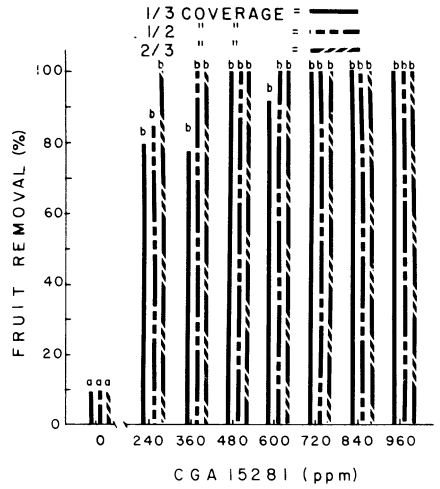

Fig. 2. Effect of CGA 15281 applied at 8 concentrations using 3 fruit coverages on fruit removal in 'Bicentennial' trees 36–38 days after full bloom (ovule length of 13.3 mm).

lower concentrations than the 2/3 coverage, but this difference was not significant. Fruit removal was greater at an ovule length of 13.3 mm than at 3.4 mm in 'Bicentennial' trees.

Results for 'Jefferson' trees parallel those of 'Bicentennial' trees in Figure 1 and 2; therefore, the data are not presented.

Foliage tests. In most cases ('Jefferson at 8.2 and 15.4 mm ovule lengths and 'Bicentennial' at 13.3 mm ovule length) there was no significant fruit removal from application to the foliage only. Foliage treated with 480 ppm CGA 15281 appeared to cause greater fruit abscission, but was significant only with 'Bicentennial' at ovule length of 3.4 mm (Table 1).

These results agree with tests conducted by the authors on 'Jefferson' trees in 1979 (6). Data obtained in the 1980 'Jefferson' test showed that CGA 15281 applied to the foliage only had no effect on fruit removal. Fruit size was not affected significantly by foliar application in the present study on 'Bicentennial' or 'Jefferson' trees; therefore, the data are not presented.

Table 1. Effect of CGA 15281 applied at 8 concentrations to foliage with fruit protected on percent thinning of 'Bicentennial' fruits 22 and 38 days after full bloom.

CGA 15281 concn (ppm)	Thinning (%)	
	22 days after full bloom	38 days after full bloom
0	9 a	17 a
240	17 a	0 a
360	25 a	0 a
480	50 b	10 a
600	20 a	0 a
720	17 a	20 a
840	17 a	20 a
960	7 a	0 a

Peduncle, abscission zone and fruit cheek tests. At a 7.3 mm ovule length, 0.01 ml droplet of CGA 15281 applied to the fruit and peduncle on 'Bicentennial' trees caused no significant thinning. At a 15.3 mm mean ovule length, applications to the fruit cheek at concentrations of 480 and 960 ppm produced chlorosis of the treated area but very little abscission occurred (only 7 and 10% removed). Little or no fruit abscission occurred when CGA was applied to the abscission zone or peduncle area (data not presented). Similar lack of fruit abscission response to ethephon has been noted with pear pedicles *in vitro* (5).

This research supports the theory of greater sensitivity to CGA 15281 as ovule length increases from stage I to stage II (1, 3, 7). Peach thinning with CGA 15281 in early stage I has been unsuccessful (1). In the present study, high fruit removal of 'Bicentennial' fruit (ovule length 3.4 mm) (early stage I) was achieved when sufficient material wetted the exocarp. This evidence lends support to the possibility of fruit trichomes being a limiting factor in early thinning when CGA 15281 is applied as a foliar spray.

Leaf abscission with CGA 15281 tends to be slight in most cases (3). Some leaf abscission was noted in the present study when higher concentrations were applied to the foliage but leaf abscission was not severe at any concentration in these tests.

These data demonstrate that contact of CGA 15281 with the fruit is necessary for significant fruit removal at normal thinning time. We suggest that spray equipment be designed to apply sprays to obtain maximum contact of the fruit with CGA 15281 for maximum efficiency of peach thinning.

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Field Resistance of Peach Cultivars to Gummosis Disease[1]

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Abstract. **Twenty-seven cultivars of peach [*Prunus persica* (L.) Batsch] and 4 seedling clones were evaluated over a 3 year period for susceptibility to gummosis disease caused by *Botryosphaeria dothidea* (Moug. ex Fr.) ces. & de Not. 'Harbrite' was highly resistant while 'Pekin', 'Harmony', 'Redskin', 'Harken' and 'White English', a seedling clone, exhibited some degree of resistance. All other cultivars were susceptible.**

Gummosis disease of peach trees, caused by *Botryosphaeria dothidea* was reported in Fort Valley, Georgia in 1974 (7). Although of recent occurrence, this new bark disease has seriously affected thousands of trees in Georgia. In addition, the authors have recently confirmed the presence of this disease in other southern states. The disease is characterized by numerous gum deposits on trunks, limbs, and twigs. Symptoms include sunken lesions around lenticels and blisters on surfaces of shoots and twigs (7). Severely affected trees exude large amounts of gum over the entire tree. Infected trees are weakened and may die during stress periods.

B. dothidea causes stem and trunk cankers of currant, apple, almond, and blueberry (1, 2, 3, 4, 5, 6, 8, 10) and information on cultivar susceptibility has been reported for almond (1), apple (2), currant (5) and blueberry (6). Resistance of peach cultivars to gummosis disease has not been reported. There is no known chemical control for this disease.

We evaluated resistance of 27 peach cultivars and 4 seedling clones for resistance to gummosis disease under field conditions. The data reported are from field plots which were established in 1972 to determine cultivar susceptibility to peach tree short life or decline. In 1977, it became apparent that cultivars were showing differential response to natural inoculation of *B. dothidea*; therefore, disease severity on trees was rated each fall for 3 consecutive years.

Trees were planted 3.1 m in the row with rows 6.2 m apart using 3 trees of each cultivar

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Table 1. Response of peach cultivars and open-pollinated seedlings of natural clones to natural infection of *B. dothidea*, 1977–79, Fort Valley, Georgia.

Cultivar	Gummosis rating[z]			
	1977	1978	1979	Mean
		Test 1		
Harbrite	2.84 a[y]	1.04 a	1.94 a	1.94 a
Pekin	4.40 ab	3.76 b	4.84 b	4.33 b
Suwanee	4.76 b	3.26 b	6.58 cd	4.87 bc
Marqueen	5.46 bc	3.80 b	5.60 bc	4.95 bcd
Ranger	5.96 bc	3.44 b	6.62 cd	5.34 cde
Springgold	5.40 bc	4.40 de	7.12 cd	5.64 cdef
LaGold	6.00 bc	4.18 bc	7.00 cd	5.73 cdefg
Maygold	6.80 c	3.98 bc	6.50 cd	5.76 cdefg
Redcap	6.32 bc	5.18 e	6.30 bcd	5.93 defg
Keystone	6.10 bc	4.38 bcd	7.90 d	6.13 efg
Springcrest	5.52 bc	6.18 e	7.30 d	6.33 efg
Triogem	6.40 c	5.04 cde	7.72 d	6.39 fg
Whynot	7.14 c	5.56 de	7.10 cd	6.39 fg
Elberta	6.16 bc	6.32 e	7.22 cd	6.57 fg
Jerseyland	7.26 c	5.64 de	7.36 d	6.75 g
		Test 2		
Harmony	3.50 a[y]	2.50 a	–	3.00 a
Redskin	3.52 a	2.72 a	–	3.12 a
Harken	4.40 ab	3.80 ab	–	4.10 ab
White English[x]	4.00 ab	4.58 abcd	–	4.29 ab
Loring	5.40 bc	3.80 ab	–	4.60 abc
Washington	5.38 bc	4.22 abc	–	4.80 bc
Indian Cling[x]	5.42 bc	4.30 abc	–	4.86 bcd
October Cling[x]	6.56 cd	4.58 abcd	–	5.57 bcde
Madison	7.06 cd	5.00 abcd	–	6.03 cdef
LaPremier	5.90 bcd	6.70 cd	–	6.30 defg
Glohaven	6.92 cdef	6.06 bcd	–	6.49 defg
Redglobe	7.10 efg	6.00 bcd	–	6.55 efg
Dixiland	7.50 defg	5.50 bcd	–	6.50 defg
Elberta	8.26 fg	6.10 bcd	–	7.18 efg
Monroe	7.74 fg	6.72 cd	–	7.23 efg
Southland	8.10 fg	7.04 d	–	7.57 fg
Jones[x]	8.66 g	7.08 d	–	7.87 g

[z]Rating scale of 0 to 9 was used with 1 = no infection to 9 = severe infection.
[y]Mean separation within columns by Duncan's multiple range test, 5% level.
[x]Open-pollinated seedlings of natural clones.

or seedling clone per plot with 5 replications. Available test areas were restricted in size; therefore, 2 proximate areas were used with 'Elberta' trees in each area serving as a susceptible control. Fifteen cultivars were planted in Test 1 and 13 cultivars and 4 peach seedling clones were planted in Test 2 (Table 1). All cultivars were on Lovell rootstock. The 4 seedling clones were grown from open pollinated seed collected from "natural" plantings in Georgia with evidence of good tree longevity. The seedling trees were grown in peat pots and were placed in the field at the same time as budded trees.

A rating of 0–9 was used with 1 = no symptoms, 4 = 4–6% of bark covered with gum deposits, and 7 = numerous gum deposits and sunken lesions scattered over the entire bark surface with copious amounts of gum exuded often covering much of the ground area beneath trees after heavy rainfall. Trees were not rated in Test 2 in 1979 due to symptoms of peach tree short life on trees.

Over the 3 year period, only 'Harbrite' exhibited a high degree of resistance to gummosis disease. 'Pekin', 'Harmony', 'Redskin', 'Harken', and 'White English' exhibited some degree of resistance while all other cultivars tested were susceptible or highly susceptible to fungal gummosis (Table 1). Since chemical control has not been effective in our research plots (data not presented), the incorporation of resistance should be considered in breeding programs in areas where fungal gummosis disease is a problem.

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