Experimental treatments with a new "kinin" growth regulator resulted in berry size increases three times normal in Black Corinth grapes at Davis. Kinins (pronounced ky-nins) are one of the three main groups of plant growth hormones, but are not as well known as the already proven auxins and gibberellins. Kinins are capable of being taken into plant tissues where, among other things, they promote protein synthesis. They have already proven their ability to extend the after-harvest shelf life and freshness of vegetables, and one patented kinin product is now being developed as Verdan(R) Senescence Inhibitor.

New Growth Regulator Possibility . . .

KININS STIMULATE GRAPE GROWTH

R. J. WEAVER · J. VAN OVERBEEK

IT IS GENERALLY recognized that both auxins and gibberellins are effective in fruit set and/or development in many plants, but successful use of kinins for these purposes has not previously been reported. Earlier attempts to stimulate grapes with kinetin and N^6-benzyladenine failed. The new synthetic kinin used in tests reported here has a better capacity to distribute itself in plant tissue.

Mature Black Corinth vines in an irrigated vineyard at the University of California at Davis were used for these tests. The vines were pruned to four canes. An aqueous solution of the new kinin (SD 8339) was used with a detergent added as a wetting agent.

1962 HARVEST DATA FOR KININ-TREATED BLACK CORINTH GRAPES

Treatment, concentration of kinin (SD 8339) ppm	Weight per berry gm	Total soluble solids %	Total acid, per cent tartaric
0	0.23	23.9	1.18
10	0.26	19.7	1.09
100	0.38	22.8	1.15
1000	0.62	18.6	1.27
	0.07*	1.7*	...

* Difference required to show statistical significance at the 5% level.

About four days after bloom, but before shatter had begun, clusters were dipped in this new kinin at 0, 10, 100 or 1,000 parts per million (ppm), using ten clusters per treatment. Other series of clusters were dipped in the auxin IAA (indoleacetic acid) at 1, 10, or 100 ppm, and others were dipped in IAA at 1 ppm plus kinin at 10 ppm, IAA at 1 ppm plus kinin at 100 ppm, IAA at 10 ppm plus kinin at 10 ppm, IAA at 100 ppm plus kinin at 10 ppm. No vines or canes were girdled.

Clusters were harvested at fruit maturity, 77 days after kinin treatment. Vines in control plots set a high percentage of small berries. The kinin greatly enlarged berry size, and berries dipped in the compound at 1,000 ppm were about three times as large as normal. About 10% of the total number of berries in clusters dipped in kinin at 1,000 ppm were still green, probably because of the large-sized clusters. These clusters also had the lowest degree Balling and highest percentage of total acid. The berries enlarged by the kinin were round, like those formed by girdling or auxins and in contrast to treatments with gibberellins which result in elongated berries.

The IAA alone had little effect on the clusters up to the 100 ppm rate, at which point it became very toxic. It reduced the percentage of set, and several clusters were dead and dry. In this experiment, the addition of IAA to the kinin had no apparent effect on increasing berry size. Since the control clusters set well in the 1962 season, the effect of the kinin on percentage set could not be measured.

Black Corinth grape cluster on right, treated four days after bloom with a new kinin (SD 8339) at 1000 ppm, shows marked increase in cluster and berry size as compared with untreated cluster from control plot, on left. Center cluster in photo, with 5 cm rule, also showing significant increase in berry size, had been treated at the same time with 100 ppm of the new kinin.

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Shell Development Company provided the new kinin (SD 8339) used in this study.