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Grapevines considered to be one of most important crops worldwide as well as in Greece. Grape’s Black rot disease caused by several mycotoxigenic species of Black Aspergilli section Nigri, is one of the most important pre- as well as post-harvest diseases of grapevines, while contaminated grape products and derivatives with Aspergillus mycotoxins may have an important impact on consumers health. Overall the aim of this project is the investigation of the population structure and the determination of the in vitro mycotoxigenic capacity of black Aspergilli species collected from conventional and organic growing systems. In detailed, asymptomatic grape berries were collected for two consecutive years (2018 & 2019) from organic and conventional grapevines originated from different regions all over the Greece. In total, 300 isolates of Aspergillus spp. were selected and identified by amplicon sequencing of three reference genes. More specifically, A. tubingiensis, A. uvarum, A. carbonarious and A. niger were identified as the casual agents of Black rot disease in Greece, while A. uvarum and A. tubingiensis considered to be the predominant species for 2018 and 2019, respectively. In addition, for both sampling years, higher frequencies of A. tubingiensis and A. uvarum were found in the organic and in the conventional grapevines, respectively. In vitro mycotoxin production (OTA, FB₂, FB₃ and FB₄) was evaluated in two selective media, while the analysis and the quantification were performed with LC/Q-TOF MS system. The analysis revealed significant high mycotoxin production, especially to the isolates originated from the conventional vineyards. In addition, A. carbonarious identified as the main OTA (0.02 to 16 μg/g) producer, while A. niger was the main producer of FB₂(5 to 35 μg/g), FB₄ and FB₆.

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