

# RAJASTHAN AGRICULTURAL COMPETITIVENESS PROJECT



## Detailed Project Report on Packhouse



Prepared by:



**Grant Thornton**

An instinct for growth™

**AGRI BUSINESS PROMOTION FACILITY**

# Contents

List of Figures	2
List of Tables	3
<b>Chapter 1- Introduction to Pack House</b>	<b>4</b>
<b>Chapter 2- Scenario of Pack Houses in India</b>	<b>9</b>
<b>Chapter 3- Production Profile of Rajasthan</b>	<b>12</b>
<b>Chapter 4- Value Chain Analysis</b>	<b>16</b>
<b>Chapter 5- Technology Options Available</b>	<b>20</b>

# List of Figures

Figure 1: Trends in Agriculture .....	4
Figure 2: Demand of Post-Harvest Management .....	5
Figure 3 Typical Value chain of Fruit and Vegetables .....	6
Figure 4: Advantage of Pack House.....	7
Figure 5: State wise status of Pack houses in India .....	10
Figure 6: GAP Analysis .....	11
Figure 7: District wise production of Onion, Potato and Tomato .....	12
Figure 8: Fruit production profile of Rajasthan .....	13
Figure 9: Production of Mango .....	14
Figure 10: Value chain of Onion.....	16
Figure 11: Value chain of Potato .....	17
Figure 12: Value chain of Tomato .....	18
Figure 13: Value chain of Orange .....	18
Figure 14: Value chain of Mango .....	19

# List of Tables

Table 1: Analysis of Status of Pack houses .....	9
Table 2: Details of vegetable production .....	12
Table 3: Key fruits of Rajasthan .....	13
Table 4: Assumptions for Operating Capacity .....	20
Table 5: Assumptions for Operating Capacity .....	20
Table 6: Means of Finance Summary.....	21
Table 7: Civil Cost Summary .....	21
Table 8: Utilities and Mis Fixed Assets Summary .....	22
Table 9: Plant and Machinery.....	22
Table 10: Income Statement .....	23
Table 11: Balance Sheet .....	24
Table 12: Assumptions for Operating Capacity .....	25
Table 13: Assumptions for Operating Capacity .....	25
Table 14: Means of Finance Summary.....	25
Table 15: Civil Cost Summary.....	26
Table 16: Utilities and Mis Fixed Assets Summary.....	27
Table 17: Plant and Machinery.....	27
Table 18: Income Statement .....	28
Table 19: Balance Sheet .....	29

# Chapter 1- Introduction to Pack House

India ranks as the second largest producer, after China, of horticulture crops and fruits in the world. Also, the nation ranks as the leader in several fruits and vegetable horticultural crops. Total horticulture production contributes around 30% in the total value of agricultural output value in India. It produces over 285 million metric ton of horticulture crops on around 2.5 crore hectare land. Total horticulture production comprises of various crops categories such as vegetables, fruits, plantations, spices, flowers and others. Vegetables and fruits together constitutes over 90% of the overall production volume.

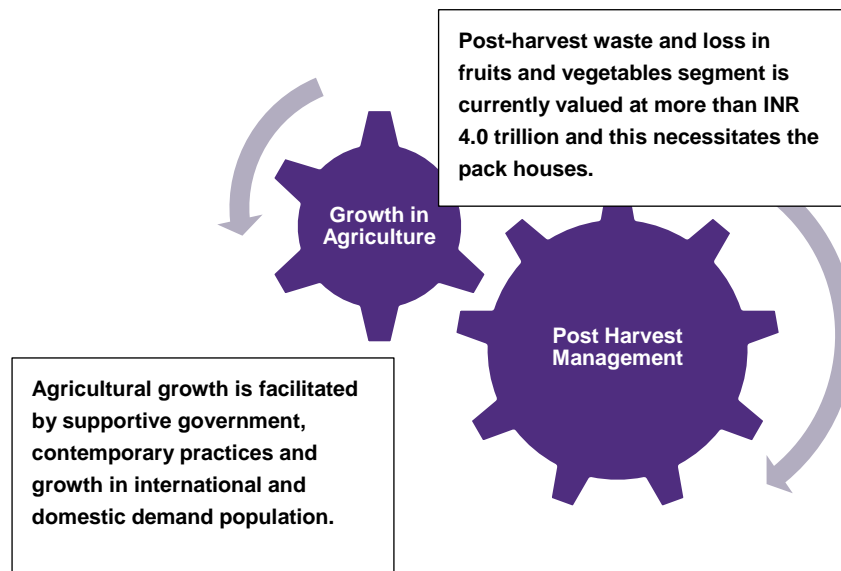
The trends in the Agriculture sector given below estimate an optimistic growth trajectory for the sector ensuring apt and increased production in future.

Figure 1: Trends in Agriculture

<p>India is amongst top five producers of many fruits and vegetables such as tomatoes, potatoes, onion, okra, mango, banana etc.</p>	<p>The major consumption centers of fruits and vegetable in India are metro cities where the population is high with much organized retail channels.</p>	<p>Tier 1 and Tier 2 cities are emerging as next consumption clusters in India on the back of rapid urbanization and rising middle class.</p>
<p>India's food and retail market is expected to reach INR 32.4 trillion (USD 482 billion) by 2020, up from INR 17.3 trillion (USD 258 billion) in 2015 i.e. CAGR 13.3%</p>	<p>Over INR 100 bn of F&amp;V were exported in 2016-17 and India has witnessed a CAGR of <b>17.6%</b> in exports value and <b>28.5%</b> in exports volume during 2014-17.</p>	<p>India's food and retail market is expected to reach INR 32.4 trillion (USD 482 billion) by 2020, up from INR 17.3 trillion (USD 258 billion) in 2015 i.e. CAGR 13.3%</p>

Despite India being one of the largest nations in terms of fruits and vegetable production, its per capita availability of fruits and vegetables is quite low as a result of postharvest losses i.e. ~5% to 18% of production gets wasted due to lack of post-harvest infrastructure. The figure below highlights the process of derivation of demand of post-harvest management that is necessitated by wastage of high current production and increased future production that goes unprotected.

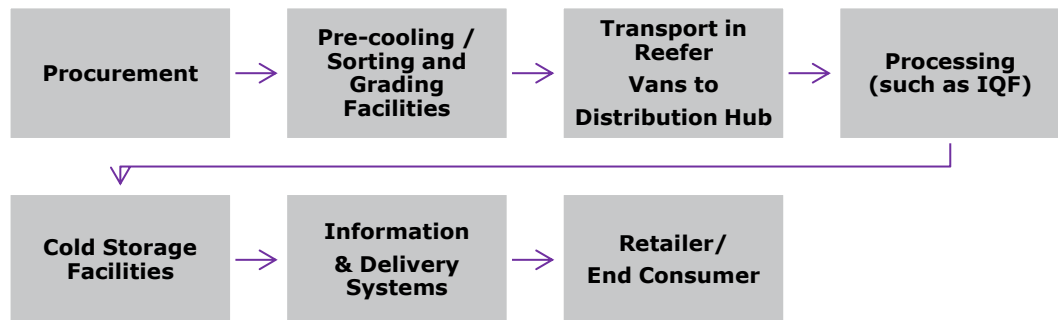
Figure 2: Demand of Post-Harvest Management



The infrastructure for Post- Harvest management includes the following infrastructures to combat wastage:

- Integrated Pack -house (with mechanized sorting & grading line/ packing line/ waxing line/ staging cold rooms, etc.)
- Ripening Chambers
- Cold Storage Unit
- Controlled Atmosphere (CA) storage
- Frozen Storage
- IQF line, Tunnel Freezer, Spiral Freezer, Blast Freezer, Plate Freezer
- Vacuum Freeze Drying
- Refrigerated Carriers
- Poultry/Meat/Marine/Fishery Processing Unit
- Packaging line for chilled /frozen/temperature controlled products
- Pre Cooling Unit

Figure 3 Typical Value chain of Fruit and Vegetables



Source: GT analysis

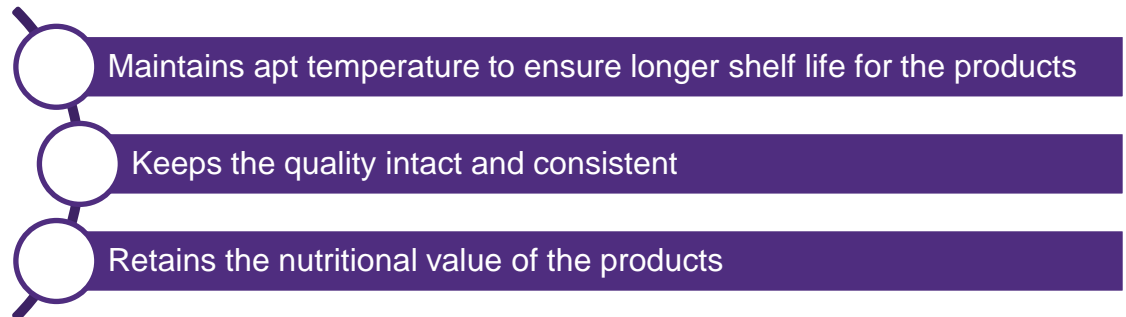
## Pack House

The concept of Pack houses will be the area of focus for us. Pack house, a type of post-harvest management infrastructure, of fresh fruits and vegetables essentially deals with sourcing of fresh produce directly from farmers/ FPOs or through the collection points and then adding value in terms of sorting, grading, packing, ripening and/ or cold storing before selling the value added produce to the exporters, retailers and/ or processors.

The infrastructure comprises of a wide range of solutions both at the farm and distribution level solutions. A well organised integrated pack house facility starts at the farm level (e.g. harvest methods, Pre-cooling) and covers up to the consumer level or at least to the retail level. Cold chain plays a vital role in the food supply chain as it reduces spoilage & wastages and retains the quality of the harvested products. In addition, it offers a cost-efficient delivery system to the consumer given adequate attention for customer service. A well-organized post-harvest infrastructure reduces spoilage, retains the quality of the harvested products and guarantees a cost efficient delivery to the consumer given adequate attention for customer service.

Utilising Pack houses will facilitate the economy in the following ways:

Figure 4: Advantage of Pack House



Key activities of a pack house are as mentioned below:

#### **Sorting & Grading:**

Sorting, grading and packing lines is an important component in the Pack House Infrastructure. These lines add shelf life to the products and ease the handling by packing into smaller and big packs as required. Ventilated boxes are a common form of packaging for chilled cargo as it allows for good airflow through the product. The sorting can be done at the farm level infrastructure using standard sorting mechanisms and packaging solutions and can also be implemented before the Individual quick freezing (IQF) processing. These systems alone can bring significant reduction in spoilage. Also, in most cases well-packaged products will attract better prices. The sorting – grading, packaging is quite known and successful in Fruits & Vegetables., which is also growing for the Dairy products. The packaging line for dairy products will facilitate the processors to send the produce in bulk and repack it as per the retail requirement.

**Key Processes:** After aggregating raw materials from collection centers or farm locations, the PH will perform the following activities:

- **Cleaning:** Removal of soil particles and any undesirable material adhering to fruits surface by swapping with clothes etc.
- **Sorting:** Removal of rotten, damaged and cracked fruits from the healthy, bright and clean fruits.
- **Grading:** Categorization of fruits on the basis of size & color, stage of maturity/degree of ripening etc.
- **Packing:** As per requirements, the graded produce will be packed in respective sizes. For e.g. 3, 5 or 10 kg bags for exports market, 1,2 or 5 kg for retail markets.



### **Pre- Cooling:**

Packed produce will be shifted to a pre cooling unit which will help in rapid removal of heat from freshly harvested produce. This process is typically done before the produce is shipped to market or put into cold storage.

### **Cold Storage**

Depending on factors like how long the product needs to be stored and what use it is going to be put to, the product can be stored at a sub-zero temperature using methods like chilled storage, deep freezer storage, controlled atmosphere storage, gas controlled cold storage, etc. All these essentially slow down the ripening process of the food product and enhance its shelf life. For cases where frozen storages are used, it basically enhances the shelf life of products as it maintains the temperature which reduces the chances of spoilage by 100%. The produce from cold stores is transported in reefer trucks to a distribution center from where it is either exported or transported to retailers. In retail stores, the food products are stored at low temperatures in refrigerated display units to maintain freshness as well as to increase shelf life.

### **Refrigerated Transport**

In horticulture storage, the major area which needs intervention is Reefer Vans. To maintain the right quality of food products during the transit, Reefer Vans with good refrigeration controls would be required. The Reefer Vans proposed shall be of optimum size which can fulfil the requirements of local conditions as well as long distance transit requirement. The temperature conditions shall be maintained through truck/trailer combinations, containers, specially designed rail cars, and equipment appropriate for air transport. Local delivery equipment may include smaller truck/trailer units, truck units, or even units that are well insulated but lack integral refrigeration equipment. Once the produce is processed it's being transferred through reefer chain to storage and then further to retail chains.

# Chapter 2- Scenario of Pack Houses in India

The role of pack houses in India can be derived from the growth of horticulture production in India. The increased production of these horticulture crops necessitates inventory management and the ensures an optimistic growth trajectory for pack houses in India. The increase in demand for food processing due to strong domestic demand, rise in opportunity for export, the support of the government to aide this sector and the favourable climatic conditions that further supports processing further add to the demand for pack houses.

The table below highlights the gap analysis the status of pack houses in India.

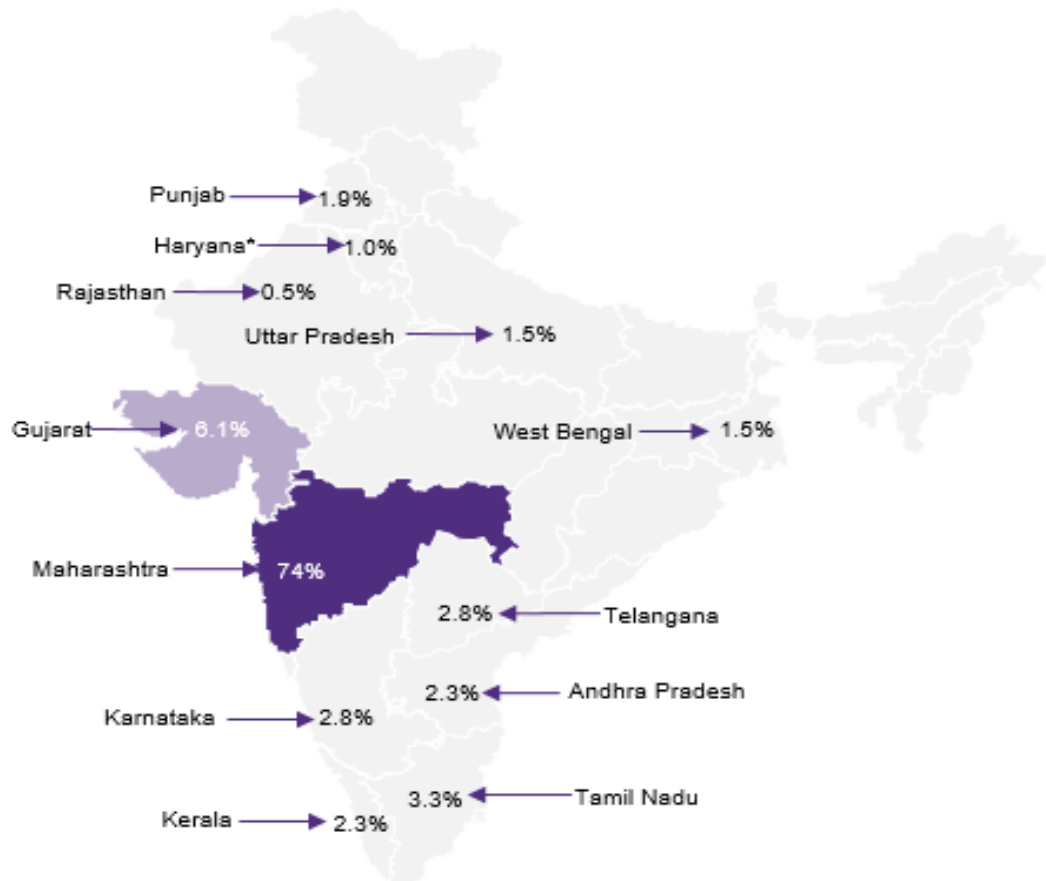
Table 1: Analysis of Status of Pack houses

Facility	Status	Analysis	Remarks
Pack House (In Nos.)	Requirement	70,080	<ul style="list-style-type: none"> <li>India would require farm-gate-pack-houses to bridge the gap between farm to consumers.</li> <li>~60% of the houses in India are being established by government (APEDA) through subsidy and lack of participation from private players is hindering the growth and innovations.</li> <li>Majority of pack houses created provide only basic operations of grading sorting and are not equipped with latest technology to carry out further value addition.</li> <li>A very modern few pack houses are catering to tomato, potato and onions in the country.</li> <li>Grapes, Pomegranates and Mangoes are key fruits utilizing most pack house infrastructure in India with over 50% of total pack houses are catering to grapes and pomegranates only.</li> <li>Okra and Bitter Gourd offers a potential opportunity for pack house infrastructure as they are available in different sizes and colors.</li> </ul>
	Created	~450	
	<b>Gap</b>	<b>69,630</b>	

Source: NCCD report on Cold Chain Infrastructure in India, 2015

According to primary survey, ~80% of the total modern pack house infrastructure in India are located in West part of the country and the remaining infrastructure i.e. 14%, 4% and 2% is located in Southern, Northern and Eastern part of the country. Approximately 50% of the total Pack House infrastructure registered with APEDA is located in Nashik, Maharashtra. It is also called as the grape capital of India that is the major reason behind the pack house infrastructure district, followed by Sangli and others.

Figure 5: State wise status of Pack houses in India



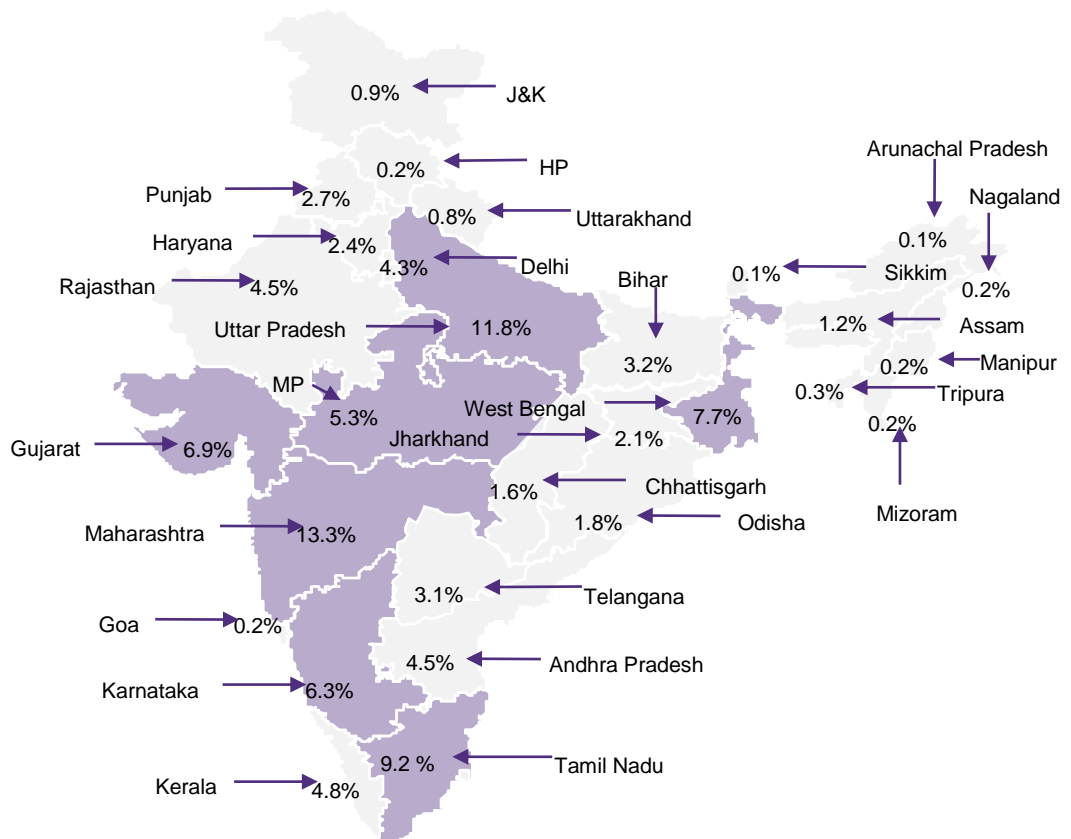
Source: APEDA registered Pack House in India 2018

### Pack House Offerings:

- Grapes, Pomegranates and Mangoes are key fruits utilizing most pack house infrastructure in India.
- ~50% of total pack houses are catering to grapes and pomegranates.
- Okra and Bitter Gourd offers a potential opportunity for pack house infrastructure as they are available in different sizes and colors.

The figure below analyses the GAP in the Pack house infrastructure and culminates into an understanding of growth of pack houses in each state as Growth of organized retail market (including e-retail) and the entry of multinational retail giants especially in Tier I and II cities are expected to drive the demand for pack houses. APEDA too has identified the following clusters for pack house infrastructure i.e. Andhra Pradesh, Karnataka, Kerala, Meghalaya, Telangana, Gujarat and West Bengal.

Figure 6: GAP Analysis



Source; NCCD report, Primary Interviews, GT analysis

While Maharashtra, Gujarat, Madhya Pradesh, Tamil Nadu, Karnataka, Uttar Pradesh and West Bengal are key regions which require majority of the modern pack house infrastructure i.e. 60% of the overall environment.

# Chapter 3- Production Profile of Rajasthan

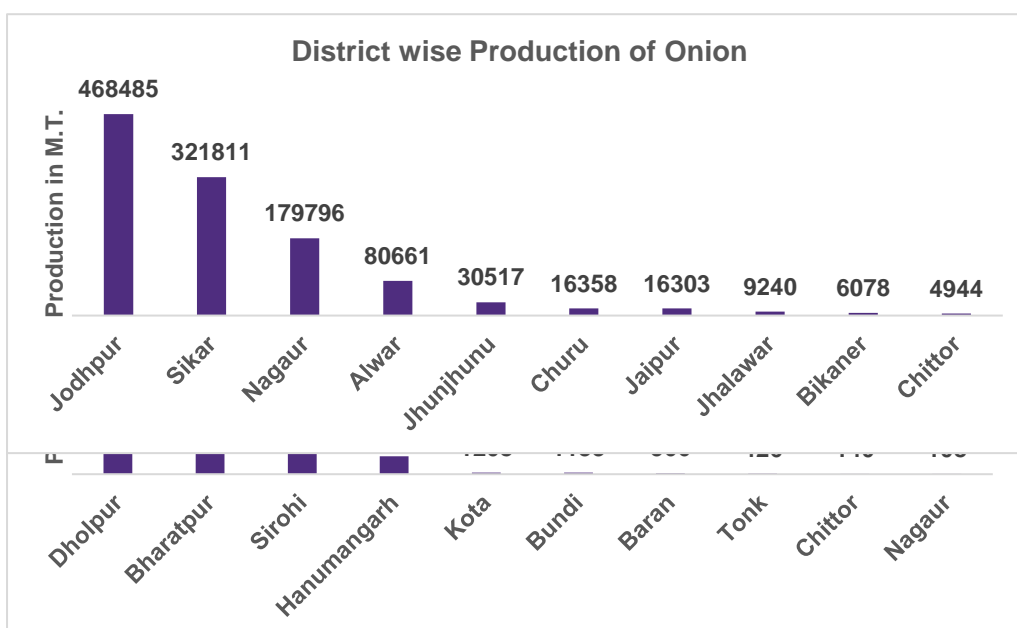
Rajasthan harbours a variety of fruits and vegetables and this section details the diversity in the production profile of Rajasthan elaborating on the districts and their production.

The table below captures the analysis for key crops of Rajasthan and highlights that Onion followed by Potato and Tomato hold maximum potential for creating a market as they account for 63.4%, 12.9% and 5% of the total vegetable production of the state.

Table 2: Details of vegetable production

Crop	Production (MT)	% Share in Total Veg.	Yield (Prod MT/ Area Ha)	AREA (Ha)	% Share in Total Veg.	Rajasthan as % of India (%)
Onion	1,149,291	63.4%	18.4	62,499	36.7%	6.9%
Potato	234,552	12.9%	16.1	20,366	12.0%	0.5%
Tomato	90,224	5.0%	4.4	14,552	8.6%	0.4%
Cauli flower	58,404	3.2%	5.3	13,831	8.1%	0.6%
Pea	36,375	2.0%	2.6	10,964	6.4%	0.7%
Brinjal	31,715	1.7%	5.4	5,881	3.5%	0.2%
Spinach	20,808	1.1%	4.9	5,514	3.2%	0.2%
Carrot	19,771	1.1%	5.3	4,673	2.7%	0.7%
Green Chilli	16,154	0.9%	2.9	4,274	2.5%	0.3%
Okra	15,379	0.8%	4.2	3,865	2.3%	0.2%
<b>Total</b>		<b>92.3%</b>			<b>86.1%</b>	

Figure 7: District wise production of Onion, Potato and Tomato



Source: Rajasthan Horticulture Department, Data pertains to year 2016-17

The district wise production of Onion, Tomato and Potato is highlighted in the graphs given above. While Jodhpur dominates the production of Onion followed by Sikar in Rajasthan, Chittor has the least production. For Potato, Dholpur has the highest produce while Bharatpur follows with second highest produce. Nagpur has the least produce for Rajasthan. Jodhpur has the least production for Tomato while Sirohi and Jaipur dominate production.

After the analysis of key crops of the state of Rajasthan, we analyse the fruit production profile for fruits of Rajasthan and the following section will capture the same and will also highlight the district wise scenario of fruits. The figure below provides the glimpse of the same.

Figure 8: Fruit production profile of Rajasthan

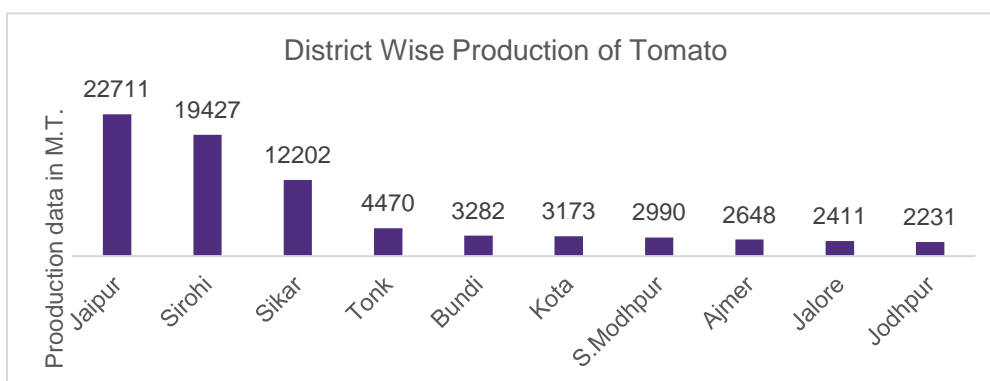
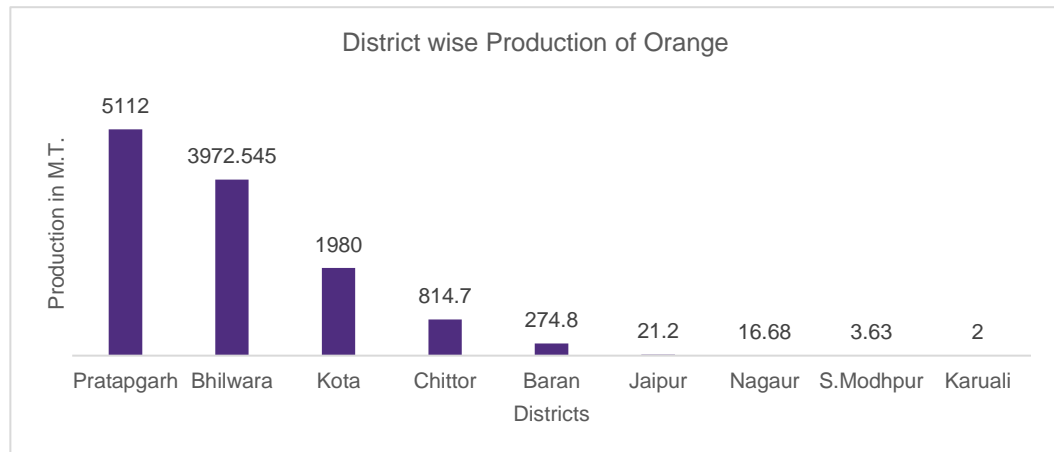


Table 3: Key fruits of Rajasthan

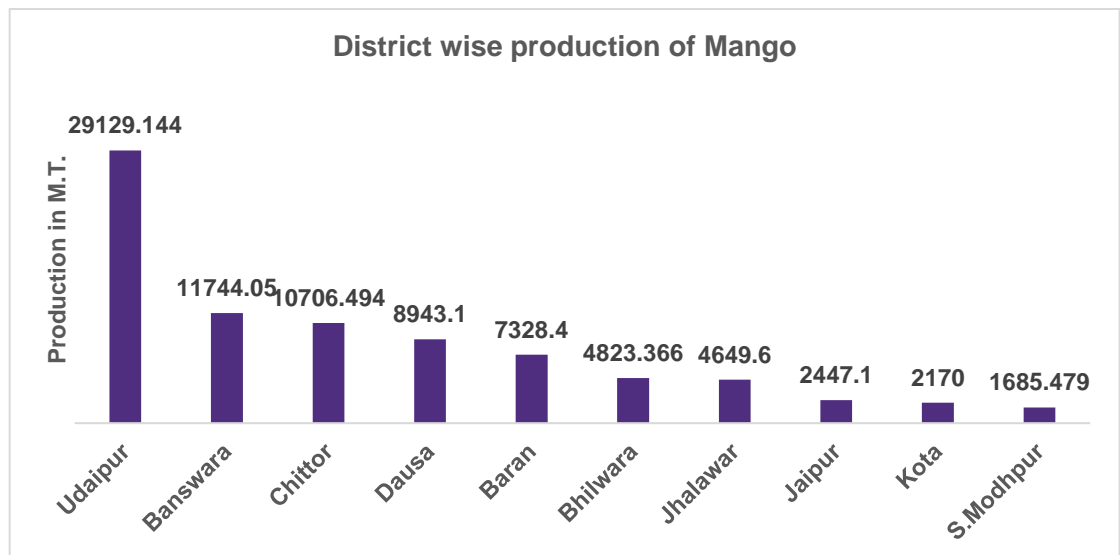
DISTRICT	Production (MT)	% Share in Total Veg.	Yield (Prod MT/ Area Ha)	Rajasthan as % of India (%)
<b>Orange</b>	496,950	55.5%	21.3	4.1% (Citrus)
<b>Kinnow</b>	204,260	22.8%	21.4	
<b>Mango</b>	88,837	9.9%	17.2	0.4%
<b>Guava</b>	27,176	3.0%	6.5	1.0%
<b>Lime</b>	16,659	1.9%	5.7	Citrus
<b>Aonla</b>	13,747	1.5%	8.6	1.5%
<b>Malta</b>	12,816	1.4%	128.2	Citrus
<b>Pomegranate</b>	10,379	1.2%	3.6	0.4%
<b>Papaya</b>	8,708	1.0%	11.7	0.2%
<b>Ber</b>	4,697	0.5%	6.8	1.6%
<b>Total</b>		<b>98.7%</b>		

Figure 8: District wise production of Orange and Kinnow



The district of Pratapgarh and Bhilwara lead the production statistics for Orange, Udaipur and Banswara dominate production for Mango. Hanumanagar and Sriganganagar are the only two districts of Rajasthan that produce Kinnow.

Figure 9: Production of Mango



While this section highlights the variety produced in Rajasthan, the previous section highlights the national level wastage of production culminating in a situation where the population does not have access to apt amount of food to satisfy hunger. Rajasthan’s contribution to wastage will increase if it does not fulfil the gap of 4% that is highlighted in the previous section. Another factor that will affect Rajasthan is that the crops with high share of domestic consumption i.e. tomato, potato etc. at national level and also at state level for Rajasthan lack of pack houses infrastructure. In addition, there are no pack house operating for orange crop. Also, over 50% of total pack houses are catering to grapes and pomegranates only and hence the state of Rajasthan requires focus for the crops dominating its production. To ensure the same, the gap the state faces in its

region for its prime crops can be bridged when the state targets to bridge the gap of 4% and hence these crops will be successful in tackling wastage in its region.



# Chapter 4- Value Chain Analysis

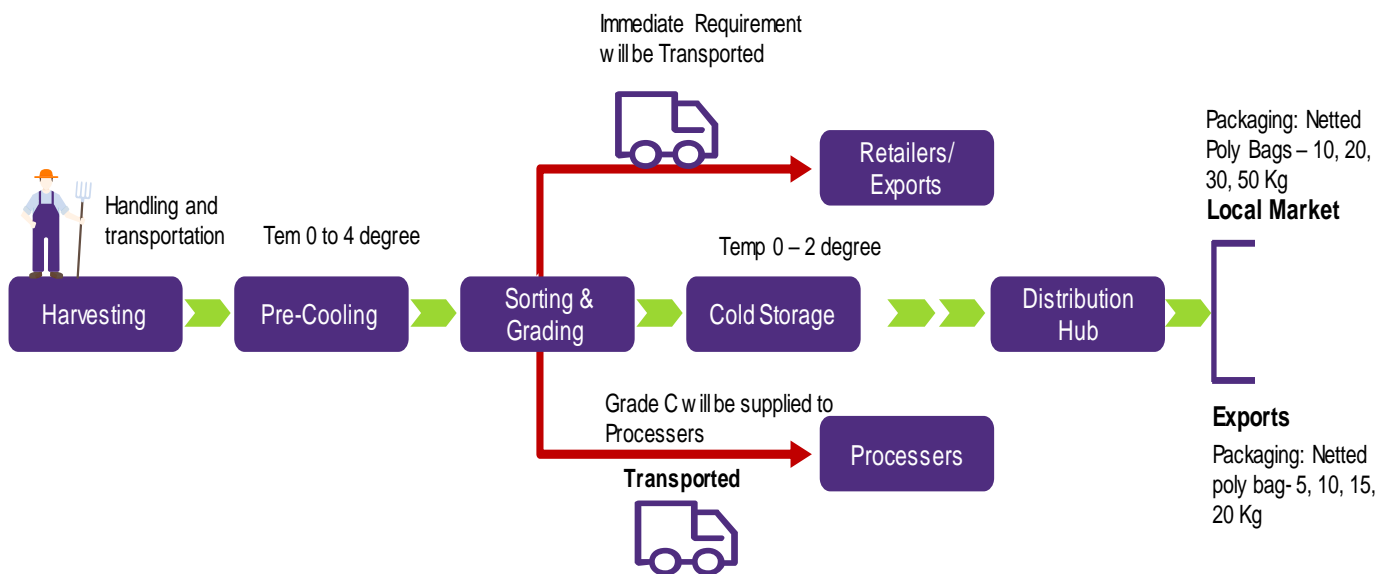
Given that Onion, Potato and Tomato are top three vegetable categories produced in the State of Rajasthan, followed by Orange (Citrus Family) being the largest fruit produce in the region.

Below mentioned is the value chain of key F&V produced in Rajasthan:

## Onions

India ranks as the largest producer in terms of onion production in the world. India produces nearly 21 million of onion every year with ~22% share in the global onion production. The nation has three harvesting seasons, out of which ~60% of harvesting happens during March to May (Rabi Season). According to industry estimates, post-harvest losses are generally around 8-10% of fresh arrivals.

Figure 10: Value chain of Onion

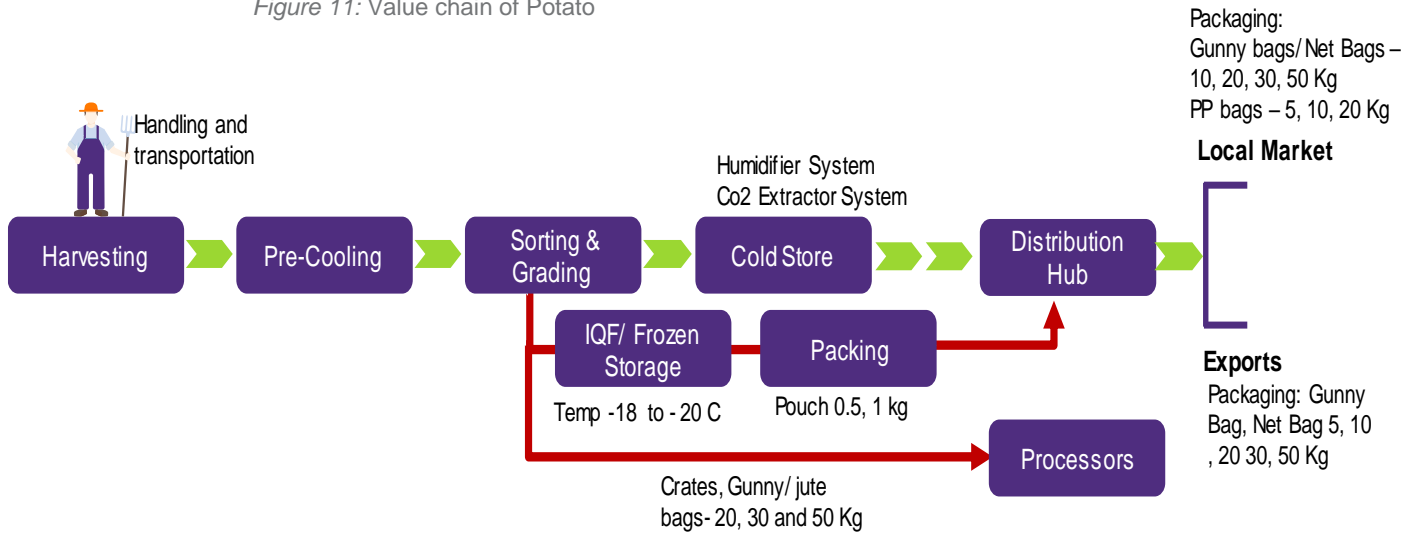


Prices of onions in India are very volatile and can be managed by putting storage infrastructure. In addition, onion storage increases the life of crop and the vegetable can be sent to long distance such as remote locations. Efficient sorting and grading helps in reduction in wastage and increase quality of the produce.

## Potato

India ranks as the third largest producer in terms of potato production in the world, after China and Russia. India produces nearly 43.4 million of onion every year with ~12% share in the global potato production. Potato harvesting is largely done for 210 – 365 days depending upon the state of production. 60-70% of Rabi production goes to store. Potato processers procure raw materials (fresh) from farms during February to March and from cold stores from April through January.

Figure 11: Value chain of Potato



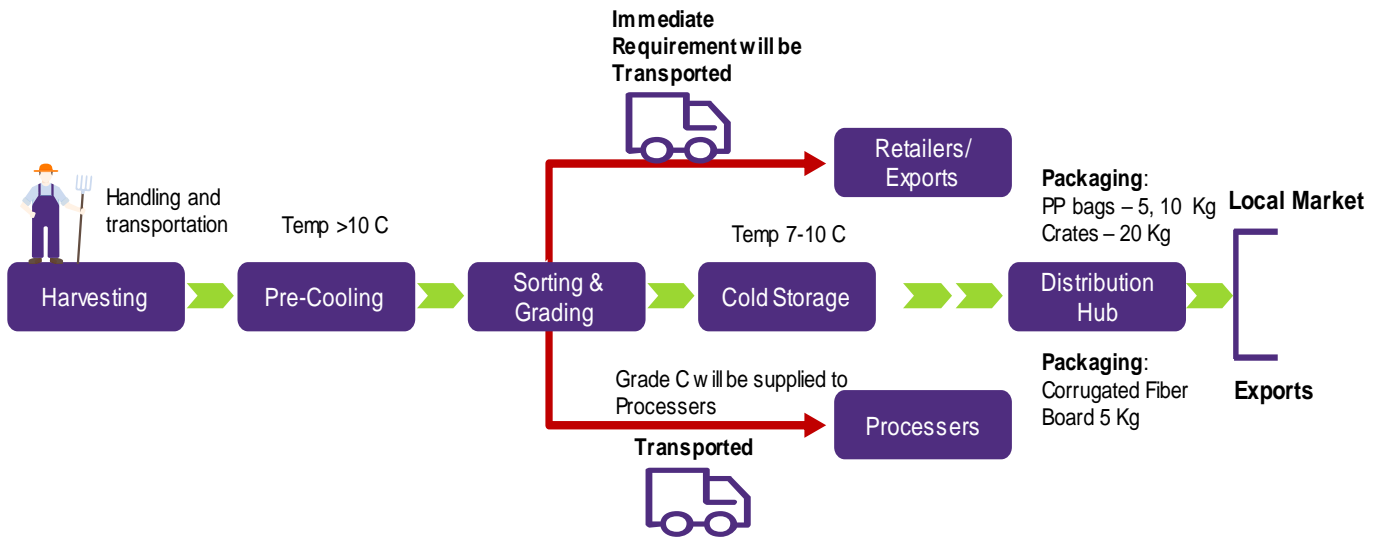
Grading of the Potato is a key value chain intervention primarily for the fresh crop suppliers as it helps them to determine the price and reduces the cost of marketing and helps to get standard potato at fair price.

According to Industry experts, potato processing in India is expected to grow at a CAGR of 20-25% in the next five years. Potato processing market includes potato chips, flacks and fries etc. Of which, chips contribute majority share. On the back of rising demand for potato processing including frozen potato, the demand for pack house is likely to grow as sorting & grading of potato is the first step for potato processing.

### Tomatoes

Sorting/ grading is an essential activity for tomato pulp and paste processing. Tomato color, quality, brix, lycopene content are key product features for paste processing. Tomato processors face hard time procuring raw materials from farmers and therefore, dependent on traders for the raw material.

Figure 12: Value chain of Tomato



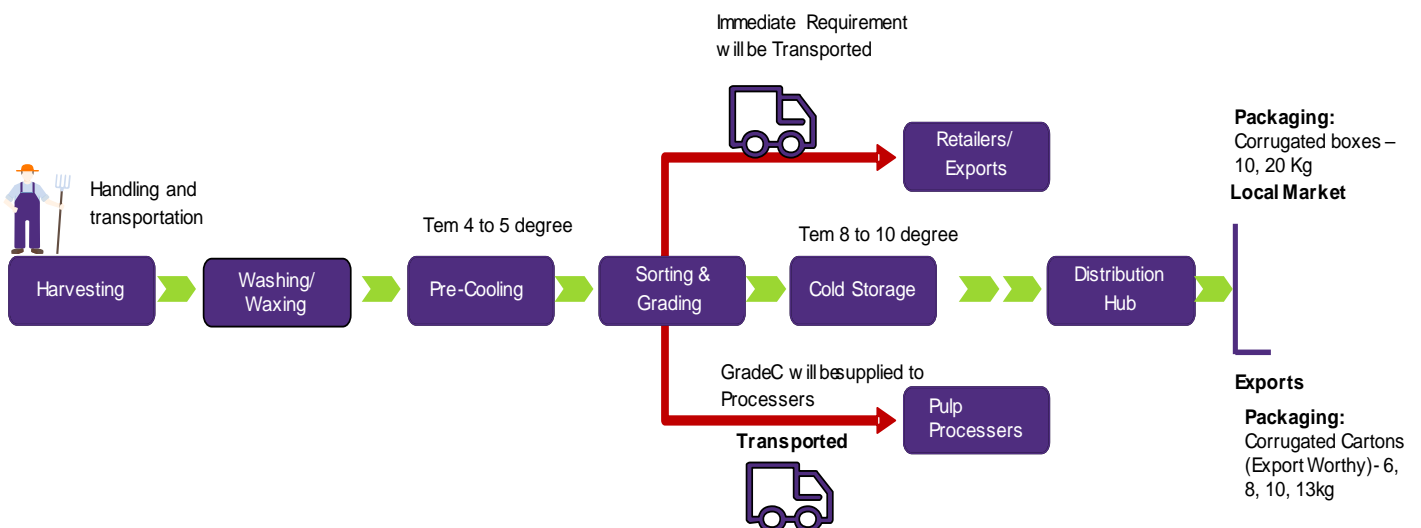
Currently, most of modern pack house in India are being utilized for export purpose and a very few pack houses are performing sorting and grading of tomato vegetables.

Nearly 99% of the sorting and grading activities are performed through conventional measures, followed by ~1% through modern pack houses. Hence, there is an immense growth opportunity for modern pack house to be set up in India.

### Orange/ Kinnow

Oranges/ Kinnow are widely consumed around India and abroad and Rajasthan has a large area under oranges and Kinnow production. Nagpur santra and Kinnow variety grown in Rajasthan. Mainly in Jhalawar as oranges and Ganganagar as Kinnow.

Figure 13: Value chain of Orange

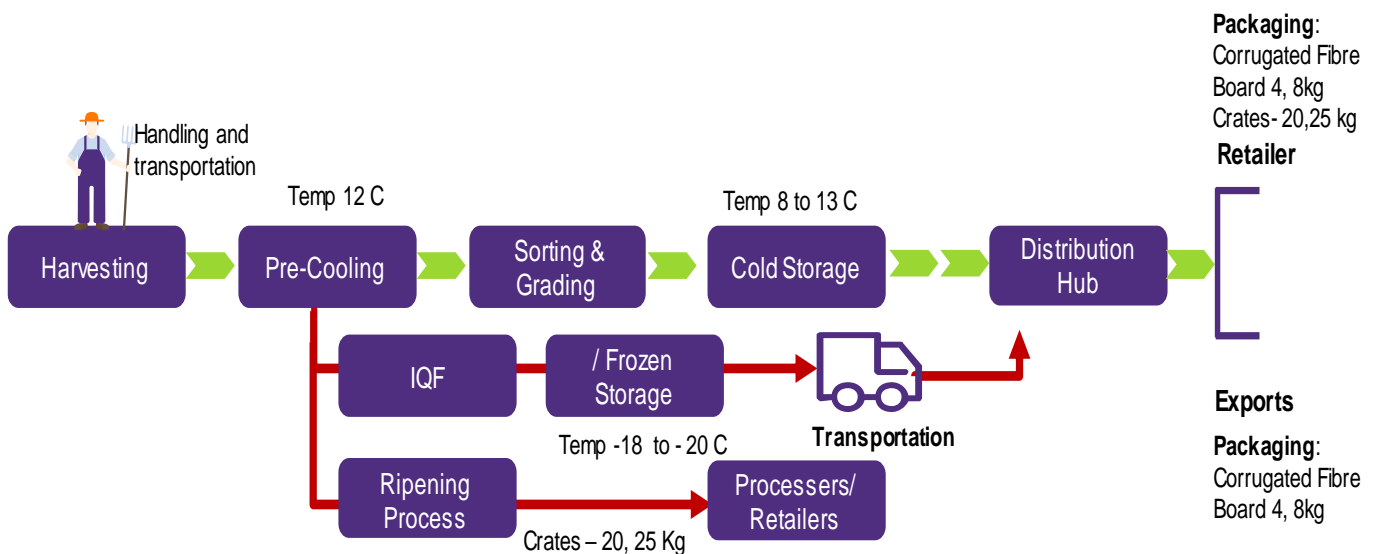


Grading of orange includes removal of immature, rotten or diseased fruits from the bulk and grade according to colour, shape and size. The organized sector supplies oranges to modern trade after doing sorting and grading and fetch extra margin as compared to raw oranges. Currently there is lack of primary sorting and grading infrastructure at community level forcing farmers to sell semi-graded produce to traders who later on sell it at a higher margin after doing sorting, grading and cleaning.

## Mango

India ranks as the largest producer in terms of mango production in the world. India produces nearly 18.6 million of mango every year with ~40% share in the global mango production.

Figure 14: Value chain of Mango



As of now, only a few states undertake the sorting and grading of Mangoes such as Gujarat, Maharashtra, Andhra Pradesh, Telangana, in some districts of Uttar Pradesh etc. Majority of sorting and grading happens according to size, colour and maturity of the fruit. There are a few growers and contractors who operate on sieves with circular holes of 8, 7.5 and 7 cm diameter to distinguish fruits by simple marks on the package.

# Chapter 5- Technology Options Available

We propose two technology options i.e. **Low end** and **High end** available for fruits and vegetable sorting and grading. The high end technology option includes semi-automatic sorting, grading line and thus would require higher capital investment as compared to the low end technology option. The high end option includes a Semi-Automatic sorting/ grading line of 5 TPH (tonnes per hour), especially for round vegetable and fruits, that performs operations with minimal human interventions.

On the other hand, the low end technology option includes sorting grading conveyer belt that would help the raw material to move on the conveyer line. This technology would require higher number of labour for making the operations.

## Low End Technology – Semi Automatic Line

### Business Assumption:

Business plan has assumed that the revenue will generate by leasing infrastructure to third party.

Below mentioned in the assumed operating capacity of the sorting grading line for the next ten years:

Table 4: Assumptions for Operating Capacity

Business Case - Assumptions	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Operating Capacity	0%	40%	60%	80%	90%	90%	90%	90%	90%	90%

### Project Cost

The total cost of the project is estimated at Rs.37.6 Lakhs, out of which civil cost constitutes Rs 11.8 Lakhs, plant and machinery constitutes Rs.14.3 Lakhs, utilities & support of Rs. 4.3 lakhs and miscellaneous fixed assets of Rs. 5.6 Lakhs. The detailed description of each component of project cost is depicted in the tables below.

Table 5: Assumptions for Operating Capacity

Capex Components	Year 1
Civil Cost	11.8
Plant & Machinery	14.3
Utility & Support	4.3
Mis. Fixed Assets	5.6
IDC	1.7
<b>Total Capex</b>	<b>37.6</b>

Note: We have not considered the land cost in this business model.

## Proposed Means of Finance

The promoter's equity in the project is Rs. 18.8 Lakhs which is 50% per cent of the total project cost. The term loan considered for the project is estimated at Rs. 18.8 Lakhs which is 50 per cent of the total project cost.

Table 6: Means of Finance Summary

Means of Finance (INR Lacs)	Year 1
<b>Total Project Cost</b>	<b>37.6</b>
<b>Funding</b>	
Equity (Promoters Cost)	18.8
Debt	18.8
<b>Total Funding Required</b>	<b>37.6</b>

*Note: We have not considered grant in aid being offered by National Horticulture Board or any other government entity/institutions. Which may have an impact on the overall profitability of the project in a positive way.*

## Civil Work

The total cost of civil work has been estimated to be Rs 11.8 lakhs, which includes technical civil work of Rs 8.4 Lakhs and non-technical civil work of Rs. 3.4 Lakhs. Cost of civil work comprises of the cost of process building, Raw material warehouse, Finished goods warehouse, transformer house & Utility building. The total cost of technical civil works has been arrived at on the basis of the estimates provided by the Chartered Engineer (Civil).

Table 7: Civil Cost Summary

Civil Cost	Total Area Required (SQM)	Total Civil Cost (Lacs)
<b>Conveyer Belt</b>	100	8.4
<b>Non-Core Area</b>		
Utilities and Support Infrastructure	20	1.7
Other (Mis Area)	20	1.7
<b>Total Civil Cost</b>		<b>11.8</b>

## Utilities and Mis. Fixed Assets

The total cost of Utilities has been estimated to be Rs 4.3 lakhs, which includes water storage of 10,000 LT, generator set of 30 KVA and truck weigh bridge. The total expenditure towards miscellaneous fixed asset is estimated at Rs. 5.6 Lakhs which comprises of 1,000 crates, 4 SS tables, 25 pallets to keep crates and 2 hand pallets trucks.

Table 8: Utilities and Mis Fixed Assets Summary

Utility & Support Infrastructure	Capacity (No. of Units)	Overall Cost (INR Lacs)
<b>Transformer, Electrical Panels, Cable wire etc.</b>		1.2
<b>Water Storage</b>	10000 LT	0.1
<b>Generator</b>	30 KVA	1.8
<b>Weighing Bridge</b>	500 KG	1.2
<b>Total Utility &amp; Support</b>		<b>4.3</b>
Mis Fixed Assets	Quantity	Total Cost (INR Lacs)
<b>Crates</b>	1000	3.3
<b>SS TABLE (8*4*3 ss304)</b>	4	1.2
<b>Pallets</b>	25	0.6
<b>Hand Pallets Trucks</b>	2	0.5
<b>Total Mis Fixed Assets</b>		<b>5.6</b>

## Plant and Machinery

The total cost of plant and machinery has been arrived on the basis of quotation received from various suppliers of equipment and machinery. The total cost of P&M is considered as Rs. 14.3 Lakhs (including GST). The following table captures the distribution of P&M and utilities.

Table 9: Plant and Machinery

Plant & Machinery	Total Cost (Lacs)
Conveyer Belt	14.3
<b>Total Cost</b>	<b>14.3</b>

## Income Statement

The below mentioned is the income statement for the Low end sorting grading line:

Table 10: Income Statement

INR Lacs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Financial Snapshot - Income Statement</b>										
Revenue	-	19.7	30.3	41.4	47.7	48.9	50.1	51.4	52.6	54.0
EBITDA	-	7.9	11.8	15.5	17.2	16.9	16.7	16.3	15.9	15.4
Depreciation	-	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
EBIT	-	5.5	9.4	13.2	14.9	14.6	14.3	13.9	13.5	13.0
Interest Cost	-	2.0	1.6	1.3	0.9	0.6	0.2	0.0	-	-
EBT	-	3.5	7.8	11.9	13.9	14.0	14.1	13.9	13.5	13.0
Tax	-	1.0	2.2	3.3	3.9	3.9	3.9	3.9	3.8	3.6
PAT	-	2.6	5.6	8.6	10.1	10.1	10.2	10.0	9.8	9.4
<b>Profitability Ratio (%)</b>										
Revenue Growth		N/A	53.8%	36.7%	15.3%	2.5%	2.5%	2.5%	2.5%	2.5%
EBITDA Margin	-	40.3%	38.9%	37.6%	36.2%	34.7%	33.2%	31.7%	30.2%	28.5%
EBIT Margin	-	28.2%	31.1%	31.8%	31.2%	29.8%	28.5%	27.1%	25.7%	24.1%
EBT Margin	-	18.0%	25.6%	28.7%	29.2%	28.7%	28.1%	27.1%	25.7%	24.1%
PAT Margin	-	13.0%	18.5%	20.7%	21.1%	20.7%	20.3%	19.5%	18.5%	17.4%





## Balance Sheet

The below mentioned is the balance sheet statement for the Low end sorting grading line:

Table 11: Balance Sheet

INR Lacs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Shareholders' Equity</b>										
<b>Equity Share Capital</b>	18.8	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
<b>Reserves &amp; Surplus</b>	-	2.6	8.2	16.7	26.8	36.9	47.1	57.1	66.9	76.3
Total Shareholders' Funds	18.8	27.5	33.1	41.7	51.8	61.9	72.1	82.1	91.9	101.2
<b>Liabilities</b>										
<b>Trade Payables</b>	-	11.7	18.4	25.7	30.3	31.7	33.3	34.9	36.5	38.3
Total Current Liabilities	-	11.7	18.4	25.7	30.3	31.7	33.3	34.9	36.5	38.3
<b>Long Term Borrowings</b>	18.8	15.7	12.5	9.4	6.3	3.1	(0.0)	(0.0)	(0.0)	(0.0)
Total Non-Current Liabilities	18.8	15.7	12.5	9.4	6.3	3.1	(0.0)	(0.0)	(0.0)	(0.0)
Total Equity and Liabilities	37.6	54.9	64.1	76.8	88.4	96.8	105.3	116.9	128.4	139.5
<b>Assets</b>										
<b>Cash and Cash Eq.</b>	-	-	1.0	5.0	12.6	22.2	31.9	44.6	57.2	69.4
<b>Total Inventories</b>	-	-	-	-	-	-	-	-	-	-
<b>Trade Receivables</b>	-	19.7	30.3	41.4	47.7	48.9	50.1	51.4	52.6	54.0
Total Current Assets	-	19.7	31.2	46.3	60.2	71.1	82.0	96.0	109.8	123.3
<b>Net Block</b>	37.6	35.3	32.9	30.5	28.1	25.7	23.3	21.0	18.6	16.2
Total Non-Current Assets	37.6	35.3	32.9	30.5	28.1	25.7	23.3	21.0	18.6	16.2
Total Assets	37.6	54.9	64.1	76.8	88.4	96.8	105.3	116.9	128.4	139.5

## High End Technology – Semi Automatic Line

### Business Assumption:

Business plan has assumed that the revenue will generate by leasing infrastructure to third party.

Below mentioned in the assumed operating capacity of the sorting grading line for the next ten years:

Table 12: Assumptions for Operating Capacity

Business Case - Assumptions	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Operating Capacity</b>	0%	40%	60%	80%	90%	90%	90%	90%	90%	90%

### Project Cost

The total cost of the project is estimated at Rs.360.6 Lakhs, out of which civil cost constitutes Rs 37.8 Lakhs, plant and machinery constitutes Rs.270.7 Lakhs, utilities & support of Rs. 17.5 lakhs and miscellaneous fixed assets of Rs. 18.2 Lakhs. The detailed description of each component of project cost is depicted in the tables below.

Table 13: Assumptions for Operating Capacity

Capex Components	Year 1
<b>Civil Cost</b>	37.8
<b>Plant &amp; Machinery</b>	270.7
<b>Utility &amp; Support</b>	17.5
<b>Mis. Fixed Assets</b>	18.2
<b>IDC</b>	16.4
<b>Total Capex</b>	<b>360.6</b>

Note: We have not considered the land cost in this business model.

### Proposed Means of Finance

The promoter's equity in the project is Rs. 180.3 Lakhs which is 50% per cent of the total project cost. The term loan considered for the project is estimated at Rs. 180.3 Lakhs which is 50 per cent of the total project cost.

Table 14: Means of Finance Summary

Means of Finance (INR Lacs)	Year 1
<b>Total Project Cost</b>	<b>360.6</b>
<b>Funding</b>	
<b>Equity (Promoters Cost)</b>	180.3
<b>Debt</b>	180.3

<b>Total Funding Required</b>	<b>360.6</b>
-------------------------------	--------------

*Note: We have not considered grant in aid being offered by National Horticulture Board or any other government entity/ institutions. Which may have an impact on the overall profitability of the project in a positive way.*

## Civil Work

The total cost of civil work has been estimated to be Rs 37.8 lakhs, which includes technical civil work of Rs 33.6 Lakhs and non-technical civil work of Rs. 4.2 Lakhs. Cost of civil work comprises of the cost of process building, Raw material warehouse, Finished goods warehouse, transformer house & Utility building. The total cost of technical civil works has been arrived at on the basis of the estimates provided by the Chartered Engineer (Civil).

Table 15: Civil Cost Summary

Civil Cost	Total Area Required (SQM)	Total Civil Cost (Lacs)
Semi-Automatic Sorting/ Grading Line	300	25.2
Pre-Cooling Line	40	3.4
Cold Store	60	5.0
<b>Non-Core Area</b>		
Utilities and Support Infrastructure	20	1.7
Other (Mis Area)	30	2.5
<b>Total Civil Cost</b>		<b>37.8</b>

## Utilities and Mis. Fixed Assets

The total cost of Utilities has been estimated to be Rs 17.5 lakhs, which includes water storage of 20,000 LT, generator set of 80 KVA and truck weigh bridge. The total expenditure towards miscellaneous fixed asset is estimated at Rs. 5.6 Lakhs which comprises of 1,000 crates, 4 SS tables, 25 pallets to keep crates and 2 hand pallets trucks.

Table 16: Utilities and Mis Fixed Assets Summary

Utility & Support Infrastructure	Capacity (No. of Units)	Overall Cost (INR Lacs)
<b>Transformer, Electrical Panels, Cable wire etc.</b>		3.0
<b>Water Storage</b>	20000 LT	0.2
<b>Generator</b>	80 KVA	4.8
<b>Truck Weigh Bridge</b>	50 MT	9.5
<b>Total Utility &amp; Support</b>		<b>17.5</b>
Mis Fixed Assets	Quantity	Total Cost (INR Lacs)
<b>Crates</b>	4000	14.3
<b>SS TABLE (8*4*3 ss304)</b>	4	1.4
<b>Pallets</b>	60	1.5
<b>Hand Pallets Trucks</b>	4	1.0
<b>Total Mis Fixed Assets</b>		<b>18.2</b>

## Plant and Machinery

The total cost of plant and machinery has been arrived on the basis of quotation received from various suppliers of equipment and machinery. The total cost of P&M is considered as Rs. 207.7 Lakhs (including GST). The following table captures the distribution of P&M and utilities.

Table 17: Plant and Machinery

Plant & Machinery	Capacity	Total Cost (Lacs)
Semi-Automatic Sorting/ Grading Line	5 TPH	214.5
Pre-Cooling Line	20 MT	36.9
Cold Store	50 MT	19.2
<b>Total Cost</b>		<b>270.7</b>



## Income Statement

The below mentioned is the income statement for the High end Pack House:

Table 18: Income Statement

INR Lacs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Financial Snapshot - Income Statement</b>										
<b>Revenue</b>	-	77.9	119.8	163.7	188.8	193.5	198.3	203.3	208.3	213.6
<b>EBITDA</b>	-	55.3	87.1	120.2	138.2	140.2	142.9	145.0	147.7	149.1
<b>Depreciation</b>	-	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8	22.8
<b>EBIT</b>	-	32.5	64.3	97.4	115.4	117.4	120.1	122.1	124.9	126.3
<b>Interest Cost</b>	-	19.2	15.7	12.2	8.8	5.3	1.9	0.0	-	-
<b>EBT</b>	-	13.3	48.6	85.1	106.6	112.1	118.2	122.1	124.9	126.3
<b>Tax</b>	-	3.7	13.5	23.7	29.6	31.2	32.9	34.0	34.7	35.1
<b>PAT</b>	-	9.6	35.1	61.5	77.0	80.9	85.4	88.2	90.2	91.2
<b>Profitability Ratio (%)</b>										
<b>Revenue Growth</b>		N/A	53.8%	36.7%	15.3%	2.5%	2.5%	2.5%	2.5%	2.5%
<b>EBITDA Margin</b>	-	71.0%	72.7%	73.4%	73.2%	72.5%	72.1%	71.3%	70.9%	69.8%
<b>EBIT Margin</b>	-	41.7%	53.7%	59.5%	61.1%	60.7%	60.6%	60.1%	59.9%	59.1%
<b>EBT Margin</b>	-	17.1%	40.6%	52.0%	56.5%	57.9%	59.6%	60.1%	59.9%	59.1%
<b>PAT Margin</b>	-	12.4%	29.3%	37.6%	40.8%	41.8%	43.0%	43.4%	43.3%	42.7%



## Balance Sheet

The below mentioned is the balance sheet statement for the High end Pack House:

Table 19: Balance Sheet

INR Lacs	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<b>Shareholders' Equity</b>										
<b>Equity Share Capital</b>	180.3	239.6	244.5	244.5	244.5	244.5	244.5	244.5	244.5	244.5
<b>Reserves &amp; Surplus</b>	-	9.6	44.7	106.2	183.2	264.1	349.4	437.6	527.8	619.0
<b>Total Shareholders' Funds</b>	<b>180.3</b>	<b>249.2</b>	<b>289.2</b>	<b>350.6</b>	<b>427.6</b>	<b>508.5</b>	<b>593.9</b>	<b>682.1</b>	<b>772.3</b>	<b>863.4</b>
<b>Liabilities</b>										
<b>Trade Payables</b>	-	16.2	25.4	35.2	41.2	43.0	44.8	46.6	48.6	50.7
<b>Total Current Liabilities</b>	-	<b>16.2</b>	<b>25.4</b>	<b>35.2</b>	<b>41.2</b>	<b>43.0</b>	<b>44.8</b>	<b>46.6</b>	<b>48.6</b>	<b>50.7</b>
<b>Long Term Borrowings</b>	180.3	150.3	120.2	90.2	60.1	30.1	0.0	0.0	0.0	0.0
<b>Total Non-Current Liabilities</b>	<b>180.3</b>	<b>150.3</b>	<b>120.2</b>	<b>90.2</b>	<b>60.1</b>	<b>30.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Total Equity and Liabilities</b>	<b>360.6</b>	<b>415.7</b>	<b>434.7</b>	<b>476.0</b>	<b>529.0</b>	<b>581.6</b>	<b>638.7</b>	<b>728.7</b>	<b>820.9</b>	<b>914.1</b>
<b>Assets</b>										
<b>Cash and Cash Eq.</b>	-	-	-	20.2	70.9	141.6	216.7	324.6	434.5	545.4
<b>Total Inventories</b>	-	-	-	-	-	-	-	-	-	-
<b>Trade Receivables</b>	-	77.9	119.8	163.7	188.8	193.5	198.3	203.3	208.3	213.6
<b>Total Current Assets</b>	-	<b>77.9</b>	<b>119.8</b>	<b>183.9</b>	<b>259.7</b>	<b>335.1</b>	<b>415.0</b>	<b>527.9</b>	<b>642.9</b>	<b>758.9</b>
<b>Net Block</b>	360.6	337.8	315.0	292.1	269.3	246.5	223.7	200.8	178.0	155.2
<b>Total Assets</b>	<b>360.6</b>	<b>415.7</b>	<b>434.7</b>	<b>476.0</b>	<b>529.0</b>	<b>581.6</b>	<b>638.7</b>	<b>728.7</b>	<b>820.9</b>	<b>914.1</b>



**Grant Thornton**  
An instinct for growth™

---

[www.grantthornton.in](http://www.grantthornton.in)

© 2018 Grant Thornton India LLP. All rights reserved.

"Grant Thornton in India" means Grant Thornton India LLP, a member firm within Grant Thornton International Ltd, and those legal entities which are its related parties as defined by the Companies Act, 2013.

Grant Thornton India LLP is registered with limited liability with identity number AAA-7677 and has its registered office at L-41 Connaught Circus, New Delhi, 110001.

References to Grant Thornton are to Grant Thornton International Ltd (Grant Thornton International) or its member firms. Grant Thornton International and the member firms are not a worldwide partnership. Services are delivered independently by the member firms.