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9B19M006

HEBON: TRANSFORMing INDIAN JACKFRUIT FROM WEED TO WONDER FOOD

Subhanjan Sengupta, Arunaditya Sahay, and Margaret Osborne wrote this case solely to provide material for class discussion. The authors do not intend to illustrate either effective or ineffective handling of a managerial situation. The authors may have disguised certain names and other identifying information to protect confidentiality.

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Subhash Koroth could not help but laugh out loud when he read the web article “According to Pinterest, 2017 is the Year of Jackfruit,”[[1]](#footnote-1) which promoted the humble jackfruit as Pinterest’s top food trend for 2017. Vegans, vegetarians, and flexitarians[[2]](#footnote-2) in the United States were touting the ubiquitous “poor man’s fruit”[[3]](#footnote-3) from India as the latest miracle health food. Koroth had taken many risks and made many false starts after deciding to start a jackfruit processing plant, Artocarpus Foods Private Limited, in his native state of Kerala, India, two years earlier. Should he now take an even bigger risk and attempt to expand his business overseas to take advantage of this trend? Or should he continue to focus on domestic growth? In the export market, should he enter the ready-to-serve product category? Or should he concentrate on industrial users? If he pursued international expansion, would he still be able to sustain his image at home of a respected entrepreneur addressing critical social and environmental issues?

koroth: AN ADAPTABLE ENTREPRENEUR

In 2010, Koroth started exploring new entrepreneurial opportunities in Kerala. He was keen to put his business skills to use. After graduating with a degree in electrical engineering from the Visveswaraya Institute of Engineering Technology, Kottayam, he established an electronics distributorship, Dev Associates, in 2005.

Koroth soon realized that the distribution business did not offer a stable future for him, as contracts were unpredictable and could be terminated arbitrarily. By 2013, Koroth had amassed ₹13 million[[4]](#footnote-4) (US$150,000[[5]](#footnote-5)) from his distribution business to invest in his next venture. He sought out local opportunities that would enrich not only him but also his local community. He first considered bottled water but could not secure the necessary financing from local bankers due to environmental concerns. The local government had recently raised objections about the use of local groundwater by a well-known soft drink brand, leading to the rejection of a proposed plant. Mindful of the regulators’ concerns, he started exploring the prospect of processing the region’s plentiful coconuts into packaged coconut water to meet the needs of the fast-growing market in the United States. However, he assessed the costs to export coconut water as prohibitive. Furthermore, he discovered that the domestic market rejected preserved product offerings in favour of the fresh—and chemical-free—coconut water widely available from street vendors.

Processing the abundant local jackfruit was an obvious opportunity and one that appealed to Koroth. He had grown up surrounded by jackfruit. A seasonal dietary staple, this abundant fruit had been in many savoury and sweet dishes in the family cuisine of his boyhood. His family, like most families in the community, could consume only 20 to 30 of the 100 or so fruits their backyard trees produced every season. Wastage was everywhere, despite the fruits’ alternative uses.

**JACKFRUIT: THE POOR MAN’S FRUIT**

Jackfruit trees grew naturally in many regions of India. The jackfruit was the state fruit of [Kerala](https://en.wikipedia.org/wiki/Kerala) and [Tamil Nadu](https://en.wikipedia.org/wiki/Tamil_Nadu). It was also the national fruit of Bangladesh. Major jackfruit producing countries, in addition to Bangladesh and India, were Myanmar, Nepal, Thailand, Vietnam, China, the Philippines, Indonesia, Malaysia, and Sri Lanka. Jackfruit trees also grew in the East African countries of Uganda, Tanzania, and Mauritius, as well as in Brazil and the Caribbean.

The jackfruit was the largest tree fruit in the world. The fruit ranged in weight from 3 to 45 kilograms (kg) (see Exhibit 1). The jackfruit was rich in carbohydrates, dietary fibre, protein, and nutrients (see Exhibit 2). When mature, it was used as a fruit; when immature, it was used as a vegetable. Unripe (green) jackfruit pulp was a vegetarian substitute for meat, with a texture indistinguishable from chicken or pulled pork. The sweet ripe fruit pulp was used as a dessert. Homemakers and cottage industries prepared numerous jackfruit recipes made from both the fruit and the seeds, processed in different ways. These included chips, pickles, ice cream, jelly, sweets, preserved flakes, and a range of beverages including nectar and wine. The leaves, bark, and latex of the jackfruit trees were used selectively for traditional medicines, livestock feed, glue, and building materials.

**JACKFRUIT: WICKED PROBLEMS**

Koroth recognized the potential of jackfruit to help solve some of the world’s aptly named “wicked problems.”[[6]](#footnote-6) Global hunger, food security, and rural poverty were pressing issues; the state of Kerala had resources and a track record of social innovation positioned to address them.

The world recognized jackfruit as an underutilized crop. It was part of the focus of attention in the United Nations’ wider search for lesser known crops with potential value as human and animal food. Rising temperatures and unpredictable rainfall had begun to reduce yields of wheat and corn, prompting the World Bank and the United Nations to warn that these reduced yields could lead to food wars.[[7]](#footnote-7) The Food and Agriculture Organization of the United Nations[[8]](#footnote-8) suggested that this type of neglected crop could play an important role in addressing the food and agriculture challenges of the future and should thus be re-evaluated.

Jackfruit could serve as a replacement for wheat, corn, and other staple crops under threat from climate change. Jackfruit was easy to grow. It could survive pests, disease, and high temperatures. “It is drought-resistant,” said biotechnology researcher Shyamala Reddy from the University of Agricultural Sciences, Bangalore. “It achieves what farmers need in food production when facing a lot of challenges under climate change.”[[9]](#footnote-9)

In 2015, India ranked 130th among 188 countries in the Human Development Index.[[10]](#footnote-10) Thirty per cent of the population in India lived below the poverty line in 2016.[[11]](#footnote-11) Forty-four per cent of the country’s population was employed in agriculture in 2017.[[12]](#footnote-12) Agribusiness was highly fragmented with an inefficient supply chain, creating high risk for farmers, most of whom were small and marginal with a daily income of about $1.[[13]](#footnote-13)

A thriving social entrepreneurship climate was responding to these challenges across India. Initiatives centred on lifting the rural poor out of poverty by creating employment opportunities and supporting agricultural activities. India had a growing number of social enterprises, of which about 28 per cent had been focusing on the agricultural sector.[[14]](#footnote-14)

The state of Kerala had made extensive improvements in reducing the incidence of both rural and urban poverty for its population of 29 million. It had gained national and international attention with an early prototype of sustainable development known as the Kerala model of development,[[15]](#footnote-15) implemented in the 1970s. As outlined in an economic report, “in Kerala, factors such as land reforms, spread of education and health care, decentralization, pension schemes, public distribution system, Kudumbashree [a women empowerment and poverty eradication program], and plan schemes” had led to a decrease in poverty levels in the state.[[16]](#footnote-16) The agricultural sector in Kerala had declined from 52 per cent of the state’s gross state domestic product in 1960–61 to about 11 per cent in 2014–15.[[17]](#footnote-17) Eight perennial crops—coconut, rubber, pepper, cocoa, cashew nut, cardamom, and tea—accounted for most organized cultivation in the state.

COMMERCIALIZING JACKFRUIT

Koroth was realistic about the issues he would face in commercializing this weed-like commodity at scale. He knew that the importers of unprocessed jackfruit were sourcing them from the orchards of Vietnam and Thailand, where the farmers grafted trees to create clones and ensure consistency. Indian jackfruit trees growing in their natural state were cross-pollinated, and their fruits varied widely in size and flavour.

Up to 75 per cent of the jackfruit growing in India became waste. The fruit spoiled if not eaten or preserved within a few weeks of ripening. Gathering and transporting the heavy fruits from trees growing sporadically would require the coordination of local casual labourers. Koroth identified an opportunity to access large quantities of this seasonal, perishable, heterogeneous fruit and process it into appealing products in a cost-effective and timely manner.

Based on his studies in 2010, Koroth stated,

There was no large-scale commercial value addition in jackfruit, only chips. Many other fruits had value-addition technology, but not jackfruit. . . . I heard about training in Maharashtra, in an agricultural university at Dapori. They had [done] some research on jackfruit—how to dehydrate, how to make powder. They had also made some machinery, like cutting machines and pulping machines. Therefore, I went there [and] I attended training, and got primary information on making powder from jackfruit, on dehydrating jackfruit, and on making juice. After I came back from the training, I decided to go for the jackfruit business.

Processing jackfruit into value-added products for domestic or export markets presented its own challenges. Peeling and cleaning the fruit to make it fit for processing was labour-intensive. A sticky sap surrounded the fruit, which made the cutting process tedious. The labourers had to lubricate the workspace, their hands, and the knives with oil to cut through the fruit.

Koroth reflected on the beginning of the business:

The critical problem was the technology. I started researching pulping. For example, you already have technology on mango pulping. There is one guy in Maharashtra who did mango pulping and also some jackfruit pulping. He had 120 acres of mango plantation . . . and in this 120 acres, he had some jackfruit trees, which gave him some 200 to 300 fruits. He plucked jackfruit and made only pulp, to make small sweets, which he would send to the temple he had a contract with and sell them as *prasad* [sweets used in religious observances by Hindus and Sikhs]. He used to do pulping of jackfruit for four to five days a year. I learned that we could pulp, preserve the pulp, and make some product out of it. Since the fruit was seasonal, I realized that during the season we can pulp, then preserve the pulp and make products or even market the pulp in the off-season. I wanted to start with powder product, juices, and pickle. So this is how you can say it all started.

In early 2014, Koroth laid the foundation of Artocarpus Foods Private Limited and created the brand name Hebon. He set up manufacturing facilities based on what he had seen in mango pulping. He used his house and car as collateral and obtained bank financing of ₹1.5 million (US$23,000) for working capital and ₹1.5 million (US$23,000) for machinery. He diverted funds from his ongoing distribution business to raise the remainder needed. His total investment by the end of 2015 was ₹13 million (US$160,000) for land, the plant, and machinery. Koroth said, “There were so many mistakes, as this was [a] very new industry and there was no model to study. So I made a lot of mistakes, [and] money was spent like anything; so the total expense was nearly ₹13 million (US$160,000).” He experimented with the hardness of nylon brushes used to extract the pulp of the fruit, the size of the metallic blades used to defibre the pulp, and the size of the moving, metallic, mesh screen used for draining the slurry pulp. The adjustments he made to the machines available in the market (i.e., the fruit-pulping machines) made them able to process jackfruit.

COMPETING ON THE SHELVES

The first products Koroth introduced were ready-to-serve consumer products such as jackfruit juice, jackfruit seed flour, jams, and masala made from jackfruit seed, under the brand name Hebon. The products were placed in local supermarkets in the Kannur district of Kerala. They did not succeed against established brands in these product categories.

Koroth said,

We placed the Hebon brand jackfruit pickle on shelves. Nobody makes jackfruit pickle. The product is unique. For the consumer, it was not unique—they compared it to the mango pickle. We had a tough time with the jackfruit pickle. For the juices, the customers compared it with pineapple juice and mango juice. Now on the shelves, you had juices of other fruits manufactured by bigger brands, such as PepsiCo. The products were not [being taken] off the shelves, as customers associated whatever the juice was with the large brands. Hebon looked small and unimportant [next to] those brands.

The next trial was with powders, such as jackfruit porridge. Despite product demonstrations at the point of sale, sales were poor. Koroth attributed the poor sales to high prices and lack of brand recognition, despite his visibility in local media.

Retailers started returning the products from the shelves to Koroth. He was very disappointed, and he took a step back. From March to July 2015, he studied the market. Pulp production continued, and Koroth began pitching his pulp to local food companies as a processed food ingredient. Reflecting on the past, he shared:

I started travelling. I made small pieces of jackfruit, carried them with me, showed that you can manufacture your cakes or ice cream with small pieces of jackfruit, and [that] it would be very tasty. One can make fruit salad, juice, [and] milkshakes using the pulp. I started selling pulp and pieces to juice shops, bakery chains, and smaller baking shops. Most of these were in Kerala, some in Tamil Nadu. Many were cold calls initially. Then it was word of mouth. Once one company started making jackfruit cake or biscuits using my pulp, others began to come to me, as there was no competition.

**BUSINESS TO BUSINESS IS THE KEY**

By late 2015, Koroth had realized that industrial products were the key to volume. The sales cycle included dropping off samples, making numerous follow-up calls, and many delays. He met with representatives from Lazza Ice Creams (Lazza) and Arun Icecreams (Arun), who later started using his product. He established business with close to 100 small bakeries, each placing monthly orders averaging 10 kg.

A breakthrough occurred when larger companies began ordering pulp in one-ton batches. Milma, the brand name of the products produced by the Kerala Co-operative Milk Marketing Federation, started using the pulp to make ice cream and *pada* (an Indian sweet). Koroth shared how the orders gradually increased:

Milma is very popular in Kerala. If they make jackfruit muffins, or jackfruit pada, the consumer will accept [them] in a single day. I cannot achieve that kind of marketing. I do not have that kind of channel and brand. So initially, they bought 1 kg [of jackfruit pulp] and made a sample, then they asked for 10 kg and made small commercial production, then started buying 200 kg a week, 500 kg a week, and it went on increasing. I concentrated on pulping and little jackfruit pieces. There are many jackfruit varieties. Only after jackfruit ripening [do] we get to know their variety in terms of taste, colour, and TSS [total soluble solid]. Therefore, I separated a particular size, and I started making pieces, which were also used for making ice cream.

At the end of 2016, Lazza placed an order for jackfruit pieces from Hebon. Lazza was a company in Cochin, Kerala, established in 1972. It had expanded to 28 IS09001-certified factories in South India and had operations in the Middle East and Africa. Once it started ordering jackfruit pulp from Hebon, Lazza began making ice cream with pieces of jackfruit in it and thereafter continued to increase its orders. Arun, a popular ice cream brand operating 1,000 ice cream parlours in South India, also began buying pieces of jackfruit from Hebon in late 2016. Arun’s corporate parent, Hatsun Agro Product Limited, also had overseas operations in the Seychelles and Brunei.

RAMPING UP PRODUCTION

Koroth addressed collection and processing challenges by creating preprocessing centres in the surrounding villages. He started with a pilot project in five villages, explaining, “Let’s say there is a home with a covered area. The women of [the] three or four nearest homes come to that area in the morning with the jackfruit from their homes, or after collecting them from nearby places. They cut the fruit there, segregate the bulb and seeds, and transport the preprocessed fruit to my factory in one hour.” This pilot process was an attempt to localize the cutting and segregation process while ensuring hygiene standards. For the main production, he maintained a facility in his plant where women manually cut, peeled, and separated the fruit. The raw material would then go straight to the pulping machine, called the pulper. To reduce costs, he intended to equip the village centres with modern facilities whereby the villagers could manage the operations on their own.

By late 2016, sales were good, and the market seemed promising. Koroth recalled,

We had five big buyers like Milma Ice Cream, Lazza Ice Cream, Arun Ice Cream, and Elite Cakes. The market was good. There was no competitor. I set the price of jackfruit pulp in India. I can proudly say that. Everybody agreed to my price. I was the only person to make jackfruit pulp in [a] sufficient quantity, for industrial usage. I knew that very soon there would be other players. But I did not have a competitor at that point.

The company was growing gradually, and Koroth was satisfied with the product line in 2016. He continued to invest in product research and development. Product development included using the testing facilities of KVK Agri Products Limited and of Trivundram University. Hebon collaborated with them to develop a jackfruit pasta for a one-time fee of ₹50,000 (US$650) and a two-year 5 per cent royalty on sales. Retort technology was purchased to produce tender jackfruit products in pouches with a shelf life of one year. Hebon used the technology to prepare and package tender jackfruit teriyaki and curry products, which the company believed was a growing market. It looked for large buyers for the new retort-packaged products. Koroth procured pulverizers and dryers to make powder-based products such as jackfruit flour.

By the first quarter of 2017, the production lines were reliably producing pulp-based products for industrial use as well as some fast-moving products for the consumer market (see Exhibit 3). The industrial products were Koroth’s main source of revenue; there had been small uptake by distributors for consumer products. In addition to pulp, pieces, squash, and paste for the large food manufacturers, Koroth had the capacity to produce a line of quality-controlled offerings under the private label “Wonder Jack Tender Jackfruit,” which included the following:

* Wonder Jack Teriyaki Jackfruit
* Wonder Jack Indian Curry Jackfruit
* Wonder Jack BBQ Jackfruit
* Organic Jackfruit Noodles
* Organic Jackfruit Vermicelli
* Organic Jackfruit Pasta
* Organic Jackfruit Flour
* Organic Jackfruit Dosa Mix
* Organic Jackfruit Coffee

Koroth secured HACCAP (hazard analysis and critical control points) certification, which certified the products as safe to consume. He established a quality control and testing lab in his plant and hired staff with necessary expertise. Hebon became the first organic company in the jackfruit industry in India. It was certified by the Indian Organic Certification Agency, the Food Safety and Standards Authority of India, and the Agricultural and Processed Food Products Export Development Authority.

**JACKFRUIT HITS THE JACKPOT**

Koroth received much press attention. He was recognized by *The Hindu* as “a pioneer in the country in [the] jackfruit-based industry.”[[18]](#footnote-18) Yahoo! Newswrote that Hebon’s “contribution to the food processing industry will remain a pioneer that resurrected a lowly fruit.”[[19]](#footnote-19) The *Deccan Chronicle*,[[20]](#footnote-20) a respected national daily, *Civil Society*,[[21]](#footnote-21) a popular magazine, and the popular news website *The Wire* [[22]](#footnote-22) also took note of Koroth’s initiatives.And his enterprise caught the attention of two like-minded entrepreneurs, Nithish Chandra and Devineni Prabhu, who eventually joined him to manage national and international operations.

By the end of 2016, Koroth was processing 6,800 kg of jackfruit a month, with a product line of pulp, pieces, tender jackfruit, jackfruit curry, and teriyaki jackfruit. He had 14 regular business-to-business (B2B) customers and 12 employees. Monthly sales had grown to ₹1.025 million (approximately US$16,000) (see Exhibits 4 and 5). His monthly fixed costs were ₹75,000 (US$11,250), and his variable costs were approximately ₹45/kg (US$0.63/kg) (see Exhibit 6). He was sourcing jackfruit from a wider area, and his dream of building the commercial value of the poor man’s fruit was gradually coming true. Koroth expanded distribution in the domestic market. He remained focused on processing jackfruit as an ingredient for industrial uses (see Exhibit 3). Signs of potential growth emerged when a major chocolate manufacturing company and a major processed food brand in India showed interest in joint research and development activities for developing jackfruit-based food products. These companies were attracted by the potential for innovation in product development. Coffee made from jackfruit, for example, was one of the innovative products drawing the attention of industrial buyers.

**FRUIT OF THE FUTURE, OR FLAVOUR OF THE MONTH?**

Koroth was making these efforts when the jackfruit was being identified as a high-potential “fruit for the future.” To understand more about the potential of the fruit and to explore commercial possibilities, Koroth, Chandra, and Prabhu sought mentoring from Shree Padree, a renowned Indian journalist in the farming sector. Padree was a leading figure in advocating the value of the Indian jackfruit in the global market. The fruit started attracting attention due to its multiple health benefits.[[23]](#footnote-23) Major B2B e-commerce websites indicated a growing volume of dried jackfruit exports from non-Western countries to Western countries.[[24]](#footnote-24) Countries such as Vietnam, Malaysia, the Philippines, Cambodia, and Sri Lanka had quickly realized the potential of the fruit and adopted initiatives for supporting farming and manufacturing value-added jackfruit products. Companies in those countries were manufacturing and exporting processed jackfruit products.[[25]](#footnote-25) Exports of fresh tropical fruits to Europe were increasing.[[26]](#footnote-26) The trade of fresh jackfruit among Southeast Asian countries[[27]](#footnote-27) and the export of mostly canned and freeze-dried jackfruit from South Asian countries to the United States began to appear in public export and import figures.[[28]](#footnote-28) Export figures from India showed the domination of jackfruit chips (see Exhibit 7), which Koroth believed were made mostly by small-scale non-governmental organizations.

Koroth was certainly surprised to see the extent to which jackfruit was making headlines in the United States. He became aware of the rising demand for vegan alternatives to meat—jackfruit in particular—in the US market. Instructions for cooking jackfruit were appearing regularly in traditional and digital media. Jackfruit was featured as a particularly attractive meat substitute because of its ability to mimic the taste and texture of pulled pork—a staple in the barbeque culture of many southern states. Raw jackfruit bulbs began showing up in mainstream grocery stores and were no longer only available in ethnic stores. Canned jackfruit was on most grocery store shelves, and retail stores had begun offering prepared packages of ready-to-serve jackfruit dishes.

Koroth wondered if he should reconsider entering the ready-to-serve product category with a line of consumer goods for export. There was a risk that jackfruit would prove to be no more than a flavour-of-the-month fad in Western markets. On the other hand, if the market had staying power, his packaged goods would face strong competition from recognized, nationally branded entrants.

Would industrial food processers in the United States be seeking a supplier of jackfruit pulp to support new product categories? Koroth was aware that diverting resources to either possible export market might put his domestic business at risk; would he be better off continuing to expand pulp production within the large domestic B2B market?

Koroth was amused by the irony of the local poor man’s fruit trending as the hottest new gourmet fad overseas. But he quickly grew serious when assessing the important decisions to be made.

EXHIBIT 1: SUBHASH KOROTH WITH JACKFRUIT IN HIS FACTORY



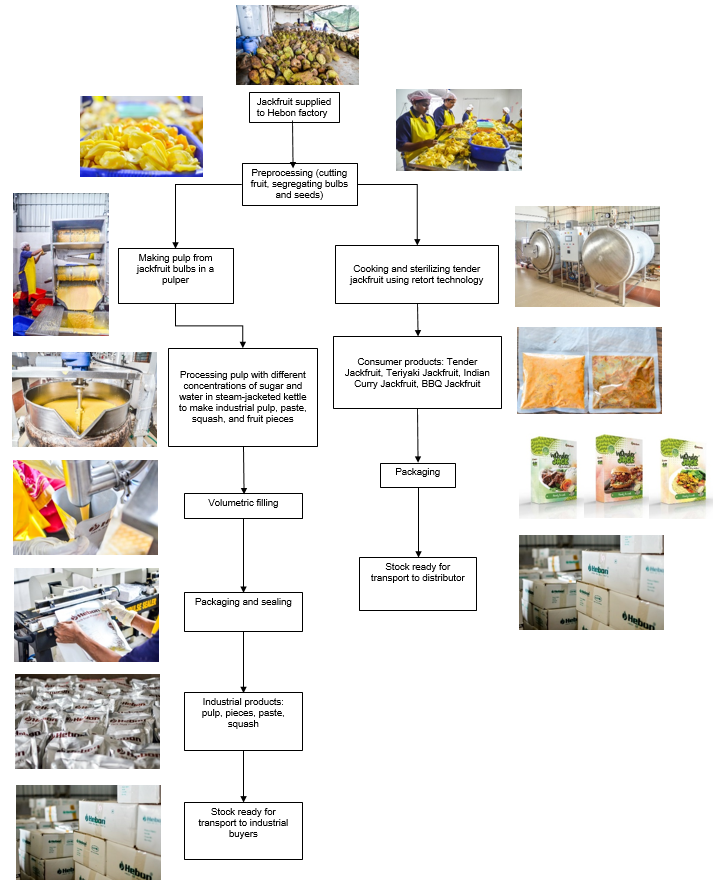
Source: Company documents.

EXHIBIT 2: JACKFRUIT FACTS

|  |
| --- |
| * Popularly known as a “miracle” fruit |
| * Grows organically by default as a backyard fruit or wild fruit |
| * Tastes like meat and serves as a substitute for it |
| * A versatile food (value-added product varieties include pulp, juice, jam, pickles, tacos, ice cream, curry, fries, pasta, honey, squash, jam, halwa, wine, chips, coffee, and chocolate, among others) |
| * Tree leaves are good fodder for farm animals |
| * Jackfruit timber is highly valued and used for making furniture and musical instruments |
| * Weight of the fruit varies from 3 to 45 kilograms |
| * The largest fruit tree in the world |
| * A jackfruit tree can grow 150 to 250 jackfruits in a season |
| * The jackfruit tree provides latex usable for making glue |
| * Very high nutritional value (protein, iron, calories, carbohydrates, vitamins, potassium, calcium, fatty acids, amino acids, folic acid, and fibre) |
| * Contains phytonutrients, which are vital in combatting cancer |
| * Rich in antioxidants |
| * Rich in magnesium, which helps fight high blood pressure, diabetes, and heart disease |
| * Low sugar levels make jackfruit an appropriate food for diabetic patients |
| * Rich in magnesium, which, coupled with calcium, helps reduce the risk of osteoporosis |
| * Fruit seed powder has a cosmetic use in helping to reduce skin wrinkles |
| * Jackfruit consumption can lead to the removal of heavy metals such as cadmium from the body |
| * Fruit seed can be used to treat anemia |
| * Fruit seed powder helps fight indigestion |
| * The jackfruit tree is resistant to drought, and it can grow in high temperatures |
| * The tree and the fruit are not affected by pests and disease |
| * Often lauded as the fruit that will save the planet from hunger, as fruit has the ability to withstand tough climatic conditions |

Source: Created by the authors based on company files.

Exhibit 3: BRIEF OVERVIEW OF THE HEBON PRODUCTION LINE



Source: Created by the authors based on factory visit and company records.

**EXHIBIT 4: HEBON SALES ESTIMATES (2015)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Month** | **Sales (US$)** | **Sales (kg)** | **Product Types Shipped** | **Number of Customers** | **Average Order Size** |
| January | 1,500 | 660 | pulp | 2 | 10 kg |
| February | 3,000 | 1,400 | pulp | 2 | 10 kg |
| March | 3,000 | 1,400 | pulp | 3 | 10 kg |
| April | 3,000 | 1,000 | pulp, pieces | 5 | 15 kg |
| May | 4,200 | 1,840 | pulp, pieces | 6 | 15 kg |
| June | 4,600 | 2,000 | pulp, pieces | 6 | 15 kg |
| July | 4,900 | 2,170 | pulp, pieces | 10 | 20 kg |
| August | 5,000 | 2,200 | pulp, pieces | 12 | 25 kg |
| September | 5,300 | 2,340 | pulp, pieces | 13 | 25 kg |
| October | 6,000 | 2,000 | pulp, pieces | 15 | 25 kg |
| November | 6,500 | 2,830 | pulp, pieces, paste | 14 | 30 kg |
| December | 6,800 | 2,960 | pulp, pieces, paste | 14 | 30 kg |

Note: kg = kilograms.

Source: Compiled by the authors from company records.

EXHIBIT 5: HEBON SALES ESTIMATES (2016)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Month** | **Sales (US$)** | **Sales (kg)** | **Product Types Shipped** | **Number of Customers** | **Average Order Size** |
| January | 7,200 | 3,130 | pulp, pieces, paste, squash, seed flour | 16 | 40 kg |
| February | 7,400 | 3,200 | pulp, pieces, paste, squash, seed flour, jackfruit flour | 16 | 40 kg |
| March | 7,600 | 3,330 | pulp, pieces, paste, squash, seed flour, jackfruit flour | 17 | 40 kg |
| April | 8,300 | 3,565 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit | 16 | 50 kg |
| May | 9,200 | 4,000 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit | 18 | 50 kg |
| June | 10,300 | 4,500 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit, pasta | 14 | 50 kg |
| July | 10,700 | 4,660 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit, pasta, jackfruit teriyaki | 14 | 70 kg |
| August | 11,300 | 3,675 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit, pasta, jackfruit teriyaki, jackfruit BBQ | 16 | 100 kg |
| September | 12,200 | 4,970 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit, pasta, jackfruit teriyaki, jackfruit BBQ | 18 | 100 kg |
| October | 13,000 | 5,310 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit, pasta, jackfruit teriyaki, jackfruit BBQ, jackfruit red gravy | 19 | 100 kg |
| November | 13,800 | 6,000 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit, pasta, jackfruit teriyaki, jackfruit BBQ, jackfruit red gravy, Indian jackfruit curry | 19 | 200 kg |
| December | 15,700 | 6,833 | pulp, pieces, paste, squash, seed flour, jackfruit flour, tender jackfruit, pasta, jackfruit teriyaki, jackfruit BBQ, jackfruit red gravy, Indian jackfruit curry | 20 | 250 kg |

Note: kg = kilograms.

Source: Compiled by the authors from company records.

EXHIBIT 6: HEBON ANNUAL COST ESTIMATES (2016)

|  |  |  |
| --- | --- | --- |
|  | **Annual Cost** | |
| **Fixed Costs (Approximate)** | ₹ | **US$** |
| Overall Depreciation on Fixed Capital | 300,000 | 4,500 |
| Insurance | 20,000 | 300 |
| Rent for Land and Water | 100,000 | 1500 |
| Licence and Certification Renewal | 300,000 | 4500 |
| Audit Expense | 30,000 | 450 |
| Total Fixed Cost | *750,000* | *11,250* |
| **Variable Costs (Approximate)** | ₹ | **US$** |
| Wages for Labour | 720,000 | 10,600 |
| Salaries | 480,000 | 7,000 |
| Power Consumption | 100,000 | 1500 |
| Maintenance of Machinery | 200,000 | 3000 |
| Raw Material Cost | 3,000,000 | 45,000 |
| Freight Cost | 480,000 | 7,000 |
| Packaging Cost | 800,000 | 12,000 |
| Managing Director Expense | 20,000 | 300 |
| Total Variable Cost | *5,800,000* | *84,000* |
| **Total Annual Cost (Approximate)** | ***5,950,000*** | ***95,250*** |

Note: ₹ = INR = Indian rupee; US$1 = ₹67.9047 on January 1, 2017.

Source: Compiled by the authors from company records.

**EXHIBIT 7: JACKFRUIT EXPORTS FROM INDIA (2017)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Country Exported** | **Jackfruit Chips** | **Whole Fruit** | **Dried Parts of Fruit** | **Jackfruit Seed** | **Mode of Export** |
| **United States** | Yes | X | X | Yes | Sea |
| **Australia** | Yes | X | X | X | Sea |
| **Saudi Arabia** | Yes | X | X | X | Sea |
| **United Arab Emirates** | Yes | Yes | X | X | Sea |
| **Kuwait** | Yes | X | X | X | Sea |
| **Qatar** | Yes | Yes | X | X | Sea |
| **Bahrain** | Yes | X | X | X | Sea |
| **Oman** | Yes | X | X | X | Sea |
| **France** | Yes | X | X | X | Sea |
| **Italy** | X | X | Yes | X | Sea |
| **Exporters:** | | | | | |
| * Wynad Exporters | * Eastern Foods | * Sumi Mercantile | * Omni Exports | * Malabar | * Shiji Traders |
| * Rootstock Trading | * Global Exporters | * Cadluck Exports | * Landmark Exports | * Grandma's Food | * Arabian Exports |
| * Grand International | * Worldwide Exports | * Nenmani Agro | * Jawath Trading | * Tropicana Exports | * Parayil Exports |

Source: Compiled by the authors based on “Exporters of Jack Fruit from India,” Planetexim.net, accessed March 23, 2018, [www.planetexim.net/product-data/india-exporter/Jack-Fruit.aspx?page=1](http://www.planetexim.net/product-data/india-exporter/Jack-Fruit.aspx?page=1).

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3. The cultivation of jackfruit by Indian farmers was hindered by an image problem. Growing naturally in yards and fallow lands across the Western Ghats mountain range, jackfruit was known in India as the poor man’s fruit. Landowners focused on cultivating other crops, such as coconut, rubber, and cocoa, because these had high commercial value. [↑](#footnote-ref-3)
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