

## Disease Notes

### First Report of Powdery Mildew of Tomato Caused by an *Erysiphe* sp. in Connecticut

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In 1995 and 1996, powdery mildew was observed on several samples of field-grown tomato foliage (*Lycopersicon esculentum* Mill.; various cultivars) submitted to the CAES Plant Disease and Information Office. Symptoms included gray superficial mycelium with abundant sporulation on adaxial and abaxial leaf surfaces, followed in the field by desiccation of the foliage and rapid defoliation. No cleistothecia were observed, and single-celled, hyaline, ellipsoidal conidia occurred, usually singly, on unbranched conidiophores. Pyriform conidia occurred at a frequency of less than 1%. Conidia ranged in length from 25.6 to 43.2  $\mu\text{m}$  (mean = 33.6, SE = 0.4) and in width from 13.1 to 23.1  $\mu\text{m}$  (mean = 18.2, SE = 0.2; n = 500). Fibrosin bodies were not observed, and vacuoles were present. Based on conidial characteristics, the fungus was identified as an unknown *Erysiphe* sp. To confirm pathogenicity, 2-week-old tomato seedlings (cv. Rutgers) were inoculated by shaking dry conidia onto the leaves and placed within plastic tents on a greenhouse bench. Control plants were treated identically but not inoculated. The inoculated plants developed foliar powdery mildew symptoms, and sporulation was observed. Susceptible cultivars that were naturally infected included Better Boy, Better Beef, Celebrity, Rutgers, Ultra Magnum, Ultra Sweet, Whopper, Yellow Brandywine; cherry type tomatoes Matts Wild Cherry and Sweet Chelsea; and plum type tomatoes Roma and Super San Marzano. Eastern black nightshade (*Solanum ptycanthum* Dunal), eggplant (*S. melongena* L. 'Black Pride'), and tobacco (*Nicotiana tabacum* L. 'C9') were also naturally infected under greenhouse conditions. However, conidia size and number of conidia per conidiophore differed between hosts. Conidia from tobacco, eggplant, and nightshade averaged  $37.8 \times 19.1 \mu\text{m}$  (SE = 0.5 and 0.2, respectively) with a 95% CI of  $35.5$  to  $40.0 \times 18.1$  to  $20.3 \mu\text{m}$  (n = 300). Conidia from tomato were smaller, averaging  $33.6 \times 18.2 \mu\text{m}$  (SE = 0.3 and 0.2, respectively) with a 95% CI of  $32.7$  to  $34.4 \times 17.5$  to  $18.9 \mu\text{m}$  (n = 300). Factorial inoculation experiments between tomato and other hosts demonstrated cross-infectivity, but isolates originally from tobacco had significantly larger conidia when infecting tomato than isolates originally from tomato infecting tobacco. Powdery mildew isolates on tomato had fewer ( $P = 0.001$ ) conidia per conidiophore (mean = 1.39, range = 1 to 4) than isolates infecting tobacco inoculated at the same time and held under the same conditions (mean = 2.54, range = 1 to 6). These results demonstrate considerable morphological variation in the powdery mildew fungus, perhaps associated with hosts such as tomato or other solanaceous plants. This is the first report of powdery mildew of tomato and tobacco in Connecticut. Powdery mildew of tomato has been reported to occur in the field in California, and in greenhouse tomatoes in New York (2). Powdery mildew of tobacco has only been reported on artificially inoculated plants in California (1).

**References:** (1) C. R. Arredondo et al. Plant Dis. 80:1303, 1996. (2) D. M. Karasevicz and T. A. Zitter. Plant Dis. 80:709, 1996.