

PHYSICO-CHEMICAL CHARACTERISTICS OF CUSTARD APPLE AS INFLUENCED BY N, P AND K NUTRITION

The custard apple (*Annonasquamosa* L.) fruits are mainly used for table purposes and cultivated on a commercial scale in many states of India. It is well known that nutrients play a pivotal role in influencing tree growth, tissue composition, fruit production and also fruit quality. Therefore, application of right amount of fertilizers in right time is the prerequisite for obtaining high yield and better quality fruits whereas deficiency of nutrients will lead to lower productivity with poor quality fruit. In this paper an attempt is made to study the effect of N, P and K on fruit quality of custard apple.

The present investigation was conducted on 10 year old custard apple plant during 1989-90 and 1990-91. The experiment was laid out in a randomised block design with three treatments and six replications. Three plants were considered as a single plot to represent one treatment. The treatments were N:P₂O₅:K₂O at the rate of 0:0:0 (control), 120:120:120 and 240:240:240 g/plant/year. Full dose of P and half the dose of K and N were applied during June and rest of N and K were applied in August. The physical characteristics like fruit weight, fruit length and diameter, dry weight, dry matter percentage, pulp and peel weight, pulp/peel ratio, seeds per fruit and specific gravity were determined at harvest maturity. The chemical characteristics such as total soluble solids (TSS), acidity (AOAC, 1984), TSS/acidity ratio, total and reducing sugar and ascorbic acid (Ranganna, 1977) contents of fruits were also estimated after harvest.

Ten fruits per sample were used. The peel, pulp and seeds were separated carefully and samples were prepared for chemical analysis with the pulp.

The fruit weight, pulp weight and peel weight were higher with 120:120:120 level compared to the higher level of the nutrient (Table 1). The higher level (240:240:240) of the nutrient produced greater number of fruits compared to lower level possibly due to better physiological activities which resulted higher metabolites production and utilization and has been reflected through production of more number of fruits compared to minimum level where the number of fruits produced was less. Fruit weight, consequently the peel weight and pulp weight, were higher in 120:120:120 level probably due to lesser number of fruits compared to 240:240:240 level of the nutrient. The fruit length, diameter and specific gravity were maximum with the higher level of the nutrients (Table 1). The per cent dry matter content and the pulp/peel ratio were also maximum with 240:240:240 level of the nutrients. Application of N, P and K was also found to influence the chemical characteristics of fruit. Treatment with 120:120:120 level of the nutrients produced fruits with maximum TSS and minimum acidity in the present investigation while the higher level of the nutrients (240:240:240) produced fruits with maximum total and reducing sugar and ascorbic acid (Table 1).

Similar to the present investigation Mazumdar (1977) noted greater number of

Table 1. Effect of N, P and K on the physical and chemical characteristics of custard apple fruits

Treatments N:P ₂ O ₅ :K ₂ O	No. of fruits/ trees	No. of seeds/ fruit	Length (cm)	Diameter (cm)	Fresh weight (g)	Dry weight (g)	Dry matter (%)	Pulp weight (g)	Peel weight (g)
0:0:0	10	35	6.35	6.98	161.6	48.05	29.72	86.3	75.71
120:120:120	39	58	7.16	8.02	197.6	64.06	32.40	118.9	77.41
240:240:240	58	62	7.00	7.96	158.1	51.60	32.63	96.9	62.66
CD (0.05)	3.23	2.89	0.163	0.483	4.70	2.34	1.266	2.31	2.08

Table 1 continued

Pulp : peel ratio	Sp. gr. (g/cc)	TSS (°Brix)	Acidity (%)	TSS : Acid ratio	Vit. C (mg/100g of pulp)	Total sugar (%)	Reducing sugar (%)
1.13	1.015	20.15	0.496	40.28	27.54	13.39	11.52
1.56	1.042	22.53	0.412	54.40	38.69	16.92	15.29
1.68	1.052	22.38	0.483	43.58	41.24	18.77	15.59
-	0.005	0.434	0.041	-	5.09	1.219	1.052

seeds and higher sugar content in larger sized fruit compared to smaller sized custard apple fruit. The improvement in TSS and sugar content as a result of complete fertilization is possibly due to the fact that it increased the efficiency of metabolic processes of the plants and thus

encouraged the growth in general and consequently various plant parts including fruit. It is concluded that fertilizers @ 240 g N, 240 g P₂O₅ and 240 g K₂O per plant per year produced quality fruits in custard apple.

Bidhan Chandra Krishi Viswavidyalaya
Kalyani 741 235, West Bengal, India

P.K. Chattopadhyay
Ashutosh Mandal

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