Alphabetical Fungicide List

- T *\textsuperscript{1} Actigard®\textsuperscript{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-Fos\textsuperscript{0} (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\textsuperscript{7Dry On} (EPA 264-516) REI 12h, (fosetyl-Al) (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 XL\textsuperscript{0} (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.

- M\textsuperscript{1} Badge SC\textsuperscript{0} (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.

- M\textsuperscript{1} Badge X\textsuperscript{3}, OMRI\textsuperscript{0} (EPA 80829-12) 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.

- M\textsuperscript{1} Basic Copper 53\textsuperscript{0} OMRI (EPA 45002-8), REI 24 hrs (basic copper sulfate, 53% metallic equiv) (Albaugh); Pur Blotch, DM, 3-4 lb/A. **0 DTH.**

- M\textsuperscript{1} Basic Copper Sulfate\textsuperscript{0} (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 4\textsuperscript{0}, 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.**

- M\textsuperscript{5} Bravo W Stik 6SC\textsuperscript{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)

- M\textsuperscript{5} Bravo Ultrex 82.5 WDG\textsuperscript{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. 0 DTH; Green Bunching, Leek, Shallot, Onion & Garlic grown for

**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; Copper = green; and Sulfurs = orange.** Color noted for seed or cloves and for **Soil broadcast** and **In-furrow.**
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.

- **Cabrio EG**\(^7\) Dry, 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.

- **Catamaran** Dry, Gr. 14 (EPA 42519-31) REI 12h (chlorothalonil, 16.7% + potassium phosphate, 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.

- **Champ 2F** (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)

- **Champ WG** OMRI (EPA 55146-1) REI 24h, (copper hydroxide 77%) (Nufarm); Onion, Garlic, Pur Blh., DM 2 lb/A. 0 DTH.

- **Chlorothalonil 720SC** Dry 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 1/2 - 3 pts./A. 7 DTH Dry Onion, Garlic, 14 DTH Green onions, leeks, shallots

- **C-O-C-S WDG** 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.

- **Cueva** 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.

- **Cuprofix Ultra 40 Dispers** 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.

- **Dithane DF Rainshield** Dry, 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.

- **Echo 720** Dry & 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.

- **Endura 70WD** for all (EPA 7969-197) REI 12h, (bosalid) (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.

- **Equus 500 ZN** Dry 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.
Green bunching, Leek, Shallot, Onion for seed (limit 13 pts.), Botrytis LB, Pur. Blt., DM (suppression) 2.25-4.25 pts./A. 14 DTH.

- **Equus** 720 SST (EPA 66222-154) REI 12h, (chlorothalonil 54%) (MANA); Dry bulb Onion & Garlic (limit 20 pts.): Botrytis LB, Pur. Blh., 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.
- **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. Blh., 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.
- **Fontelis** 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.
- **Forum 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.
- **Fosphite** 0 (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.
- **Fungi-Phite** 0 (EPA 83472-1) REI 4 hrs (45.5% mono- and di-potassium salts 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)
- **Helena ProPhyt** 0 (EPA 42519-22-5905) REI 4h, (potassium phosphite) (Helena); Onion, Garlic, Shallot, DM, Pur. Blh., 4 pts/20-50 gal/A. 0 DTH.
- **Incognito 85 WDG** 0 Garlic cloves; 0 IF On, Gar (EPA 66222-145) (thiophanate-methyl) (limit 1.6 lb) or **Incognito 4.5F** 0 (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.
- **Initiate** 720 F 7Dry, 14 Gr. (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 1/2 to 3 pts, 14 DTH (limit of 9 pts.)
- **Inspire 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.
- **Kaligreen** 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 1/2-3 lbs/A. 1 DTH.
- **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.
2012 Onion, Garlic, etc. Fungicides Registered in NYS

- **Kphite 7LP** (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.

- **Kocide 3000** (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.

- **Kumulus DF** (EPA 51036-352) REI 24 hrs. (80% sulfur) (Arysta) Onion (Dry, Green), Shallots, Garlic; Petrobia mite and PM, 3-10 lb. 0 DTH.

- **M-Pede** (EPA 53219-6) REI 12h, (potassium salts of fatty acids) (Gowan); Insects and PM (greenhouse and field). 0 DTH.

- **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.

- **Manzate Pro-Stick 75DG** (Dry, 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.

- **Mastercop** (EPA 55272-18-66222) REI 48 hrs. (copper sulfate pentahydrate) (limit 9 pts.) (MANA); 0 DTH.

- **Micro Sulf** (EPA 55146-75). REI 24 hrs. (sulfur) (Nufarm); Onion (green and dry), dry shallots, PM, Petrobia mite, 3-10 lb/A. 0 DTH.

- **Microthiol Dispers** (EPA 70506-187). REI 24h, (micronized wettable sulfur) (UPI) Onions (all types). Garlic, Shallot; Powdery mildew, Petrobia mite, 3-10 lb/A. 0 DTH.

- **Microfine** (EPA 6325-13-34704) REI 24hrs, (sulfur) (Loveland); Onions and Garlic for PM. 0 DTH.

- **MilStop** (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.

- **Nordox 75WB** (EPA 48142-4) REI 12 hrs. (83.9% cuprous oxide) (Nordox AS); assorted diseases on label. 0 DTH.

- **Nu-Cop 50WP** (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 with limits of 15.75 pts.), and Nu-Cop HB.

- **Oxidate** (EPA 70299-2), REI 1h, (hydrogen peroxide) (BioSafe Systems); Onions, Leek, Shallots, Garlic, Botrytis, DM, PM. See label. 0 DTH.

- **Penncozeb 75DF** (Dry, 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.

- **Phostrol** (EPA 55146-83) REI 4h, (Na, K, NH\textsubscript{4}phosphorous acid) (Nufarm); Dry Bulb Onions, DM, 2.5-3.75 pt/20-50 gal/A. 0 DTH.

- **Presidio** (Dry, 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.

- **Prev-Am Ultra** (EPA 72662-3) REI 12h, (sodium tetraborohydrate decahydrate, borax) (Citrus Oil); Onion, Garlic, Botrytis, DM, 50 fl oz/A. 0 DTH.

- **Pristine** (Dry & 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
applications for Botrytis, Purple Bloat 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

- **PropiMax** 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.

- **Quadrus** 1Dry, 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.

- **Quadrus Opti** F7Dry, Garlic or 1Gr. 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 Quadrus 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.

- **Quadrus 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, Stemphylium. LB, 12-14 fl oz/A. 7 DTH.

- **Quint Xcel 14Dry, 0 Gr.** (EPA 100-1324) 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.

- **Rampart** 6Dry (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.

- **†11 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.

- **Reus** 40Dry, Gr., Garlic, Leek, Shallot (EPA 100-1254) REI 12 hrs. (mandipropanyl) (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.
2012 Onion, Garlic, etc. Fungicides Registered in NYS

- **Bio Rhapsody AS** (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/100 gal; for Garlic Botrytis Neck Rot, Rust use 2-6 qt/100 gal. 0 DTH.

- **Ridomil Gold SL** (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+MS Ridomil Gold Bravo** (Dry 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./2.5 A, 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).

- **Rovral 4F** (Dry, Garlic) (EPA 264-482) REI 24h, *(iprodione)* (Bayer); Dry Bulb Onions, for Botrytis LB, Pur. Blh., Botrytis Neck Rot, Staphylium. 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.

- **Scala 400SC** (Dry, 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** (Dry, Garlic, Shallot) (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** (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** (EPA 69592-13), REI 4h, *(Bacillus pumilis)* (AgraQuest); Onion, Garlic, Shallot, DM, Rust, 2-4 qt/A. 0 DTH.

- **Switch 62.5WG** (Dry, Gr., Garlic, Onions for seed) (EPA 100-953) REI 12h, *(cyprodinil 37.5% + fluoxzonil 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 6L** (EPA 6325-13-34704) REI 24h, *(sulfur)* (Arysta); Onions, Garlic, Dry Shallots; PM and mites, 1/2 to 1 1/3 gal per A. 0 DTH.

- **Bio T-22 HC** (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.

- **Tanos** (Chopped or by T-M) 50DF (EPA 352-604) REI 12 hrs *(famoxadone + cyxomalin)*, (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 Sulfur** (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

- **Thiophanate Methyl 85 WDG** (EPA 6222-145) REI 3 days (thiophanate-methyl) (MANA); Onions & Galic (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.

- **Tilt** 14 Doy 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.

- **Topsin M 70WDG** (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.

- **Topsin 4.5FL** (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 **Incognito 4.5F**)

- **Ultra Flourish 2EC** (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.

- **Twist** (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.

- **Vanguard WG** 7 Doy, 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. byssinae); **Flower blight** (Botrytis squamosa, B. cinerea, B. allii); **Downy mildew** (Peronospora destructor, reported to all Allium spp.); **Damping-off** (Pythium spp.); **Cercospora leaf spot** (C. dudiae); **Leaf blotch** (Cladosporium allii-cepae); **Powdery Mildew** (Leveillula taurica or Oidiosis 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://vegetablemdonline.ppath.cornell.edu for more updates (underlined = labeled in NYS).

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)

- **M3** (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) 7Dy = Dithane DF (30 lbs.), Manzate Pro-Stick (30 lbs.), Pennzoceb 75DF (32 lbs.) (BLB, Neck rot, DM, Pur Blh, Smut)
- **M3 + M1** (mancozeb + copper hydroxide) 7Dy only. = ManKocide (20 lbs.) (BLB, DM, Pur Blh, Bac Blt)
- **M1** fixed copper 0Dry,Gr. = Bravo SC, Badge X, OMRI. Basic Copper Sulfate & 53 Ormi. Champ WG 14 Dry, Gr. & Dry Prill, Cueva OMRI. C-O-C-S, Kentan DF, Kocide 101, 2000, 3000, Cuprofix Ultra40 Dispers, Mastercroc, Nordox 75WB OMRI, Nu-Cop 50WP OMRI. SL, HB. (Bac. Blt., DM, Pur. Blh.) (see newer labels for limits)
- **M2** sulfur 0Dry, Gr. = Kulumus OMRI. Microthiol Dispers OMRI. Micro Sulf OMRI. Microline. Sulfur 6L. That. (PM, mites)
- **M1** (Bacillus subtilis) 0Dry, Gr. OMRI = Serenade MAX, Rhapsody (BLB, Neck rot, Pur Blh, DM, Rust)
- **M1** Bacillus pumilus 0Dry, Gr. OMRI = Sonata (DM, Rust)
- **M1** Oxidata 0Dry, Gr. OMRI = (hydrogen peroxide) (Botrytis, DM)

Group 11 Stroblasins (QoI) and “like”

- **11** Quadris 7Dry,Gr. (azoxystrobin) (92.3 fl oz) Quadris Opti 7Dry,Gr. (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

- 3D Inspire Super 7Dry, 14G (difenoconazole + cyprodinil) (80 fl oz Dry. 60 fl oz Gr.) (PM, Pur Blh, Stemph, Botrytis LB, suppression. of black mold)
- **7** Endura 7Dry,Gr. (bosalid) (41 oz.) (BLB, Pur Blh)
- **9** Scala 7Dry,Gr. (pyrimethanil) (54 fl oz) (BLB, Neck rot, Pur Blh)
- **2** Rovral 4F only (iprodione) (limit applic.) (BLB, Pur Blh, Neck rot, Stemph)
- **9** Vanguard WG 7Dry,Gr. (cyprodinil) (28 oz.) (BLB, Suppr. Neck rot, Pur Blh)
- **11** Switch 4F,Gr. (cyprodinil + fludioxonil) (limit 56 oz) (BLB, Pur Blh)
- **3** Tilt 4Dy or 6Gr. (propiconazole) (16 fl oz) (Pur Blh, suppression of BLB)
- **3** PropiMax 4Dy or 6Gr. (propiconazole) (16 fl oz) (Suppression BLB, Pur. Blh.)
- **1** Topsin M 70WDG, 70WP, WSP 0Dry,Gr. as IF ret. T-M 4.5F, 85WDG (thiophanate methyl) (limits on label) (Wh. rot)
- **7** Fontelis (penthiopyrrol) (limit 72 fl oz) (BLB, Neck Rot. Pur. Blh., Stemph.)

Downy Mildew & DM Plus

- **3** Presidio 7Dry or Gr. TM (fluopicolide) (4 appic./12 fl oz, tank-mixed) (DM)
- **40** Forum 0Dry or Gr. (dimethomorph) (30 fl oz) (DM)
- **3** Allite 4Dy (fospetyl-Al) (7 appic.) (DM, Pur Blh)
- **M3 + M3** Catamarn 7Dy. Gr. 14 (see label) (BLB, Pur Blh, DM)
- **33** Agri-Foam 0Dry+Gr. + Fosptide: Fungi-Phite (suppre. bacterial dis), *Kphite 7LP. Phostrol. Rampart (Bac.), *Resist 75 (phosphor acid) (all for DM)
- **30** ProPhyto 0Dry, Gr. (DM, Pur Blh)
- **M** Prev-Aga 5Dry, Gr. (borax) (DM)
- **40** Revus 7Dry, Gr. (manipropamid) (32 fl oz Dry; 24 fl oz Gr) (DM)
- **4 + M5** Ridomil Gold Bravo 0Dry or 14Gr. (mefenoxam + chlorothalonil) (limits on label) (DM, BLB, Pur Blh)
- **4 + M3** Ridomil Gold Cu 0Dry or 1Gr. (DM)
- **4 + M3** Ridomil Gold MZ 0Dry only, also Garlic (DM)

Additional Oomycetes (Pythium)

- **8** Ridomil Gold 0Gr. incorporate (mefenoxam) (Pythium)

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

- **M5** Basic Copper 53, Badge X, Champ WG, Cuava, Nordox 75WB, Nu-Cop 50WP (see label for specific diseases or see above listings) (coppers)
- **M0** T-22 PC (Trichoderma) (Soilborne pathogens)
- **M0** Contour (Coniosporium) (White mold)
- **M0** Kaligreen (PM only) (K bicarbonate)
- **M0** MiStop (not specifically labeled on onion (PM, DM))
- **M0** Regula EC (Reynoutria), (see label)
- **M0** Oxidant (Hydrogen peroxide)
- **M0** Rhapsody (Bacillus subtilis)
- **M0** Serenade MAX (Bacillus subtilis)
- **M0** Sonata (Bacillus pumilis)
- **M0** Kumulus. Micro Sulf. Microthiol Dispers (Sulfur) (PM)

* Restricted to commercial applicator; 1 set for use on Long Island; TM = Tank Mix required. 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.