SJVAR&EC
Report No. 6, 1979

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Effect of Rate of Gibberellin Used for Berry Enlarging Sprays on Post-Harvest Shatter and Fruit Characteristics of Table Thompson Seedless

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Summary

Differential rates of gibberellin berry-enlarging sprays were applied ranging from 0 to 160 ppm. The greatest benefit in berry weight was obtained from the first 40 ppm increment. Further increments contributed much less to berry weight.

However the higher gibberellin rates increased the amount of post-harvest shatter. Thus there was little benefit from the higher gibberellin rates in increasing berry weight but a detrimental effect in increasing shatter.

The purpose of this trial was to determine the effects of differential gibberellin berry-enlarging sprays on fruit characteristics. Our particular interst was in berry weight and in the post-harvest shatter potential.

Methods

Rates of gibberellin employed were a total of 0, 40, 80, 120, and 160 ppm applied as split sprays of equal strength. The first spray was applied on May 31 when the berries averaged 4-5 mm diameter. The second spray was applied on June 6 wity berries 7-8 mm diameter.

The design was a randomized complete block with six replications of five treatments. Each replication consisted of five vines. The sprays were applied at a rate of 200 gallons per acre with a single row inverted "U" boom. The spray water was adjusted to pH 4 and 4 oz. of Triton B1956 were added per 100 gallons of water.

Samples for berry weight, soluble solids, and total acidity consisted of 200 berries per replication. The post-harvest shatter was determined on two boxes per replication picked and packed by members of the grower's crew. These were adjusted to uniform weight, vibrated for 20 seconds at an acceleration of 3 gravity, inverted, and the berries counted and weighed.

Results

The results in Table 1 show that little benefit in berry weight was gained with more than 40 ppm of gibberellin. However, greater post-harvest shatter was experienced at 120 and 160 ppm. Figure 1 shows those results which illustrate that the higher rates of gibberellin produces greater amounts of shatter without increasing berry weight very much.

The 0 ppm gibberellin fruit was of poor quality because of small berries, excessive water berries, and high maturity. When vibrated after packing, about 25% of the shattered berries had their capstems attached. In the 40 ppm and higher gibberellin treatments, one percent or less of the berries shattered with capstems intact.

Discussion

The results confirm several previous trials which showed that the first 20 to 40 ppm produces the greatest size increase; that beyond 40 ppm, the curve is linear and fairly flat. It gives us new information that the higher rates produce fruit with greater shatter potential.

Table 1. Effect of rate of gibberellin on fruit characteristics and post-harvest shatter of table Thompson Seedless.

PPM Gibberellin treatment	Berry weight gms	Soluble solids °Brix	Total acidity	Post-harvest shatter: Number of berries per box	Post-harvest shatter: Weight of berries per box g,s
1. 0 + 0	2.77a 1/	22.6a	.56a	109a	277a
2. 20 + 20	4.54 b	19.4 b	.58a	225 b	997 b
3. 40 + 40	4.81 bc	18.8 bc	.57a	278 bc	1223 bc
4. 60 + 60	4.58 b	18.8 bc	.56a	298 c	1312 c
5. 80 + 80	4.92 c	18.4 c	.56a	314 c	1419 c

1/ Mean separation of Duncan's multiple range test, 5% level.

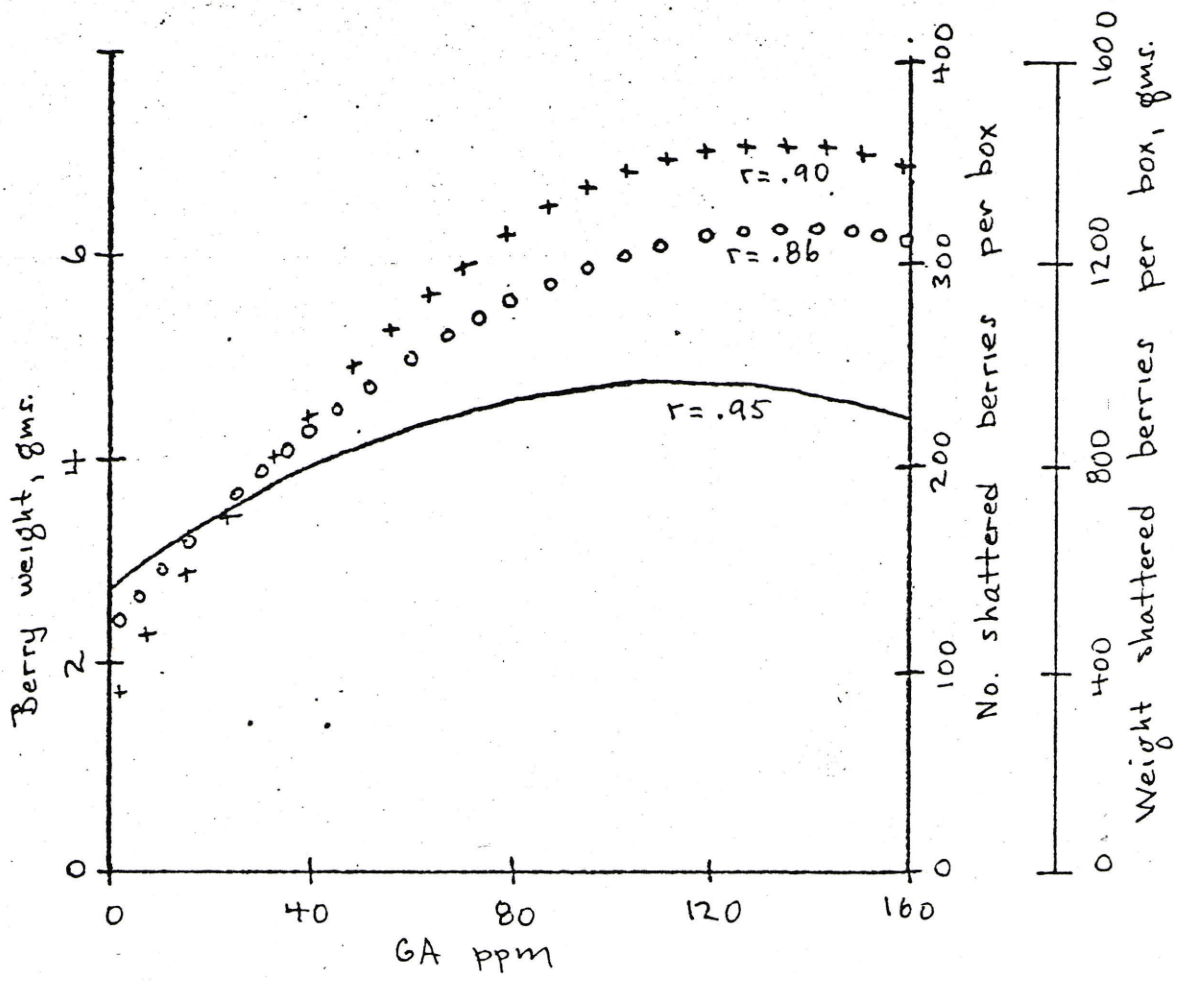

Fig. 1. Effect of rate of gibberellin on berry weight (——), number of shattered berries (oooo), and weight of shattered berries (++++).