EFFECT OF SOME PRE AND POSTHARVEST TREATMENTS ON MARKETABILITY OF PEACH FRUITS

By

AHMED ABDEL NABI ABDEL GAYED SEMIDA
B.Sc. Agric. Sci. (Horticulture), Fac. Agric., Fayoum Univ., 2011

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APPROVAL SHEET

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SUPERVISION SHEET

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Title Of Thesis: Effect of Some Pre and Postharvest Treatments on Marketability of Peach Fruits
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ABSTRACT

Studies related with the storage of peach fruits have great relevance in many fruit-growing countries, among which Egypt. The effects of pre-harvest sprays with calcium chloride and chitosan, separately and in combination, as well as post-harvest treatments with chitosan and ozone, on quality attributes, storability and marketability of 'Early Swelling' peach fruits were studied throughout the 2014 and 2015 seasons. In pre-harvest experiment, peach trees were sprayed twice with 1% or 2% calcium chloride. The 1st spraying was at pea stage, while the 2nd one was performed 10 days before fruit harvesting. Chitosan sprays were performed at 0.5% or 1%, alone or in combination with 1% and 2% calcium chloride, 10 days before harvesting. Untreated trees served as control. As for post-harvest, chitosan was applied at concentrations of 0.5 and 1%, ozone at concentrations of 0.5 and 1 ppm. Fruits were harvested at maturity stage for both experiments, packed and stored at (0 °C and 85-90 % RH) or at room temperature (25±2 °C). A number of physical and chemical parameters were evaluated on stored fruits at equal intervals (7 days for fruits stored at 0 °C for a total of 35 days, and 2 days for fruits stored at room temperature).

Results showed that pre-harvest application with 2% $CaCl_2$+1% chitosan was most effective in minimizing weight loss (%) and decay (%), as well as in maintaining maximum firmness, lengthening marketing life and keeping best general appearance. Fruit color was not affected by any of the treatments, in the meantime untreated fruits recorded higher total soluble solids (TSS%), total phenolic content, and lower titratable acidity TA, (%). These results were recorded for fruits stored at 0 °C and room temperature.

Post-harvest treatments with ozone at both concentrations recorded less weight loss, while decay incidence was significantly lowered by the treatments with 0.5% chitosan, 1% chitosan and 1 ppm ozone, in comparison to control fruits in the first and second season, maximum firmness was maintained with both the chitosan treatments. Likewise, treated fruits recorded higher scores of general appearances comparing to untreated ones. Meanwhile, untreated fruits recorded the highest loss of weight (%) and decay incidence (%), furthermore, higher TSS %, total phenols, and the lowest fruit firmness, TA% and Marketing life comparing to other treatments when fruits were kept at both 0 °C and room temperature conditions.

Key words: Peach, cv Early Swelling$CaCl_2$, chitosan, ozone , quality attributes

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DEDICATION

I dedicate this work to whom my heartfelt thanks; to my father, my mother and my brothers Mohamed, Mahmoud and Zead for all the support they lovely offered along the period of my post-graduation.

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CONTENTS