

## EFFECT OF ARTIFICIAL INDUCTION OF FLOWERING IN PINEAPPLE

S, BALAKRISHNAN, N K. NAYAR AND VALSAMMA MATHEW

*College of Horticulture, Vellanikkara 680654, Trichur, Kerala.*

In Kerala State, the popular commercial variety of pineapple under cultivation is 'Kew' which is a shy producer of suckers. Crowns are occasionally planted in view of their availability and uniform size. Information on the comparative performance of suckers and crowns of pineapple as planting materials and the differential effects of growth regulators on these planting materials in inducing uniform flowering is scanty. A trial was, therefore, conducted during 1976-78 at the Pineapple Research Centre, Kerala Agricultural University, Vellanikkara to study the flowering behaviour of suckers and crowns of different age groups as influenced by the application of growth regulator.

### Materials and Methods

Suckers and crowns of uniform size and type of pineapple var. 'Kew' were planted under uniform conditions adopting the recommended package of practice in Randomised block design with four replications. The spacings adopted were 30 cm between plants, 60 cm between rows and 90 cm between trenches, accommodating 70 plants for each treatment. The experiment consisted of 12 treatments, namely, application of growth regulator in suckers of age 14, 15, 16, 17 and 18 months after planting and in crowns of age 16, 17, 18, 19 and 20 months after planting. Control (water application alone) plots were also run for both sucker and crown treatments. The growth regulator used was ethrel at 100 ppm containing 2% urea and 0.04% calcium carbonate. The prepared solution (50ml) was poured into the heart of the plants at appropriate period once. The crop was raised under rainfed conditions.

### Results and Discussion

Observations on vegetative growth of plants, namely, number of leaves, length and width of 'D' leaf and leaf area at the time of growth regulator application, extent of flowering, mean fruit weight, mean crown weight, length/breadth ratio and canning ratios of fruits were recorded. Fruits were analysed for qualities such as TSS and acidity.

It may be seen from Table 1 that significant variation exists between the treatments for all the characters studied. In respect of mean number of leaves, suckers were found superior to crowns. There is also progressive increase in the production of leaves as the age of plants advanced both in suckers and crowns. In respect

of extent of flowering, the treatment differences were not significant. The extent of flowering is poor in suckers and crowns under natural conditions. Crowns of age group 17 and 18 months responded extremely well to growth regulator application as compared to other age groups studied.

The results in Table 2 show that the treatment differences are significant only in respect of mean weight of fruits with and without crowns, crown weight and TSS. Suckers of age 18 months and crowns of age 20 months recorded highest fruit weight with and without crown. With reference to crown weight, suckers of age 14 months were superior. The variation in respect of TSS among different treatments is attributable to climatic conditions under which sampling was done.

The study has revealed that the crowns of pineapple fruits although not superior to suckers in respect of vegetative growth, responded well to growth regulator application by early flowering induction. The crowns of age groups 17 to 20 months after planting can be chosen for growth regulator application. However, for getting large sized fruits, application of growth regulator in crowns of age 20 months is preferable.

Table 1  
Effect of growth regulator on the percentage of flowering  
and some growth parameters in pineapple cv. Kew

Treatment	Mean no of leaves	Mean length of 'D' leaf (cm)	Mean width of 'D' leaf (cm)	Mean leaf area (cm <sup>2</sup> )	Percentage Of flowering
1 Sucker - 14th month	37.40	64.07	4.24	275.24	91.07
2 Sucker - 15th month	38.25	67.51	4.30	291.28	82.50
3 Sucker - 16th month	39.98	70.01	4.79	335.09	88.21
4 Sucker - 17th month	45.39	64.32	5.53	355.37	94.64
5 Sucker - 18th month	46.82	70.83	5.43	385.84	96.07
6 Sucker - control	43.92	71.96	5.70	410.02	78.57
7 Crown - 16th month	30.07	63.20	4.00	252.96	79.64
8 Crown - 17th month	30.10	70.14	4.34	304.99	91.78
9 Crown - 18th month	31.53	64.84	5.20	337.37	88.21
10 Crown - 19th month	39.12	73.82	4.14	348.33	72.50
11 Crown - 20th month	39.42	75.58	4.28	351.98	60.35
12 Crown - control	38.07	73.39	4.07	297.04	28.57
Significance	Signi- ficant	Signi- ficant	Signi- ficant	Signi- ficant	non-signi- ficant
CD (p=0.01%)	6.70	10.05	0.52	100.13	—

Table 2  
Yield and quality attributes of pineapple fruits as influenced by planting materials

Treatment	Mean fruit weight with crown (kg)	Mean fruit weight without crown (kg)	Mean crown weight (kg)	L/B ratio	Canning ratio	TSS	Acidity %
1 Sucker - 14th month	1.204	0.986	0.216	1.28	1.05	16.2	0.688
2 Sucker - 15th month	1.540	1.265	0.269	1.40	1.03	17.2	0.544
3 Sucker - 16th month	1.777	1.442	0.442	1.35	1.10	15.8	0.563
4 Sucker - 17th month	1.853	1.449	0.398	1.24	1.02	15.5	0.656
5 Sucker - 18th month	2.250	1.934	0.316	1.28	1.04	17.0	0.640
6 Sucker - Control	1.933	1.604	0.329	1.33	1.86	16.5	0.584
7 Crown - 16th month	1.137	0.857	0.280	1.86	1.07	15.5	0.416
8 Crown - 17th month	1.188	0.916	0.222	1.15	1.00	15.8	0.584
9 Crown - 18th month	1.476	1.189	0.285	1.18	1.03	13.8	0.584
10 Crown - 19th month	1.800	1.517	0.280	1.18	1.00	18.5	0.804
11 Crown - 20th month	1.975	1.667	0.410	1.18	1.00	14.5	0.640
12 Crown - control	1.443	1.192	0.230	0.90	0.78	16.5	0.688
Significance	Significant	Significant	Significant	N S	N S	Significant	—
CD (p=0.01%)	0.250	0.620	0.08	—	—	0.67	—

### Summary

A study was undertaken at the Pineapple Research Centre, Vellanikkara during 1976—78 years to assess the influence of growth regulator 100 ppm ethrel solution containing 2% urea and 0.04% calcium carbonate in inducing flowering of pineapple plants raised from suckers and crowns. The crowns were not found to be as vigorous as suckers in growth characteristics. Crowns

of the age group 17 to 20 months can be induced to flower earlier and uniformly. For getting better fruit weight, it is preferable to apply growth regulator on 20 month old crowns-

#### Acknowledgement

The study was carried out under auspices of the All India Co-ordinated Fruit Improvement Project and the authors are grateful to the ICAR for the financial assistance and to the Kerala Agricultural University for the facilities.

#### സംഗ്രഹം

വിവിധ പ്രായത്തിലുള്ള കൈത്തലകളിലും, കൈതമകുടങ്ങളിലും ഹോർമോണുകളുടെ പ്രയോഗം flijejo കൃത്രിമ പുഷ്പിക്കൽ കൈവരുത്തുന്നത് സംബന്ധിച്ച പഠനങ്ങൾ നടത്തി. 17 മുതൽ 20 മാസംവരെ പ്രായമുള്ള മകുടങ്ങളെ ഹോർമോൺ roigTy" ഒരേ സമയത്ത് പുഷ്പിക്കാമെന്ന് കണ്ടു. നല്ല തൂക്കമുള്ള കായ്കൾ ലഭിക്കുന്നതിന് ഹോർമോൺ പ്രയോഗിക്കേണ്ടത് 18 മാസം പ്രായമായ കൈത്തലകളിലും, 20 മാസം പ്രായമായ മകുടങ്ങളിലുമാണ്.

#### References

- Anonymous 1978. Annual Report of All India Co-ordinated Fruit Improvement Project, Trichur Centre. pp. 43-44.
- Balakrishnan, S., Aravindakshan, M- and Krishnan Nair, N. 1978. Efficacy of certain growth regulators in inducing flowering in pineapple (*Ananas comosus*). *Agric. Res. J. Kerala*, **16**, 125-128.
- Chadha, K. L., Shikhamany, S. D. and Melanta, K. R. 1974. For pineapple yield and quality, type and size of planting material vital *Indian Hort.*, **19**, 3-5.
- Chadha, K. L. Melanta, K. R. and Shikhamany, S. D. 1974. Effect of the type and size of planting material on the vigour of the subsequent plants, yield and quality in 'Kew' pineapple (*Ananas comosus*). *Indian J. Hort.*, **31**, 9-15.
- Hayes, W. B. 1950. *Fruit Growing in India*. Kitabistan, Allahabad. pp. 370-372.