4th International Congress on Biodiversity
"Man, Natural Habitats and Euro-Mediterranean
Biodiversity", Malta, 17-19th November 2017

Fungal contaminants of *Pyrus communis* var. *bambinella*: macroscopic and molecular characterisation

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Produce such as pear fruits are prone to post-harvest diseases caused by fungi or bacteria and can occur at any stage from harvest to consumption. Such organisms may cause soft spots or light brown lesions on fruit and this may lead to advanced fungal invasion, which is clearly seen by a variety of coloured mouldy growths on fruit. Fungal pathogens cause premature fruit spoilage of '*Bambinella*', known as Maltese June Pear, a fruit endemic to the Maltese Islands. The objective of this study was to isolate, quantify and characterise fungal contaminants of '*Bambinella*' and describe their growth kinetics. In total, 284 fungicide-free fruits were collected over two consecutive summers (2014, 2015). The isolated fungi were obtained by using forward and reverse colonial morphology. Species identification was determined by PCR-based methods The number of colony forming units of each species (CFU) per cm^2 of '*Bambinella*' outer skin was calculated. Mycelium diameter growth rate studies of the isolates were also carried out on Sabouraud Dextrose Agar at seven different temperatures ranging from 5-35°C. Fungi isolated from '*Bambinella*' in 2014 and 2015 included *Cladosporium ramotenellum*, *Alternaria arborescens, Penicillium lanosum*, *Penicillium expansum* and *Aspergillus sydowii*, listed from the most abundant to the least abundant. All isolates are known to be causative factors of fungal disease in pears at various degrees. Data fitted to the Rosso model showed that the optimal temperatures for growth of all the five fungi were in the range of 20-22°C, while growth was slower at temperatures below 10°C and above 30°C. As observed in the

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diameter studies, the order of the most to the least aggressive fungi was found to be: *P.* expansum, *A. sydowii*, *P. lanosum*, *C. ramotenellum* and *A. arborescens*. Germination studies showed that the highest germination rate was for *P. lanosum* followed by *A. arborescens*, *C. ramotenellum*, *P. expansum* and *A. sydowii*, in descending order. Understanding the growth dynamics of '*Bambinella*' fungal pathogens can help in reducing the use of agricultural fungicides.