



## **Meat Analogue from Jackfruit**

**A comprehensive handbook on using Jackfruit as a meat alternative**



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## **Introduction**

Jackfruit is a fruit of the Jack tree (*Artocarpus heterophyllus*) belonging to the family Moraceae. The jackfruit is regarded as the largest tree fruit, which could receive a weight to 55kg in weight and 9cm in length and 50cm in diameter. A mature jackfruit tree is capable of producing around 200 fruits per year, with older trees being able to produce higher number of fruits. The jackfruit has evolved a unique layered configuration with a thorny exterior and porous tubular underlayer that help the fruit survive a high energy impact while the fruit falls from the tree. The jackfruit is a multiple fruit composed of thousands of multiple flowers, and fleshy petals of unripe jackfruit are eaten. Research suggests that jackfruit may produce several health benefits as it is a healthy source of Vitamin C and other essential nutrients.

The jackfruit tree is commonly found in tropical lowlands and is widely cultivated throughout tropical regions of the world, including India, Bangladesh, Sri Lanka and the rainforests of the Philippines, Indonesia, Malaysia and Australia.

The ripe fruit is sweet, consumed raw, and commonly used in desserts. Jackfruit is commonly used in South and Southeastern Asian cuisines. Both ripe and unripe fruits are consumed. Canned green Jackfruit has a mild taste and meat-like (fibrous) texture that tends itself to be called 'vegetable meat'. This fruit is available internationally as canned or frozen and in chilled meals, as various products derived from fruit, such as noodles and chips.

### **Etymology and Common names:**

The word *Jackfruit* comes from Portuguese *jaca*, which in turn was derived from the Malayalam language from *chakka* when the Portuguese arrived in India at Calicut on the Malabar Coast. The common English name "jackfruit" was used by physician and naturalist Garcia de Orta in his 1563 book. Centuries later, botanist Ralph Randles Stewart suggested it was named after William Jacks (1795-1822), a Scottish botanist who worked for the East India Company in Bengal, Sumatra and Malaya.

The jackfruit was domesticated independently in the Indian subcontinent and Southeast Asia, as indicated by the Southeast Asian names which are not derived from Sanskrit roots. It was

probably first domesticated by Austronesians in Java or the Malay Peninsula. The fruit was later introduced to Guam via Filipino settlers when both were part of Spanish empire. It is the national fruit of Bangladesh and state fruit of Kerala and Tamil Nadu.

### **Varieties:**

In South Asian countries like Bangladesh and India, the fruit is consumed on its own. The unripe fruit is used in curry and. In India, two varieties of jackfruit predominate: *Muttomvarikka* and *sindoor*. *Muttomvarikka* has a slightly hard inner flesh when ripe, while the inner flesh of the ripe *sindoor* fruit is soft.

### **Botanical Description**

#### **Shape, trunk and leaves:**

Jackfruit grows as an evergreen tree that has a relatively short trunk and dense treetop. It easily reaches heights of 9 to 21meter and trunk diameters of 30 to 80cm. it sometimes forms buttress roots. The bark of the jackfruit tree is reddish-brown and smooth. In the event of injury to the bark, a milky sap is released.

The leaves are alternate and spirally arranged. They are gummy and thick and are divided into a petiole and a leaf blade. The petiole is 2.5 to 7.5cm long. The leathery leaf blade is 20 to 40cm long 7.5 to 18cm wide, and is oblong to ovate in shape. In young trees, the leaf edges re irregularly lobed or split. On older trees, the leaves are rounded and dark green, with a smooth leaf margin. The leaf blade has a prominent main nerve and starting on each side, six to eight lateral nerves. The stipules are egg-shaped at a length of 1.5 to 8cm.

#### **Flowers:**

The inflorescence is formed on the trunk, branches or twigs. Jackfruit trees are monoecious, having both female and male flowers on a tree. The inflorescence is pedunculated, cylindrical to ellipsoidal or pear shaped. In fluorescence are initially completely enveloped in egg-shaped cover sheets which rapidly slough off.

The flowers are small, sitting on a fleshy rachis. The male flowers are greenish, some flowers are sterile. The male flowers are hairy and the perianth ends with two 1 to 1.5mm membrane. The individual and prominent stamens are straight with yellow, roundish anthers. Pollen grains are tiny, around 60 microns in diameter. After the pollen distribution, the stamens become ash-gray and fall off after few days. Later, all the male inflorescence also falls off. The greenish female flowers, with hairy and tubular perianth, have a fleshy flower-like base. The female flowers contain an ovary with a broad, capitate or rarely bilobed scar. The blooming time ranges from December until February to March.

**Fruit:**

The ellipsoidal to roundish fruit is a multiple fruit formed from the fusion of ovaries of multiple flowers. The fruits grow on a long and thick stem on the trunk, they vary in size and ripen from an initially yellowish-greenish to yellow, and then at maturity to yellowish-brown. They possess a hard, gummy shell with small pimples surrounded with hard hexagonal tubercles.

The fruit consists of a fibrous, whitish core about 5-10cm thick. Radiating from this are many 10cm long individual fruits. they are elliptical, light brown achenes with a length of about 3cm and a diameter of 1.5-2cm.

There are about 100-500 seeds per fruit. The seed coat consists of a thin, waxy, parchment-like, easily removable testa and a brownish, membranous tegmen; the cotyledons are usually unequal in size, and then endosperm is minimally present. An average fruit consists of 27% edible seed coat, 15% edible seeds, 20% white pulp and bark and 10% core.

The fruits mature during the rainy season from July to August. The bean-shaped achenes of the jackfruit are coated with a firm yellowish aril, which has an intense sweet taste at the maturity of the fruit. The pulp is enveloped by many narrow strands of fiber, which run between that hard shell and the core of the fruit and are firmly attached to it. When pruned, the inner part secretes a sticky, milky liquid. When fully ripe, jackfruit has a strong, pleasant aroma; the pulp of the opened fruits resembles the odor of pineapple and banana.

### Nutritional value of Jackfruit (100g)

Constituent	Average value
Moisture (%)	76.20
Protein (g)	1.90
Fibre (g)	1.10
Potassium (mg)	107.00
Phosphorous (mg)	41.00
$\beta$ Carotene (mg)	175.00
Riboflavin (mg)	0.13
Vitamin C (mg)	7.00
Energy (cal)	88.00
Fat (g)	0.10
Carbohydrates (g)	19.80
Calcium (mg)	20.00
Iron (mg)	0.56
Thiamine (mg)	0.03

### Uses:

Ripe jackfruit is naturally sweet, with subtle pineapple or banana flavour. It can be used to make a variety of dishes, including custards and cakes, or mixed with shaved ice, such as *es teler* in Indonesia or halo-halo in the Philippines. For the traditional breakfast dish in southern India, *idlis*, the fruit is used with rice as an ingredient and jackfruit leaves are used to wrap it up for steaming. Jackfruit *dosas* can be prepared by grinding jackfruit flesh along with the batter. Ripe jackfruit arlis are sometimes seeded, fried or freeze-dried and sold as jackfruit chips.

The seeds from ripe fruits are edible once cooked, and are said to have a milky, sweet taste often compared to Brazil nuts. They may be boiled, baked or roasted. When roasted, the flavour of

seeds is comparable to chestnuts. Seeds are used as snacks or to make desserts. In Java, the seeds are commonly cooked and seasoned with salt as a snack. They are commonly used in curry in India in the form of a traditional lentils and vegetable mix curry. Young leaves are tender enough to be used as a vegetable.

#### **Uses of Jackfruit:**

- LDL or 'bad cholesterol' is a waxy deposit that can stick to the inner walls of arteries, which on building up can restrict the flow of blood, which can raise blood pressure and increase the risk of heart attack or stroke. HDL or 'good cholesterol' helps remove LDL cholesterol from blood vessels and send it back to the liver. Animal studies suggests that jackfruit seeds may help reduce the levels of LDL and raises level of HDL.
- Jackfruit is a good source of potassium. According the American Heart Association (AHA), foods rich in potassium can helps reduce blood pressure. Potassium lowers blood pressure by counteracting the effects of sodium and reducing tension in the walls of blood vessels. The AHA recommends that healthy adults consume 4700 milligrams of potassium a day. A cup of raw, sliced jackfruit contains 739mg of potassium.
- Jackfruits contains phytochemicals like flavonoids, saponins and tannins. According to the American Institute of Cancer Research, many phytochemicals have antioxidant properties, which means that they may help to counter the effects of free radicals. Free radicals are highly reactive molecules that occur naturally in the body and can damage cells causing oxidative stress, which may play a role in promoting carcinogenesis. Also, phytochemicals may prevent angiogenesis round cancerous cells affecting blood its supply and growth.
- The glycemic index throws light on how specific foods affect a person's blood glucose levels. Foods with higher GI scores are likelier t cause spike in blood glucose that those with lower score. Jackfruit has an intermediate GI score, but other parts of the plant may help treat T2DM. Researches have also determined that jackfruit leaf extract contains flavonoids that may help prevent cell death in pancreas and can result in higher insulin levels and in-turn helps in lowering the blood glucose levels than those who eat controlled diet. Also, another study revealed that the extract from jackfruit bark contains chemicals

that prevent the breakdown of fats and complex carbohydrates into sugars, thus helping in managing diabetes.

- Jackfruit is a good source of vitamin C, a powerful antioxidant that is essential for a healthy immune system. The body requires vitamin C to make Collagen protein that is necessary for maintaining healthy skin, bones and connective tissues, such as blood vessels and cartilage. Collagen is also important for wound healing.
- Jackfruit seeds is a good source of both soluble and insoluble fiber. Soluble fiber can help lower LDL cholesterol levels and slow absorption of carbohydrates into the blood stream, which can help prevent spikes in blood glucose levels after eating. Research suggest that dietary fiber may also reduce the risk of heart diseases, diabetes and colon cancer. Jackfruit seeds contain prebiotics that help growth of beneficial bacteria in the gut.
- Jackfruit is rich in magnesium, a mineral linked with helping the body relax. Melatonin, a form of magnesium has been proved to reduce insomnia.
- Jackfruit contains nutrients that may help prevent sores in the stomach, or ulcers from forming.

### **Cultural Significance:**

The jackfruit has played a significant role in Indian agriculture for centuries. Archaeological findings in India have revealed that jackfruit was cultivated in India 3000 to 6000 years ago. It has also been widely cultivated in Southeast Asia.

The ornate wooden plant called *avani palaka* (*Mane* in Kannada), made of the wood of the jackfruit tree, is used as the priest's seat during Hindu ceremonies. The jackfruit woods are prized for statues in temples in Hindu and Buddhist temples.

### **Production, Marketing and Commercial Availability:**

In 2017, India produced 1.4 million tons of jackfruit, followed by Bangladesh, Thailand, and Indonesia.

The marketing of jackfruit involves three groups: producers, traders, and middlemen, as well as wholesalers and retailers. The marketing channels are rather complex. Large farms sell immature fruit to wholesalers, which helps cash flow and reduces risk, whereas medium-sized farms sell the fruit directly to local markets and retailers.

Outside countries of origin, fresh jackfruit can be found at food markets throughout Southeast Asia. It is also extensively cultivated in the Brazilian coastal region, where it is sold in local markets. It is available canned in sugary syrup or frozen, prepared and cut. Jackfruit Industries was established in Sri Lanka and Vietnam, where the fruit is processed into products such as flour, noodles, papads, and ice cream. It is also canned and sold as a vegetable for export.

Jackfruit is widely available year-round, both canned and dried. Dried jackfruit chips are produced by various manufacturers. As reported in 2019, jackfruit became more widely available in US grocery stores, cleaned and ready to cook, as well as in premade dishes or prepared ingredients. It is on restaurant menus in preparations such as tacos and fillings of vegan versions of pulled meat dishes.

### **Concept of Meat Analogue**

Meat analogues, also referred to as imitation meats or meat substitutes. These are the foods that mimics the appearance, flavour, and texture of the conventional animal-based meats but they are completely made of plant-based components or other non-meat sources. The development the application of meat analogues has been becoming more prevalent in the recent years due to many concerns like, animal diseases related health risks, religious and ethical issues pertaining to animal care, environmental concerns due to excessive meat production.

Various plant-based proteins such as soy, wheat gluten, pea protein, and mycoprotein (derived from fungi), are most commonly used as meat substitutes. These proteins are frequently mixed with additional components such as oils, starches, fibers, and flavourings to improve the texture and flavour and more realistic mouthfeel is achieved by using sophisticated procedures to create fibrous structures that imitate the muscle fibers present in meat.

## Types of Meat Analogues

Meat analogues can be used in various food forms, like burgers, sausages, nuggets, strips, and even whole cuts that resemble steaks or roasts. Because they are designed to be cooked and served in similar ways to traditional meats.

## Jackfruit as Meat Analogue

Jackfruit is recognized as a most eligible meat substitute due to its fibrous texture and ability to absorb flavours, that makes it more versatile substitute in vegetarian and vegan cooking. Jackfruit has been traditionally used in culinary practices for its unique properties and nutritional benefits. Usually, jackfruit flesh is sweet and aromatic when it is ripe, and it is often enjoyed as a fruit. However, it is the young, unripe jackfruit that is used as a meat substitute of which the flesh is fibrous and mildly flavoured, making it an ideal component for absorbing spices and souses, similar to the meat properties.

## Texturizing methods for Meat Analogue

Technique	Equipment	Textural characteristics	Ready-to-eat	Commercially available
Electrospinning	Electro spinner	Anisotropy in nanometer scale, fibrous products	Yes	No
Low-moisture extrusion cooking (LMEC; $\leq 40\%$ water)	Single-screw extruder	Dry, slightly expanded products	No	Yes
Freeze structuring	Unidirectional freezer	Anisotropic foam structure (alignment of ice crystal needles)	No	No
High-moisture extrusion cooking (HMEC; $> 40\%$ water)	Twin-screw extruder with or without a cooling die	Anisotropic, fibrous & layered structure	Yes	Yes

Cell Shearing Technology	Shear cell with a “cone-in-cone” (Couette) geometry	Layered and fibrous structures	Yes	No
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### **Electrospinning**

Electrospinning is a kind of plant-based protein processing technology that is also being efficiently used in development of meat alternatives. It involves the use of electric field to produce nanofibers from the protein.

### **Extrusion**

Extrusion is the most often used commercial method to develop plant-based meat products. There are two distinguished types of this texturizing method, Low-moisture extrusion cooking (LMEC) and High-moisture extrusion cooking (HMEC).

#### **Low-moisture extrusion Cooking (LMEC)**

In this method, the flours or the concentrates are mechanically processed to texturized vegetable proteins (which are dry) with moisture content  $\leq 40\%$ .

#### **High-moisture extrusion Cooking (HMEC)**

In high moisture extrusion, fibrous products are produced with moisture content more than 50%.

In general, the concentrates are molten inside the barrel by a combination of heating, hydration and mechanical deformation. When the contents are molten, they flow into the die and get arranged by the laminar flow and is cooled to avoid expansion.

### **Freeze Structuring**

Freeze structuring or freeze alignment involves freezing of plant-based protein emulsions to form ice crystals and bidirectionally removing heat from the well-mixed slurry to get isotropic identical ice crystals. The frozen products then dried while preserving ice crystal, which results in distinct and aligned interconnected fibrous microstructures. The fibrous structure resembles the animal meat structure like layers muscles.

## Shear Cell Technology

Shear cell technology, also known as high pressure processing (HPP), applying high pressure to the raw materials, results in the breakdown of cell walls, this process improves the texture, digestibility, nutritional profile, flavour, and shelf life of the alternative protein products and the meat substitutes.

This technology offers superior control over the deformation of plant-based meat compared to extrusion processes. The precision allows for the production of fibrous meat analogue that maintains stability and consistent structure even after cooling.

## Process of preparing meat analogue with jackfruit

- **Peeling, Cutting and Cleaning:** Peel out the well mature unripe jackfruit, and cut/slice the fruit into smaller portions for the ease of further process. Clean by removing seeds and unwanted rag from it.
- **Blanching, Salting/removing excess water:** Blanch the cleaned pieces in hot water with added salt, for 2-3 minutes and allow to drain excessive water.
- **Drying:** Dry out the pieces with the heat pump dryer to drain out the water content from the fruit completely.
- **Milling/ grinding:** Milling or grinding of dried pieces to the fine powder and sieving it for a uniform granule size.
- **Blending:** Mix all the desired ingredients with the ground jackfruit powder and blend it properly.
- **Texturization:** Subject the blended mixture to the texturing process for the proper meat like structure using either of the methods mentioned.
- **Shaping and Packing:** Give a proper shape (spherical/square/cube) to the well texturized outcome and pack it in a vacuum sealed package.
- **Storage:** Store the well packed portions in deep freezer (-18°C).

**Cutting/Cleaning**

(Cutting the unripen fruit into smaller pieces, and Cleaning them thoroughly by removing seeds)



**Blanching**

(short time in Hot water)



**Salting/removing excess water**



**Drying**

(Heat Pump Dryer)



**Milling of dried JF slices**



**Sieving**

(Blood & fat substitutes can be added) by **Blending**



**Texturization**



**Shaping and Packing**

(Vacuum Package)



### Storing (Deep Freezer/ -18 °C)

#### Machineries Requirements and cost:

Machineries	Approx. Cost in Rs.
Heat pump dryer Capacity: 100 to 2000 LPH	5.5 lakhs
Wet Grinder 5 HP (200kg/hr)	1.2 lakh
Hammer miller	2 lakhs
Jackfruit Peeler	20,000/-
Hot air oven	50,000/-
High moisture extruder (HME)	20 lakhs
Single screw extruder	15 lakhs
Blender (100kg)	3 lakhs
Vacuum packaging system	40,000/-
Packaging Material	Retort pouches (LDPE) recommended
Deep freezer (1000L)	5 lakhs

#### Appendix I: List of Jackfruit Meat analogue processing companies/manufacturers in India

Name of the company	Product Type	Place
Anusha Ventures Private Limited	Vegan Meat	Bengaluru, Karnataka
Wakao Foods	Raw Jack meat- Burger Patty, Sausage,	Taleigao, Goa
Kathalfy's Foods	Raw jackfruit Meat	Mumbai, Maharashtra

**Appendix II: List of Jackfruit Distributors/ Suppliers across India****Karnataka**

<b>Name of the company</b>	<b>Sector</b>	<b>Place</b>
HR Exports	Distributor	Bangalore, Karnataka
Kripash International	Distributor and Supplier	Bangalore, Karnataka
AVS Tender Coconut export	Distributor and Supplier	Mandya, Karnataka
Raju Tender Coconut	Distributor and Supplier	Tumkur, Karnataka
Adara Exports Pvt Ltd	Distributor and Supplier	Bangalore, Karnataka
Indian Tang	Distributor and Supplier	Bangalore, Karnataka
Prabhu Exports	Distributor and Supplier	Kolar, Karnataka
Ain Traders	Distributor and Supplier	Hassan, Karnataka
Pruthviraj Traders India	Distributor and Supplier	Bijapur, Karnataka
Nature Crop Exports Pvt Ltd	Distributor and Supplier	Bangalore, Karnataka
Goel Global Impex	Distributor and Supplier	Hubli, Karnataka
Smoving Overseas Private Limited	Distributor and Supplier	Belgaum, Karnataka
ANR Fresh World	Distributor and Supplier	Bangalore, Karnataka
OMR Exports	Distributor and Supplier	Bangalore, Karnataka
ACS Technologies	Distributor and Supplier	Bangalore, Karnataka
AL Ghaffar Exports	Distributor and Supplier	Kolar, Karnataka
Sri Sathya Sai Gokulam	Distributor and Supplier	Mysore, Karnataka
wisemen	Distributor and Supplier	Bangalore, Karnataka
Sri Balaji Traders and Exporters	Distributor and Supplier	Bangalore, Karnataka
Mufagro Pvt Ltd	Distributor and Supplier	Bangalore, Karnataka

Sandalwood	Distributor and Supplier	Chikkamagaluru, Karnataka
Sayed exporter	Distributor and Supplier	Sirsi, Uttara Kannada, Karnataka
Fresh Platter Private Limited	Distributor and Supplier	Batawadi, Tumkur, Karnataka
Pachu Ashi Aradhana Exims Traders	Distributor and Supplier	Bangalore, Karnataka
Desi foods	Distributor and Supplier	Bangalore, Karnataka
Sri Ganesh Home Products	Distributor and Supplier	Karkala, Udupi
Green waves farms	Distributor and Supplier	Bangalore, Karnataka
Vanassara Foods	Distributor and Supplier	Udupi, Karnataka
Fresh n Prime	Distributor and Supplier	Bangalore, Karnataka
Organic traders	Distributor and Supplier	Mysore, Karnataka
Dawat vegetabels	Distributor and Supplier	Hassan, Karnataka
VP Agro international	Distributor and Supplier	Bangalore, Karnataka
DHRUVA AGRI FARM	Distributor and Supplier	Chikkaballapur, Karnataka

### Tamil Nadu

Name of the company	Sector	Place
Astro Exporters	Supplier and Exporter	Erode, Tamil Nadu
Honey Dew International	Trading	Thuvakudi, Tamil Nadu
Aara Trading Company	Distributor and Exporter	Chennai, Tamil Nadu
Monsoonleaf Overseas	Exporter and Trading Company	Chennai, Tamil Nadu
M S S Export and Import	Exporter	Madurai, Tamil Nadu
Global Agro Products	Distributors and Supplier	Coimbatore, Tamil Nadu
Nilgiris Green International	Supplier and Exporter	Gudalur, Tamil Nadu
Business Links International	Distributor	Rajapalayam, Tamil Nadu

Sada International Exports	Supplier and Exporter	Chennai, Tamil Nadu
S L Fruites	Distributor and Suppliers	Tiruchirappalli, Tamil Nadu
L S Organic Farm	Supplier and Trader	Tiruvallur, Tamil Nadu
Almatin Imports & Exports	Supplier and Exporter	Tirunelveli, Tamil Nadu
Fresh Fields	Distributor and Suppliers	Madurai, Tamil Nadu
Jeyalakshmi Fruit Suppliers	Distributors and Supplier	Dindigul, Tamil Nadu
K.V. Traders	Distributors and Distributor	Theni, Tamil Nadu
Jawadhu Foods India Pvt. Ltd	Distributors and Supplier	Vellore, Tamil Nadu
Oceanaa	Distributors and Supplier	Villupuram, Tamil Nadu,
Priyas Exports	Supplier and Exporter	Krishnagiri, Tamil Nadu
Preyadarsini Exports	Distributors and Supplier	Chennai, Tamil Nadu
Kodai Fresh Pvt Ltd	Distributor	Kodaikanal, Dindigul, Tamil Nadu

### Maharashtra

Name of the company	Sector	Place
Deetesh Agro	Supplier	Pune, Maharashtra
Deetesh Infra & Agro	Distributor	Pune, Maharashtra
Pangare Enterprises	Supplier and Exporter	Pune, Maharashtra
Km Export International	Supplier and Exporter	Nashik, Maharashtra
Tradewise Indian Xporter Pvt Ltd	Distributor and Exporter	Nagpur, Maharashtra
Ganraj Traders	Trading Company	Ahmednagar, Maharashtra
Yesraj Enterprises	Distributor	Pune, Maharashtra

### Kerala

<b>Name of the company</b>	<b>Sector</b>	<b>Place</b>
GV Exports Kerala	Distributors and Supplier	Kannur, Kerala
Kerala Agro Fruit Products	Distributors and Supplier	Kollam, Kerala
Ex-Service Men's Co-Operative Colony Ltd.	Distributors	Thrissur, Kerala
Alga International	Distributors and Supplier	Kochi, Kerala
Aj Exports and Imports	Supplier and Exporter	Kochi, Kerala
Jigesh & Company	Distributor and Suppliers	Kozhikode, Kerala
Joby Anthony	Supplier and Exporter	Thrissur, Kerala
King Fruit	Supplier	Kochi, Kerala
Mks Fruits	Distributors	Wayanad, Kerala
Ather Trades	Exporter	Kozhikode, Kerala

### **Telangana and Andhra Pradesh**

<b>Name of the company</b>	<b>Sector</b>	<b>Place</b>
Sanathana Exports	Supplier and Trading Company	Secunderabad, Telangana
Prasanna Fruits Shop	Distributors	Visakhapatnam, Andhra Pradesh
SI Agro Pvt. Ltd.	Distributors and Supplier	Hyderabad, Telangana
Alkhuda Export Private Limited	Exporter and Trading Company	Guntur, Andhra Pradesh
Cochabamba's Agros Techh Food Private Limited	Distributor	Hyderabad, Telangana
Haasith Exims Pvt Ltd	Distributors and Supplier	Kakinada, Andhra Pradesh

### **West Bengal**

<b>Name of the company</b>	<b>Sector</b>	<b>Place</b>
T.K. Koley Expo. In International	Exporter	Howrah, West Bengal
Green Valley Agro Fresh Pvt. Ltd.	Supplier and Exporter	Kolkata, West Bengal
Saanvi Overseas	Supplier and Exporter	Tehsil Kadambagachi, West Bengal
Gopal Import & Export	Distributors and Supplier	Parganas, West Bengal
Taposhi Enterprise	Distributor	Parganas, West Bengal
Beauti Enterprises	Distributor	Burdwan, West Bengal

### **Other States**

<b>Name of the company</b>	<b>Sector</b>	<b>Place</b>
Shimla Hills Offerings Private Limited	Distributor and Exporters	Shimla, Himachal Pradesh
Nanda Enterprises	Supplier, Trading Company, Wholesaler	Kaithu, Himachal Pradesh
Samyukta Global Traders	Trading Company	Agartala, West Tripura, Tripura
Jk Enterprise	Supplier and Trading	Kailasahar, Tripura
Jabbar Ali Mohammad Sariq And Company	Supplier and Exporter	Barabanki, Uttar Pradesh
RBSC Associates	Supplier and Exporter	Lucknow, Uttar Pradesh
Chanakya Exports	Exporter	Rajkot, Gujarat
Subhadra Farms	Supplier and Trading	Rajkot, Gujarat
Bajrangi Trader and Exporter Pvt Ltd	Distributor and Suppliers	Narela, Delhi

Lamba Nursery	Distributor and Suppliers	Jhunjhunun, Rajasthan
Sufala Agro Products	Supplier and Trader	Kamrup, Assam
Nsf Agro Global Exporter	Supplier and Exporter	Amritsar, Punjab