

Morphological Characterization and Pollen Grain Fertility of Selected Orange (*Citrus sinensis* L.) Varieties

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AMONG the national objectives of the National Gene Bank and Genetic Resources (NGBGR) in Egypt are the collection, characterization, evaluation and conservation of agricultural genetic resources. The present study investigates the morphological characterization and pollen grain fertility and sterility of 15 orange (*Citrus sinensis* L.) varieties namely Balady, Balady red, Balady succari, Central, Hamlin, Jaffa (Shamouti), Khalili red, Khalili white, Mafred, Mezazie, Mouzambique, Roja, Tanneriffe, Tunisi and Valencia.

Thirty-eight morphological characteristics were studied to describe the tree, leaf, inflorescence, fruit, and seed. The morphological characterization showed wide range of differences among varieties. Characterization of tree shape resulted in four ellipsoid varieties, seven spheroids and four were obloid. The morphological characterization of leaf lamina shape showed one elliptic variety, one ovate and 13 lanceolate. Fruit shape studies indicated that eleven varieties were spheroid and four were ellipsoid. Shape of fruit apex demonstrated that five varieties were round, nine were truncate, and one was depressed. Differences in flavido (rind skin) color among varieties revealed that one was light yellow, two were light orange, and eight were orange. The rest of the varieties were dark orange. As to the color of the pulp (flesh), results indicated that two varieties were yellow, 10 were orange and three were orange-red. The average number of carpeles per fruit ranged from 5-9 carpeles in four varieties, and from 10-14 carpeles in 11 varieties. The average number of seed per fruit revealed that nine varieties had one to four seeds; four varieties contained five to nine seeds and two varieties showed 10-19 seeds per fruit. Other morphological studies are investigated and will be presented.

Studies of pollen grain fertility showed that Blood orange, Jaffa, and Mezazie varieties demonstrated the highest pollen grain fertility 99.04, 99.13, 98.96% respectively. Contrarily, the highest pollen sterility was found in Mouzambique (7.18%), Hamlin (6.18%), and Tunisi (5.91%) varieties.

Keywords: National Gene Bank - Egypt - Orange varieties - Morphological description - Pollen grain fertility and sterility.