

Resistance to the SDHI fungicides boscalid and fluopyram in *Podosphaera xanthii* from commercial cucurbit fields in Spain

Alejandra Vielba-Fernández^{1,2}, Antonio de Vicente^{1,2}, Alejandro Pérez-García^{1,2}, Dolores Fernández-Ortuno^{1,2}

1- Departamento de Microbiología, Facultad de Ciencias, Universidad de Málaga, 29071 Málaga, Spain

2- Instituto de Hortofruticultura Subtropical y Mediterránea "La Mayora"-Universidad de Málaga-Consejo Superior de Investigaciones Científicas (IHSM-UMA-CSIC), Departamento de Microbiología, Campus de Teatinos, 29071 Málaga, Spain

E-mail: dfernandez-ortuno@uma.es

Powdery mildew elicited by *Podosphaera xanthii* is a devastating disease of cucurbits worldwide and one of the most important diseases affecting these crops in Spain. Application of fungicides is the main control practice for managing *P. xanthii*; however, isolates resistant to multiple classes of site-specific fungicides have been recently reported in the Spanish cucurbit powdery mildew population. Succinate dehydrogenase inhibitors (SDHIs) constitute a relatively novel class of fungicides registered for powdery mildew control representing new alternatives for cucurbit growers. In the present study, 30 *P. xanthii* isolates were used to determine the effective concentration that reduces mycelial growth by 50% (EC₅₀) to boscalid and fluopyram. The present study was also conducted to obtain discriminatory doses to monitor SDHI fungicide resistance in 180 *P. xanthii* isolates collected from several commercial cucurbit fields in Spain during 2017-2018. Three SDHI resistance patterns were observed in our population, which include patterns I (resistance to boscalid), II (resistance to fluopyram), and III (resistance to boscalid and fluopyram). The amino acid changes associated with these resistance patterns in the Sdh protein were also examined. Based on our results, SDHI fungicides are good alternatives for cucurbit powdery mildew control, although they should be applied with caution.