MISCELLANEOUS NOTES

+ APPLICATION OF GROWTH SUBSTANCES ON CLONAL CUTTINGS

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In order to assess the suitability of root-growth-promoting substances on tea cuttings on a commercial scale, experiments have been designed and carried out by Mr. K. V. S. Krishna at Katary Estate, Nilgiris, India. His experiments, results, and conclusions have been forwarded to us for publication in the *Tea Quarterly*. Since similar experiments have been conducted by us to determine the effect of growth-promoting substances on tea cuttings, the results of which have been already published in the Annual Report of the Plant Physiologist of the Institute for 1957, it was thought useful to summarise his experiments, results and conclusions with comments.

He used two hormone preparations, AB 8000 (a solution of Indolylacetic Acid (IAA) and Indolylbutyric Acid (IBA) in 50% alcohol, containing equal parts of IAA & IBA, the total growth substance concentration being 8000 p.p.m.) and Seradix B, a proprietary powder, and untreated cuttings as control.

In all 10,000 cuttings of 44 clones were under test. The 3 treatments AB 8000, Seradix B-2, and control were tested out on every clone tried. Planting was done in August, September and November, 1958, respectively, with a view to assess both the seasonal and hormonal effects on the rooting of tea cuttings. Experimental errors were kept to a minimum by using similar soil, shading and watering in all tests. The cuttings were dipped in the AB 8000 solution for 2 seconds, while care was taken to see that an uniform quantity of Seradix B-2 powder went with each cutting. Assessment was done after a period of 110, 150, and 100 days for August, September and November planting, respectively. The cuttings were examined and the number rooted, callused and dead were recorded.

TABLE I.—*Total effect of month of planting and treatments*

	ROOTING %			
	AB 8000 —	Seradix A-2	Control —	Avg. % —
August ...	(111.4) 49	(86.4) 38	(100) 44	43.7
September ...	(130.8) 68*	(126.9) 66*	(100) 52	62.0
November ...	(96.4) 80	(97.6) 81	(100) 83	81.3
Total ...	197	185	179	187.0
Average % ...	65.7	61.7	59.7	62.3
% Increase on Control	110	103	100	

Figures within parenthesis denote results in percentages of control (100%).
* Significant at 5% level.

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Results

Table I gives the total effects for the month of planting and hormone treatments. The increase or decrease by the use of AB 8000 and Seradix is not statistically significant in the case of the August and November experiments, while the increase over the control in the September planting by using hormones is significant at the 5% level. November planting has given the best results, due most probably to the excessive rain of 12.66" experienced during the August and September experiments against 5.89" in November. Excessive rainfall, coupled with lack of drainage during August resulted in a high percentage of cuttings which showed excessive callusing.

TABLE II.—*Summary of mean rooting percentages of clones in groups*

	Control	AB 8000	Seradix
*(5) 20% ...	12.0 (100)	45.8 (382)	41.2 (343)
*(9) 21—40% ...	33.9 (100)	42.0 (124)	34.0 (100)
*(8) 41—60% ...	51.0 (100)	60.3 (118)	56.5 (111)
*(7) 61—80% ...	70.6 (100)	78.4 (111)	78.4 (111)
*(6) 81—90% ...	87.3 (100)	76.8 (88)	77.7 (89)
*(9) 91% ...	98.8 (100)	89.1 (90)	84.7 (86)

* No. of clones used.

In table II, the clones have been grouped into categories according to the rooting percentages of the control. It will be noticed that only the very poor rooting clones (those below 20%) responded markedly to the treatments. This response is highly significant. The response in the case of the better rooting categories is much less and decreases with an increase in the rooting capabilities of the clones, until with good rooters giving over 90% rooting there appears to be a slight depressing effect by hormonal treatment, although this effect is not significant.

Summary

(1) Cuttings planted in November have given better results than those planted in August and September.

(2) There is a significant response by poor rooting clones to these hormones, but this response decreases as the rooting percentage of the clones increases until, with very good rooters, there appears to be a depressing action on rooting. The former were defined as "positive," the latter as "negative" clones.

Comments

These experiments have unfortunately not been replicated and this reduces considerably the value of the figures obtained. This lack of replication is however partly compensated for by the great number of clones used. Although the results indicate that November planting is superior to planting in August and

September, it would not be strictly correct to attribute this result to the month of planting because different clones were used in the three experiments which might partly account for the increase in rooting obtained in November. The results of these experiments confirm those obtained by us, namely, that the use of growth-promoting hormones, although they tend to increase rooting in poor rooting clones, have not given results that will justify their use on a commercial scale except in some special cases. In special cases, *e.g.* to promote the propagation of material with valuable characteristics, like resistance to pests, outstanding quality, etc., hormone treatment may be useful.

(Summary and comments by L. M. de W. Tillekeratne, Plant Physiology Division).