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Resistance to SDHI fungicides in *Botrytis cinerea* from strawberry fields in Spain

Dolores Fernández-Ortuño^{1*}, Alejandro Pérez-García¹, Alejandra Vielba-Fernández²,
Antonio de Vicente¹, Juan Antonio Torés²

¹*Instituto de Hortofruticultura Subtropical y Mediterránea "La Mayora"-Universidad de Málaga-Consejo Superior de Investigaciones Científicas (IHSM-UMA-CSIC), Dpto. de Microbiología, Facultad de Ciencias, Bulevar Louis Pasteur s/n, Campus de Teatinos, 29071 Málaga, Spain.* ²*IHSM-UMA-CSIC, Estación Experimental "La Mayora", 29750 Algarrobo-Costa (Málaga), Spain.*

Gray mold, caused by *Botrytis cinerea* Pers., is one of the most economically important diseases of strawberries and its control involves the application of fungicides throughout the strawberry growing season. Succinate dehydrogenase inhibitors (SDHIs) constitute a novel class of fungicides representing new alternatives for strawberry growers. In the present study, *B. cinerea* isolates were used to determine the effective concentration that reduces mycelial growth by 50% (EC₅₀) and to obtain discriminatory doses to monitor SDHI fungicides over the course of three-year monitoring period. The overall frequencies of resistance to the SDHI fungicides boscalid, fluopyram, fluxapyroxad and penthiopyrad were 56.9, 6.9, 12.9, and 24.6%, respectively. Four SDHI resistance patterns were observed in our population. Patterns I (resistance to boscalid) and II (resistance to boscalid and penthiopyrad) were associated with the amino acid substitutions H272R/Y; pattern III (resistance to boscalid, fluxapyroxad, and penthiopyrad) was associated only with the H272Y mutation; and finally, pattern IV (resistance to boscalid, fluopyram, fluxapyroxad and penthiopyrad) was associated with the N230I allele in the SdhB subunit. For gray mold management, it is suggested that the simultaneous use of boscalid and penthiopyrad should be limited to one application per season. The use of fluxapyroxad and fluopyram could be used as valid SDHI alternatives for our strawberry growers, but they should be applied with caution.

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