**-44- Summary of**

# EFFECT OF SOME PREHARVEST TREATMENTS ON QUALITY AND RIPENING OF''CANINO'' APRICOT FRUITS AND ON THEIR SHELF LIFE

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**BY**

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## SUMMARY

**This study was conducted during two successive seasons 2007 and 2008 by using "Canino" apricot cultivar (Prunus armeniaca L.) grafted on Balady apricot rootstock. Trees were grown at El-Noubarya province, Behera, Egypt Trees were sprayed with a hand sprayer to the run off. Treatments included water as the control; Ethephon at 200 ppm prepared from a stock solution of 48% (w/v) alone or in a combination with either Cacl2 or oleic acid , in addition to oleic acid at 400 ppm, Cacl2 (2 % ,w/v), The Non ionic surfactant Tween 80 at 0.1% (v/v) was added to all treatments. The trees received the treatment at one application time either at pit hardening or at the early coloration stage (15-20% fruit coloration). The first application time was at pit hardening (8th, 2nd May during 2007 and 2008 respectively), while the second application time was at 15 – 20 % fruit coloration (23, 16 .(May during 2007 and 2008 respectively**

**.Research objectives could be summarized as follow**

**-١ To identify the more suitable time of applying ethephon which minimize its adverse effects on fruit quality and shelf life**

**-٢ To mitigate the adverse effects of ethephon on apricot fruits by .incorporating Cacl2 or oleic acid into the applied solution**

**-٣ To investigate the possibility of using oleic acid as a coloring and .ripening agent of apricot fruits**

**-٤ To provide apricot growers and producers with a safe regime of accelerating fruit coloration and maturity without sacrificing their .shelf life**

**:The following points summarize the results**

**:First: Applied treatments at pit-hardening**

**-١ Ethephon-treated fruits at 200 ppm decreased fruit firmness, fruit size, stone weight, chlorophyll a and acidity, while, increased flesh/ stone ratio, carotenes, total sugars, reducing sugars, TSS and**

**TSS/ acidity ratio. Ethephon treatment had no consistent influence on fruit weight, flesh weight, and chlorophyll b. On the other hand, ethephon did not cause a significant change on fruit diameter and fruit .length at harvest in both seasons when compared with the control**

**٢- The incorporation of Cacl2 with ethephon mitigated the adverse effect of ethephon on fruit firmness, however, the incorporation of Cacl2 with ethephon decreased fruit size, fruit diameter, fruit weight, flesh weight, chlorophyll a and acidity, while, increased carotenes, reducing sugars, TSS and TSS/ acidity ratio. This treatment did not had a consistent influence on fruit length and chlorophyll b. On the other hand, the incorporation of Cacl2 with ethephon did not cause a significant change on stone weight, flesh/ stone ratio, total sugars and .non-reducing sugars**

**٣- The incorporation of oleic acid with ethephon mitigated the adverse effect of ethephon on fruit firmness, however, the incorporation of oleic acid with ethephon increased fruit size, fruit weight, flesh weight, carotenes, total sugars, reducing sugars, TSS and TSS/ acidity ratio, while, decreased chlorophyll b and acidity. The incorporation of oleic acid with ethephon had no consistent influence on chlorophyll a, fruit diameter, fruit length, flesh/stone ratio, and non-reducing sugars. On the other hand, incorporation of oleic acid with ethephon did not cause a significant change in stone weight as .compared with the control**

**٤- Oleic acid-treated fruits at 400 ppm increased fruit size, fruit diameter, fruit length, fruit weight, flesh weight, flesh/stone ratio, carotenes, reducing sugars and TSS. Oleic acid-treated had no consistent influence on fruit firmness, chlorophyll b, acidity and TSS/ acidity ratio. On the other hand, oleic acid-treated fruits did not cause a significant change in stone weight, chlorophyll a, total sugars, and .non-reducing sugars when compared with the control**

**:Second: Applied treatments at 15-20% fruit coloration**

**٥- Ethephon alone or in the presence of either Cacl2 or oleic acid caused a significant reduction in stone weight, chlorophyll a, and**

**acidity, as compared with the control. While, increased carotenes, total sugars, reducing sugars, TSS and TSS/ acidity ratio. On the other hand, the formulation did not cause a significant change in fruit size, fruit diameter, fruit length, fruit weight, flesh weight, chlorophyll b, .and reducing sugars as compared with the control**

**٦- Oleic acid-treated fruits at 400 ppm increased carotenes, reducing sugars, TSS and TSS/ acidity ratio. While decreased chlorophyll a and acidity, as compared with the control. On the other hand, oleic acid-treated fruits did not cause a significant change in fruit firmness, fruit size, fruit diameter, fruit length, fruit weight, flesh weight, flesh/stone ratio, chlorophyll b, total sugars, and reducing .sugars when compared with the control**

**Third: The interaction between treatments and the two times of :application**

**٧- None of the treatments performed better whether applied at pit hardening or at 15-20% coloration on fruit firmness, fruit size, fruit diameter, fruit length, fruit weight, flesh weight, stone weight , flesh/stone ratio, chlorophyll a, b, carotenes , reducing sugars, TSS and TSS/ acidity ratio. On the other hand, applied treatments at pit hardening were significantly effective in reducing chlorophyll a and b in apricots skin as compared with that applied at 15-20% coloration, while, oleic acid applied at pit hardening resulted in considerable increase in fruit size, weight, diameter, and flesh weight as compared with the control and ethephon plus Cacl2 applied at 15-20% coloration .during the two seasons in a consistent manner**

**:Fourth: The Shelf life Test**

**٨- At the end of shelf period (at ambient temperature (22± 2OC) for three days) applied treatments such as ethephon alone or in the presence of either Cacl2 or oleic acid at pit hardening caused a significant increasing in carotenes , reducing sugars, TSS/ acidity ratio and decreased chlorophyll a, b and acidity. The incorporation of Cacl2 with ethephon had no consistent influence on weight loss.**

**Meanwhile, the incorporation of oleic acid with ethephon did not cause a significant change in weight loss. On the other hand, oleic acid treated fruits decreased weight loss, fruit firmness, chlorophyll a, b and increasing carotenes, TSS/ acidity. While, did not cause a significant change in fruit firmness, total sugars, reducing sugars and .non-reducing sugars when compared with the control**

**٩- At the end of shelf period (at ambient temperature (22± 2OC) for three days) applied treatments such as ethephon alone or in the presence of either Cacl2 or oleic acid at 15-20% fruit coloration caused a significant increase in carotenes, reducing sugars, TSS/ acidity ratio and decreased acidity. Furthermore, they did not cause a significant change on weight loss, fruit firmness, chlorophyll a, b and non-reducing sugars. Moreover, ethephon-treatment alone caused an increase in weight loss and reduced fruit firmness. On the other hand, oleic acid–treatment caused an increased in carotenes, reducing sugars, TSS/ acidity and decreased acidity. Meanwhile, it did not cause a significant change in weight loss, fruit firmness, chlorophyll a, b, .total sugars and non-reducing sugars as compared with the control**

**Aforementioned, this study recommended using oleic acid at (400 ppm) at pit hardening or using the combination of ethephon plus oleic acid either at pit hardening or at 15-20% fruit coloration to gain the best desired results in terms of fruit quality, fruit coloration and ripening at harvest while retarding the loss of firmness with the shelf life test of .(Canino) apricot fruits**