



A STUDY OF COMMERCIAL VIABILITY OF JACKFRUIT IN INDIA

KEYWORDS

Jackfruit, Jack, Jac Products, Nutritional content of jack, Commercial viability of Jack.

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ABSTRACT Jackfruit is a fruit commonly seen all over South Asia and it is the national fruit of Bangladesh. The nutritional content of jack give an amazing amount of various proteins, vitamins, calcium etc... and this helps to improve the health of human body in lot of ways. Jackfruit is a sure shot for so many minor diseases like Constipation, cough & Cold etc... and even prevent from Colon cancer. India is the largest producer of jack in the world but the peoples in India are not well aware about this facts and might be due to this jack is a neglected fruit in India. This neglect is the major reason for the lack of jackfruit commercialization in India. The study intends to Sort-out the various benefits of Jack and how it can be effectively utilize to reduce the wastage. The reasons behind lag in Commercial aspects of jack along with suggestions are also play a vital role in the study.

Jackfruit – A Golden Fruit

Jackfruit (*Artocarpus Heterophyllus*) is one of the common agricultural food product seen all over south Asia. It is also called as Jack or Jac in its simplest form. The word Jack is derived from the Portuguese word 'Jacca' which is originally derived from the malayalam word 'Chakka'. Moreover in 1948 Mr. Hendrik Van has made point about jackfruit in 'Hortus Malabaricus' during his visit in India. The product is assumed to have the originality from the Plantae and it has found out that Jack has discovered from the south west rain forests of Western Ghats in Indian sub continents. In India Jack fruit has been cultivating from 6000 years ago and this legacy itself proven the position of jackfruit production in the world. As per the latest reports of production India is leading in the first position followed by Bangladesh. Jackfruit is the national fruit of Bangladesh and their entire production is consumed by themselves. The topmost production details of jack is as follows,

Table No:01

Production details of Jackfruit – Worldwide

Rank	Country	Production (in tonnes)
1	India	1436
2	Bangladesh	926
3	Thailand	392
4	Indonesia	340
5	Nepal	18.97

(Source: <http://www.wikipedia.com/jackfruit>)

Jack fruit belongs to the family of Mulberry and Breadfruit which are commonly grouped under 'Moroleae'. Jackfruit is very similar to breadfruit in its entire means and it is having a lot of nutritious content in its flesh inner part. The volatile components in jackfruit are 'ethyl isovalerate', 'propyl isovalerate', 'butyl isovalerate', '2 methyl butan-1-01', '3 methyl acetate-1 butanol' etc... Jackfruit is considered as the biggest eatable natural fruit in the world. An average jack will have the diameter of 50cm, length of 70-90cm and weight of 25-35 kilogram. Jack fruit is not only bigger in size but also too bigger in nutrition content. An average jack will have the following nutrition content (Nutritional value per 100g (3.5 oz)),

Table No:02

Nutritional Value in Jackfruit

Nutritional Parameter	Value	Percentage
Energy	397 kJ (95 kcal)	
Carbohydrates:		
Sugars	19.08 g	
Dietary fibre	1.5 g	

Fat	0.64 g	
Protein	1.72 g	
Vitamins		
Vitamin A equiv. , beta – carotene and lutein zeaxanthin	5µg, 61 µg and 157 µg respectively	
Thiamine (B1)	0.105 mg	9%
Riboflavin (B2)	0.055 mg	5%
Niacin (B3)	0.92 mg	6%
Panthothenic acid (B5)	0.235 mg	5%
Vitamine B6	0.329 mg	25%
Folate (B9)	24 µg	6%
Vitamin C	13.8 mg	17%
Vitamin E	0.34 mg	2%
Minerals		
Calcium	24 mg	2%
Iron	0.23 mg	2%
Magnesium	29 mg	8%
Manganese	0.043 mg	2%
Phosphorus	21 mg	3%
Potassium	448 mg	10%
Sodium	2 mg	0%
Zinc	0.13 mg	1%
Other constituents		
Water	73.5 g	

(Source: <http://www.wikipedia.com/jackfruit>)

Jackfruit is treated as the fruit of poor due to this high nutritional value in cheaper costs and availability. Jack fruit is cultivating in so many area in the world like India, Nepal, Bangladesh, Myanmar, Thailand, Sri Lanka, Brazil etc... And in the case of consumption South Africa is magnificent.

The consumption of jack is having the following health benefits to the users:-

- Jackfruit is a great source of Vitamin C and antioxidants, which can strengthen your immune system.
- Jackfruit has antioxidants, phytonutrients and flavonoid that provide protection from cancer. Antioxidants in jackfruit protect the body from free radicals. Free radicals are produced due to oxidative stress in the body. This damages the DNA of your cell and produces cancer cell. But, antioxidants can neutralize these free radicals to protect DNA from free radicals damage. Jackfruit also provides protection against colon, lung and oral cavity cancer.
- Vitamin B6 present in the fruit helps to reduce homocystein

- levels in your blood and keeps your heart hale and hearty.
- Antioxidants present in jackfruit can destroy the free radicals in the body to slow down the ageing process.
- This can reduce wrinkles in just about 6 weeks. Dip jackfruit seed in some cold milk for some time. Grind it gently and apply on the wrinkles.
- The consumption of jackfruit seeds helps to prevent constipation. Jackfruit has strong anti-ulcerative properties that can cure ulcers and many other digestive system disorders.
- The high carbohydrate in Jackfruit is a rich source of simple sugar like fructose and sucrose that gives instant energy.
- The fruit contains zero cholesterol that makes it a safe and healthy food.
- Jackfruit comes loaded with Vitamin A, C, E, K, Niacin, Vitamin B6, Folate, Pantothenic acid, Copper, Manganese and Magnesium that are required for blood formation. This also increases your body's capacity to absorb iron, thus preventing and curing anemia.
- Jackfruit is useful to reduce high blood pressure, stroke and heart attack due to the content of potassium that maintains the sodium level in the body.
- Jackfruit contains vitamin A that is a vital nutrient for eye health. Rich antioxidant content in jackfruit increases eye vision and provides protection against cataract and macular degeneration.
- Jackfruit contains calcium, which strengthens and promotes healthy bone. This can also prevent osteoporosis.
- Vitamin C supplements are known to prevent cold and infections.
- Jackfruit has a rich amount of this nutrient and thus helps regulate blood sugar levels in the body.
- Jackfruit is filled with this potent micro mineral and keeps your metabolism rate healthy.
- Jackfruit seeds contain a good amount of protein which can be added to different dishes prepare.
- Jackfruit seeds contain vitamin A that is an essential vitamin for healthy hair and to prevent dryness and brittle hair.

Like all other fruits jack is also divided into different varieties according to its taste and other features. In India itself there are more than 20 cultivars available. Some of the varieties of jack are given below

Table No:03
Varieties of Jackfruit

Country	Cultivars
Bangladesh	Topa, Hazari, Chala, Goal, Koa, Khaja
India	Khuja, Ghila, Hazari, Rudrakshi, Gulabi, Hazar, NJT 1, NJT 2, NJT 3, NJT 4, Koozha, Navarikka, Safeda, Khaja, Bhusila, Bhadaiyan, Handia, Mammoth, Everbearer, Rose-scented, Kooli, Varika, Gerissal, Barica, Ghila, Karcha, Champa, T- Nagar, Ceylon Jack etc...
Myanmar	Talaing, Kala
Sri Lanka	Vela, Varaka, Peniwaraka, Kuruwaraka, Ceylon Jack

(Source: "A status report – Jackfruit improvement in the Asia – Pacific Region")

In India

Though India is the largest producer of Jack in lot varieties, major portion of the production goes wasted. According to an article released in "The Hindu" 75% of the ripe fruits goes to waste in India. In fact, the demand for jackfruit products is high, but the manufacturers have difficulty in procuring machinery and laborers willing to process the fruits. In worldwide there are a few companies available for the large scale production of jack products, especially one in Sri Lanka and one in Vietnam. They are producing products like Noodles, flours, papad ice cream etc...

As per the experts opinion jackfruit will be a close substitute for the products like wheat and paddy in future due to the imbalanced climate situations. The cultivation of wheat and paddy requires high level of water and such farming need good and appropriate climates where as jack can grow up in difficult drought conditions too and it will give the fruit for long years. the nutritional jack can use for the production of flours, noodles etc.. which can easily overcome the shortage of wheat and rice products. But as stated above the largest producer of jack itself is wasting the fruit to 75% means how will it be useful for the future? And never underestimate the products of jackfruit to only noodles and flour. As per recent researches in India we can produce a lot of products from jackfruit like Squash, Syrup, Jam, Jelly, Halwa, Wine, Pickle, Pappadam, Murukku, Honey Jackfruit, Jackfruit preserve, Jackfruit thera, Chakkakkuruthoran, Chakkakkuru Avalosepodi, Chakkakkuru Puttupodi, Chakkakkuru Sambar Parippu, Dried chakkachula, chakkachips, ice cream, beverage items, snacks etc...

The above said are the products made from the flesh sweet part inside the jack and seed. Now comes another industry from jackfruit tree. The jack tree is too powerful and used as a good means of various furniture products in all over the world. India is the major consumer of jack wood for the purpose of furniture. The wood is also used in India for making musical instruments like Mridangam, Veena etc. And in countries like Philippines also the wood is used for making drums and other musical instruments. The balance parts of the wood can be used as kitchen log and leafs of the jack tree too are a good source of income. It can be sell to goat farmers, dairies and to rabbit farms. So from root to leaf each and every part of jackfruit is useful and moreover commercial. But how much we are using this opportunity? It should be a head break question for all the commerce students, researchers, academicians and for the business men in India.

A tree which can perfectly grow in all the climate situations without much efforts is giving unbelievable income generating products in all forms, though the peoples in India is turning face to such a wonderful investment avenue. However Indians produce the jack products will consume by India itself. That much is the demand for jack products. But due to certain machinery procurement problems and laborer problems the eminent business men are neglecting the investment avenue.

Now if we take the statistics of state wise production in India. It shows the following figures:-

Table No:04
State wise production of jackfruit in India

States	Area (in 000' ha)	Production (in 000' mt)	Productivity (t/ha)	% Contribution
Arunachal Pradesh	1.06	8.52	8.03	1
Jharkand	4.10	41.00	10.01	4
Karnataka	5.25	213.82	36.71	23
West Bengal	10.42	143.47	13.76	16
Kerala	97.54	348	3568	38
Assam	18.00	170.00	9.49	18

(Source: "A status report – Jackfruit improvement in the Asia – Pacific Region")

As the table states, around 61% of the production is contributing by south India and 35% of the production is from north eastern side. And the largest producer of jack is Kerala but unfortunately the highest wastage is also reported in the state of Kerala. According to Vijay Mantri, District Collector of East Garo Hills district in Meghalaya, jackfruit worth Rs 434. 88 crore is wasted every year in the entire Garo hills. By the same parameters used in this calculation, the whole of India would be losing nothing less than Rs 4,000 crore of jackfruit.

The fundamental reasons for such wastage are due to the lack of knowledge about the feasibility of a Jack industry in India. Most of the jack products in the earlier stages are familiar in India and the demand for products are also high in the country. Likewise the chances of export are also not far in case of Jack products. The countries like Middle east and Europe are eager to the jack products from our country as they are in lack of the product.

Recently a food processing company has setup in Kerala proposes to market innovative products of Jack. It is the country's first full-fledged jackfruit processing venture. The basic raw material of bakery products in India is Maida which is not good for health and the thought of preparing Jack seed powder instead of Maida gave tremendous change in the Company. Jackfruit Pulp is one of the other main commercial products from jack. The secondary value added products can be ice-cream, milk-shake, toffee, chocolate etc... Instant porridge and even a form of chicken which is an instant porridge to hot water and ready to use is another commercial product from jack.

Though it is having such commercial aspects there are certain drawbacks of jackfruit products come in the way of its popularity. First one is there are not many products that can boast of high quality and are professionally produced, packed and distributed. Then none of these are available round the year. Some people are keeping peeled jackfruit carpals in cold storage during the season to make product available throughout the year, though it is insufficient to meet the actual demand. Jackfruit has a value only once harvest it, cut and separate the raw material. it is more expensive than harvesting other fruits because of two reasons: firstly the process of peeling real raw material is laborious, a very few people have the will and skill to cut and peel the bulbs by properly tackling its gum. Secondly, more than half the portion by weight is waste. The real difficulty is pre-production stage which involves this procuring the right kind of raw material, those who are not familiar with the fruit will take hours to make it ready for cooking. Lack of apt technologies for producing various jack products is another big challenge. Entrepreneurs themselves have to invest considerably in research and development.

Establishing a network of dealers for the products in available Places are the only remedy to solve the scarcity of raw material. Presently jack is having a market price of approx Rs. 5/- per kg. Many small processing units have come up in the past years to make jackfruit products. But all are in infantile stage. There is a huge, untapped potential. Processing of jackfruit will generate a lot of rural employment and augment the rural economy. But growers generally don't earn much from jackfruit. Growers can make good income from jackfruit if they are organized and have a good market connectivity. There are some issues related to harvesting. Each fruit matures at different time and it is not feasible for a farmer to take it to the market. There are farmers who earn Rs 5,000-10,000 by selling jackfruit locally as a vegetable. The first and only such association in the country, and built direct connectivity to the market.

Odessa's Indian Institute of Horticulture Research has trained tribal women in minimal processing procedures of the fruit and given them small, handy machines to peel the outer grind. This has helped them increase their income. The countdown for jackfruit development has begun in the country. Many civil society groups have started organizing jackfruit festivals. The jackfruit will definitely become the most sought after fruit in the coming years. You can't keep a food crop neglected for long. As rightly said by Mr. Padre, Once the inferiority complex attached to jackfruit in South India gets removed, the wastage will start reducing drastically. Then, the future of jack industry will be a golden revolution for India.

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