



2012 Onion, Garlic, etc. Fungicides Registered in NYS
ONION (Dry and Green), GARLIC, LEEK and SHALLOT FUNGICIDES (Labeled & Rates/A)
as of MAY 2012

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NOTE: Underlined are Registered in NYS for Commercial Use; Group Nos. are from the Fungicide Resistance Action Committee and EPA; ex. [^{FRAC No.} Product ^{DTH}]; (*Warnings are given in italics; No Fungicide Resistance* concerns to note at this time*) (**Important comments in RED**); Systemic fungicides are in **BOLD**.

Major fungicide groups have been color coded to aid in finding and categorizing by MOA (mode of action): *Phosphorous acids* = Blue; *Strobilurins* or Group 11 = violet; *Chlorothalonils* = gray; *Coppers* = green; and *Sulfurs* = orange. Color noted for seed or cloves and for Soil broadcast and In-furrow.

Alphabetical Fungicide List

- **T^{PI} Actigard^{7Dry}** On, Garlic, Shallot **50WG (EPA 100-922) REI 12 hrs (*acibenzolar-S-methyl*), (host plant defense induction) (limit to 4 oz) (Syngenta) Dry Blub onion, garlic, shallot; For suppression of **DM**, Iris Yellow Spot Virus and Leaf blight (*Xanthomonas axonopodis* pv. *allii*), 0.75-1 oz/A. (Generally for field use, suggesting not applied before thinning or within 5 days of transplant). **7 DTH.****
- ³³**Agri-Fos⁰** (EPA 71962-1) **REI 4h, (*phosphorous acid*)** (Liquid Fert.); Onion, garlic, shallots, leeks, DM, 2 qt/100gal or tank mix with mancozeb 2 qt + full rate mancozeb. **0 DTH if used alone.**
- ³³**Aliette WDG^{7Dry}** On (EPA 264-516) **REI 12h, (*fosetyl-AI*)** (limit 7 appl./season)(Bayer); (**do not tank mix with copper compounds**) Onion Dry Bulb, DM, Pur. Blotch 2-3 lbs./A. **7 DTH.**
- ⁴**Apron XL⁰** (EPA 100-799) **REI 48h, (*mefenoxam*)** (Syngenta); Onion (all types), Garlic, Leek, Shallot, Pythium damping-off, to seed at 0.085-0.64 fl oz/**100 lbs. of seed**. **0 DTH.**
- ^{M1}**Badge SC⁰** (EPA 80289-3) **REI 24 hrs (*copper oxychloride + copper hydroxide*, 20% metallic equiv. w/w)** (Isagro); Bac. Blight, DM, Purp blotch, 1.8 pt/A. (**can cause phytotoxicity to leaves**). **0 DTH.**
- ^{M1}**Badge X₂⁰**. ^{OMRI} (EPA 80289-12) **REI 48 hrs (*copper oxychloride + copper hydroxide*, 28% metallic equiv. w/w)** (limit 6 lbs.) (Isagro); (Onion, Garlic) Bac. Blight, DM, Purp Blotch, 0.75 lbs./A. (**can cause phytotoxicity to leaves**) **0 DTH.**
- ^{M1}**Basic Copper 53⁰**. ^{OMRI} (EPA 45002-8), **REI 24 hrs (*basic copper sulfate*, 53% metallic equiv)** (Albaugh); Pur Blotch, DM, 3-4 lb/A. **0 DTH.**
- ^{M1}**Basic Copper Sulfate⁰** (EPA 46923-9) **REI 24 hrs (*basic copper sulfate*, 53% metallic equiv)** (Old Bridge); Pur Blotch, DM, 3-4 lb/A. **0 DTH.**
- ¹⁴**Blocker 4F⁰**, Garlic only (EPA 5481-472) **REI 12h, (*pentachloronitrobenzene*, PCNB)** (limit 20 lbs.) (Amvac); Garlic only; White Rot at planting 5 gal/100 gal at 24" spacing or 2.5 gal/1000 **seed cloves**. **0 DTH.**
- ^{M5}**Bravo W Stik 6SC^{7Dry, 14Gr.}** (EPA 50534-188-100) **REI 12h, (*chlorothalonil*)** (Syngenta); Dry Onion and Garlic (limit 20 pts.), Botrytis LB (Blast), Neck rot suppression, Pur Blotch., DM (suppression) 1-3 pt/A. **7 DTH Dry bulb & Garlic; 14 DTH Green bunching, Leek or Shallot** (limit 9 pts.) (see also Bravo ZN)
- ^{M5}**Bravo Ultrex 82.5 WDG^{7Dry, 14Gr.}** (EPA 50534-201-100) **REI 12h, (*chlorothalonil*)** (Syngenta); Dry bulb and Garlic (limit 18.2 lbs. for Dry and Garlic), Botrytis LB, Neck rot (suppression), Pur. Blh., DM (suppression) 0/9-2.7 lb/A. **7 DTH; Green Bunching, Leek, Shallot, Onion & Garlic grown for**



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seed (limit of 8.2 lbs.), **Botrytis LB, Pur. Blh, DM suppression**, 1.4-2.7 lb/A. 7 DTH for Dry bulb & Garlic; **14 DTH** for Gr. bunching, leeks, shallots.

- ¹¹ **Cabrio EG**^{7Dry, Gr.} (EPA 7969-187), REI 12h, (*pyraclostrobin*, 20%) (limit 72 oz.) (BASF); (No aerial application in NYS; for DM control, do not make more than 1 application before alternating to a DM-fungicide with different MOA); Onion (all types), Garlic, Leek, Shallot; Pur. Blh., Stemph. LB, Rust 8-12 oz/A on 14 day schedule; **DM, Botrytis LB (suppression)** 12 oz/A. (max. sequential applications is 1). **7 DTH**.
- ^{M5 + 33} **Catamaran**^{Dry 7, Gr. 14} (EPA 42519-31) REI 12h (*chlorothalonil*, 16.7% + **potassium phosphite**, 38.9%) (Luxembourg-Pamol); Dry bulb and Garlic, Botrytis leaf blight, Purple Blotch, DM, 4-7 pt/A; Gr Bunching Leeks, Shallots, Botrytis LB, Purple Blotch, DM, 4-7 pts./A; (see max. limits on label). Dry Onion and Garlic, **7 DTH**; Gr Bunching, Leek and Shallots, **14 DTH**.
- ^{M1} **Champ 2F**⁰ (EPA 55146-64) REI 48h, (*copper hydroxide* 37.5%) (limit 16.5 pts.)(Nufarm); Onion, Garlic, Leek; Pur. Blh., DM, 1 1/3/A; Bac. Blt 2/3 - 1 pt/A. **0 DTH**. (See also Champ Dry Prill)
- ^{M1} **Champ WG**^{0, OMRI} (EPA 55146-1) REI 24h, (*copper hydroxide* 77%) (Nufarm); Onion, Garlic, Pur Blh., DM 2 lb/A. **0 DTH**.
- ^{M5} **Chlorothalonil 720SC**^{7Dry or 14Gr.} (EPA 66330-362) REI 12 hrs. with PPE. (*chlorothalonil*, 54%) (limit 20 pts.) (Arysta); Dry bulb onion & Garlic Botrytis LB, Pur Blotch, Suppression of Botrytis neck rot, **Suppression of DM**, 1-3 pts/A, 7 DTH. Onions (Gr. bunching) Leek, Shallot, Onion and Garlic for Seed (limit 9 pts.); Botrytis leaf blight, Pur Blotch, Suppression of DM, 1 ½ - 3 pts./A. **7 DTH** Dry Onion, Garlic; **14 DTH** Green onions, leeks, shallots.
- ^{Bio} **Contans WG**^{0, OMRI} (EPA 72444-1), REI 4 hrs (*Coniothyrium minitans*, biological) (Sylvan Bioproducts/Prophyta); WM in agricultural and greenhouse soils, 1-4 lbs/A or 0.75-1.5 oz per 1000 sq ft. **0 DTH**.
- ^{M1} **C-O-C-S WDG**^{0, On, Garlic} (EPA 34704-326), REI 48 hrs. in field (74.8% *copper oxychloride* + 14.2% *basic copper sulfate*, 50% metallic equiv.) (limit 11.6 lbs.) (Loveland). **0 DTH**.
- ^{M1} **Cueva**^{0, OMRI} (EPA 67702-2-70051), REI 4 hrs. (*copper octanoate*, 10%) (Neudorff/Certis); (All), Botrytis lb, DM, Neck rot, Bacterial soft rot, 0.5-2 gal/100 gal. **0 DTH**.
- ^{M1} **Cuprofix Ultra 40 Dispers**^{0, On, Garlic} (EPA 70506-201) REI 48h, (40% *basic copper sulfate*) (limits 15 lbs.) (UPI) Onion, Garlic, Bac. Blt, Pur. Blh., DM 1.25-2.5lb/A (may be used in greenhouse [hoop] or field) **0 DTH**.
- ^{M3} **Dithane DF Rainshield**^{7Dry, Garlic, Shallots; or 0 in-furrow} (EPA 62719-402) REI 24h, (also available is Dithane F-45) (*mancozeb*) (limit 30 lbs.) (Dow) (**DO NOT apply more than 16.5 pints (2.1 gallons) product per acre (6 lbs. metallic copper/A) per year; Do not apply to exposed bulb**); Dry bulb onion, Garlic, Shallot, Botrytis LB, Pur. Blh., Botrytis Neck rot, DM, Rust, 3 lb/A. 7 DTH. **Onion in-furrow drench**, Damping off, Seed rots, Smut, 3 lbs./A furrow drench at time of planting. 0 DTH.
- ^{M5} **Echo 720**^{7Dry & Garlic or 14Gr.} (EPA 60063-7) REI 12h, (54% *chlorothalonil*) (Sipcam); Dry Bulb onions, Garlic (limit 15 lbs. ai) Botrytis LB, Purp Blotch 0.91-1.82 lb; **Neck rot suppression** 1.25-1.82 lb **7 DTH**; Green Bunching, Leek, Shallot, Onion for seed (limit 6.7 lbs. ai), BLB, Pur Blh, DM (suppression), 1.36-2.73 lbs. **14 DTH**.
- ⁷ **Endura 70WD**^{7for all} (EPA 7969-197) REI 12h, (*boscalid*) (limit 41 oz) (BASF); (**Do not make more than 2 applications of Endura before alternating to a fungicide with a different MOA**); Onion (all types), Garlic, Leek, Shallot, Botrytis LB, Pur. Blh. 6.8 oz/A (max. of 6 applic.). **7 DTH**.
- ^{M5} **Equus 500 ZN**^{7Dry or 14 Gr.} (EPA 66222-150) REI 12h, (*chlorothalonil* 38.5%) (MANA) Dry bulb Onion & Garlic (limit 29 pts.), Botrytis LB, Pur. Blh., Neck rot (suppression), 1.4-2.8 pt/A **7 DTH**.



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Green bunching, Leek, Shallot, Onion for seed (limit 13 pts.), Botrytis LB, Pur. Blt., DM (suppression) 2.25-4.25 pts./A. **14 DTH.**

- ^{M5}Equus 720 SST^{7Dry & Garlic or 14 Gr., Leek, Shallot} (EPA 66222-154) REI 12h, (*chlorothalonil* 54%) (MANA); Dry bulb Onion & Garlic (limit 20 pts.); Botrytis LB, Pur. Blt., Neck rot (suppression), DM (suppression), 1.0-2 pts./A. **7 DTH.** Green bunching, Leek, Shallot, Onion for seed (limit 9 pts.), Botrytis LB, Pur. Blt., DM (suppression) 1.5-3 pt/A. **14 DTH.**
- ^{M5}Equus DF^{7Dry or 14 Gr.} (EPA 66222-149) REI 12h, (*chlorothalonil* 82.5%) (MANA); Dry bulb Onion & Garlic (limit 18.2 lbs.); Botrytis LB, Pur. Blt., Neck rot (suppression), DM (suppression) 0.9-2.7 lb/A **7 DTH.** Green bunching, Leek, Shallot, Onion for seed, (limit 8.2 lbs.) (**14 DTH**), Botrytis LB, Pur. Blt., DM (suppression) 1.4-2.7 lbs./A.
- ⁷Fontelis^{3Dry, Gr.} (EPA 352-834) REI 12hrs (*penthiopyrad*) (limit of 72 fl oz/A) (DuPont); Not registered in NYS. 16 to 24 fl oz for Onion Dry and Green, Garlic, Leek, Shallot for Botrytis leaf Blight, Neck Rot, PM, Pur. Blotch, Stemp L Blt and stem rot; (no more than 2 sequential applications before switching to a different MOA). **3 DTH.**
- ⁴⁰Forum 4.18 SC^{0 for all unless TM} (EPA 241-427) REI 12h, (*43.5% dimethomorph*) (limit 30 fl oz) (BASF) (DO NOT make more than 5 applications per season) Onion, Dry bulb and Green, Garlic, Leek, Shallot, DM, 6 fl oz/A. **0 DTH.**
- ^{*}³³Fosphite⁰ (EPA 68573-2) REI 4h, (*53% mono- and dipotassium salts of phosphorous acid*) (JH Biotech); (Do not apply Fosphite foliarly to plants at less than 3 day intervals) Onion, Garlic, DM, 1-3 qt/A. **0 DTH.**
- ³³Fungi-Phite⁰ (EPA 83472-1) REI 4 hrs (*45.5% mono- and di-potassium slats of phosphorous acid, no equivalent given*) (Plant Protection); Onion (Dry and green), Garlic, Leek, Shallot, DM, Phytophthora, Pythium, suppression of bacterial dis., 1-1.5 qt/A (Do not apply more than 6 times per crop cycle). **0 DTH.** (see also Fungi-Phite DF)
- ³³Helena ProPhyt⁰ (EPA 42519-22-5905) REI 4h, (*potassium phosphite*) (Helena); Onion, Garlic, Shallot, DM, Pur. Blt., 4 pts/20-50 gal/A. **0 DTH.**
- ¹Incognito 85 WDG^{0 Garlic cloves; 0 IF On, Gar} (EPA 66222-145) (*thiophanate-methyl*) (limit 1.6 lb) or ¹Incognito 4.5F⁰ (EPA 66222-134) (limit 40 fl oz) (MANA); Onion and Garlic IF, white rot 0.4-0.6 oz for 85WDG or 40 fl oz for 4.5F (REI 3 days for both); Garlic Cloves, Penicillium clove rot 0.8lb/100gal for 85 WDG or 20 fl ozs/100 gal for 4.5F (REI 12h for both). **0 DTH.**
- ^{M5}Initiate 720 F^{7Dry, 14Gr.} (EPA 34704-881) REI 12h, (*chlorothalonil, 54%*) (**Loveland**); Dry Bulb and Garlic; Botrytis LB, Neck Rot (suppression), Purple Blotch, DM (suppression), 1-3 pts. (no more than 20 pts per season) **7 DTH.** Onion (Green bunching), Leek, Shallot, Onion grown for seed; Botrytis LB, Purple Blotch, Downy Mildew (suppression) 1 ½ to 3 pts, **14 DTH** (limit of 9 pts.)
- ³⁺⁹Inspire Super^{7Dry, 14Gr.} (EPA100-1317) REI 12h; (*difenoconazole, 8.4% + cyprodinil, 24.1%*) (Syngenta). Onion (all), Garlic, Shallot, Leek, Cer LS, Leaf blotch, PM, Pur. Blotch, Stem LB, Botrytis LB; suppression. of Black mold, 16-20 fl oz/A (limit of 60 fl oz for green and 80 fl oz dry). Dry 7DTH, Green 14 DTH.
- ^MKaligreen^{1 OMRI} (EPA 11581-2), REI 4 hrs. (*potassium bicarbonate, 81.9%*) (Otsuka) Bulb vegetables like Onions (dry and green), garlic, leeks, shallots; Label only addresses PM control at 2 ½-3 lbs/A. **1 DTH.**
- ^{M1}Kentan DF^{0, On, Garlic, Leek} (EPA 80289-2) REI 48 hr, (*copper hydroxide 61.3% = 40% metallic cu*) (limit 6 lbs.) (Isagro); Onion, Garlic, Leek Bac Blt, 1-1.5 lb/A; DM, Pur Blotch, 2 lb/A. **0 DTH.** May be used for greenhouse crops on label.



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- *³³**Kphite 7LP⁰** (EPA 68573-2) REI 4 hrs. (53% Mono & di-potassium salts of *phosphorous acid*) (Plant Food Systems); Onion, Garlic; generic label, DM, 1-3 qt in 20 gal water. **0 DTH.**
- ^{M1}**Kocide 3000⁰**, On, Garlic, Leek (EPA 352-662) REI 48h w/o PPE, (*copper hydroxide* 46.1%= 30% metallic copper equivalent) (limit 20 lbs.) (DuPont); Onion, Garlic, Leek (Can cause phytotoxicity to leaves); Bac. Blt., DM, Pur. Blh. 0.75-1.5 lb/A (limit of 20 lbs). **0 DTH.** See also Kocide 101 and Kocide 2000.
- ^{M2}**Kumulus DF⁰**, OMRI (EPA 51036-352) REI 24 hrs. (80% *sulfur*) (Arysta). Onion (Dry, Green), Shallots, Garlic; Petrobia mite and PM, 3-10 lb. **0 DTH.**
- ^M**M-Pede⁰** (EPA 53219-6) REI 12h, (potassium salts of fatty acids) (Gowan); Insects and PM (greenhouse and field). **0 DTH.**
- ^{M3+M1}**ManKocide^{7Dry} only** (EPA 352-690), REI 48h, (*mancozeb* 15% + *copper hydroxide* 46.1%) (limit 20 lbs.) (DuPont); (Do not apply to exposed bulbs) Dry Bulb Onions, Botrytis LB, DM, Pur. Blh. 2.5 lb/A, Bac. Blt. 1.5-2.25 lb/A. **7 DTH.**
- ^{M3}**Manzate Pro-Stick 75DG^{7Dry}**, Garlic, Shallot, 0 IF (EPA 70506-234) REI 24h, (*mancozeb*) (limit 30 lbs.), (UPI); (Do not apply to exposed bulbs); Dry bulb onion, Garlic, Shallot Botrytis LB, DM, Botrytis Neck Rot, Pur. Blh. 3 lb/A **7 DTH.** In-Furrow drench Onions, Smut 3 lb/A. **0 DTH.**
- ^{M1}**Mastercop⁰**, On, Garlic (EPA 55272-18-66222) REI 48 hrs. (*copper sulfate pentahydrate*) (limit 9 pts.) (MANA); **0 DTH.**
- ^{M2}**Micro Sulf⁰**, OMRI (EPA 55146-75), REI 24 hrs. (*sulfur*) (Nufarm); Onion (green and dry), dry shallots, PM, Petrobia mite, 3-10 lb/A. **0 DTH.**
- ^{M2}**Microthiol Dispers⁰**, OMRI (EPA 70506-187), REI 24h, (micronized wettable *sulfur*) (UPI) Onions (all types), Garlic, Shallot; Powdery mildew, Petrobia mite, 3-10 lb/A. **0 DTH.**
- ^{M2}**Microfine⁰** (EPA 6325-13-34704) REI 24hrs, (*sulfur*) (Loveland); Onions and Garlic for PM. **0 DTH**
- ^M**MilStop⁰**, OMRI (EPA 70870-1-68539) REI 1hr, (potassium bicarbonate, 85%) (BioWorks); NOTE: Not specifically labeled for onion, garlic, leeks or shallots. Lists both PM and DM, with a normal field rate of 2.5-5 lb/A. **0 DTH.**
- ^{M1}**Nordox 75WB⁰**, OMRI (EPA 48142-4) REI 12 hrs. (83.9% *cuprous oxide*) (Nordox AS); assorted diseases on label. **0 DTH.**
- ^{M1}**Nu-Cop 50WP⁰**, OMRI (EPA 45002-7), REI 24 hrs (*cupric hydroxide*, 77%, 50% metallic equiv.) (Albaugh); Bac Blight 1-1.5lb/A; Pur Blotch, DM, 2 lb/A. **0 DTH** (see also Nu-Cop 3L^{On, Garlic} with limits of 15.75 pts.), and Nu-Cop HB)
- ^M**Oxidate⁰**, OMRI (EPA 70299-2), REI 1h, (*hydrogen peroxide*) (BioSafe Systems); Onions, Leek, Shallots, Garlic, Botrytis, DM, PM. See label. **0 DTH.**
- ^{M3}**Penncozeb 75DF^{7Dry}**, Garlic, Shallots, 0 IF (EPA 70506-185) REI 24h, (*mancozeb*) (limit 32 lbs.) (UPI); (Don't allow spray or drift to reach bulbs after lifting from soil); Onion Dry bulb, Garlic, Shallot Botrytis LB, DM, Neck Rot, Pur. Blh., 2-3 lb/A. **7 DTH.** Onions In-furrow drench, DO, Seedling blights, Smut, 3 lb/A. **0 DTH.**
- ³³**Phostrol⁰** (EPA 55146-83) REI 4h, (Na, K, NH₄*phosphorous acid*) (Nufarm); Dry Bulb Onions, DM, 2.5-3.75 pt/20-50 gal/A. **0 DTH.**
- *⁴³**Presidio^{2Dry}**, Gr., Tank-Mix (EPA 59639-140) REI 12h, (*fluopicolide*) (limit 4 applications/12 fl oz per season) (Valent), All for DM, 3-4 fl oz/A. (must be tank-mixed with another fungicide effective for DM control). **2 DTH.**
- ^M**Prev-Am Ultra⁰** (EPA 72662-3) REI 12h, (sodium tetraborohydrate decahydrate, *borax*) (Citrus Oil); Onion, Garlic, Botrytis, DM, 50 fl oz/A. **0 DTH.**
- ¹¹⁺⁷**Pristine^{7Dry}** & Gr. On., Garlic, Shallot, Leek (EPA 7969-199) REI 12h, (*pyraclostrobin + boscalid*) (limit 6 appl./111 oz) (BASF); Onion (all types), Garlic, Leek, Shallot; (Do not make more than 2



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applications for **Botrytis**, **Purple Blotch** or **Stemphylium** before alternating to a non-strobilurin fungicide; do not make more than 1 application in the case of **DM**; no aerial application in NYS; not for use in greenhouse or transplant production); **Botrytis LB**, **Botrytis neck rot**, 14.5-18.5 oz/A; **Pur. Blh.**, **Stemphylium L Blt.**, 10.5-18.5 oz/A, **DM (suppression)**, 18.5 oz/A. **7 DTH**

- **ProPhyt** see **Helena ProPhyt**.
- ³**PropiMax** ^{14Dry, or 0Gr.} (EPA 62719-346) REI 12hrs. (*propiconazole*) (16 fl oz.) (Dow); **Dry Onion** and **Dry Shallots**, **Garlic**, **Green Onions & Shallots**, **Leeks**, **Scallions**; **Botrytis leaf blight (suppression)**, **Alternaria purple blotch**, 4-8 fl oz alone or 2-4 fl oz with mixing partner. **14 DTH** for **Dry onions**, **0 DTH** for **Green onion types**.
- ¹¹**Quadris F** ^{0Dry, Gr., Garlic, Leek Shallot} (EPA 100-1098) REI 4h, (*azoxystrobin*) (limit 92.3 fl oz) (Syngenta); (Do not apply sprays near apples; no more than 1 application before alternate with different MOA and limit to 4 applications per season). **Onion** (all types), **Leek**, **Garlic**, **Shallot**; **Pur Blh.**, **Rust**, **White rot**, 6.0-12.0 fl oz; **DM**, **Botrytis Leaf Blt (*B. aclaca*)** 9.0-15.5 fl oz; **Rhizoctonia In-furrow** 0.40-0.80 fl oz/1,000 row feet. **0 DTH**.
- ^{11+M5}**Quadris Opti F** ^{7Dry, Garlic or 14Gr. Leek, Shallot} (EPA 100-1171), REI 12h, (*azoxystrobin + chlorothalonil*) (limit 1.5 lbs. a.i. of *azoxy* and 6.75 lbs. a.i. *chloroth.*) (Syngenta); (Do not apply more than 1 application of **Quadris Opti** or other strobilurin before alternating to a fungicide with a different MOA); **Green bunching Onion**, **Leek**, **Shallot**, **Pur. Blh.**, **Rust**, **Botrytis leaf blt.**, 1.6-3.2 pt/A; **DM**, 2.4-3.7 pt/A **14 DTH**; **Dry bulb Onion**, **Garlic**. Same diseases and rates as above, but **7 DTH**.
- **Quadris Top** ^{7Dry, Gr.} (EPA100-1313) REI 12h (*azoxystrobin + difenoconazole*) (limit green 42 fl oz & for dry bulb 56 fl oz) (Syngenta); **Onion**, **Dry & Green**, **Garlic**, **Shallot**, **Leek**; **Botrytis LB**, **PM**, **Purple Blotch**, **Stemphy. LB**, 12-14 fl oz/A. **7 DTH**.
- ³⁺¹¹**Quilt** ^{14Dry, 0 Gr.} (EPA 100-1178) also REI 12h (*azoxystrobin + propiconazole*) (limit 55.3 fl oz) (Syngenta); **Onion Dry & Green**, **Garlic**, **Scallions**, **Shallots**, **Leeks**, **Purple Blotch**, **Suppression BLB**, **Rust**, 14-27.5 fl oz. **14** or **0 DTH**.
- ³⁺¹¹**Quilt Xcel** ^{14Dry, 0 Gr.} (EPA 100-1324) REI 12h (*azoxystrobin + propiconazole*) (limit 56 fl oz) (Syngenta); **Onion Dry & Green**, **Garlic**, **Scallions**, **Shallots**, **Leeks**, **Purple Blotch**, **Rust**, 14-21 fl oz; **White rot**, **DM**, **BLB**, 17.5 -26 fl oz). **14 DTH Dry**; **0 DTH Green**.
- ³³**Rampart** ⁰ (EPA 34704-924) REI 4 hrs (**Mono- and dipotassium salts of phosphorous acid**) (Loveland); **Onion**, **Garlic**. Generic label for **Downy mildew**, 1-4 quarts in a minimum of 20 gal water/A; do not apply at intervals less than 3 days. *Xanthomonas campestris* on this generic label. **0 DTH**.
- ^{†11}**Reason 500SC** ^{7Dry, Gr., Garlic, Leek, Shallot} (EPA 264-695) REI 12h, (Not approved for use on Long Island) (*fenamidone*) (limit 22 fl oz) (Bayer); (Do not make more than 1 application of product before switching to a fungicide with a diff. MOA). **Onion** (all types), **Garlic**, **Leek**, **Shallot**; **DM**, **Pur. Blh.**, 5.5 fl oz/A. **7 DTH**.
- ^{SAR}**Regalia biofungicide concentrate** ^{0, OMRI} (EPA 84059-3), REI 4h, (*Reynoutria sachalinensis* extract, biological SAR) (Marrone) (All bulb crops); Multiple diseases, 2-4 qt/50-100 gal or tank-mix with another effective fungicide. **0 DTH**.
- ^{*33}**Resist 57** ⁰ (EPA 82940-1) REI 4 h. (**mono- and dipotassium salts of phosphorous acid**) (Actagro); All Foliar Generic label for **DM**, 1-3 quarts in a minimum of 20 gal water/A. **0 DTH**.
- ⁴⁰**Revus** ^{7Dry, Gr., Garlic, Leek, Shallot} (EPA 100-1254) REI 12 hrs. (*mandipropamid*) (limit 32 fl oz for **Dry** bulb and 24 fl oz for **Green**) (Syngenta) **Onion** (**Dry bulb & Green**), **Leek**, **Garlic**, **Shallot** **DM**, 8 fl oz (**silicone-based adjuvant recommend (Silwet L-77)**; make no more than 2 consecutive applications before switching to an effective fungicide other than Group 40). **7 DTH**.



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- ^{Bio} Rhapsody AS^{0, OMRI} (EPA 69592-19) REI 4h, (*Bacillus subtilis*), (AgraQuest) Greenhouse uses on label Onion, Garlic; For Onion Botrytis LB, Neck Rot, Pur. Blh., DM use 6-10 qt/100gal; for Garlic Botrytis Neck Rot, Rust use 2-6 qt/100gal. **0 DTH.**
- ⁴Ridomil Gold SL⁰ (EPA 100-1202) REI 48h, **0 if soil incorporated (*mefenoxam*)** (Syngenta); see also Ultra Flourish (Nufarm); (**Do not use as a water transplant treatment, and do not use in greenhouse or on field-grown vegetable bedding plants**); Onion (all types), Garlic, Leeks, Shallot; for soil, preplant incorporate or surface application, Pythium damping-off, 0.5-1 pt. **0 DTH.**
- ^{4+M5}Ridomil Gold Bravo^{7Dry and Garlic or 14 Gr., Leeks, Shallots} (EPA 100-1221) REI 48h, (*mefenoxam* + *chlorothalonil*) (Syngenta); Dry Bulb & Green Onion, Leeks, Garlic, Shallot, DM, Botrytis LB, Pur. Blh., 2.5 pt/A. **7 DTH** (Dry Bulb & Garlic, see limits on label). **14 DTH** (Green Onions, leeks & Shallots, see limits on label) (also see Ridomil Gold Copper (EPA 100-804) for DM, 5 lbs./2.5A, **10 DTH** (Dry Bulb Onion, Garlic & Shallots); **7 DTH** (Green Onion, Leeks, Scallions); and Ridomil Gold MZ (EPA 100-1269); for DM, 2.5 lb/A, **7 DTH** (Dry Bulb Onion, Shallot, Garlic).
- ²Rovral 4F^{7Dry, Garlic 0} (EPA 264-482) REI 24h, (*iprodione*) (Bayer); Dry Bulb Onions, for Botrytis LB, Pur. Blh., Botrytis Neck Rot, Stemphilium, 1.5 pt/A (1 pt if tank mixed with another fungicide). **7 DTH.** Garlic, for White rot, 4 pt/A applied in furrow. **0 DTH.**
- ⁹Scala 400SC^{7all On, Garlic Leek, Shallot} (EPA 264-788) REI 12h, (*pyrimethanil*) (limit 54 fl oz) (Bayer); Onion (all types), Garlic, Leek, Shallot, Botrytis LB, Neck Rot, Pur. Blh., **9 fl oz/A when use only in a tank mix with another fungicide effective for these diseases, 18 fl oz when used alone.** **7 DTH.**
- ^{Bio} Serenade ASO^{0, OMRI} (EPA 69592-12) REI 4h, (*Bacillus subtilis*) (AgraQuest); Onion; Botrytis LB, Botrytis Neck Rot, Purple Blh., DM, 6-10 qt/A; Garlic, Botrytis Neck Rot, Rust, 6-10 qt/A. **0 DTH.**
- ^{Bio} Serenade MAX^{0, OMRI} (EPA 69592-11) REI 4h, (*Bacillus subtilis*) (AgraQuest); Onion, Garlic, Shallot; Botrytis LB, Neck Rot, Pur. Blh., DM, Rust, 1-3 lb/A. **0 DTH.**
- ^{Bio} Sonata^{0, OMRI} (EPA 69592-13), REI 4h, (*Bacillus pumilis*) (AgraQuest); Onion, Garlic, Shallot, DM, Rust, 2-4 qt/A. **0 DTH.**
- ⁹⁺¹²Switch 62.5WG^{7Dry, Gr., Garlic, Onions for seed} (EPA 100-953) REI 12h, (*cyprodinil 37.5% + fludioxonil 25%*) (limit 56 oz) (Syngenta); Onions (all types and grown for seed), also Garlic; Botrytis LB, Stemp., Pur. Blh., Suppression of Neck rot, Black mold, 11-14 oz/A; soilborne white rot, IF 7-14 oz/1,000 ft row. **7 DTH.** *Switch use on Long Island limited to Onion and Strawberry only.*
- ^{M2}Sulfur 6L⁰ (EPA 6325-13-34704) REI 24h, (*sulfur*) (Arysta); Onions, Garlic, Dry Shallots; PM and mites, ½ to 1 1/3 gal per A. **0 DTH.**
- ^{Bio} T-22 HC^{OMRI}, (EPA 68539-4) REI till dry (*Trichoderma harzianum*) (BioWorks); Onion, Garlic leek, Shallots, for root pathogens, apply dust @ 4-8 oz/cwt seed. **0 DTH.**
- ¹¹⁺²⁷Tanos^{3 or longer by T-M} **50DF** (EPA 352-604) REI 12 hrs (*famoxadone + cymoxanil*), (limit of 84 oz/season, must be tank mixed with a protectant) (DuPont); Dry and Green bulb, Garlic, Shallot, Leek, DM, Purple Blotch, 8 oz/A; Disease suppression for Bac soft rot & Xanthomonas blight, 8-10 oz, (Must be tank-mixed with copper containing fungicide). (**Do not apply more than 1 application before switching to a fungicide with a different MOA; Do not apply more than 50% of applications of Tanos or other Group 11 fungicide per season.** **3 DTH or longer.**
- ^{M2}That Flowable Sulfur⁰ (EPA 57538-5) REI 24 hrs. (*Sulfur*) (Stoller); Onions (Green and Dry), Garlic, Dry shallots; PM, Petrobia mite 2-5 qts/A. **0 DTH.**



2012 Onion, Garlic, etc. Fungicides Registered in NYS

- ¹**Thiophanate Methyl 85 WDG**⁰ (EPA 6222-145) REI 3days (*thiophanate-methyl*) (MANA); Onions & Garlic (**in-furrow**), White rot 0.4-0.6 oz/1000 row ft at 12" row spacing; Garlic, Penicillium clove rot, 0.8 lb/100 gal for **garlic clove immersion** before planting. **0 DTH**.
- ³**Tilt**^{14Dry or 0Gr.} (EPA 100-617) REI 12 hrs. (41.8% *propiconazole*) (limit 16 fl oz) (Syngenta) Onion (all types), Garlic, Shallots, Leeks; **Purple Blh**, **suppression of Botrytis leaf blight**, solo 4-8 fl oz/A; Tilt + mixing partner 2-4 fl oz/A. **14 DTH** for Dry bulb onions; **0 DTH** for Green onion types.
- ¹**Topsin M 70WDG**⁰ (EPA 73545-18-70506) **70WP** (EPA 73545-11-70506) **WSB** (EPA 73545-16-70506); All REI 3 days (*thiophanate-methyl*) (UPI); For **70WDG**, Onion & Garlic (**in-furrow**), White rot 2 lb/A, (limit of 2 lb product/A). Garlic, **Penicillium clove rot** (REI 12 h), 1 lb/gal for garlic clove immersion for 5 min. **0 DTH**.
- ¹**Topsin 4.5FL**⁰ (EPA 73545-13-70506) REI 12 h clove treatment, 3 days IF (UPI); **In-furrow** Onions, Garlic for White rot, 40 fl oz (also limit for season); **Garlic cloves** for Penicillium rot, 20 fl oz/100 gal. (also see ¹**Incognito 4.5F**⁰)
- ⁴**Ultra Flourish 2EC**⁰ (EPA 55146-73) REI 48h, (*mefenoxam*) (Nufarm); (Do not use as a water transplant treatment, and do not use in greenhouse or on field-grown vegetable bedding plants); Onion (all types), Garlic, Leeks, Shallot; for soil, preplant incorporate or surface application, Pythium damping-off, 1-2 pt/A, see label for specifics. **0 DTH**.
- ⁴**Twist**⁰ (EPA 100-1145) REI 48 h (*mefenoxam*) (see label for limits) (Syngenta); Dry bulb and Green Onions, Garlic, Shallots, Leeks, Scallions, Damping off, 1-2pts./A **preplant incorporate or soil spray**. **0 DTH**.
- ⁹**Vanguard WG**^{7Dry,Gr., Garlic} (EPA 100-828) REI 12 hrs (**75% cyprodinil**) (limit of 28 oz product/A) (Syngenta). Onions (Dry bulb & Green), (**Onions for seed**), Garlic. **Botrytis LB**, **Purple blotch**, **Suppression of Neck rot**, 10 oz/A (**After 2 applications, alternate with a fungicide with a different MOA for 2 applications. For ground application only.** **7 DTH**).

This summary is provided as a helpful guide to most of the products that are available for Onion Disease Control and is not a substitute for Pesticide Labels. Refer to the 2012 Cornell 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: * = **if restricted by DEC** to commercial applicators; † = **not for use on Long Island**; M = Multi-site activity; OLF = Other labeled formulation; MOA = mode of action.

Botrytis Leaf Blight, (*Botrytis squamosa*); **Botrytis Neck Rot** (*Botrytis allii*, *B. acladia* and *B. byssoidea*); **Flower blight** (*Botrytis squamosa*, *B. cinerea*, *B. allii*); **Downy mildew** (*Peronospora destructor*, reportedly to all *Allium* spp.); **Damping -off** (*Pythium* spp.); **Cercospora leaf spot** (*C. duddiae*); **Leaf blotch** (*Cladosporium allii-cepae*); **Powdery Mildew** (*Leveillula taurica* or *Oidiopsis sicula*); **Purple Blotch** (*Alternaria porri*); **Black mold** (*Aspergillus niger*); **Penicillium clove rot**; **Bacterial soft rot** (*Erwinia carotovora* sub. sp. *carotovora*); **Slippery skin** (*Pseudomonas gladioli* pv. *allicola*); **Leaf blight** (*Xanthomonas axonopodis* pv. *allii*); **Bacterial canker and sour skin** (*Burkholderia cepacia*); **Center rot** (*Pantoea ananatis*); **Rust** (*Puccinia porri*); **Smut** (*Urocystis colchici*); **Stemphylium Leaf Blight** (*Stemphylium vesicarium*); **Stalk rot** (*Stemphylium botryosum*); **White Rot** (*Sclerotium cepivorum*); **Nematodes** (primarily northern root-knot, *Meloidogyne hapla*,



2012 Onion, Garlic, etc. Fungicides Registered in NYS
and the lesion, *Pratylenchus* spp.); Pink root (*Phoma terrestris*); Onion yellow dwarf potyvirus (OYDV); Iris yellow spot tospovirus (IYSV).



Overview of Onion D=Dry Bulb or G=Green Bunching
Fungicide Roster

<http://vegetablemendonline.ppath.cornell.edu> for more updates (underlined = labeled in NYS).
[FRAC No. Product DTH] T. A. Zitter, MAY 2012
Systemic fungicides are in **Bold**, Protectants are listed first in upper left corner. (Seasonal limits given).

Protectants/Mixing Partners/Alternating (Field diseases listed)

- ^{M5} (*chlorothalonil*)^{7 Dry or 14Gr.} = Bravo WS (20 pts. Dry & Garlic); (limit 9 pts. Gr., Leek, Shallots); Ultrex, ZN, Chlorothalonil 720, Equus, Echo, Initiate 720 (BLB, Neck rot, Pur Blh, DM) (see label for rest of limits)
- ^{M3} (*mancozeb*)^{7Dry} = Dithane DF (30 lbs.), Manzate Pro-Stick (30 lbs.), Penncozeb 75DF (32 lbs.) (BLB, Neck rot, DM, Pur Blh, Smut)
- ^{M3 + M1} (*mancozeb + copper hydroxide*)^{7Dry only} = ManKocide (20 lbs.) (BLB, DM, Pur Blh, Bac Blt)
- ^{M1} *fixed copper*^{0Dry,Gr.} = Badge SC, Badge X₂, OMRI, Basic Copper Sulfate & 53, OMRI, Champ WG, OMRI & Dry Prill, Cueva, OMRI, C-O-C-S, Kentan DF, Kocide 101, 2000, 3000, Cuprofix Ultra40 Disperss, Mastercop, Nordox 75WB, OMRI, Nu-Cop 50WP, OMRI, 3L, HB, (Bac. Blt., DM, Pur. Blh.) (see newer labels for limits)
- ^{M2} *sulfur*^{0Dry,Gr.} = Kumulus, OMRI, Microthiol Disperss, OMRI, Micro Sulf, OMRI, Microfine, Sulfur 6L, That, (PM, mites)
- ^M (*Bacillus subtilis*)^{0Dry,Gr., OMRI} = Serenade MAX, Rhapsody (BLB, Neck rot, Pur Blh, DM, Rust)
- ^M (*Bacillus pumilis*)^{0Dry, Gr., OMRI} = Sonata (DM, Rust)
- ^M Oxidate^{0Dry,Gr. OMRI} (*hydrogen peroxide*) (Botrytis, DM)

Group 11 Strobilurins (QoI) and “like”

- ¹¹ Quadris^{0Dry,Gr.}, (*azoxystrobin*) (92.3 fl oz) Quadris Opti^{7Dryor14Gr.} (*azoxystrobin + chlorothalonil*) (see label) (DM, Pur Blh, BLB, Rhiz, Rust, Wh. rot)
- ¹¹ Cabrio^{7Dry, Gr.} (*pyraclostrobin*) (72 oz) (Pur Blh, Stemph, Rust, DM, BLB suppression)
- ^{*+11} Reason^{7Dry,Gr.} (*fenamidone*) (22 fl oz) (DM, Pur Blh)
- ^{11 + 7} Pristine^{7Dry,Gr.} (*pyraclostrobin + boscalid*) (111 oz.) (BLB, Neck rot, Pur Blh, Stemph, DM)

Additional Specific Chemistry

- ³⁺⁹ Inspire Super^{7Dry, 14Gr.} (*difenoconazole + cyprodinil*) (80 fl oz Dry; 60 fl oz Gr.) (PM, Pur Blh, Stemph, Botrytis LB, suppression. of Black mold)
- ⁷ Endura^{7Dry,Gr.} (*boscalid*) (41 oz.) (BLB, Pur Blh)
- ⁹ Scala^{7Dry,Gr.} (*pyrimethanil*) (54 fl oz.) (BLB, Neck rot, Pur Blh)
- ² Rovral 4F^{7Dry only} (*iprodione*) (limit applic.) (BLB, Pur Blh, Neck rot, Stemph)
- ⁹ Vanguard WG^{7Dry,Gr.} (*cyprodinil*) (28 oz.) BLB, Suppr. Neck rot, Pur Blh)
- ^{9 + 12} Switch^{7Dry,Gr.} (*cyprodinil + fludioxonil*) (limit 56 oz) (BLB, Pur Blh)
- ³ Tilt^{14Dry or 0Gr.} (*propiconazole*) (16 fl oz) (Pur. Blh, suppression of BLB)
- ³ PropiMax^{14Dry or 0Gr.} (*propiconazole*) (16 fl oz) (Suppression BLB, Pur. Blh.)
- ¹ Topsin M 70WDG, 70WP, WSB^{0Dry,G as IF trt.} T-M 4.5F, 85WDG (*thiophanate methyl*) (limits on label) (Wh rot)
- ⁷Fontelis³ (*penthiopyrad*) (limit 72 fl oz) (BLB, Neck Rot, Pur. Blth., Stemph.)

Downy Mildew & DM Plus

- ^{*43} Presidio^{2Dry or Gr.TM} (*fluopicolide*) (4 applic./12 fl oz, tank-mixed) (DM)
- ⁴⁰ Forum^{0 Dry or Gr.} (*dimethomorph*) (30 fl oz) (DM)
- ³³ Aliette^{7 Dry} (*fosetyl-AI*) (7 applic.) (DM, Pur Blh)
- ^{M5 + 33} Catamaran^{dry 7, Gr. 14} (see label) (BLB, Pur Blh, DM)
- ³³ Agri-Fos^{0Dry,Gr.*} Fosphite; Fungi-Phite (suppre. bacterial dis), *Kphite 7LP, Phostrol, Rampart (Bac.), *Resist 57 (*phosphorous acid*) (all for DM)
- ³³ ProPhyt^{0 Dry, Gr.} (DM, Pur Blh)
- ^M Prev-Am^{0 Dry, Gr.} (*borax*) (DM)
- ⁴⁰ Revus^{7Dry, Gr.} (*mandipropamid*) (32 fl oz Dry; 24 fl oz Gr.) (DM)
- ^{4 + M5} Ridomil Gold Bravo^{7Dry or 14Gr.} (*mefenoxam + chlorothalonil*) (limits on label) (DM, BLB, Pur Blh)
- ^{4 + M1} Ridomil Gold Cu^{10Dry or 7Gr.} (DM)
- ^{4 + M3} Ridomil Gold MZ^{7Dry only, also Garlic} (DM)

Additional Oomycetes (Pythium)

- ⁴ Ridomil Gold^{0D,G Incorporate} (*mefenoxam*) (Pythium)

OMRI Listed Products (all M = multi-site activity)

- ^{M1}, Basic Copper 53⁰, Badge X₂, Champ WG⁰, Cueva, Nordox 75WB⁰, Nu-Cop 50WP⁰ (see label for specific diseases or see above listings) (*coppers*)
- ^{Bio.} T-22 HC⁰ (*Trichoderma*) (Soilborne pathogens)
- ^{Bio.} Contans⁰ (*Coniothyrium*) (White mold)
- ^M Kaligreen¹ (PM only) (*K bicarbonate*)
- ^M MilStop⁰ (not specifically labeled on onion (PM, DM?))
- ^{SAR} Regalia EC⁰ (*Reynoutria*), (see label)
- ^M Oxidate⁰ (*Hydrogen peroxide*)
- ^{Bio} Rhapsody⁰ (*Bacillus subtilis*)
- ^{Bio} Serenade MAX⁰ (*Bacillus subtilis*)
- ^{Bio} Sonata⁰ (*Bacillus pumilis*)
- ^{M2} Kumulus⁰, Micro Sulf⁰, Microthiol Disperss⁰ (*Sulfur*) (PM)

* Restricted to commercial applicator; † not for use on Long Island; TM = Tank Mix required.
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