

Effect of Ethrel (2-chloroethyl phosphonic acid) on uneven ripening and berry characteristics of Gulabi and Bangalore purple grapes

by

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Der Einfluß von Ethrel (2-Chloräthylphosphonsäure) auf ungleiche Reife und Beerenmerkmale der Rebensorten Gulabi und Bangalore purple

Zusammenfassung. — 12jährige Reben der Sorten Gulabi und Bangalore purple wurden im Februar, d. h. 4 Wochen vor der normalen Ernte mit 200 und 300 ppm Ethrel besprüht. Die Substanz reduzierte bei beiden Sorten den Anteil der unreifen Beeren bis auf $\frac{1}{5}$ der Kontrollwerte und verbesserte auch die Traubenqualität.

Introduction

Amongst the commercial varieties grown in the State of Maharashtra, Gulabi (Black Prince) and Bangalore purple find their place on account of quality, tolerance to anthracnose and uniform cropping ability (PHADNIS 1973). However, according to TIJARE (1965) and CHAKRAWAR (1966) the size of berries in both varieties remains uneven i.e., some berries attain large size and some remain very small. Similarly, some of the berries remain unripe green when the others become fully ripe and start dropping if not harvested at that stage. As per the reports of HALE *et al.* (1970), WEAVER and POOL (1971) and JENSEN *et al.* (1975), Ethrel, applied when the ripening had started, effectively enhanced the colouration, lowered the acidity and induced early ripening in different grape varieties. However, it was not tried with regard to uneven ripening of grapes.

Materials and methods

The climate of the above mentioned region is mildly sub-tropical with an annual rainfall of 750 mm, mostly during June to September. The temperature range is 44.5 °C in May and 7.2 °C during December. During fruiting season (October to March), the climate is warm, dry and rainless. The soil of the vineyard is medium black and well drained. 12-year-old vines, spaced 1.3 m × 3.2 m apart and trained on overhead trellis, were selected for the study during 1975—76. A 4-bud spur-pruning was done in the 2nd week of October. The vineyard was given manuring of 1 kg sulphala (15 : 15 : 15, N : P : K mixture) per vine along with a basal dose of 25 kg compost.

Ethrel was sprayed at 200 ppm and 300 ppm concentrations with water spray as check in a factorial randomised block design and the treatments were replicated thrice. The chemical was sprayed on the whole vine on 12th February, when 10 to

Effect of 200 and 300 ppm Ethrel (E 200, E 300) on the bunch and berry characteristics of Gulabi and Bangalore purple grapes

Einfluß von 200 und 300 ppm Ethrel (E 200, E 300) auf die Trauben- und Beerenmerkmale bei den Rebensorten Gulabi und Bangalore purple

Character	Gulabi			Bangalore purple			C.D. at 5% T ¹⁾	C.D. at 5% V ²⁾
	Control	E 200	E 300	Control	E 200	E 300		
1. Mean wt. /bunch (g)	78.62	79.98	85.50	154.85	145.58	161.23	N.S.	14.16
2. % of green berries	17.51	3.18	5.68	10.79	2.49	2.07	2.61	2.11
3. Mean wt. /berry (g)	2.15	2.20	2.18	2.87	3.70	3.70	0.09	0.06
4. % of juice	66.56	72.33	70.00	53.00	58.50	60.33	1.67	1.13
5. T.S.S. (°Brix)	19.17	21.83	21.00	16.33	18.00	17.17	0.69	0.57
6. Acidity (%)	0.59	0.44	0.43	0.47	0.43	0.45	0.019	0.006

¹⁾ Significant at the 5% level for treatments.

²⁾ Significant at the 5% level for varieties.

N.S.: not significant.

20 percent of the berries developed partial colour. The fruits were harvested from 12th to 15th March, 1976 and the physico-chemical observations were recorded.

Results and discussion

The data are presented in the table. The bunch weight was not affected by any of the treatments. The significant increase in bunch size of Bangalore purple over Gulabi is due to the varietal character. The percentage of green berries was significantly reduced to an extent of one fifth in both the varieties at both concentrations of Ethrel. Similar findings have been reported by BLOMMABERT *et al.* (1974), WEAVER and MONTGOMERY (1974) and JENSEN *et al.* (1975).

Ethrel also significantly increased the berry size in Bangalore purple variety, but not in Gulabi. WEAVER and POOL (1971) reported similar results in some of the table and wine cultivars. As regards the juice, its percentage was significantly increased in both the varieties at both the concentrations. This seems to be due to better softening of the berries leading to a better juice extraction. There was a considerable increase in total soluble solids (T.S.S.) as a result of Ethrel treatment of both concentrations and in both the varieties. Gulabi responded more than Bangalore purple to Ethrel application in increasing the T.S.S. The acidity was significantly reduced in both the varieties at both concentrations. WEAVER and MONTGOMERY (1964) obtained similar results. This is but natural since there was a significant decrease of green unripe berries in Ethrel treated bunches.

Summary

An investigation was carried out with Ethrel on 12-year-old grapevines of Gulabi and Bangalore purple varieties. Ethrel was sprayed on the vines at 200 and 300 ppm concentrations in February i.e., four weeks before the normal harvest. It

was found that the chemical effectively reduced the percentage of unripe berries to the extent of one fifth and also improved the quality of grapes, in both the varieties.

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