

Short Communication

Identification, Characterization and Evaluation of Yearly twice-yielding Type Jackfruit (*Artocarpus heterophyllus* L.) Germplasm at Bundelkhand Agro-climatic condition

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Present study was conducted in Bundelkhand region of Madhya Pradesh mainly districts were Tikamgarh and Sagar. Global warming, it seems, has hit the poor people of Bundelkhand in Madhya Pradesh harder. A fourth successive drought in the last five years has shattered the people of this backward region. Mercury was already touching 46 degrees celsius, water has evaporated from all rivers and ponds, and the tube wells are dry. People of Tikamgarh and Sagar were of the drought-hit districts of the backward region of Bundelkhand, risk their lives every day as they fetch water from an ancient dug well. As they step down on loose stone blocks, villagers form a human chain from up to down to fill utensils with muddy water from the well. Horticultural crops growing are one of the most viable alternative land use and less water requirement crop for maximum sustainable productivity and safe the environment. On the same unit of land and natural resources meeting the ecological as well as socio-economic needs of the peoples. In this view to doubling the farmer income the jack fruit variety which could be used for

increasing the production. The studies were carried out to Identification, characterization and evaluation of yearly twice-yielding type Jackfruit (*Artocarpus heterophyllus* L.) germplasm at Bundelkhand Agro-climatic condition.

The study was conducted at the farmers field and forest of Tikamgarh and Sagar District by Krishi Vigyan Kendra, College of Agriculture and in collaboration with Department of Forest of Madhya Pradesh during the period 2016-17 to 2017-18 to find out the jackfruit germplasm the 10 germplasm viz., JT-01, JT-02 JT-03, JT-04, JT-05, JS-06, JS-07, JS-08, JS-09, and JS-10 were selected in which five from Tikamgarh district and five from Sagar district for the study. The plants were healthy, about 13 years of age and received similar cultural treatments. The soil of plants was medium sandy loam with having low water holding capacity and less fertile

The jackfruit germplasm in the present study flowering period during the period from 15th of January to 15th of Feb (Table 1). It was found that there was wide variation in the period of fruit set among

the germplasm. Germplasm JT-01 had the two fruit setting period in 15th Feb and 15th Sept , which was different among all the germplasm rest of the germplasm flowering once in a year and matured fruits in 4-5 month while two times flowering germplasm JT-1 matured its fruits in only 3 month which less than others all germplasm . The percent of fruit set of jackfruit germplasm varied from 95 to 100

with an average of 97.6. Germplasm JT-01, JT-02 and JT-3 had the highest percentage of fruit set (100%) followed by JS-07(99)JT-08 (98), JT-05 (97) , JS-8 JS-09 (96) and germplasms had the lowest fruiting percentage JS-06 and JS-10(95).The lowest percentage of fruit set seems to be due to no receptivity and improper development of stigma.

Table 1 Number of female spikes, period and duration of fruit set, percentage of fruit set in jackfruit germplasm.

Name of farmer	district	Germplasm code	Total no. of female spikes	No. of fruits set	Flowering time	Duration (month)	Fruit set (%)
Ambika Prasad Tiwari	Tikamgarh	JT-01	40	40	15 th Sept 15 th Feb	3	100
Arun Kumar Shukla	Tikamgarh	JT-02	37	37	15 th Jan	4	100
Dinesh Singh	Tikamgarh	JT-03	38	38	15 th Feb	4	100
Raghunath Singh	Tikamgarh	JT-04	39	30	15 th Jan	5	98
Dushyan Bundela	Tikamgarh	JT-05	36	32	15 th Feb	4	97
Nandu Lal Patel	Sagar	JS-6	37	30	15 th Jan	5	95
Santosh Patel	Sagar	JS-07	35	31	15 th Feb	4	99
Jayant Malaiya	Sagar	JS-08	32	28	15 th Jan	5	96
Pankaj Malaiya	Sagar	JS-09	34	27	15 th Jan	5	96
Parsoo Patel	Sagar	JS-10	39	34	15 th Jan	5	95

Fruit bearing habit of jackfruit is cauliflorous i.e., fruits are borne on trunk and branches (Table 2). The germplasm under study bore fruits on trunk, primary, secondary, tertiary, fourth, fifth and sixth branches. On an average, the maximum number of fruits were borne on primary branches (30.58 %), followed by trunk (21.10 %), secondary (19.27 %), Tertiary branch (11.93%), fourth branch (5.81 %) and Fifth branch(2.18) , while it was the

lowest on sixth branch (0.61%) (Table 2). However, there were some variations in fruit bearing habit of individual germplasm. Germplasm JT-01, JT-02, JT-03 JT-04 and JT-05 were not borne fruits in sixth branches and JT-05, JS-06 and JS-07 not bore fruit on secondary branches most of the germplasm produced fruits on most of the sections (primary to six branches) of the plant and trunk^[1].

Table 2 Fruit borne on different sections of jackfruit germplasm

Germplasm	Trunk	Primary branch	Secondary branch	Tertiary branch	Fourth branch	Fifth branch	Sixth branch	Total
JT-01	7	14	11	5	3	0	0	40
JT-02	9	13	10	3	2	0	0	37
JT-03	9	15	11	3	0	0	0	38
JT-04	5	12	9	3	1	0	0	30
JT-05	8	13	0	6	4	1	0	32
JS-6	7	12	0	5	3	2	1	30
JS-07	7	14	0	4	3	2	1	31
JS-08	5	9	7	3	2	2	0	28
JS-09	5	8	7	4	3	0	0	27
JS-10	7	15	8	3	1	0	0	34
Total	69	100	63	39	19	07	02	327
Average	6.9	10	6.3	3.9	1.9	0.7	0.2	32.7
(%)	21.10	30.58	19.27	11.93	05.81	02.14	0.61	-

It was observed that the average length of fruit increased rapidly up to 65 days after fruit set and then it decreased again. But fruit diameter increased slowly up to 20 days after fruit set and then the rate of increase was rapid up to 50 days and again it slowed down. The circumference followed the same pattern as the length. At maturity, the average length, diameter and circumference attained by the fruit were 32.5 cm, 51.0 cm, and 80.4 cm, respectively. The changes in weight and volume were slower up to 20 days after fruit set. Thereafter, a rapid increase took place till 110 days. Later the rate of increase dropped appreciably and it continued till maturity (Approx. 120-140 days). At maturity, the average weight and volume attained by the fruits were 2500 g and 2900 cc, respectively.

The bulb growth parameters as length, breadth and weight of bulb of jackfruit germplasm were recorded at 20

days interval after fruit set. They increased rapidly from 20 days after fruit set to 95 days and subsequently slowed down till harvest. Average increase in bulb weight also followed the similar trend as bulb length. At harvesting maturity, the average length and breadth attained by the bulb were 3.3 and 1.3 cm whereas the weight was 26 g.

The data on measurements of seed were also recorded at 20 days from fruit set till maturity. The length and breadth of seed increased slowly from 20 to 30 days and they increased rapidly up to 65 days followed by a relatively slow rate of increase till maturity. The rate of increase in seed weight was rapid from 20 days upto 65 days from fruit set. Then it was slower till maturity. At maturity, the average length and breadth attained by the seeds were 3.2 and 2.1 cm, respectively, whereas the weight was 5 g.

The texture of pulp and seed changed with time. The pulp texture

changed from soft to semi-hard from 20 to 40 days (Table 3). It turned hard after 60 days and remained so up to 140 days. Again the bulbs were soft at ripe stage during 120-150 days. The seeds were soft up to 60 days. Then they became semi-

hard up to 80 days and became hard thereafter till they were ripe. From the above results, it is concluded that 60 to 80 days was the optimum time to use jackfruit as vegetable when the seeds were soft to semi-hard.

Table 3 Changes in morphological characters of fruit, bulb and seed at 15 days intervals from fruit set of jackfruit

Days after fruit set	Colour of Pulp and Seed		Texture of Pulp and Seed	
	Pulp	Seed	Pulp	Seed
20	White	White	Soft	Soft
40	White	White	Semi-Soft	Semi-Soft
60	Creamy white	Creamy-white	Semi-hard	Semi-hard
80	Creamy white	Creamy-white	Semi-hard	Semi-hard
100	Yellowish white	Light brown	Hard	Hard
120	Yellowish white	Brown	Hard	Hard
140	Yellowish	Brown	Hard	Hard

The present studies showed that growth of fruit of jackfruit was characterized by simple sigmoid curve. This was true when all parameters of measurements viz., length, diameter, circumference, weight, and volume of fruit; length, breadth, weight of bulb as

well as seed were plotted against time from fruit set to harvesting maturity. A similar growth curve has also been reported for mango^[2]. The mango is botanically a simple fruit but showed same pattern of growth like jackfruit which is a multiple fruit.

References

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