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New jackfruit for homesteads

The status on diversity, conservation and knowledge of *Artocarpus* (Moraceae) to which the jackfruit belongs to, is not commonly known. Jackfruit has a wide range of genetic variation, particularly in India, which could facilitate selection of superior and desirable types. Botanically, jackfruit is a compound fruit and consists primarily of three regions, *viz.* fruit axis (inedible region), persistent perianth and proper fruit which is edible. For sustainable use, genetic diversity of jackfruit is a valuable resource for the present and future. It has innumerable types, categorized according to the phenotypic and organoleptic characteristics contributing to diverse land races at farmers' fields over years.

JACKFRUIT is an evergreen tree which comes up well under tropical and subtropical regions throughout the world. Probable origin of jackfruit is in the rain forests of the Western Ghats of India. Jackfruit is the largest of all tree borne fruits. It is a fruit that produces maximum biomass with highest food value per unit area of all the fruits known to mankind and hence important to food security of any country growing it. A nutritious fruit, rich in vitamins A, B and C, potassium, calcium, iron, proteins and carbohydrates, it could be one of the significant component in the fruit basket. Apart from these, it is a rich source of dietary fibre and nutraceutical, acting against free radicals scavenging and ageing. From the time immemorial, jackfruit tree is used as multipurpose of food, traditional medicine, timber, fuel and as fodder.

The primary economic product of tender fruits of the tree are used as vegetables and the ripe ones as table fruits. Hence, considered as a 'poor man's food' in South-East Asia. It is widely found trees in the homesteads. It is also commercially grown in Karnataka, West Bengal, Kerala, Tripura, Tamil Nadu, and Andhra Pradesh mainly and to a smaller scale in Assam, Bihar, Odisha, Maharashtra, and where it is a culinary delicacy. Apart from its uses as a dessert fruit, several value-added products from both

Cross section of CHESHJF 1

Table 1. Economic traits of three promising selections of Jackfruit (mean of three years)

Trait	CHESHJF 1	CHESHJF 2	CHESHJF 3
Fruiting season	March-July	March-July	March-December
Fruit bearing position	Main trunk and primary branches	Main trunk and primary branches	Main trunk and primary branches
Fruit clustering habit	Clustering	Solitary	Solitary
Fruit shape	Irregular	Ellipsoid	Ellipsoid
Flake shape	Irregular	Irregular	Rectangular
*Number of fruits/tree	450 (35 years)	200 (25 years)	250 (50 years)
Fruit weight (kg)	2.44	2.05	7.35
Flake/fruit ratio	30.21	36.81	61.22
Estimated yield/tree (kg)	1098	410	1836
Number of flakes/fruit	30.0	44.4	150.0
Weight/flakes (g)	24.57	17.0	30.0
Flake thickness (mm)	8.50	7.19	7.1
*Flake colour	Coppery red	Coppery red	Yellowish orange
Flake taste and consistency	Sweet and firm	Sweet and medium	Sweet and medium
Average seed weight / flake (g)	9.5	5.0	7.3

*RHS colour chart

Tree of jackfruit CHESHJF 1

immature fruits as well as seeds are being prepared within the country and several South-east Asian countries. The area under jackfruit cultivation in India is around 1.51 lakh ha with annual production of 18.40 lakh tonnes.

At CHES (IIHR), Hirehalli

ICAR-IIHR-Central Horticultural Experiment Station (CHES), Hirehalli, Karnataka, undertook survey for identifying superior jackfruit types during 2014 in traditional jackfruit-growing tracts of southern Karnataka, through survey of Tumakuru and adjoining districts (Hassan, Bengaluru Rural, Chikkaballapura, Ramnagara and Chitradurga) for identification of elite types of jackfruit. These regions were found dominated by seedlings and considerable variability existed for tree morphology and fruit parameters. The criteria adopted for selection of elite types: small size fruits: 2-5 kg; colour flakes- coppery red to orange red-yellowish red; thicker flakes: >7-12 mm; pulp consistency: crispy; sweetness: TSS >25^{0}B. Passport data was recorded and *in situ* evaluation was carried out.

About 128 samples were shortlisted, out of which 42 samples were evaluated for basic horticultural traits including colour of flakes and organoleptic evaluation. The majority of seedling trees fell in age, ranging from 25 to 80 years old. The process resulted in identification of three superior accessions conforming to the criteria of selection outlined as above. Thus, following selections are described:

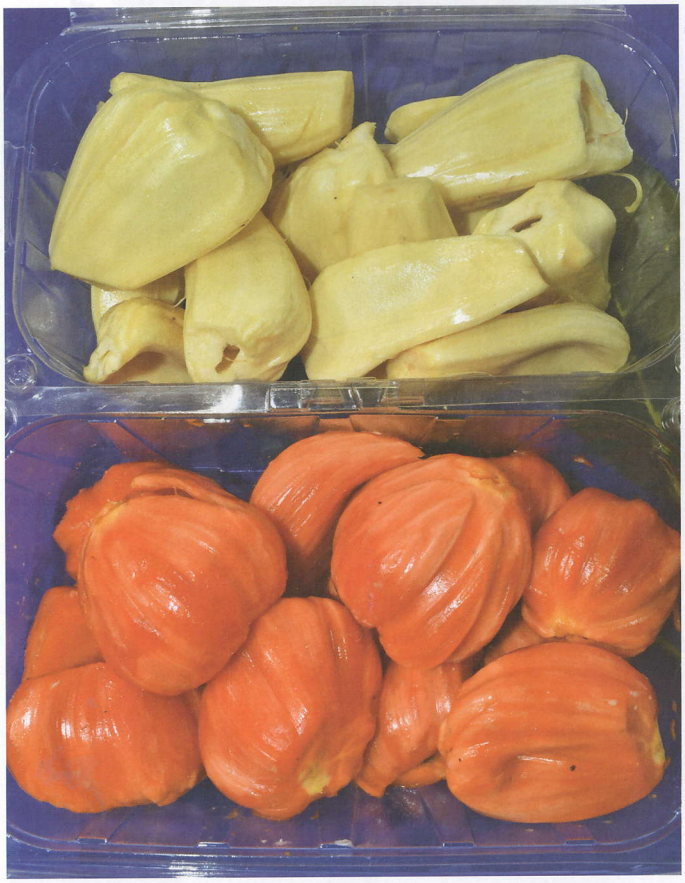
Jackfruit for Homesteads

CHESHJF 1: Its tree is located at Chelur village in Tumkur district with latitude 13.44 ° N, Longitude-76.90° E and 822 m MSL. Tree age is around 35 years and shape of

Table 2. Phytochemical composition of selected elite accessions of jackfruit (mean of two years)

Parameter	CHESHJF 1	CHESHJF 2	CHESHJF 3	White color flakes
TSS (°Brix)	31.0	31.0	28.5	27.0
Acidity (%)	0.62	0.59	0.27	0.43
Vitamin-C (mg/100 g)	6.48	3.52	4.86	3.90
Total phenols (mg gallic acid equivalents/100g)	31.76	37.99	25.93	30.09
Total flavonoids (mg catechin equivalents/100g)	3.74	3.79	3.45	12.97
FRAP (mg AEAC/100g)	11	10.91	8.95	3.72
DPPH (mg AEAC/100g)	14.93	9.42	10.4	24.19
Total carotenoids (mg/100g)	4.43	5.83	1.64	0.55
Lycopene (mg/100g)	1.12	2.26	0.17	0.04

Mean of three replicates and represented on fresh weight basis of ripe flakes without seeds



White (*above*) and coppery red flakes (*below*) of jackfruit

the tree is broadly pyramidal. It is classified under small-sized fruits (2-5 Kg).

CHESHJF 2: Its tree is located at Beligeri village in Tumkur District with latitude 13.68° N, Longitude-77.07° E and 860 m MSL. Tree age is around 25 years and shape of the tree is pyramidal. Its tree is classified under small-sized fruits (2-5 Kg).

CHESHJF 3: Its tree is located at K.B. cross in Tumkur District with latitude 13.52° N, Longitude-76.74° E and 860 m MSL. Tree age is around 60 years old and shape of the tree is irregular. Fruits are medium sized (8.0 Kg)

Different fruit parameters considered for evaluation of accessions are listed in Table 1.

In terms of flakes color and quality, CHESHJF 1, CHESHJF 2 and CHESHJF 3, are better as compared to white coloured flaked fruit. Among accessions, CHESHJF 1 is best one.

Coppery red flakes of CHESHJF 2

The proximate and phytochemical composition of jackfruit such as carotenoids, flavonoids, antioxidant and vitamins varied among these three clones (Table 2).

These accessions have either deep coppery red or yellowish orange colour flakes with highest values of total carotenoids and lycopene classes of phytochemicals composition as compared to one having white colour flakes. Highest total soluble solids was recorded in CHESHJF 1 (31.0 °Brix) and 2 (31.0 °Brix). TSS (°Brix) of these varieties is quite high which is an important parameter related with fruit quality. Theses varieties have deep coppery red and yellowish orange colour flakes with high amounts of carotenoids and lycopene ranging from 1.64 to 5.83 mg/100 g and 0.17 to 2.26 mg/100 g, respectively as compared to white colour flakes. The lycopene content of CHESJF-2, especially is almost one-third of tomato which appeared significant. Total antioxidant activity ranged from 8.95 to 11 and 9.42 to 14.93 mg AEAC/100g in FRAP and DPPH assay, respectively which indicated potential of its health promoting and functional food components.

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Book Review

The Art of Banana Leaf Folding

by Chatura Ajith, Rajani Ramkumar, Uma Balaji and Malathi Satish

Published by S R Rajani, Bengaluru 560 080
www.artcrumps.wordpress.com

The book is really the first of its kind, a tutorial for the art form. It is awesome and intended both for beginners with no experience as well as artists who are already practising! It has a brief history of the art form, the basics with clear pictures and simple explanations. It slowly introduces readers to more complex foldings and designs. With these basic skills, it is easy-to-make own personal creations in no time! Haven't found another resource which comes even close to how things are explained in this book. The book is worth reading for students, teachers, artists or enthusiasts wanting to learn this art form.

Dr T Janakiram