

treatments 90° and 120° had longer internodes. This could indicate that these canes were to some extent affected by being shaded for some hours daily by the rest of the vine. Heavy shading of sultana vines causes not only extension of internode length but it also reduces fruitfulness³. In treatments 90° and 120° bunch initiation and development may have been somewhat inhibited by the shading, but this was far too light to nullify any effect of gravimorphism such as found in fruit trees.

One could speculate that the grape vine differs from fruit trees and also from the Japanese larch⁴ in its reaction to gravity because it is a climber under natural conditions. This problem may bear further investigation.

P. MAY

Commonwealth Scientific and Industrial
Research Organization,
Commonwealth Research Station,
Merbein, Victoria.

Oct. 6.

¹ Antcliff, A. J., Webster, W. J., and May, P., *Aust. J. Agric. Res.*, **9**, 323 (1958).

² Wareing, P. F., and Nasr, T., *Nature*, **182**, 379 (1958).

³ May, P., and Antcliff, A. J. (unpublished results).

⁴ Longman, K. A., and Wareing, P. F., *Nature*, **182**, 380 (1958).

Effect of Gibberellic Acid on Seeded Grapes

SIZE of grape berries was found by Müller-Thurgan in 1898 to be correlated with its number of seeds¹. Size of seedless berries could be increased by means of auxins such as *p*-chlorophenoxyacetic acid^{2,3} and by gibberellin spray^{4,5}. The sprays had, however, no effect on size of seeded grapes^{6,7}.

Bunches of 'Queen of Vinyard' grapes were sprayed about 23 days after full bloom with 20 p.p.m. α -naphthalene acetic acid and gibberellin, respectively; 0.1 per cent 'Triton X-100' was added as wetting agent. 'Triton' alone was used for the controls. The fruit was harvested at full maturity, weighed, cut in halves and the number of seeds determined.

Results in Table 1 show a correlation of size of fruit and number of seeds. The 20 p.p.m. α -naphthalene acetic acid had no effect on fruit size; gibberellin, on the other hand, showed a marked effect. The added weight, however, decreased with the increasing number of seeds.

Table 1. EFFECT OF GROWTH SUBSTANCES ON GRAPE BERRIES CONTAINING DIFFERENT NUMBERS OF SEEDS. (WEIGHT OF 100 BERRIES IN GM.)

Treatment	Seed No. per berry			
	0	1	2	3
Control	19	349	465	523
α -Naphthalene acetic acid	81	355	457	533
Gibberellin	181	491	506	526

This decrease is shown more clearly in the ratio between the weight of treated and untreated berries as affected by number of seeds (Fig. 1). The curve indicates that while the ratio is about 2.5 with parthenocarpic fruit it approaches 1 when the number of three seeds is reached.

It can be concluded, therefore, that gibberellin has a physiological effect on seeded berries, but only to a limited extent. Gibberellin compensates for the 'lack' of seeds; but once the berry has a sufficient number of seeds, gibberellin at the concentration used had no further effect.

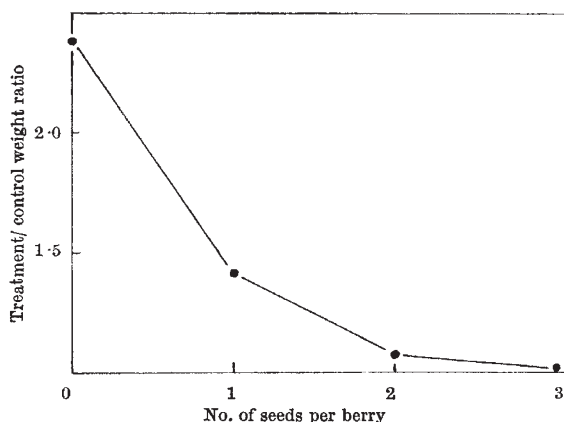


Fig. 1. Ratio between weight of gibberellin-treated and control grape berries as affected by number of seeds

No seed-like formations were found in the fruit due to gibberellin, though the tissue was more firm at the missing seed locations. α -Naphthalene acetic acid showed no effect.

S. LAVEE

Division of Pomology and Viticulture,
Agricultural Research Station,
Rehovot,
Israel.

¹ Müller-Thurgan, M., "Land W. Ib. Schweiz", 135 (1898).

² Coombe, B. C., *South Austral. J. Agric.*, **57**, 107 (1953).

³ Weaver, R. J., *Proc. Amer. Soc. Hort. Sci.*, **61**, 135 (1953).

⁴ Stewart, W. S., Ghing, F. T., and Halsey, D. D., *Lasca Leaves*, **7**, 80 (1957).

⁵ Weaver, R. J., and McCune, S. B., *Hilgardia*, **27**, 189 (1957).

⁶ Samish, R. M., and Lavee, S., *Agric. Res. Sta. Rehovot 'Ktavim'*, **8**, 273 (1958).

⁷ Weaver, R. J., and Williams, W. O., *Bot. Gaz.*, **113**, 75 (1951).

Mutagenic Action of Mitomycin C on *Escherichia coli*

MITOMYCIN C is of biological interest not only because it selectively inhibits cellular deoxyribonucleic acid synthesis^{1,2} but also in that it induces lambda phage development in *Escherichia coli* K 12³.

In this communication we present evidence that mitomycin C also affects the genetic mechanism, such as exerting a mutagenic action and stimulating the recombination rate in *Escherichia coli*.

Mutagenic action of mitomycin C was demonstrated in the reversion of *Escherichia coli* B/r tryptophan-requiring strain to the wild type. Logarithmic growing cells of this strain were harvested by centrifugation and resuspended in glucose-salt medium containing mitomycin C at a concentration of 1 μ g./ml. and incubated at 37° for 15 min. After the agent was removed by centrifugation, a part of the treated cell suspension was plated both on nutrient medium and minimal medium in order to count the total number of viable cells and the revertants to the wild type, immediately after the treatment. Another part of the treated cell suspension was incubated in broth after the treatment and assayed by the same method after one hour incubation.

During the treatment with mitomycin C the total number of viable cells decreased to one-tenth of the initial but during the post-incubation in broth the number of viable cells remained constant. Immediately after the treatment with mitomycin C the ratio of number of prototroph colonies to the total number