observed that muscadine vines with trunks damaged by freeze or with roots damaged by grape root borer initiate roots on the trunk. NAA is a plant growth regulator that promotes root initiation in hard-to-root plants (4).

Table 3. Effects of spring 1982 NAA application on the vegetative growth of 'Dixie Red' muscadine.

Treatment	No. shoots/vine 4/15	4/28	7/2	No. roots/vine
Control	17.5	20.5	11.8[y]	0.0
0.25% NAA	(2.1)[z]	0.0	0.0	0.0
0.50% NAA	(2.3)[z]	0.0	0.0	0.5
1.0% NAA	(1.7)[z]	0.0	0.0	0.3

[z]Sprouted, but killed back.
[y]Some suckers removed from lower trunk by hand.

Spring application of NAA to the vine trunk did not affect the fruit quality of muscadine grape (Table 4). There were no significant differences in the total soluble solids, titratable acidity, or number of berries per cluster between treatments. Studies conducted on *V. vinifera* and *V. labrusca* L. have shown that fruit quality is not affected by the application of NAA to the trunk (1, 2).

In conclusion, NAA inhibited shoot regrowth on the trunk and crown without affecting fruit development. Higher concentrations of NAA inhibited shoot growth around the trunk for at least two successive years but promoted adventitious root development on the trunk. This restriction in growth should improve harvesting and promote the penetration of light and sprays (fungicides and insecticides) into the vine canopy. Also, with the elimination of trunk shoots, band application of non-selective herbicides underneath the canopy can be extended into the summer.

Table 4. Effects of spring 1982 NAA application on the fruit quality of 'Dixie Red' muscadine.[z]

Treatment	T.S.S.[y] (%)	T.A.[y] (%)	No. berries/cluster
Control	10.8	1.45	14.4
0.25% NAA	10.5	1.43	14.1
0.50% NAA	10.8	1.31	13.8
1.0% NAA	10.7	1.36	14.6

[z]Fruit sampled August 4, 1982.
[y]T.S.S. = total soluble solids; T.A. = total acid.

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Proc. Fla. State Hort. Soc. 95:128-130. 1982.

BLOSSOM THINNING OF PEACH WITH CGA-15281[1]

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Additional index words. chemical thinner, fruit abscission, *Prunus persica,* (2-chloroethyl)methylbis(phenylmethoxy) silane.

Abstract. **Airblast sprays of dilute CGA-15281, an ethylene generator, were applied at full bloom to peach** [Prunus persica **(L.) Batsch cvs. June Gold and Harvester]. Concentrations of 1500, 2000 and 2500 ppm were applied to 'June Gold' and 1500 and 2000 ppm to 'Harvester'. Thinning (52, 66 and 79%) of 'June Gold' occurred 11 days after treatment from 1500, 2000, and 2500 ppm, respectively, without detrimental effects on fruit quantity or quality. Concentrations of 1500 or 2000 ppm thinned 'Harvester' 30 and 24%, respectively, 11 days after application. Total yield/tree, fruit firmness, % blush and soluble solids were not significantly affected by the chemical treatments. However, the 2000 ppm treated 'Harvester' fruit were larger than the untreated check. No phytotoxicity was noted for any treatment.**

Chemical thinning of peach fruit with various compounds has been attempted over the years (3, 5, 8), yet no compound has been found commercially acceptable. CGA-15281, (2-chloroethyl)methylbis(phenylmethoxy) silane, has shown promise during several years of tests at a number of locations (2, 4, 7). On short-cycle peaches (60-90 days from full bloom to maturity) in Florida, thinning activity has been achieved when applied at ovule lengths of 10-12 mm at rates of 360 to 480 ppm of CGA-15281 (1). However, a slight reduction in total yield was noted for 'Harvester' and 'June Gold' with the latter also having slight defoliation at 480 ppm. In order to avoid defoliation and thin the tree as early as possible for maximum fruit size, full bloom applications were evaluated. However, full bloom treatments in 1979 of up to 600 ppm on these cultivars resulted in no fruit abscission (1). From these results it was apparent higher concentrations were needed.

The objectives of this experiment were to determine the effect of 3 concentrations of CGA-15281 when applied at full bloom to 'June Gold' and 2 concentrations applied to 'Harvester' peaches.

Materials and Methods

Treatments. Full bloom applications of 1500, 2000 and 2500 ppm CGA-15281 (4E formulation) were made March 1, 1981 to 4th leaf 'June Gold' peach. Treatments of 1500

[1]Florida Agricultural Experiment Stations Journal Series No. 3241. Mention of a trademark or proprietary product does not constitute a guarantee or warranty of the product by the Univ. of Florida and does not imply its approval to the exclusion of other products that may also be suitable.

and 2000 ppm CGA-15281 were made at full bloom to 7th leaf 'Harvester' peach on March 6, 1981. An untreated check was included for each cultivar. Well water pH was adjusted to 6.4-6.8 with HCl prior to addition of the chemical. A randomized block design of 4 single tree replications per treatment was used. Treatments were made using an airblast sprayer calibrated to deliver 1.5 gal/tree of dilute spray at 200 psi. Medium to coarse droplet size resulted from #6 and 7 discs and 3-hole whirl plates.

Fruit abscission monitoring. Ten blossoms/limb with 10 limbs/tree were flagged shortly after application. Eleven and 33 days following treatment, the number of fruit remaining were counted to determine percent fruit abscission.

Hand thinning. Hand thinning of 'June Gold' CGA-15281 treatments was performed to reduce fruit load rather than to thin fruit to a standard spacing. The 'June Gold' untreated check and all 'Harvester' treatments were thinned to space fruit 10-13 cm apart. 'June Gold' trees were hand thinned April 7. 'Harvester' was thinned April 9 through 15.

Harvest procedure. A single harvest on May 28th of all 'June Gold' fruit was performed. Only mature fruit of 'Harvester' were removed June 8 with the remaining fruit harvested June 15. A subsample of 10 fruit/tree/harvest was used to determine mean fruit weight and diameter. Percent blush was a subjective rating of percent red pigmentation, using a scale of 0 (no red pigmentation) to 100 (completely red). Firmness was determined for each fruit on two pared areas of each side of the peach using a Magness-Taylor force tester with a 7.9 mm tip. Soluble solids values were determined with a refractometer for each fruit sampled.

Data analyses. Analyses of variance and Duncan's multiple range tests were performed.

Results

Chemical thinning of 'June Gold'. Thinning activity, 52-79% above natural abscission (fruit that aborts after bloom but before pit hardening) was achieved with CGA-15281 treatments 11 days after application (Fig. 1). The "r" value for 0, 1500, 2000 and 2500 ppm was 0.99. This thinning activity increased only slightly 33 days following treatment due to natural abscission (Table 1). Subsequent hand thinning was reduced 92-100% compared to the untreated check. No phytotoxicity was observed.

There were trends of slightly lower yields and larger, more mature fruit at harvest from CGA-15281 treatments but no difference was statistically significant (Table 2).

Chemical thinning of 'Harvester'. CGA-15281 applied at 1500 and 2000 ppm reduced the fruit load 30 and 24%, respectively, compared to the untreated checks 11 days after treatment (Fig. 1). The "r" value for the 'Harvester' concentrations was 0.91. Natural abscission increased 30% on the untreated check trees from day 11 to 33 after application (Table 3). The increase for the CGA-15281 treatments during this period was slightly higher, 40-45%. The necessity for hand thinning was reduced by 1500 and 2000 ppm CGA-15281 70 and 81%, respectively, compared to the untreated check. There was no phytotoxicity observed.

Total yield was not significantly reduced by any chemical treatment compared to the untreated check (Table 4). Mean fruit weight and diameter were higher for CGA applied at 2000 ppm over the untreated check. Fruit firmness, soluble solids, and percent blush were not affected by any treatment.

Discussion

'June Gold' is more sensitive to CGA-15281 than 'Harvester' which suggests each cultivar will respond individually.

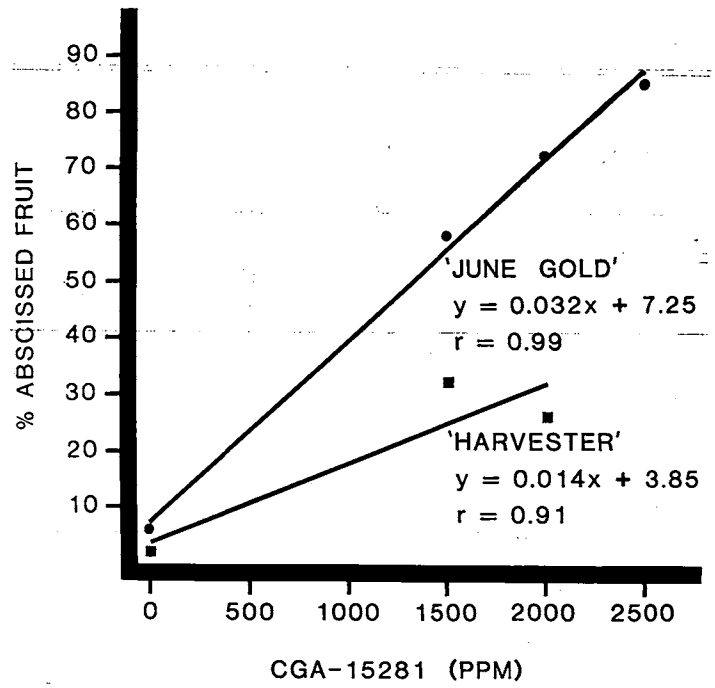

Fig. 1. Percent fruit abscission 11 days after full bloom applications of CGA-15281 to 'June Gold' and 'Harvester' peaches.

Table 1. Fruit removal from full bloom applications of CGA-15281 to 'June Gold' peach.

Treatment	Abscission (%)[z] Days after application 11	33	No. of fruit hand thinned
Untreated check	6a[y]	11a	216a
CGA-15281			
1500 ppm	58b	61b	18b
2000 ppm	72b	76b	9b
2500 ppm	85b	86b	0c

[z]Average of 10 fruit/limb, 10 limbs/tree on 4 trees/treatment.
[y]Means within columns separated by Duncan's multiple range test, 5% level.

Table 2. Effect of CGA-15281 full bloom application on yield and fruit quality of 'June Gold' peach.

Treatment	Total yield/tree (kg)[z]	Fruit wt (g)[y]	Fruit diam (cm)	Fruit firmness (kg)	Soluble solids (%)	Blush (%)
Untreated check	26.6a[x]	124a	5.8a	3.5a	9.0a	54a
CGA-15281						
1500 ppm	21.2a	147a	6.2a	3.1a	10.0a	65a
2000 ppm	21.2a	156a	6.3a	1.9a	10.8a	72a
2500 ppm	11.7a	157a	6.3a	2.2a	10.3a	73a

[z]Average 4 trees/treatment.
[y]Average of 10 fruit/tree.
[x]Means within columns separated by Duncan's multiple range tests, 5% level.

Caution is necessary in predicting thinning results since variables such as climatic conditions could alter thinning response. Porpiglia and Barden (6) found environmental factors such as temperature, precipitation, and relative humidity shortly after application affect leaf abscission from CGA-15281.

Table 3. Fruit removal from full bloom application of CGA-15281 to 'Harvester' peach.

Treatment	Abscission (%)[z] Days after application 11	33	No. of fruit hand thinned
Untreated check	2a[y]	32a	2365a
CGA-15281			
1500 ppm	32b	72b	709b
2000 ppm	26b	71b	452b

[z]Average of 10 fruit/limb, 10 limbs/tree on 4 trees/treatment.
[y]Means within columns separated by Duncan's multiple range test, 5% level.

Table 4. Effect of CGA-15281 on total yield, mean fruit weight, firmness, soluble solids, and percent blush of two harvests of 'Harvester' peach.[z]

Treatment	Total yield/tree (kg)[y]	Fruit wt (g)[x]	Fruit diam (cm)	Fruit firmness (kg)	Soluble solids (%)	Blush (%)
Untreated check	96a	94b	5.5b	5.7a	11.6a	55a
CGA-15281						
1500 ppm	74a	109ab	5.8ab	5.1a	11.8a	62a
2000 ppm	88a	117a	6.0a	4.9a	11.2a	61a

[z]Means within columns separated by Duncan's multiple range test, 5% level.
[y]Mean of two harvests with 4 trees/treatment.
[x]Mean of two harvests with 10 fruit/tree/harvest with 4 trees/treatment.

There are at least 2 considerations blossom thinning presents. Frost damage is always a possibility in the Southeast. In 1980, a killing frost which came after full bloom of some cultivars almost completely destroyed the crop in Florida. The other variable is natural abscission. Natural abscission in 1979 was 13% on 'Harvester' 39 days after full bloom. The same cultivar had 32% in this study.

Another conclusion from this and earlier years' experimentation concerns the follow-up hand thinning. Chemically treated 'June Gold' trees were thinned for fruit load and resulted in little difference in total yield for 1500 ppm compared to check trees though some limbs were slightly overthinned. Treated 'Harvester' trees on the other hand were thinned on a spacing format. The 1500 ppm treated trees had almost twice as many fruit hand thinned as the 2000 ppm treatment which resulted in a lower yield, yet by 33 days after application both 1500 and 2000 ppm abscissed about 70%. The result was a reduction, though not statistically significant, in total yield.

Though more work on external factors influencing thinning activity of CGA-15281 as well as efficacy are needed, this material has definite potential as a peach bloom thinner.

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Proc. Fla. State Hort. Soc. 95:130-132. 1982.

BENOMYL-RESISTANT MONILINIA FRUCTICOLA NOT DETECTED IN PEACH AND NECTARINE ORCHARDS IN FLORIDA[1]

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Additional index words. fungicides, *Prunus persica.*

Abstract. **No benomyl-resistant** Monilinia fructicola **isolates were found in lesions on 230 infected peach and nectarine fruit from five peach orchards, one nectarine orchard and two peach and nectarine fruit cull piles in Madison, Jefferson, Alachua, and Marion counties in Florida. The inhibitory dose of benomyl was less than 0.5 ug/ml for all isolates tested. The potential for development of resistance to benomyl and the need to monitor for resistance to benomyl are discussed.**

Peaches, *Prunus persica* (L.) Batsch, have been grown in Florida for local and home use since the time of Spanish colonization (1). However, large scale commercial plantings of peaches and the conspecific nectarine were not established until the early 1960's (2). The two major peach and nectarine production areas in Florida are from Madison county west in north Florida and from Alachua county south to Tampa in central Florida.

A disease which affects both peaches and nectarines in Florida is brown rot incited by *Monilinia fructicola* (Wint.) Honey. The pathogen can infect blossoms, twigs, green fruit and mature fruit (3). Fruit infection appears to be the major problem of the disease in Florida. Florida peaches mature in the spring when the weather is usually dry and

[1]Florida Agricultural Experiment Stations Journal Series No. 4279.