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HARRY L. ANDRIS

The Effects of Gibberellin With and Without 6BA on Fruit Characteristics and Rot Reduction in Chenin Blanc

Fred Jensen, Extension Viticulturist, Parlier
Larry Bettiga, Staff Research Associate, Parlier

SUMMARY

Gibberellin, applied when the shoots averaged nine inches in length, reduced bunch rot as compared to untreated vines. When 6BA was added to these treatments, the effects were not different. However if 6BA was applied in bloom following the earlier gibberellin application, there was a tendency to further rot reduction and berry weight was increased. Promalin®, a mixture of 6BA and GA_{4-7}, did not give results different from GA_3 in regards to rot reduction.

Flower cluster counts the season following applications failed to show many differences between treatments since gibberellin alone did not reduce fruitfullness. Promalin® may have given somewhat higher flower cluster counts.

The growth regulator, 6 benzl adenine, a natural cytokinin, has an effect on fruiting opposite from gibberellin. Gibberellin tends to produce tendrils from anlagen while 6BA tends to produce flower clusters. Thus 6BA mixed with gibberellin or applied after gibberellin, might offset the reduction of flower cluster size or number. A trial was established to test 6BA mixed with gibberellin or applied as a serial application. Another form of gibberellin, GA_{4-7}, was also used with 6BA, a mixture sold as Promalin®.

Methods

The trial was located at KHFS. There were 10 treatments with six single vine replications in a randomized complete block.

The materials were applied either on April 30 when the shoots averaged nine inches in length or on May 10 at 5% bloom. The time of the first treatment was chosen because trials had shown that time to be effective in reducing rot. The second date, at 5% bloom, was chosen because many Chenin blanc producers would be applying a fungicide for Botrytis rot at that time.

The material, Promalin® (Abbott) contains equal amounts of GA_{4-7} & 6BA. It was tested because another form of gibberellin might be more effective and/or less damaging than GA_3.

Fruit samples consisted of 100 berries. The fruit was harvested on Sept. 1. Fruit designated at rot had 25% or more of the berries affected by rot as judged visually.

Flower cluster counts were made in the spring of 1982. The vines had been frosted on April 7 so counts were difficult to make and perhaps not entirely accurate.

Results

The results, Table 1, shows that all gibberellin applications reduced rot compared to the check, that sound fruit did not vary, and that total yield was significantly different from the check for only two treatments.

Mixing 6BA with gibberellin on April 30 did not affect any yield factor. The serial 6BA applications at 5% bloom on May 10, reduced rot more than gibberellin, alone, and except for 100 ppm, was not different from gibberellin and 6BA mixed on April 30. They significantly increased berry weight and soluble solids, and decreased acidity compared to gibberellin alone. Ten ppm 6BA was as effective as 50 or 100 ppm.

Promalin®, the mixture of GA_{4-7} and 6BA, was not different from GA_3 alone or GA_3 mixed with 6BA in terms of rot reduction. However it may have resulted in slightly higher flower cluster counts.

Table 1. The effects of growth regulators on yield and fruit characteristics of Chenin blanc, and fruitfullness the season following application.

	Gibberellin			6 Benzyl adenine			Sept. 1, 1981						April 20, 1982
							Yield per vine, lbs			Berry weight	° Brix	Titratable	Flower clusters
	Type	Conc.	Date applied	Material	Conc.	Date applied	Sound	Rot	Total	grams		acidity	per vine
1.	-	-	-	-	-	-	29.1a	11.4a	40.5a	2.30a	19.4a	.69a	119 bcd
2.	GA_3	10ppm	4/30	-	-	-	33.3a	6.5 b	39.8a	2.26a	20.5ab	.61ab	118 bcd
3.	"	"	"	6BA	10ppm	4/30	27.9a	4.4 bc	32.3abc	2.30a	20.8 b	.58 b	117 bcd
4.	"	"	"	"	50ppm	"	31.3a	4.4 bc	35.8ab	2.24a	20.5ab	.61ab	102abc
5.	"	"	"	"	100ppm	"	33.1a	4.1 bc	37.1ab	2.22a	20.1ab	.65ab	97ab
6.	"	"	"	"	10ppm	5/10	26.5a	1.8 cd	28.2 bc	2.50 b	20.8 b	.58 b	105abcd
7.	"	"	"	"	50ppm	"	29.6a	1.9 cd	31.4abc	2.48 b	21.2 b	.57 b	117 bcd
8.	"	"	"	"	100ppm	"	24.5a	0.4 d	24.9 c	2.51 b	21.1 b	.56 b	84 a
9.	GA_{4-7} ①	10ppm	4/30	6BA	10ppm	4/30	32.2a	7.1 b	39.3a	2.16a	20.1ab	.61ab	128 cd
10.	"	"	5/10	"	10ppm	5/10	31.3a	5.3 b	36.6ab	2.53 b	20.3ab	.62ab	134 d

* 1 This mixture of GA_{4-7} & 6BA is Promalin®