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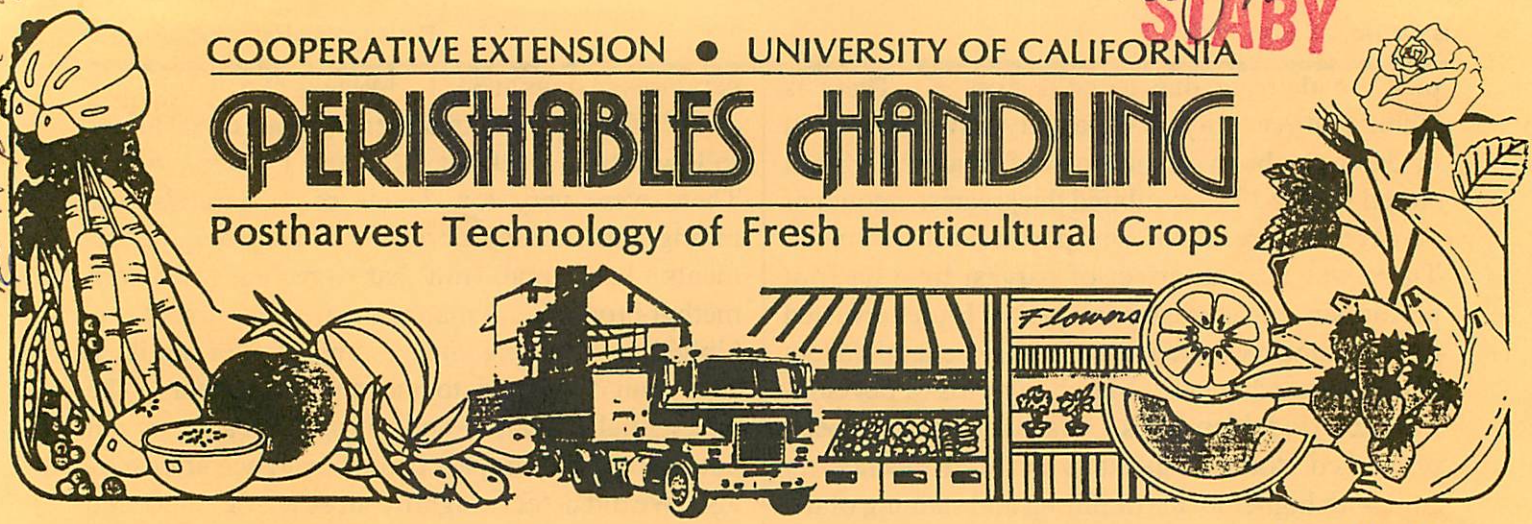
PERISHABLES HANDLING

Postharvest Technology of Fresh Horticultural Crops



May 1991 Issue No. 71

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The Impact of Cultural Practices on the Postharvest Fruit Quality of Navel Oranges

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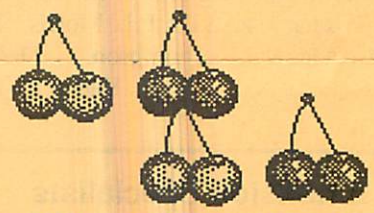
The McKellar IPM project is a multi-year project aimed at evaluating the impact of cultural practices on tree productivity and fruit quality. The various differential preharvest treatments included were irrigation (based on %ET), N fertilization, gibberellic acid (+/-), miticide (+/-) and fungicide/nematicide (+/-). Fruit were harvested twice during the commercial harvesting season in all three years: the second week of January and the second week of March. Fruit were evaluated four times: at harvest, after 1 week at 6° F, after 3 weeks at 41° F or 32° F plus 1 week at 68°F, and after 3 weeks at 32° F plus 3 weeks at 41° F plus 1 week at 68° F. Various parameters of fruit quality were monitored: % juice content, titratable acidity (TA), soluble solids content (SSC), SSC/TA ratio and external quality (+/- pitting and/or staining). The results can be summarized from two aspects: those field factors which influenced internal fruit quality and those factors which influenced external quality.

After data analysis the following points can be made regarding the impact of various cultural practices on postharvest fruit quality and suscepti-

bility to damage due to cold storage. There is significant year-to-year variability between the level of damage observed due to cold treatment. Fruit stored during 1987 exhibited the greatest amount of damage as a result of any postharvest treatment. There was also an effect of harvest time on fruit performance in storage in all years. Fruit harvested in early January stored significantly better than that fruit harvested in early March in terms of development of rind blemishes. As one would expect, prolonged storage especially at 32° F resulted in fruit with higher levels of pitting and staining of the rind tissue.

When examining the impact of field factors on the internal quality of the fruit we noted that fruit harvested from trees receiving greater amounts of water had both higher SSC and % juice content. Nitrogen fertilization practices also influenced the internal quality of the fruit. We observed higher SSC and increased SSC/TA ratios from trees receiving more nitrogen. It should be noted that in none of the years were the trees markedly starved for nitrogen although there was a differential between treatments. Gibberellic acid was the only field experimental factor which impacted external appearance consistently across the three years. Fruit which did not receive a fall application of gibberellic acid always had significantly higher levels of pitting and staining of the rind particularly after the March harvest. Gibberellic acid did not significantly impact internal fruit quality. During the three years of this study we did not observe any impact on fruit quality due to fungicide/nematicide or miticide treatments.

In March 1990 we obtained fruit from the McKellar project in order to evaluate the effect of the field treatments on susceptibility to methyl bromide damage as compared to cold treatment. Since we had not observed any impact on fruit quality due to fungicide/nematicide or miticide treatment, these field factors were not included in the 1990 evaluation. The storage treatments included: no cold storage (1 week at 68° F); methyl bromide fumigation (32g/m³ at 70° F or above for 2 hours) in combination with various holding times and temperatures (4 days at 34° F, 3 Weeks at 41° F, 1 week at 68° F); and cold treatment (3 weeks at 34° F) followed by 3 weeks at 41° F and 1 week at 68° F. There were very low levels of moderate/severe pitting and staining observed in all storage treatments. In general, fruit that were fumigated with methyl bromide, no matter the field treatment, exhibited more pitting and staining of the rind tissue than fruit subjected to the cold treatment. The differential irrigation and nitrogen treatments did not significantly impact fruit appearance after storage. We did detect a significant effect of gibberellic acid treatment on external appearance. This was surprising since the amount of gibberellic acid applied in fall 1989 was only 0.75 ppm rather than the planned recommended 15 ppm dosage. In addition, we subjected a small sample of fruit to a hot water immersion treatment after waxing. This treatment caused a shattering of the wax and rendered the fruit an opaque white. Fruit treated in this manner did not store well.



Sweet Cherry Harvesting, Postharvest Handling and Storage

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Physiological Fruit Characteristics:

A lot of people love to eat fresh cherries but few people realize how difficult it is to keep cherries fresh. There are several reasons why it is so difficult to do so. First, cherry is a non-climacteric fruit; second, it has a poorly developed cuticle; third, it has a high rate of respiration, fourth, it is susceptible to decay, and finally, the fruit is easily bruised.

The cherry fruit is a non-climacteric fruit which means that what you pick is what you get and