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Reprinted from Volume 86 of the Proceedings of the  
 FLORIDA STATE HORTICULTURAL SOCIETY  
 Miami, November 6-8, 1973

## ENHANCEMENT OF RED COLOR ON

### MANGOS WITH AN ANTITRANSPIRANT

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**Abstract.** Preharvest application of the anti-transpirant poly-1-p Menthen-8-9 diyl, Vapor Gard (VG), at concn of 2 to 3% accentuated the red color on 'Kent', 'Keitt', and 'Irwin' mangos. The material can be applied with the last fungicide application 1 to 2 weeks prior to harvest.

The external color of mango fruits produced in Florida is an important factor in consumer appeal. With adequate disease control, color development of most yellow cv. is no problem. However, color development of some red cv. can be extremely variable. The red color is due to anthocyanins (1) and its development is affected by light exposure. With some cv. harvested mature but firm (commercial maturity), anthocyanin development is reduced when fruit are ripened at 21°C or higher (3). In 1972, preharvest application of VG was found to increase red color development on 'Irwin' and 'Keitt' mangos (1). This phenomenon has been studied for 2 years and VG was first used commercially this year to enhance the color of mangos.

The purpose of this study was to determine the effect of different VG concn on red color of several mango cv.

#### Materials and Methods

Tests were conducted on fruiting trees of 'Irwin', 'Lippens', 'Keitt', 'Kent', and 'Palmer' located in south Dade County, Florida. VG was applied at concn of 1 to 5% at the time of the last fungicide application to the fruit replacing the

Fla. Agr. Expt. Sta. J. Series No. 5127. Cooperative research of the University of Florida, IFAS Agricultural Research and Education Center, Lake Alfred, and the U. S. Department of Agriculture, Miami, Florida.

sticker-extender, Nu-Film-17. Fruit were harvested for color determinations 7 to 17 days after spraying.

Color measurements were made in the laboratory with a Hunterlab D25 Color Difference Meter 1 day after harvest. Measurements were made in an area of max red color on 10 to 15 fruit of each treatment and the value expressed as the a/b ratio. This value is used to express a scale of red to yellow to green.

#### Results and Discussion

The red color response to VG varies among cv. (Table 1). Fruit surface of the 'Irwin' cv. is

Table 1. Effect of preharvest VG application on the accentuation of the external red color (a/b) of the fruit of several cv.

Cultivar	Treatment	Color value	
		a	b
Irwin <sup>z</sup>	Control	2.85 <sup>x</sup> ±	.22
	2.5% VG	3.11 ±	.17
	5% VG	3.55 <sup>x</sup> ±	.19
Palmer <sup>y</sup>	Control	2.02 ±	.55
	1% VG	2.10 ±	.49
	3% VG	2.06 ±	.40
	5% VG	2.45 ±	.45
Kent <sup>y</sup>	Control	1.48 ±	.23
	2% VG	1.70 ±	.21
Keitt <sup>y</sup>	Control	0.72 ±	.30
	1% VG	0.92 ±	.33
	3% VG	1.10 ±	.32
	5% VG	1.17 ±	.32
Lippens <sup>z</sup>	Control	0.97 <sup>x</sup> ±	.18
	5% VG	1.11 <sup>x</sup> ±	.21

<sup>z</sup>Fruit harvested 17 days after VG application.

<sup>y</sup>Fruit harvested 7 days after VG application.

<sup>x</sup>Data taken from Barmore, et al. (1).

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mostly bright red when tree ripened. However, the skin of fruit harvested mature, but firm, is paler red and less accentuated when ripened at 21°C (3). VG treatments of both 2.5 and 5% accentuated the red color compared with the controls and also have been reported to increase the percentage of red surface area (1). A similar effect has also been noted on the 'Tommy Atkins' cv.

'Palmer' fruit at commercial maturity have a bright red color which covers a large percentage of the surface. Accentuation of the red color was observed only with a 5% VG application. Use of VG on cv. which develop acceptable red color at time of commercial harvest would be of little value.

Both the 'Keitt' and 'Kent' cv. at commercial maturity have red color mixed in with green and yellow on the upper portion of the fruit exposed to the sunlight, the remaining portion being light green. The intensity of the red color is substantially less than that of the previously mentioned cv. The amount of red coloration is greater on 'Kent' than on 'Keitt'. Red color was increased with VG at 2% for the 'Kent' and 3 and 5% for the 'Keitt'. Increase in the percentage surface area showing red color has also been reported for 'Keitt' mango (1).

The effect of VG on color development of 'Lippens' was minimal. The skin of this cv. does show a small amount of red coloration but is primarily yellow. Slight increase in red color has been noted on fruit exposed to direct sunlight.

## Conclusions

VG is not intended to be used on all mango cv. for enhancing red color. A beneficial effect is obtained from VG on cv. where preharvest red color development is marginal or where postharvest red color development is reduced. Also, the concn of VG used should be sufficient to stimulate acceptable red color development. High concn of VG are not only expensive, but retard chlorophyll degradation in storage (unpublished data). Based on the results presented and on field observations, 2 to 3% VG applied 1 to 2 weeks prior to harvest is adequate for accentuating the red color of 'Irwin', 'Keitt', 'Kent' cv. Other cv. not examined in this study may respond to applications of VG. The material can be applied alone or in combination with the fungicide material replacing the sticker-extender (2).

## Literature Cited

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