Cucurbits (pumpkins, cucumbers, muskmelons, watermelons, summer and winter squash, and even gourds) can be difficult crops to grow because they are susceptible to so many diseases that can potentially destroy an entire field. Management strategies need to include the following:

1.) Begin with a resistant or tolerant Powdery Mildew variety (PMR) available for squash and pumpkins and some muskmelon and Downy mildew varieties for cucumber. Since some varieties have only intermediate resistance, these can still benefit from the use of fungicide sprays.

2.) Crop rotation is critical for reducing the number of diseases found in cucurbits, so a minimum of 2 years, with a 3yr rotation out of all cucurbits being preferred. Diseases for which rotation is an important criterion are:

A. **Gummy Stem Blight** (GSB) /also called **Black rot** (BR), see images below.

Foliar symptoms of GSB are rarely seen in NY on pumpkin, spaghetti squash or winter squash, but typical symptoms can appear on fruit in the field, which of course is too late to take corrective actions. BR is also a postharvest storage problem for Butternut.

B. **Plectosporium Blight** - this disease only affects Zucchini Squash and Pumpkins, with the soilborne inoculum surviving for at least 2 years.

C. **Phytophthora Blight** – is the quintessential disease since it can infect multiple crops including cucurbits. In addition to rotation, water management is necessary to reduce standing water in fields (create waterways, subsoiling to remove hardpans, and use dome-shaped beds for bush-type crops).

3.) Always purchase seed from a reputable seed company. **Scab** (L, fungal) or **Angular Leaf Spot** (R, bacterial) does not occur on a regular basis which suggests that seed may have introduced the pathogen into the greenhouse or field.

4.) If you choose to spray fungicides, then spray preventatively as determined by scouting for Powdery mildew or following Downy mildew (L and R below) tracking maps: [http://cdm.ipmpipe.org/scripts/map.php](http://cdm.ipmpipe.org/scripts/map.php) (which monitors airborne spores of DM from Michigan, Ontario, Pennsylvania or New Jersey)

5.) The accompanying sheet (opposite side) provides a listing of fungicides for conventional, organic and home garden use. For commercial use, be guided by selecting fungicides to be used for the entire season by making sure they have different Modes of Action (MOA), as indicated by the Group Nos. given. To prevent resistance from developing, follow the label to avoid making sequential applications before alternating to a fungicide with a different MOA. (Prepared by T.A. Zitter, Dept. Plant Path. Ithaca, NY).

Additional Cucurbit Disease Resource at: [http://vegetablemdonline. path.cornell.edu/DiagnosticKeys/CucKey.html](http://vegetablemdonline. path.cornell.edu/DiagnosticKeys/CucKey.html)
ABCs of Fungicides for Cucurbits 2012

Numbers used before or after the Product (registered NYS) refer to fungicides with different MOA, followed by preharvest interval. See: http://vegetablemdonline.ppath.cornell.edu (May 2012) (Prepared by T. A. Zitter, Department of Plant Pathology, Ithaca, NY)

Fungicides (Conventional, Organic, and Home = Garden) are for all cucurbits unless noted. Systemic fungicides are in Bold, and protectants include: chlorothalonil, sulfur, mancozeb, copper, or combination sold as 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:

- **11** Quintec\(^3\) (not registered on cucumber or summer squash); begin usage early in the PM cycle then alternate with one of the following:
  - M\(^2\) Sulfur\(^4\) (good protectant, alone or tank-mixed with Quintec); Organic = Kumulus or OLP
  - **3** Procure\(^0\) at Hi rate 8 oz + M\(^5\) Bravo\(^0\) (or OLP) or **3** Rally\(^0\) at Hi rate 5 oz + M\(^5\) Bravo\(^0\) (or OLP) (NOTE: both Procure and Rally are in the same fungicide group, choose 1)
- Consider **11** Pristine, **3** Inspire Super, or **3+9** Switch*.

*Protectants & Organic = M\(^4\) JMS Stylet\(^6\), M\(^1\) coppers\(^0\) like Champ WG, M\(^3\) M-Pede\(^0\), M\(^5\) MilStop\(^0\) or OLP; Home = Bonide Fung-onil, Bonide Copper, Trilogy XL, or OLP

**Note on PM:** All 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:

- M\(^3\) Pennczozeb\(^5\) (or OLP) or M\(^5\) Bravo WS\(^0\) (or OLP)
- **3** Inspire Super\(^7\) (GSB) or **3+1** Switch

*Protectants & Organic = M\(^1\) coppers\(^0\) like Champ WG; Home = Bonide Fung-onil, Bonide Copper

**Note on GSB:** All strobilurin (Group 11) fungicides are not listed due to fungicide resistance for GSB, and include Cabrio, Flint, Quadris, Quadris Opti, Sovran, and Pristine. Also M\(^1\) Tospin (or OLP) are no longer effective for GSB.

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:

- M\(^5\) Bravo Ultrex\(^0\) 2ee
- **3** Inspire Super (Plectosporium)
- **11** Quadris \(1\), **11** Quadris Top\(^1\)
- **11** Cabrio\(^0\), **11** Flint\(^0\) (but don’t rely on sprays of these products for PM or GSB control)

**Note on Plectosporium:** Rare for Organic or Home.

D.) Phytophthora (P) and Downy Mildew (DM) - if P has previously occurred on your farm (must utilize disease management practices, see over) 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 DM/ P sprays should include:

Top 5 DM choices used “preventatively”:

- **12** Gavel 50WG\(^7\) (not Pumpkin or W. Squash) (DM, P)
- **14** Presidio\(^2\) (fluopicolide) (DM, P) + must use protectant
- **28** Previcur Flex\(^2\) (DM) + protectant
- **21** Ranman 400SC\(^0\) (DM, P) + protectant
- **11** Tanos 50WG\(^0\) (DM, P)

**Note on Phytophthora blight:** Disease is rare for Organic or Home, but DM can occur in both. Organic = M\(^1\) coppers\(^0\) like Champ WG; Home = Bonide Fung-onil, Bonide Copper.

E.) If SCAB occurs: M\(^5\) Bravo WS\(^0\) or OLP; M\(^1\) fixed coppers\(^\) (per label); M\(^3\) ManKocide\(^5\) \(=\) M\(^3\) mancozeb\(^5\) (all); Ridomil Gold\(^\) Bravo\(^\) = Basic Copper 53 or OLP; Home = Bonide Copper.

F.) Angular leaf spot bacterial (ALS) = M\(^3\) ManKocide\(^3\), all coppers; Organic = all OMRI coppers; Home = Bonide Copper or OLP.

See complete Cucurbit Fungicide Roster at: http://vegetablemdonline.ppath.cornell.edu/NewsArticles/Cuc_Overview_Roster.pdf for OLPs.

Key MOA: Modes of Action. OLPs other labeled product and/or formulations are available, * = multi-site activity and mixing partner to reduce risk of developing fungicide resistance; NA = not assigned; \(\_\) = Restricted to use by registered applicators; * = Not for use on Long Island

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