

## Improving Qualitative and Quantitative Characteristics of Indian jujube Fruit (*Ziziphus mauritiana* cv. Sibi) by Spraying Calcium Chloride, Putrescine and Salicylic Acid

F. Shanbehpour Bandari, S. Rastegar\* and M. Ghasemi<sup>1</sup>

Indian jujube is one of the most important tropical fruit which its cultivation is expanding in the southern provinces of Iran. In this study we evaluated the effects of different concentrations of calcium chloride spray, putrescine and salicylic acid on some quantitative and qualitative attributes and antioxidant activity at harvest time. Spraying on trees was carried out in two stages before commercial maturity at the rate of 0.5 and 1.5 percent calcium chloride, 1 and 2 mM putrescine, 1 and 2 mM salicylic acid, as well as distilled water (control). At the time of commercial maturity, fruits were harvested and immediately transported to the laboratory. Firmness, fruit length, fruit diameter, percent of fruit juice, pulp to pit ratio, total soluble solids, titratable acidity, pH, ascorbic acid, chlorophyll a, b and carotenoids, color parameters (L\*, a\* and b\*), the chroma index, Hue angle and antioxidant activity were measured. The results showed that foliar application of calcium chloride, putrescine and salicylic acid favorably were effective on quantitative and qualitative characteristics of Sibi Indian jujube fruit. In the treated fruit compared to the control, TSS, carotenoids and a\* were less but fruit firmness and diameter, percent of fruit juice, pulp to pit ratio, vitamin C, antioxidant activity, chlorophyll a and b, the index Chroma and Hue angle were higher than those of control. Parameter of total acid, pH, L\* and b\* in the treated fruit had no significant different with control. In general, calcium chloride at 1.5%, putrescine at 1 mM and salicylic acid at the rate of 2 mM were the best treatments to preserve the quantity and quality of fruit.

**Key words:** Calcium chloride, Fruit quality, Putrescine, Salicylic acid, *Ziziphus mauritiana*.

1. Former M.Sc. Student, Assistant Professor, Department of Horticultural Science, Hormozgan University and Assistant Professor, Agricultural Research and Education Center Natural Resources of Qazvin Province, respectively.

\* Corresponding author, Email: (rastegarhort@gmail.com)