

fruit rate and incidence of pests and diseases, etc. (Du, 2001). The data covers the entire growing season, and some indicators even extend to the post-harvest storage period. Some studies also combined meteorological data, soil properties, fruit metabolomics and transcriptomics to analyze the effects of management measures on fruit quality and stress resistance (Huang et al., 2025).

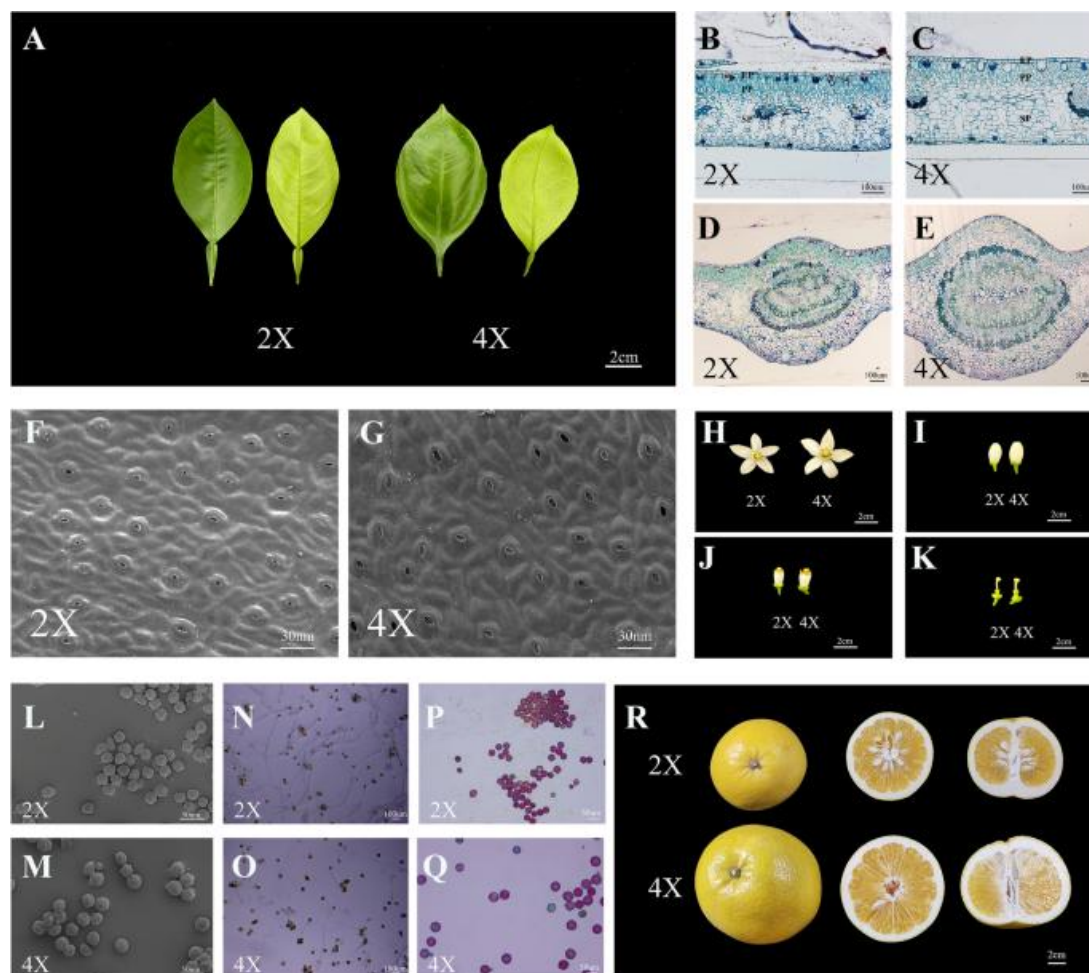


Figure 2 A Morphology of the leaves of the diploid (2X) and the tetraploid (4X) (Bar = 2 cm) (Adopted from Huang et al., 2025)
Image caption: The leaf was shown in both adaxial (upper) (left) and abaxial (lower) (right) surfaces. B-E Transversal sections of leaves (B-C) and midribs (D-E) of the diploid (2X) and the tetraploid (4X) (Bar = 100 μ m). F-G Scanning electron micrographs of stoma of the diploid (2X) and the tetraploid (4X) (Bar = 30 nm). EP: Epidermis, PP: Palisade parenchyma, SP: Spongy parenchyma. H-K Morphology of blooming flowers (H), floral buds (I), stamens (J), and pistils (K) of the diploid (2X) and the tetraploid (4X) (Bar = 2 cm). L, M Scanning electron micrographs of pollen grains of the diploid (2X) and the tetraploid (4X) (Bar = 50 nm). (N, O) The pollen germination of the diploid (2X) and the tetraploid (4X) (Bar = 100 μ m). P, Q Pollen staining activity of the diploid (2X) and the tetraploid (4X) (Bar = 50 μ m). R Morphological characteristics of fruits in the diploid (2X) and the tetraploid (4X) (Bar = 2 cm) (Adopted from Huang et al., 2025)

7.3 Results: yield outcomes, fruit quality improvements, and market acceptance

The results indicated that optimized fertilization and scientific irrigation could significantly increase the yield per plant and per unit area by 10% to 25% compared with conventional management (Huang et al., 2025). Dense planting can achieve early high yields in young orchards, but as the tree age increases, timely thinning is necessary; otherwise, it is prone to clogging, leading to a decrease in yield (Tan et al., 2012). Superior varieties such as natural tetraploid and preferred grafted lines have stronger growth vigor and higher yield potential (Du, 2001). Scientific pruning, reasonable fertilization and irrigation also make the fruit size more uniform, the fruit skin color brighter, the content of soluble solids higher and the flavor more stable (Tan et al., 2012). The fruit of the natural tetraploid is larger, the peel is thicker, and the contents of some metabolites such as flavonoids, terpenoids and amino acids are higher, with enhanced medicinal and processing values (Huang et al., 2025).