restricted to registered applicators; *Not for use on Long Island. Every effort has been made to provide correct, complete, and up-to-date information at the time of this presentation/publication. Trade names used are for convenience only. No endorsement of products intended, nor is criticism of unnamed products implied. These recommendations are not a substitute for pesticide labeling. Always read the product label before applying any pesticide.



2014 Cucurbit Fungicide NYS

ABCs of Fungicides. Numbers used before or after the Product (registered NYS) refer to fungicides with different MOA, followed by preharvest interval. [FRAC No. ie 40 Product 4PHI] See: <http://vegetablemdonline.ppath.cornell.edu> (JULY 2014) T. A. Zitter, Department of Plant Pathology, Ithaca, NY

Fungicides are labeled for all cucurbits unless noted. **Systemic** fungicides are in **Bold**. **Protectants** include: *chlorothanonil*; *sulfur*; *mancozeb*; *copper* (2ee), **ManKocide**.

A.) **Powdery Mildew (PM)** - occurs every year, so make sure to use of tolerant varieties if available for squash or pumpkins. Beginning when lesions are 1st detected inside the canopy on lower leaves (top or bottom). **PM sprays should include:**

- ¹³**Quintec**³ (*quinoxifen*) (NOW registered on winter squash, pumpkins, gourds, muskmelon, and watermelon, but not cucumber or summer squash); begin usage early in the PM cycle then alternate with one of the following:
- ^{U6}**Torino**⁰ (*cyflufenamid*) only for PM, consider tank mix with protectant
- ^{M2}**Sulfur**⁰ (good protectant, alone or tank-mixed with **Quintec**)
- ³**Procure**⁰ (*triflumizole*) at ^{Hi rate 8 oz} + ^{M5}**Bravo**⁰ (or OLP) or ³**Rally**⁰ (*myclobutanil*) at ^{Hi rate 5 oz} + ^{M5}**Bravo**⁰ (or OLP) (NOTE: both **Procure** and **Rally** are in the same fungicide group, choose only 1 (Procure preferred)
- Or consider ¹¹⁺⁷**Pristine**⁰ (*pyraclostrobin* + *boscalid*)
- Or consider protectants like ^{NA}**JMS Stylet**⁰ mineral oil or ^{M1}**coppers**⁰
- Or consider ³⁺⁹**Inspire Super**⁷ (*difenoconazole* + *cyprodinil*) or [†]⁹⁺¹²**Switch**¹ (*cyprodinil* + *fludioxonil*)

Note: **The strobilurin (Group 11) fungicides** are not listed due to fungicide resistance for PM, and include **Cabrio**, **Flint**, **Quadris**, **Quadris Opti**, **Sovran**, **Tanos**, etc.

B.) **Gummy Stem Blight (GSB)/also called Black rot** - occurs most seasons when moisture is adequate after fruit set (end of July or beginning of Aug), and if rotation of less than 2 years is practiced.

GSB sprays should include:

- ^{M3}**Penncozeb**⁵ (or OLP)
- ^{M5}**Bravo WS**⁰ (or OLP)
- ³⁺⁹**Inspire Super**⁷ (GSB)
- [†]⁹⁺¹²**Switch**¹

Note: **The strobilurin (Group 11) fungicides** are not listed due to fungicide resistance for GSB, and include **Cabrio**, **Flint**, **Quadris**, **Quadris Opti**, **Sovran**, and

Pristine. Also ^{1+Prot}**Topsin M**¹ (or OLP) (*thiophanate-methyl*) is no longer effective. C.) **Plectosporium** - if disease has been previously found in Zucchini Squash or Pumpkins, and less than 2 year rotation is practiced, and if July-August rains occur (wet soils) then **Plectosporium** sprays (for above crops only) should include:

- ^{M5}**Bravo Ultrex**⁰ 2ee; ^{M3}**Dithane M-45**⁵
- ³⁺⁹**Inspire Super**⁷ (**Plectosporium**)
- ¹¹**Quadris**¹, ¹¹⁺³**Quadris Top**¹, ¹¹**Cabrio**⁰, ¹¹**Flint**⁰ (but don't rely on sprays of these products for **PM** or **GSB** control)

D.) **Phytophthora (P)** and **Downy Mildew (DM)** – if **P** has previously occurred on your farm (must utilize disease management practices) or if **DM** is reported on tracking maps:

<http://cdm.ipmpipe.org/scripts/map.php> (which monitors airborne spores of DM from Michigan, Ontario, Pennsylvania or New Jersey), Then the **Top 5 DM/P choices used “preventatively”:**

- ^{*22+M3*}**Gavel 50WG**⁵ (*zoxamide* + *mancozeb*) (DM, P)
- ^{*43}**Presidio**² (*fluopicolide*) (DM, P) + must use protectant
- ^{*28}**Previcur Flex**² (*propamocarb*) (DM) + protect.
- ²¹**Ranman 400SC**⁰ (*cyazofamid*) (DM, P) + protect.
- ¹¹⁺²⁷**Tanos 50WG**³ (DM, P suppression) + protectant

Top 4 DM choices “after disease is already present”:

- ^{*43}**Presidio**² (*fluopicolide*) (DM, P) + must use protectant
- ^{*28}**Previcur Flex**² (DM) + protect.
- ²¹**Ranman 400SC**⁰ (DM, P) + protect.
- ¹¹⁺²⁷**Tanos 50WG**³ (DM, P suppression) + protectant

E.) If **Scab** should be an issue:

- ^{M5}**Bravo WS**⁰ or OLP
- ^{M1}*fixed coppers*⁰, (if on a few labels)
- ^{M3+M1}**ManKocide**⁵
- ^{M3}*mancozeb*⁵ (all)
- ^{4+M5}**Ridomil Gold Bravo**⁰

Key: MOA= Modes of Action; OLF= other labeled product and/or formulation; ^M = multi-site activity and mixing partner to reduce risk of developing fungicide resistance; ^{NA}= not assigned; 2ee = allowed for specific disease not on original label. ^{*}= Restricted to use by registered applicators; [†] = Not for use on Long Island