

# TECHNICAL BULLETIN

No. 48, 2023

## Production and Management of Newly Released Year Round Jackfruit Varieties

Jackfruit (*Artocarpus heterophyllus* Lam.), the national fruit, is one of the most common, important and delicious fruits in Bangladesh. Ripe jackfruit is highly nutritious, its pulp and seeds both being rich sources of carbohydrate, vitamins and minerals. The fruit provides 88 kcal per 100 g of pulp, and every 100 g of ripe flake contains 287-323 mg potassium, 30.0-70.2 mg calcium and 11-19 g carbohydrates. It is also known to contain a very high amount of carotene (precursor of vitamin A). Also, green jackfruit is popular in Bangladesh as a delicious vegetable. Jackfruit cultivation and marketing provide good livelihood opportunities for the rural people of Bangladesh. The Bangladesh Agricultural Research Institute (BARI) has developed a year round jackfruit variety namely, BARI Kanthal-3, which is a regular bearing jackfruit variety and can be harvested during the months of September to June, and two other varieties viz., BARI Kanthal-1, a regular bearing high-yielding variety harvested during mid-May to mid-June and BARI Kanthal-2, an off-season regular bearing jackfruit variety harvested during the months of January to March. A standard variety cannot be maintained through seed propagation due to the heterozygous nature of the trees, this can be done only by vegetative propagation, and grafting is commonly practiced for this purpose. Quality planting materials and improved management practices comprising appropriate fertilizer doses and irrigation to prevent fruit drop, along with proper pollination and pest control are needed for high year round jackfruit production. This project involved work on dissemination of jackfruit saplings of year round, season and off-season jackfruit varieties, agronomic management of jackfruit plants and orchards.

### Methodology

The Pomology Division, Horticulture Research Centre (HRC), BARI along with an associate organization, an NGO namely, Society for Sustainable Development for the Rural and Urban Area (SSURDA) implemented the project. A baseline survey for identifying year round/off-season jackfruit germplasm in Khagrachari, Ramgarh, Narsingdi and Gazipur was conducted, and fruits were collected and evaluated. At the same time, scions were collected to produce saplings through grafting. A mother orchard of BARI Kanthal-3 along with BARI Kanthal-1 and BARI Kanthal-2 was established in the Fruit Research Farm of BARI, Joydebpur, Gazipur in 2018. Similar orchards with BARI developed jackfruit varieties were established in farmers' field of Gazipur, Khagrachari, Narsingdi and Mymensingh. These orchards of jackfruit would act as mother orchards of jackfruit. Four experiments were conducted at the Pomology Division of HRC, BARI, Joydebpur, Gazipur during (2018-2022), and an adaptive trial of BARI developed jackfruit varieties was conducted in farmers' field of four districts viz. Gazipur, Khagrachari, Narsingdi and Mymensingh. Performances of BARI



**KRISHI GOBESHONA FOUNDATION**

A non-profit foundation for sustainable support to agricultural research and development

Kanthal-1, BARI Kanthal-2, BARI Kanthal-3 and exotic jackfruit germplasm were evaluated. The experiments included effect of time of grafting on grafting success and response to split application of fertilizers.

Results and Outputs

In the baseline survey, eight off-season jackfruit genotypes were identified in Gazipur district, three year round jackfruit germplasm in Khagrachhari, one year round jackfruit germplasm in Narsingdi and three year round jackfruit germplasm were identified in Mymensingh district. In Gazipur, some jackfruits were called “Madhu Kanthal” which were very sweet, some were called “Paharia” which were very large, early special scented jackfruits were called “Kubaira Kanthal”. One jackfruit type going by the name of “Hazari Kanthal” was found to bear relatively bear small but numerous fruits, generally more than 200 per plant. In Khagrachhari, red fleshed jackfruits were found which were called “Binni Kanthal”.

Orchards of BARI developed jackfruit varieties were established at the research station and in farmers’ fields of Gazipur, Khagrachari, Narsinghdi and Mymensingh as palnned. About 2000 grafted plants of these jackfruit varieties were planted for the first time in Bangladesh. Moreover, saplings were distributed among selected farmers of Joydebpur. From the established mother orchards saplings could be produced through vegetative propagation. January was found to be the most suitable grafting time for jackfruit, grafting could also be done in February and October although with a lower success rate.

Growth performances of BARI Kanthal-1, BARI Kanthal-2 and BARI Kanthal-3 were evaluated during 2018-2021. In August, 2018, plant heights of BARI Kanthal-1, BARI Kanthl-2 and BARI Kanthal-3 were 1.03 m, 0.40 m and 0.44 m which increased sharply to 4.03 m, 4.00 m and 3.96 m (Fig. 2), i.e., by 291%, 900% and 800%, respectively, in about two years



Fig. 1. Orchard of BARI developed jackfruit varieties at BARI, Joydebpur (top), and female inflorescence in BARI Kanthal-1 (bottom)

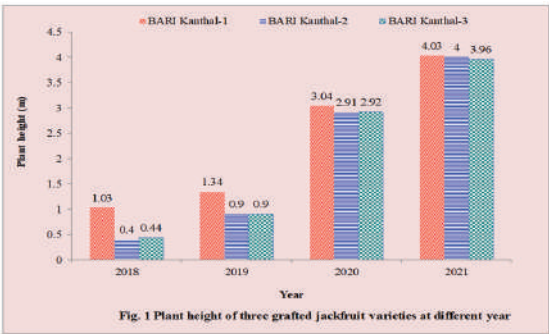


Fig. 2. Increase in plant height of three BARI developed jackfruit varieties over time during 2018-2021



Fig. 3. Saplings from January grafting

and a half later in January, 2021. Female inflorescence occurred in BARI Kanthal-1 in 2021. Male inflorescence started in all the exotic genotypes of jackfruit from the fourth week of July, 2020 indicating off-season and year round behavior. The highest grafting success (82.9%) was found in the month of January followed by that in February (69.8%) and October (66.3%). The high grafting success found in January might have been due to the availability of more suitable dormant scion. Plant height, base girth and canopy development were significantly influenced by the split application of fertilizers.

In the adaptive trials in 10 farmers’ fields at Sreepur, Gazipur, in 2021 (planted in 2018), plant height varied from 2.50 m to 4.60 m in BARI Kanthal-1, 2.10 m to 4.75 m in BARI Kanthal-2 and 2.10 m to 4.50 m in BARI Kanthal-3, the averages 3.19 m, 2.99 m and 2.89 m, respectively (Table 1).

**Table 1. Growth parameters of BARI developed jackfruit varieties in farmers’ fields in Gazipur district**

Farm	Plant height (m)			Base girth (cm)			Plant spreading N-S (cm)			Plant spreading E-W (cm)		
	V1	V2	V3	V1	V2	V3	V1	V2	V3	V1	V2	V3
F1	3.60	4.00	3.60	25	27	37	270	350	370	200	330	370
F2	4.60	4.75	4.50	23	34	19	230	360	230	210	300	240
F3	3.00	2.10	2.10	14	8	8	90	70	70	95	90	65
F4	2.95	2.70	2.90	18	23	22	150	130	180	240	150	200
F5	2.65	2.30	2.60	15	10	14	150	95	120	100	120	150
F6	2.80	3.40	2.50	17	27	16	155	265	166	150	280	130
F7	3.00	2.25	2.50	18	24	14	140	200	120	150	260	120
F8	2.90	2.50	2.60	15	12	14	120	100	120	100	110	150
F9	3.90	2.80	3.10	20	20	15	300	300	100	330	250	120
F10	2.50	2.70	2.50	15	17	14	180	200	150	190	190	160
Mean	3.19	2.95	2.89	18	20.2	17.3	178.5	207	162.6	176.5	208	170.5
V1= BARI Kanthal-1; V2= BARI Kanthal-2; V3= BARI Kanthal-3												

Expected Impact

Commercial cultivation of the newly released jackfruit varieties with improved technologies will be possible which will ensure the availability of this important fruit in the markets throughout the year. Large quantities of raw material will be available for the fruit processing. Large numbers of jackfruit trees will enhance social forestation which will improve the environment. Growing off season and year round varieties will boost production, cut down the current undesirable wastage of this valuable fruit to an acceptable level, increase jackfruit growers’ profits and open up opportunities for export of jackfruit contributing to the national economy.

Recommendations

Further research should be continued to evaluate the performances of jackfruit genotypes different agro-ecological conditions of the country. Improved management packages need to be developed for different varieties and growing seasons. Monitoring is needed to observe the fruiting of BARI developed jackfruit varieties. The mother orchards need to be managed and preserved well for future research and development work. Training of farmers and nursery men on sapling production through vegetative propagation of jackfruit needs to be continued and strengthened. A propagation lab with modern facilities is needed for disease-free and healthy sapling production.

---

This Technical Bulletin has been prepared on the basis of technical information available from a completed BKGET-KGF Funded CGP Project, the details of which are given below:

**Project Code and Title:** TF-53-C/17. Production and Dissemination of BARI Released Year Round Jackfruit Variety and Its Management Packages

**Principal Investigator:** Dr. Md. Zillur Rahman, Principal Scientific Officer (PSO), Fruits Division, HRC, BARI, Gazipur, e-mail: zillurhrc@gmail.com

**Project duration:** Feb 2018 to Jan 2023

**Edited by:**

**Nasrin Akter, GM Panaullah and Nathu Ram Sarker**

Krishi Gobeshona Foundation (KGF)

---

**Published by:**

**Krishi Gobeshona Foundation**, AIC Building, 3<sup>rd</sup> Floor, BARC Campus, Farmgate, Dhaka-1215, Bangladesh, Cell: 01729 480988, Website: [www.kgf.org.bd](http://www.kgf.org.bd), e-mail: [kgf-bd@kgf.org.bd](mailto:kgf-bd@kgf.org.bd)