ABSTRACT BOOK

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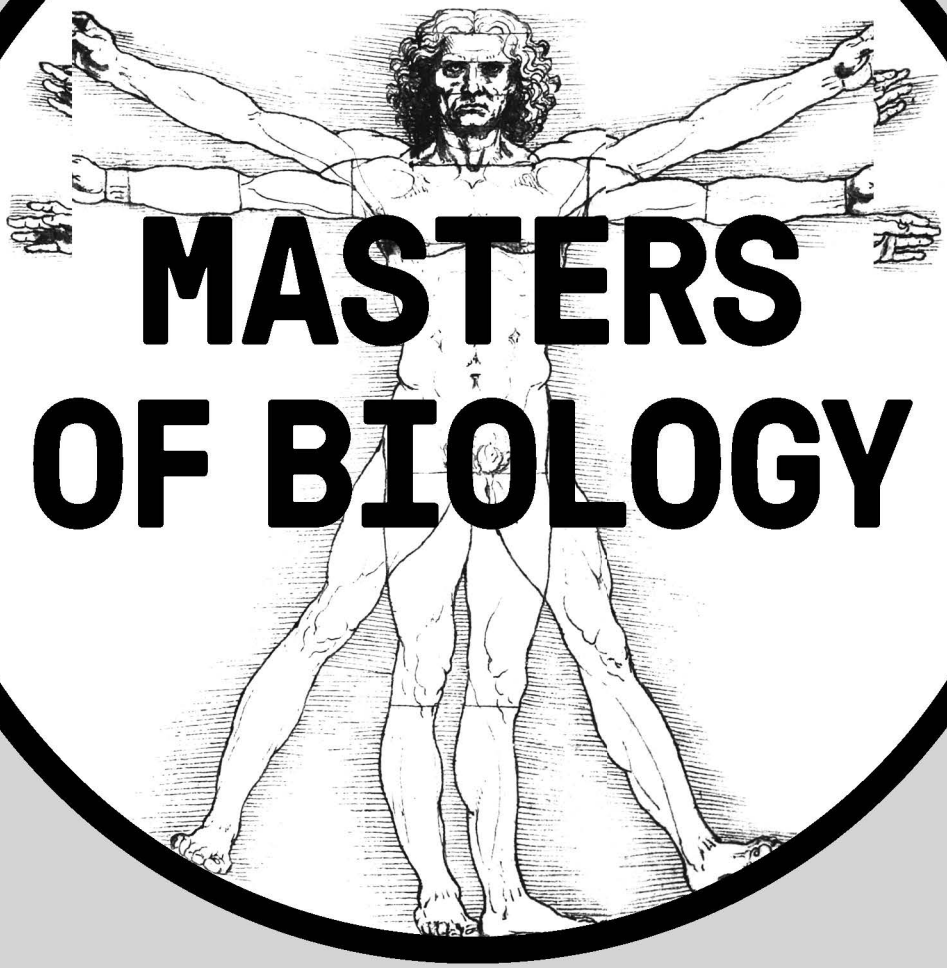

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producing unisexual or sterile flowers, the cellular bases of these processes remain poorly known. Floral buds of hermaphrodite individuals of *M. obtusifolia* were collected and processed by TEM in order to analyse the cellular events associated with pollen development. Microsporocytes were recognized by callose walls and dense cytoplasm rich in mitochondria, RER and associated vesicles, Golgi bodies, oil bodies and small vacuoles. After microsporocytes meiosis, tetrahedral tetrads were characterized by callose walls and cytoplasm with proplastids, mitochondria, Golgi bodies and vesicles contained dense electron granulations whose content was released by exocytosis. Subsequently, free microspores were characterized by the presence of exine, small vacuoles, central nucleus and cytoplasm rich in oil bodies, mitochondria, linear or concentric ER elements, polyribosomes, Golgi bodies and amyloplasts. The vacuoles merged together forming vacuolated microspores, which after mitosis, gave rise to bicellular pollen grains. The generative cell was half-moon shaped and exhibited nucleus with a non-obvious nuclear envelope and associated ER tubules. After mitosis of the generative cell, tricellular pollen was formed with a vegetative cell and two gametes. The elliptical gametes had irregular contour, nuclei devoid of nuclear envelope and abundant cytoplasm delimited by a translucent vesicle-like layer. These cellular events culminated in the development of viable pollen grains.

PC1.56 ABSCISIC ACID INDUCES CHANGES ON GENE EXPRESSION RELATED TO THE SYNTHESIS OF CAROTENOID DERIVED VOLATILES IN TOMATO (*SOLANUM LYCOPERSICUM*) FRUIT DURING RIPENING

THURSDAY 5 JULY, 2018 **POSTER SESSION**

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In tomato fruit (*Solanum lycopersicum*), a range of 20 to 30 volatile metabolites contribute significantly to the aroma, being derived from fatty acids, amino acids and terpenoids. There is an extensive literature about the role of ethylene on fruit ripening and in the induction of aroma-associated genes. However abscisic acid (ABA) has also been implicated as an important ripening hormone, although its role on the biosynthetic pathways of volatile compounds remains unclear. Tomatoes in the mature green stage were infiltrated with ABA, while the other experimental group was infiltrated with the inhibitor of its synthesis, fluridone. The synthesis of volatile compounds in different ripening stages of those groups were compared to fruits treated with ethylene, 1-methylcyclopropene (ethylene antagonist) and without infiltration. In the fruits treated with ABA and with its synthesis inhibitor the accumulation of terpenes such as α-terpineol, linalool and citral evidenced the influence of this hormone on carotenoid derived volatiles, apparently independent of ethylene. The expression of *CAROTENOID CLEAVAGE DIOXYGENASES 1A AND 1B* (*CCD1A and CCD1B*) were up-regulated in the presence of high levels of ABA and down-regulated under fluridone treatment. The expression of the lipoxygenase pathway genes appeared to be less affected by ABA, and the C_6 volatiles synthesis as well. Thus, the results seem to indicate an ethylene-independent action of ABA in the formation of volatile compounds derived from carotenoids in tomato fruit, probably related to specific alterations in the carotenoid biosynthesis pathway.

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PC1.57 FOLIAR APPLICATION OF JASMONIC ACID AMELIORATE PHOTOSYNTHESIS AND YIELD OF THE OLIVE TREE UNDER SUMMER STRESS

WEDNESDAY 4 JULY, 2018 **POSTER SESSION**

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Despite the physiological defence strategies that olive trees dispose against summer stress, the projected climate change for the Mediterranean Basin characterized by severe summer conditions, with low rainfall, excessive heat load, and high irradiance levels, might affect this crop. New cropping practices allowing better water use efficiency and protection against summer stress as with the introduction of foliar jasmonic acid were pursued. The study was conducted in an organic orchard at Quinta do Prado, Lodões, Vila Flor (41°20'13.3"N, 7°05'54.2"W) under sustained deficit irrigation and shows the impact of the application of jasmonic acid (100 µM) on leaf gas exchange and yield during the 2017 season. Jasmonic acid sprayed plants consistently showed higher stomatal conductance and transpiration rate, as well as superior net photosynthesis, mainly at midday period, and at the end of summer, due to lower non-stomatal limitations, in a close association with higher intrinsic water use efficiency. The better physiological status of the jasmonic acid sprayed olive trees was reflected in a higher fruit fresh weight, pulp to stone ratio and higher yield. The present study gives new insights about the effect of this new cropping practice for olive orchards, showing that jasmonic acid foliar application improves the tree physiological status, which can help the development of a sustainable and more competitive olive sector.

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