

THE EFFECTS OF GIBBERELLIN TREATMENTS
BETWEEN BLOOM AND FRUIT SET ON
TABLE THOMPSON SEEDLESS

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ABSTRACT

Table Thompson Seedless were sprayed with gibberellin every three days after the bloom thinning spray to 15 days later, the last spray being about three days after fruit set. Rates used were 16, 32, and 48 grams of gibberellin per acre. Factorial analysis showed significant average effects of both timing and rate. With timing, the heaviest berries were produced by treatments at 9, 12 and 15 days which were not different. Treatments at three days weighed the least and treatment at six days was intermediate between the three day and later treatments. With rate, all treatments were heavier than zero gibberellin with 32 and 48 grams superior to 16 grams. The two greater rates were not different from one another.

OBJECTIVE

To determine the response when gibberellin was sprayed between bloom and fruit set, a time previously considered to be a "dead" period, that is, when the fruit was unresponsive. Small scale field trials and some grower usage have indicated that the fruit does respond during this period.

METHODS

Individual clusters were sprayed with gibberellin, GibGro[®] 4% liquid concentrate, at rates of 20, 40 and 60 ppm, a concentration approximately that had 16, 32 and 48 grams per acre been utilized at 200 gallons per acre. The adjuvant, Latron B1956[®], was added at a rate of 3 oz/100 gallons of water. The two factors were: 1) Gibberellin rates of 0, 16, 32 and 48 grams per acre; 2) Treatment dates of 3, 6, 9, 12 and 15 days after the gibberellin bloom thinning spray. The bloom spray was applied at 12 grams per acre on May 15 at 75% bloom. The subsequent sprays were applied on May 18, 21, 24, 27 and 30. The fruit was judged to be at FS (fruit set stage) on about May 27, 12 days after the bloom spray. On May 28, the average berry diameter was 5.4 mm. The vines were trunk girdled on June 1. No berry-enlarging gibberellin was applied following the above treatment. The clusters were tipped and berry thinned as required to assure as much uniformity among clusters as possible. The clusters were harvested on August 3. All berries were removed from the cluster, counted and weighed. Length and width were measured on a subsample of 50 berries and soluble solids and titratable acidity determined from another subsample.

of 100 berries. These data were analyzed for average effects of date and rate and interaction of the two.

RESULTS

The results are presented in Tables 1 and 2. With timing, the following were noted:

1. Berry weight - The heaviest berries were produced from treatments applied at 9, 12 or 15 days; these were not different from one another.
2. Soluble solids - The 3, 6 and 9 day treatments produced the highest soluble solids and the 15 day treatment the lowest.
3. Acid - The 9 day treatment produced the lowest acid although not different from the 12 day treatment.
4. Berry size - considering both length and diameter, the 9 and 12 day treatments were the largest.

With rate, the following were noted:

1. Berry weight - Sixteen, 32 and 48 grams all produced heavier berries than zero gibberellin, 32 and 48 grams being superior to 16 but not different from one another.
2. Soluble solids - The soluble solids were the inverse of the berry weights.
3. Acid - Acids did not differ.
4. Berry size - Berry length followed the same pattern as berry weight. Berry diameters, however, were similar for the 16, 32 and 48 gram rates which were greater than zero gibberellin.

Interactions between timings and rates - There were no significant interactions between timings and rates.

Fruit appearance - No deleterious effects on appearance were noted. In previous small scale trials, some persistence enlarged pedicels have been noted. These are pedicels without attached berries.

CONCLUSIONS

A response to gibberellin was secured from applications between the bloom sprays and the fruit set stage. Considering all characteristics, the most favorable timing was 9 days after the bloom spray and a rate of 32 grams per acre. It is not clear whether or not a treatment

between the bloom and fruit set is permitted by the current label. Bloom is not defined so presumably this allows enough latitude to permit a treatment so long as any cluster in the vineyard remains in bloom. However, the rate would be limited to 16 grams per acre while 32 grams was a superior treatment in the trial just reported. Timing is also a bit of a problem since the 9 day treatment was only three days before fruit set. Another higher gibberellin rate spray should be applied at fruit set, based on many previous trials, but a three-day interval is an insufficient period between treatments based on current information. Perhaps the following schedule should be considered:

1. Bloom spray: 8-16 g/acre at 50-60% bloom.
2. Intermediate spray: 16 g/acre 6-7 days later.
3. Fruit set spray: 60-80 g/acre 6-7 days later.
4. Later spray: 60-80 g/acre in one or two sprays one to three weeks later depending on maturity decisions.

Should the intermediate spray be considered a sizing spray instead of a second bloom spray, 32 grams per acre would be a better choice than 16 grams per acre. However, berries will not be 4-5 mm diameter at this time as mentioned on the label for the first fruit set treatment.

Table 1. The main effects of the time of application of all rates of gibberellin on fruit characteristics of Thompson Seedless.

Days after bloom spray	Berry weight B	⁰ Brix	TA	Berry length mm	Berry diam. mm	Ratio length: diam.
3	3.73 c	19.4 a b	.66 a	24.3 b	15.9 b	1.53 a b
6	4.01 b	19.8 a	.65 a	24.8 b	15.9 b	1.62 a
9	4.34 a	19.6 a b	.62 b	25.7 a	16.8 a	1.53 a b
12 (FS)	4.44 a	19.1 b	.64 a b	25.0 a b	16.8 a	1.48 b
15	4.38 a	18.3 c	.66 a	24.8 b	17.0 a	1.45 b

1 FS is fruit set.

Table 2. The main effects of rates of gibberellin for all times of treatment on fruit characteristics of Thompson Seedless.

GA rate gms/acre	Berry weight g	⁰ Brix	TA	Berry length mm	Berry diam. mm	Ratio length: diam.
0	3.21 c	20.0 a	.64 a	21.9 c	15.6 b	1.41 b
16	4.22 b	19.3 b	.64 a	25.2 b	16.5 a	1.53 a
32	4.58 a	19.0 b c	.65 a	26.0 a	17.0 a	1.54 a
48	4.73 a	18.6 c	.65 a	26.4 a	16.8 a	1.62 a

there is a response during this dead time between bloom and fruit set

bump or maintenance spray