

Parkia Tree Bean Just another Bean or Future Food?

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Have you heard the story of 'Jack and the Beanstalk?'

It is a pretty charming tale. Jack, a poor little boy, exchanges his cow for a few magic beans that grow all the way up to the sky overnight. Jack climbs up and after the adventure on top of the massive beanstalk, he cuts the plant and kills the giant pursuing him. And discovers a bag of gold, golden egg-laying hen and a magical harp. 'Poor' Jack does not remain poor anymore, thanks to the magic beans. How wonderful it would be to have a bean that makes you rich like that! Well, you may not be rich, but at least hunger-free could be the wish.

Practically speaking, beans can never grow overnight, or enormously limitless. It is just a plain Old English fairy tale. Much of the literary works from the bygone era describe beans as cheap food, fit only for the poor.

'They eat beans mostly, this old yellow pair
Dinner is a casual affair.'

Gwendolyn Brooks, *The Bean Eaters* (1960)

From these lines from Gwendolyn Brooks poem, 'The Bean Eaters', one finds what beans have always meant to the world. In the world where everyone cannot afford animal products, people surrender to beans. Since time immemorial, beans, and other legumes in the family are known as 'poor man's meat'. Like beans, all other legume foods are low-cost and yet they are not

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in the mainstream. They are at best, alternative sources of vegetable proteins, calories, vitamins and minerals. No wonder they are highly popular in numerous under-developed and developing nations.

Food legumes are those having two or more seeds enclosed in a pod, like in the green peas. The word 'legumes' and 'beans' are often used interchangeably. Legumes growing on trees are commonly called 'Tree Beans' or 'Tree Legumes'. Recently, food legumes are a major crop group in the Asia-Pacific region. Several legumes like soybean and groundnut have changed the face of modern agriculture amidst the dominion of cereals, becoming leading crops in conventional farming. Could there be a new prince in the story? A new savior?

The Way Forward

Asia needs one such princely savior. Asian continent ranks the topmost regarding population density; it is also the continent with the hungriest people, accounting two-thirds of the total. India peaks with almost 200 million inhabitants going to bed hungry every night. On the plus side, India has emerged as the fastest growing major economy in the world, but on the minus side, it is home to the largest number of undernourished population. The hunger situation in India is an extremely critical issue. Food grain production in India is finally improving. The land is the world's largest producer for milk and second largest producer of fruits and vegetables. Digital India prides itself as the progressive nation but fails to keep pace with the matters of food and nutrition. Imagine the irony of not having the ability to reach out to the hunger population even as the country has reached self-sufficiency in food production. Despite all the green revolution, providing for the hungry stomachs in the future is still a dream, a dream aiming at 'Zero Hunger' by 2030. For achieving 'Zero Hunger', nutrition and food security are vital. But there are a growing number of people and a significant burden on conventional food resources. In spite of this, the land where there is a struggle, nature hides the key to success as well. Scientists have identified several under-exploited food legumes that could be the saviors in food and nutrition insecurity crisis. Legumes are indispensable and some of which are regionally highly valuable food for men and beasts.

The Long Journey: Spilling the Beans

One of the legumes could be just lying, literally, on our walking paths. During the British Raj, the elite introduced park culture in cities like Bangalore. This culture gradually integrated among Indians leading to the beautification of cities with parks and gardens focusing on planting multipurpose trees among ornamental and flowering plants.

Thanks to the people of yore under urban vegetation cover, many native and exotic species diversity still exists today. Among them, one can find plenty of 'Parkia Tree' or 'Badminton Ball Tree' (*Parkia biglandulosa* Wt. & Arn.) gracing the street lanes and adding aesthetic value to the park spaces in Andhra Pradesh, Maharashtra, and Karnataka. For locals, the tree is just another one giving shade in the Sun or plain beauty.

But *Parkia* is more than just a beauty. Its pods could be sources of future protein. The tree with its flowers and fruits bears a close resemblance with another tree *Parkiatimoriana* DC. Merr., which is seen only in North-East India. In Manipuri language, it is famously known as 'Yongchak'. Unlike the pods of Badminton Ball Tree, which are the length of a 15cm scale, containing 5-8 seeds in every pod, the Yongchak is 35-40 cm long and includes 18-20 seeds per pod. It is highly valued in Manipur for its ecological and economic importance, and is a huge part of traditional food preparations like fresh salad, singju and boiled curry, eromba. In the beans, one finds an appealing palate taste which makes the bean so popular and high in demand during its peak season.

On the other hand, *Parkiabiglandulosa* Wt. & Arn., is the native of Malaysia, introduced in India through cultivation. It is often mistaken for the Gulmohar tree during the non-flowering and non-fruiting season. But on any wintry day from December till early March, one can see the inflorescence in full bloom. The myriad cream color flowers, with yellow hints, cluster in a spherical shape and look like badminton balls, hanging on long stalks. It is a beautiful sight to observe parrots and other small birds bite into the fruit clutching the long stalk and swing. Walking under the shades of these trees during hot summers, one may never ponder on the food potential of the short and twisted pods that grow out from these flowers in bunches of 10-20 in numbers.

Luckily, the distribution of these trees in and around Mysuru district of Karnataka has opened new ground for the food scientists and researchers at CSIR-Central Food Technological Research Institute. Credit goes to one of the CFTRI Food Scientists. Dr Ngaseppam Iboyaima Singh hailing from Manipur finds these tree legumes of Mysuru as an alternative substitute for the highly popular beans from Manipur for the local consumption of Manipuri population in Mysuru city. Having consumed both the tree beans during his 25-years long career life, he does not find any difference in the taste, except the observable physical characteristics of the tree, flowers, and pods.

But appearances apart, the food value of a plant depends upon many other factors. Though its use in food, medicine, and fodder is little known, the preliminary probing reveals the promising food and nutrition potential of these seasonal tree beans. The resource-rich beans packed with protein (25-35%), fat (11-20%), vitamins and minerals can meet the needs of basic and wholesome nutrition. But there is a catch. Processing is a major factor for such legumes, as they many times contain anti-nutritive substances which do not allow nutrition gain in the body. Science can help here. While carrying out nutritional profiling, processing, and development of traditionally valued legume-based products are underway. These are ready-to-prepare and ready-to-eat, attractive and convenient. With the touch of science, the utilization of the strange yet familiar *Parkia* tree beans is now possible for the first time, to its full potential.

Today's research can drive the future of food, and every progress made with science, technology, and hopes, will be a step ahead to win the battle against hunger.