



Variability of Physical Parameters of Different Cultivar in Jackfruit

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Jackfruit (*Artocarpus heterophyllus* Lam.) is an important and indigenous fruit crop of India therefore present investigation was carried out with the aim to evaluate performance different jackfruit cultivars in vidharbha region at Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during 2016-17. Experiment was carried out in Randomized Block Design with thirteen different genotypes of jackfruits viz., AKJF-1 (Akot jackfruit -1), AKJF-2 (Akot jackfruit -2), AKJF-3 (Akot jackfruit -3), AKJF-4 (Akot jackfruit -4) AKJF-5 (Akot jackfruit -5), AKLJF-6 (Akola jackfruit -6), GDJF-7 (Gadchiroli jackfruit -7), GDJF-8 (Gadchiroli jackfruit -8), GDJF-9 (Gadchiroli jackfruit -9), GDJF-10 (Gadchiroli jackfruit -10), GDJF-11 (Gadchiroli jackfruit -11), GDJF-12 (Gadchiroli jackfruit -12) and GDJF-13(Gadchiroli jackfruit -13) which were replicated thrice. The results revealed that, maximum rag weight per fruit (1.86 kg), highest bulb weight (30.3 g), highest weight of flake (22.2 g) and highest seed weight (10.71g) as observed in the fruits of genotype GDJF-12 whereas maximum seeds weight per fruit (0.81 kg) and number of bulbs per fruit. (159.33) was found in the genotype GDJF-13.

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Keywords: Jackfruit; genotypes; bulb; rag; seeds; staple foods; economic products.

1. INTRODUCTION

Artocarpus heterophyllus Lam. (Jackfruit is rich source of carbohydrates, proteins, potassium, calcium, iron, and vitamin A, B and C. Due to high levels of carbohydrates, jackfruit supplements other staple foods is time of dietary fibre. The jackfruit is a multipurpose species providing wood, timber, fuel, fodder, and medicinal and industrial products. It is one of the largest tree borne fruits in the world. The primary economic product of jackfruit is the fruit which is used both when mature and immature. Jackfruit seeds (nuts) can be roasted like chestnuts, or boiled. The fruit pulp is sweet and tasty and used as dessert or preserved in syrup. The fruits and seeds are also processed in a variety of ways for food and other products. Seeds make-up around 10 to 15 per cent of the total fruit weight and have high carbohydrate and protein contents [1].

Despite of such vast potential and usefulness, jackfruit remains an underutilised fruit species. There is considerable genetic variation exists in jackfruit with regard to quantitative character as well as traits contributing quality of fruits. The fruit weight, number of bulbs per fruit as well as rag weight of fruits are the yield contributing characters while bulb contain determine the quality of fruit. Hence, the present research work is proposed to evaluate the physical properties of fresh, ripe and dehydrated jackfruits collected from different traits. It is essential to access the degree of association of various quantitative characters in order to initiate effective selection programme.

2. MATERIALS AND METHODS

Present study on evaluation of different jackfruit cultivars was carried out at department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during the year 2016-17. Experiment was carried out in randomised block design with three replication and thirteen different genotypes of jackfruits viz., AKJF-1 (Akot jackfruit -1), AKJF-2 (Akot jackfruit -2), AKJF-3 (Akot jackfruit -3), AKJF-4 (Akot jackfruit -4) AKJF-5 (Akot jackfruit -5), AKLJF-6 (Akola jackfruit -6), GDJF-7 (Gadchiroli jackfruit -7), GDJF-8 (Gadchiroli jackfruit -8), GDJF-9 (Gadchiroli jackfruit -9), GDJF-10 (Gadchiroli jackfruit -10), GDJF-11 (Gadchiroli jackfruit -11), GDJF-12 (Gadchiroli jackfruit -12) and GDJF-

13(Gadchiroli jackfruit -13) which were collected from the various region of Vidarbha, Korchi, Dist. Gadchiroli; Akot, Dist. Akola. For recording the fruit physical parameter observations, thirty nine ripe mature jackfruit from all varieties were selected and used for recording the different observation. Different observations like seed weight per fruit, rag weight per fruit, bulb weight and seed weight were recorded with help of electronic balance and mean of thirty nine fruits was calculated and recorded. The data recorded in respect of all the above parameters were subjected to statistical analysis and for interpretation of results. The analysis of the data was analysed by one way classification method [2].

3. RESULTS AND DISCUSSION

3.1 Physical Parameters of Jackfruits

Seeds weight/fruit (kg): Significantly The data with respect to seeds weight per fruit in jackfruit is furnished in Table 1. Maximum seeds weight per fruit (0.81 kg) was found in the genotype GDJF-13 which was followed by GDJF-9 (0.45 kg) and minimum seeds weight per fruit was (0.03 kg) was recorded in the genotype AKJF-2, AKJF-3 and GDJF-7. Variation in seeds weight per fruit might be due to differences in morphoagronomic character of the tree since jackfruit is cross pollinated in nature. These results are in concurrence with the findings of Sahiba et al. [3], Goswami et al.[4] and Jagadeesh et al. [5] in jackfruit that maximum seed weight is due to it is due to morphoagronomic character of the tree.

Flakes to seed ratio: The data presented in Table 1 revealed that, the maximum flakes to seed ratio (25.95) was observed in the genotype AKJF-3 which was at par with AKJF-2 (16.61) and GDJF-7 (14.46). Whereas, minimum flakes to seed ratio (0.30) was noticed in the genotype GDJF-8. Similar results were recorded by Sahiba et al. [3] and Jagdeesh et al. [5] reported variation in edible portion of jackfruit which may be due to genetic characteristics of the tree.

Rag weight per fruit: Data revealed that significantly maximum rag weight per fruit (1.86 kg) was observed in the fruits of genotype GDJF-12 which was followed by GDJF-11 (1.37 kg) AND GDJF-10 (1.05 kg) while minimum rag weight per fruit(0.15 kg) was observed in the

Table 1. Evaluation of different jackfruit genotypes with respect to physical parameters/ Fruit seed and bulb parameter

Name of genotypes	Seeds weight/fruit (kg)	Flakes to seed ratio	Rag weight/ fruit (kg)	Rag %	Number of bulbs /fruit	Bulb weight (g)	Flake weight (g)	Seed weight (g)
AKJF-1	0.09	3.32	0.29	14.70 (21.32)	106.33	3.33	2.36	1.85
AKJF-2	0.03	16.61	0.15	10.13 (18.48)	100.00	2.33	2.53	1.3
AKJF-3	0.03	25.95	0.15	9.81 (18.16)	101.00	4.33	3.75	1.3
AKJF-4	0.14	0.96	0.39	19.98 (26.53)	110.66	2.67	1.2	1.33
AKJF-5	0.15	1.74	0.21	10.56 (18.93)	95.67	4.67	2.75	1.5
AKLJF-6	0.18	1.15	0.48	24.07 (28.89)	107.67	3.67	1.9	1.63
GDJF-7	0.04	14.46	0.25	18.93 (25.66)	24.00	5.67	4.6	1.3
GDJF-8	0.16	0.30	0.44	32.91(34.94)	36.67	5.67	1.27	4.33
GDJF-9	0.45	1.08	0.99	25.58 (30.37)	117.67	6.67	2.6	3.83
GDJF-10	0.15	1.18	1.05	53.48(47.19)	33.33	9.67	5.17	4.53
GDJF-11	0.16	2.04	1.37	17.32 (23.80)	52.33	7.00	3.8	3.1
GDJF-12	0.18	1.17	1.86	37.90(37.83)	17.00	30.3	22.2	10.71
GDJF-13	0.81	6.25	0.85	16.67(24.10)	159.33	10.3	5.45	5.11
'F' Test	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
SE (m)±	0.18	6.25	0.16	3.52	9.55	0.57	0.43	0.19
CD at 5%	0.55	17.81	0.48	10.02	27.20	1.74	1.32	0.57

genotype AKJF-2 AND AKJF-3. The differences in the rag weight per fruit may be attributed to the difference in genetic makeup of the different jackfruit genotypes. Results are in close conformity with the findings of Mitra and Maity et al. [6] and Rai et al. [7].

Rag percentage: The data presented in Table 1 revealed that, the rag percentage of fruits varied significantly among the different genotype studied. Maximum rag percentage was observed in the genotype GDJF-10 (53.48 %) which was at par with the genotype GDJF-12 (37.90 %) while minimum rag percentage (9.81 %) was found in the genotype AKJF-3. Present variation in rag percentage amongst different genotypes is due to the difference in the rag weight and fruit weight of the jackfruit genotype studied.

Seed weight: Significantly highest seed weight (10.71g) was recorded in the genotype GDJF-12 followed by GDJF-13 (5.11 g) whereas minimum seed weight (1.3 g) was observed in the genotype AKJF-2, AKJF-3 and GDJF-7. Variation might be attributed to the genetic make up and agroclimatic conditions of trees grown in different areas. Similar results were reported by Reddy et al. [8] with maximum seed weight of 12.30 g and Rahman et al. [9] with maximum seed weight of 8.19 g.

Bulbs per fruit: Maximum number of bulbs per fruit. (159.33) was observed in the genotype GDJF-13 which was followed by GDJF-9 (117.67) and minimum number of bulbs per fruit (17.00) were recorded in the genotype GDJF-12. It might be due to number of bulbs per fruit depends upon the size of fruits and also genetical characteristics of the plant. Results are in conformity with the findings of Rai et al. [7], Reddy et al. [8], Singh et al. [10] and Rahman et al. [9] in jackfruit.

Bulb weight: Highest bulb weight (30.3 g) was recorded in the fruits of the genotype GDJF-12 which was followed by genotype GDJF-13 (10.3 g) while the genotype AKJF-2 recorded minimum bulb weight (2.33 g). Bulb weight of jackfruit is depending on the size of fruit and genetic characteristics of bearing tree. Since the jackfruits studied were from different trees and different region were bulbs varied. This is in agreement with the findings of Rai et al. [7], Anu et al. [11] and Rahman et al. [9].

Weight of flake: Results indicated that highest weight of flake (22.2 g) was observed in the

jackfruit genotype GDJF-12 which was followed by GDJF-13 (5.45 g) and minimum flake weight (1.2 g) was observed in the genotype AKJF-4. Superiority of any genotype for table purpose depend on the quality of flakes. The genotypes having higher number of big size flakes are desirable. This is in confirmation with the Rai et al. [7] who observed the genotype HPJS-10/8 with the maximum flake weight of 33.75 g. Similar findings are reported by Reddy et al. [8] in jackfruit.

4. CONCLUSION

On the basis of present investigation reported in jackfruit, the significant variation was observed in physical evaluation of different jackfruit genotypes and following conclusion could be drawn. GDJF-12 was found superior in respect of bulb weight per fruit, flake weight per fruit, seed weight per fruit, flakes to seed ratio and maximum seeds weight per fruit (0.81 kg) and number of bulbs per fruit. (159.33) was found in the genotype GDJF-13. Whereas minimum rag weight and rag percentage were found in genotype AKJF-3

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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