



Alternaria cucumerina causing leaf spot of pumpkin newly reported in North Caucasus (Russia)

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Alternaria cucumerina is an important pathogen of some *Cucumis*, *Cucurbita* and *Citrullus* species with a wide distribution, including several European and Asian countries (Ellis, 1971). *Alternaria* leaf blight can cause up to 30% yield loss (Latin, 1992) and lead to a decrease in soluble solid content in fruits (Latin *et al.*, 1994). The fungus has been found in the Far East of Russia on *Cucumis melo*, *Cucumis sativus* and *Citrullus lanatus* (Egorova, 1999); however it has not been reported from other areas of Russia. At the end of July 2009, foliar necrosis of pumpkin (*Cucurbita maxima*) was observed in private gardens located in the Republic of Dagestan (North Caucasus region; 41°51'12"N, 48°25'58"E). Leaf blight was accompanied by powdery mildew. The observed leaf spots were up to 8-12 mm in diameter with a round greyish to pale brown centre and dark brown edges. Up to 30% of the surface area of older leaves was affected by the disease. Fungal isolates with morphological characteristics similar to those of *A. cucumerina* were collected from diseased leaves and cultured on V4 medium (150 ml juice mixture [beet, celery, carrot, tomato 4:3:2:1] and 20 g agar/l; Mikhailova *et al.*, 2002) then incubated at 24°C under a light/dark cycle (12/12 h). After seven days, large solitary conidia were formed on the surface of the agar. The average size of the conidia was 70-94 x 22-25 µm with a conidial beak length of 40-145 µm. In general, these measurements are within the size range determined by Simmons (2007) for *A. cucumerina*. On potato-carrot agar, the conidial body was smaller (43-70 x 16-20 µm), whereas the beak was appreciably longer (70-220[-284] µm).

Two isolates (MF-P288011, MF-P288021) were evaluated for their pathogenicity on leaves of *Cucurbita moschata* cv. 'Vitamnaya' grown in pots under greenhouse conditions. Four plants per isolate were inoculated by spraying the leaves with a suspension containing approximately equal numbers of conidia and mycelial pieces (50000 cfu/ml). Control plants were sprayed only with water. After inoculation, plants were incubated in a chamber with a high relative humidity (nearly 100%) for 24 hours. The

plants were placed back in the greenhouse where brown spots were observed on all plants three days post-inoculation. No symptoms were observed on non-inoculated plants. Seven days after inoculation, 20% of the leaf surface was diseased. Older leaves had a higher number of larger spots than younger leaves. Koch's postulates were confirmed by re-isolation of the fungus from inoculated plants. To our knowledge, this is the first documented detection of *A. cucumerina* in North Caucasus, one of the main areas of production of pumpkins and other cucurbitaceous crops in Russia.

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Figure 1



Figure 2

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