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Lycopene Content and Fruit Morphology of Watermelon (*Citrullus lanatus*) Germplasm Collections

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High-quality and high-phytonutrient watermelon fruits have strong market opportunities besides their health related benefits. Hence, investigating quality and nutritional related traits of watermelon genetic resources could provide important baseline data in breeding for increased lycopene content thereby increasing the marketability of watermelon. To this end, we have examined some fruit morphological traits and lycopene content of 105 genetic resources. The morphological characters were recorded on the field and inside laboratory and lycopene was measured using spectrophotometric and HPLC methods. Watermelon fruits have shown a diverse morphological characters. Red and pink fleshed fruits dominated in the entire collections. Fruits with higher thickness of rind were found to exhibit less soluble solid content (SSC). Korean origin fruits were characterized by intermediate SSC while USA, RUS, TJK, TKM, TWN, and URY originated fruits had the highest SSC. The lycopene content varied between 41.37 and 182.82 μg/g, 2.81 and 163.72 μg/g, and 3.54 and 255.47 μg/g using HPLC, UV-Vis, and microplate reader instrumnets, respectively. Red- and pink-fleshed fruits had the highest levels of lycopene content compared to the yellow- and orange-fleshed. Lycopene content had a significant positive correlation with SSC, however, no correlations were detected between lycopene and other quantitative fruit morphological characters.

Key words: Genetic resources, Quality traits, HPLC, Spectrophotometry, Principal component analysis

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