Tracking Cucurbit downy Mildew Movement and Screening for Host Specificity

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A plot was established at the Rutgers Snyder Research and Extension Farm on June 30, 2011 consisting of six varieties of cucurbit crop with four replications each. The varieties were as follows:
- Cucumber ‘Straight Eight’
- Cantaloupe ‘Hale’s Best Jumbo’
- Acorn squash ‘Table Queen’
- Pumpkin ‘Big Max’
- Butternut squash ‘Waltham’
- Watermelon ‘Mickey Lee’

Cucurbit downy mildew (CDM), caused by *Pseudoperonospora cubensis*, is a foliar disease of cucurbit crops. CDM does not overwinter in NJ, but still develops most years, as spores are transported to this area on storm systems. Other factors, such as environmental conditions on the ground, CDM race and host preference, and fungicide control program impact the appearance and/or severity of disease. CDM is considered to be of epidemic severity upon first detection because of the speed with which it causes total defoliation of host crops. Specific fungicide products are required to manage CDM, separate from those required for control of other cucurbit fungal infections. Information on the presence and host preference of local CDM infections are critical to successful and economical management of CDM.

The purpose of the research plot was to determine when (or if) the downy mildew organism (*Pseudoperonospora cubensis*) (CDM) appeared in northern New Jersey, and what host(s) within the cucurbit family were affected. The Snyder Farm plot was one component in a multi-state project, with similar plots established in AL, DE, FL, GA, IL, IN, KY, LA, MD, MA, MI, MS, NJ (southern), NY, NC, OH, OK, PA, SC, TN, TX, VA, WI, and Ontario, Canada.

On August 5, 2011 downy mildew was found on the cucumber variety ‘Straight Eight’, and on August 12, downy mildew was found on the cantaloupe variety ‘Hale’s Best Jumbo’. No other crops were infected. Weekly reports were generated and distributed through the Plant and Pest Advisory, Vegetable Crops Edition as well as the CDM Forecast website (http://cdm.ipmpipe.org/). The plot was terminated on or near Sept. 25, as all foliage had senesced. No further infection occurred.

*Left:* CDM sporulation on underside of pumpkin leaf.  *Center:* Yellow lesions on the upper surface of the leaf.  *Right:* Pumpkin field, showing defoliation from CDM infection.