Ministry of Food Processing Industries
Government of India

Assessment Studies For Identifying Gaps in Infrastructure & Processing Facilities for Development of Potential Value Chains for Perishable Products under Operation Greens Scheme

MAHARASHTRA - GRAPES

Nashik | Sangli | Solapur | Pune

Prepared by

TransGraph Consulting Pvt. Ltd

TRANSGRAPH
RESEARCH - CONSULTING - TECHNOLOGY
commodity market mentors

CONTENTS

Section 1: Summary and Methodology

SUMMARY AND FLOW OF REPORT

A study has been conducted in the state of Maharashtra in the Grapes production clusters of Nashik, Sangli, Solapur and Pune. By combining secondary research with primary research consisting of interactions with government stakeholders, cooperatives, farmers, infrastructure players and domestic traders, we arrived at an assessment of existing infrastructure and the gaps thereof.

Cold storages/pre-cooling and Reefer vans turnout to be the biggest infrastructure boost that, can be provided as part of the operation Greens Initiative. The need for the same is a rising out of gaps at various legs of value chain, which in some way or the other are pointing towards the need of enhanced "cold" infrastructure. Some of the key infrastructural gaps identified are:

- Low shelf-life of Grapes of 5 to 6 days, which can be enhanced by additional 4 days, if pre-cooled. If stored in cold storages, grapes can be stored for 60 days. Also Seasonality of Grapes, with highly concentrated activities during a particular part of the season, i.e. from December till March, necessitates the need to have cold storage facilities for off-season availability.
- Pack houses and cold storages are mostly owned by Exporters, who have established these capacities to cater to the import countries requirements.
- The total capacity of pack-houses and that of cold storages is ~3.5lakhtons. Cold storage and pre-cooling facilities are used mostly for export markets as of now and not much in domestic trade. But to avoid losses in transport and to preserve the brix content till the material reaches to consumer, there is a need to double up the pre-cooling capacity and to make fruit available in offseason within India cold storage facilities need to be increased.
- Transport agencies are not offering their services to interior villages. 2-3 tons Mini Reefer vans should be made available to cater to needs of small farmers.
- For exporters and domestic suppliers the packaging cost is turning out to be higher. Each box of corrugated box costs around Rs. 25 per box, which adds a cost of Rs. 5 to 6 per kg of Grapes. (Adding 10% to fruit cost). Any initiatives to moderate the packing costs can help the industry in many ways.
- 60% exports happen between Februarys to March, meaning daily exports of 1500 tons to 2000 tons. During that time, cargo (refer container) rail connectivity should be enhanced between Nashik to Mumbai port.
- Red Globe, Crimson, Flame, Jumbo, Arra and Golden Berry–these are the color varieties which have high demand potential in international market. Efforts should be taken to enhance such varieties cultivation.
- Resin making is mostly done manually, leading to low quality. Impetus should be given to follow automatic drying. There is a need for cold storage enhancement in Raisins, a sin the case of fresh fruit.
- Sangli and Solapur are high potential areas, but not having any infrastructure facilities. These districts should be developed in line with Nashik.

ASSESSMENT AT EACH LEG OF VALUE CHAIN

The ensuing report covers the production, trade flow and infrastructure assessment at each leg of value chain

INVESTMENT BUDGET SUMMARY

Proposed Intervention	Cluster-1 (Nashik-Pune) units	Cluster-1 (Sangli-Solapur) units	Per unit cost (INR crore)	Cluster-1 total cost (INR crore)	Cluster-2 total cost (INR crore)	Total cost (INR crore)
Primary processing						
Integrated Pack house (including cold storage)	30.00	28.00	5.00	150.00	140.00	290.00
Refer vans	35.00	20.00	0.08	2.80	1.60	4.40
Secondary processing						
Solar dryers for raisin making	420.00	738.00	0.10	42.00	73.80	115.80
FPO and Farmers training & Certification	10000.00	6000.00	0.0012	12.00	7.20	19.20
Total	10485.00	6786.00		206.80	222.60	429.40

APPROACH & METHODOLOGY

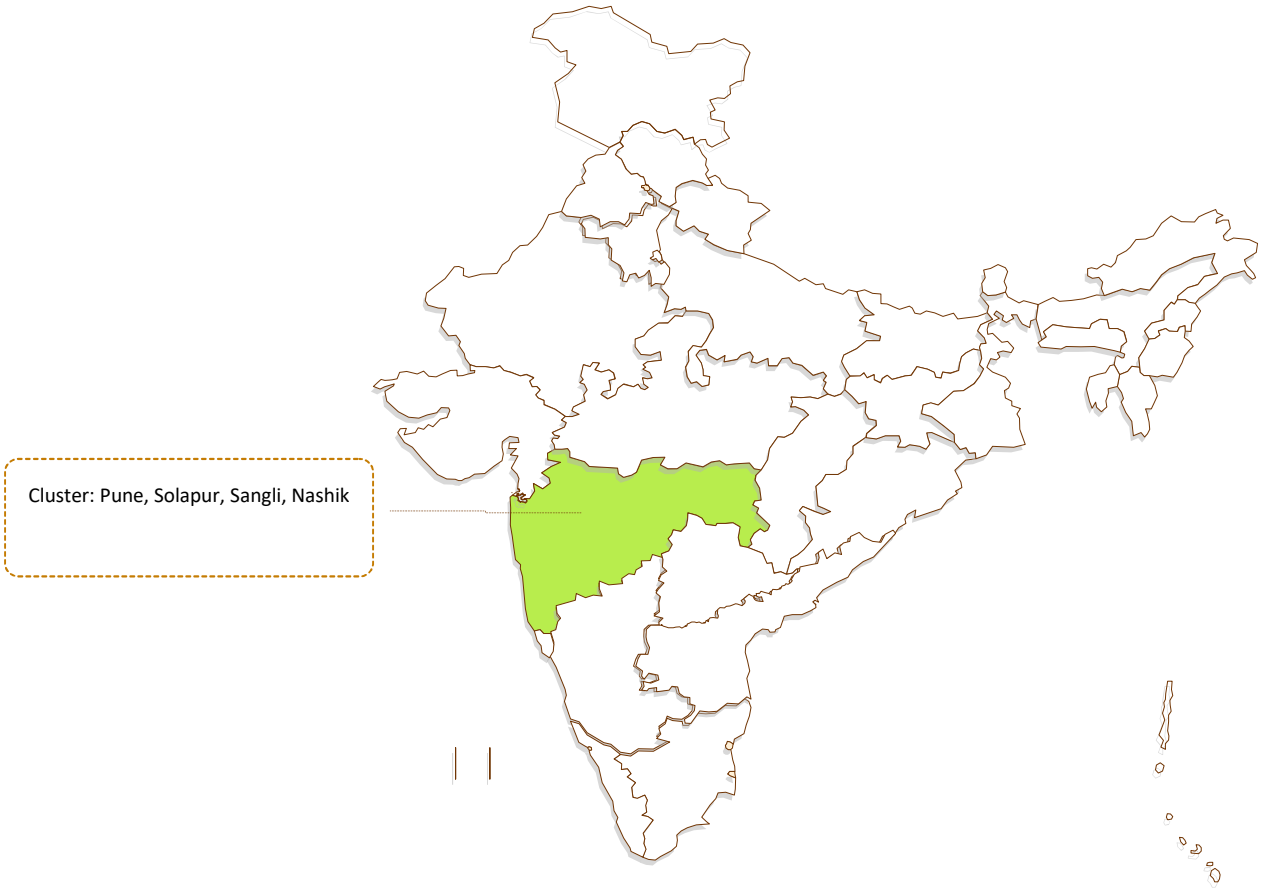
The Assessment Study for Grapes focuses on identifying gaps in infrastructure & processing facilities for development of potential value chains for perishable products under Operation Greens Scheme of MoFPI. The study has adopted both primary and secondary research tools. Preliminary research was based on detailed desk review of relevant secondary literature and interactions with relevant stakeholders during inception and subsequent stages. Primary research and assessment were based on the qualitative data/information that was collected through government official interactions as well as cluster/field visits and consultations with different stakeholders such as farmers, traders, processors, exporters etc. along with different enabling and institutional stakeholders.

STUDY AREA

A TOTAL OF FOUR DISTRICTS IN MAHARASHTRA WERE TAKEN INTO CONSIDERATION FOR AN IN-DEPTH STUDY AND GAP ANALYSIS OF GRAPES VALUE CHAIN AND THEIR STATUS OF FUNCTIONING WHICH ARE PREVALENT IN THE STATES.

THESE INCLUDED: PUNE, SOLAPUR, SANGLI & NASHIK

CLUSTER FOR STUDY



STAKEHOLDER CONSULTATION

The various participants covered during the primary/field level interactions included farmers, traders, small & medium scale processors and local retailers. Various discussions and consultations were carried out with Department of Agriculture, Horticulture, Industries etc. to get an overview of the prevailing situation pertaining to the status and gaps in the value chain. Suggestions were also noted from different department heads and other relevant stakeholders in order to successfully have an in depth understanding and deliver some constructive recommendations.

The identification of different focus groups and farmers was done in coordination and consultation with the district level officials which included District Agriculture Officer (DAO), District Horticulture Officer (DHO), Commodity Product Experts, Nodal Officers, Trainers and other opinion leaders at the cluster and village levels. Focus Group Discussions (FGD/s) were also carried out which covered some relevant topics like challenges in production, post-harvesting, storage, marketing, processing and other value- added services for the focus crop. Other information which included package of practices prevalent, cost of production, farm level value addition, primary processing facilities, access to market and logistics, access to processing facilities and barriers in the value addition process were also recorded.

Stakeholders	Key points of discussion
Industry Mentor	Existing scope & challenges Present Status of industry Scope of Investment Types of products/product line in which company is involved in Expectation from the study Suggestion (if any)
Farmers/FPOs/FPCs	Existing challenges and opportunities Marketing and access to markets Grants or schemes availed
Processors/Traders	Existing challenges and opportunities Marketing and entrepreneurial skills Access to information/knowledge Certification (Organic & Geographical recognition)
Government Officials	Sampling of clusters for primary research and evaluation

	Role of implementing agencies in districts if any Existing economic opportunities and existing market failures Prevalent schemes in the districts Secondary data collection
District Industrial Center/ MSME	Secondary data collection on processing of Grapes
State Officials/Directorates	Priority sectors and subsectors Discussion on ongoing and future programs Understanding the gaps between multiple support programs Secondary Data collection

INTERACTION WITH GOVERNMENT

Official Name	Designation	Feedback
Sh. Kailas Mote	Director Horticulture	Shared Feedback on Questionnaire and asked to suggest marketing set up for Grapes
Sh. Subash Nagare	Director Horticulture Processing	Shared feedback on Questionnaire asked to study the Modern Marketing & Branding for Grapes
Sh. Govind Hande	Technical Expert , Horticulture Department	Suggested study &provide Data for GRAPENET and HORTSAP Data for Farmer Training

Sh. Milind Joshi	GM, Maharashtra State Agriculture Marketing Board	Told about the initiatives of MSAMB Holding Farmer Fair, Fruit Festival, Incentives for exporters, Pack house facilities, Marketing support

INTERACTION WITH INDUSTRY

Mr. Sachin Walunj
General Manger procurement and operations, Sahyadri Farmer Producing Company

- Interacted with Mr Sachin Walunj General Manger discussed about infrastructure gaps in farmers and exporters levels in below.
- Quality issues at farmer level and varietal issues like the farmer should grow higher demand varieties for Europe and other developed nations markets, particularly the demand is growing for colored varieties, Viz Arra, Red globe, Jumbo, crimson and flames.
- The farmers should go for early season instead of normal season in early season the farmers and exporters are benefiting
- Lack of pre cooling and cold storages availability at farmer level creating quality issues, by improve these infrastructure post harvest can reduce and the product self life will improve .
- In secondary process the manual raisins should reduce and the technology should utilize like Solar and electric dryers.
- Impose of restrictions on Indian grapes imports in USA should remove and GOI or APEDA should support to lift the restrictions.
- Higher freight cost (shipping) is around 1500 USD per container is keeping less competitive with other competitive countries of Egypt and South Africa.

Mr. Amit Kalya

Kalya exports

- Interacted with Mr Amit Kalya discussed about new and disease resistance varieties and new markets for exporters and technology in raisin process
- New varieties which are in demand in international market
- Better diseases resistant varieties
- Less agri-input requiring varieties are needed in large scale.
- Government support through getting some deals with breeders here or developing new varieties are needed desperately.
- Raisin varieties of grapes should also be looked into.
- Raisin processing should be automated
- Opening of new markets like USA, South Korea for Indian grapes should be looked into at most urgent need as exports are concentrated at countries like EU nations. Defending on one region is a great risk to Grapes Industry.

Mr. Uday Sinh Kadam, Procurement Manager
Mahindra Agri solutions

- Interacted with Mr Uday sinh kadam on grapes industry infrastructure gaps from farmer level to consumers
- Farmer should grow demanding varieties for consuming markets like colored varieties Jumbo, crimson, flames, Nanasaheb, these verities demand is increasing from importers particularly South East Asian countries
- Early crop from Maharashtra grapes regions is creating opportunity of higher export potential
- Packaging and transportation cost high to EU and other nations
- Testing time is high and the lab facilities should be improved
- Insufficient cold storages leading higher post harvest loss.

Ashok Gaikwad (Khirsagar export and ND wines)
Ex president Maharashtra grapes grower association

- Higher cost of pesticide
- Varieties (particular hormones lower utilize) only cooperative are growing. PC, Kalya new verity. Resistance verities
- **Cracking resistance varieties Red globe, Arra, Crimson.**
- Early crop will improve farmers and exporters margins
- Plastic cover netting for reduce cracking from cold temperatures.
- Containers issue for EU exports
- NRC is helping better way for farmers
- Train connectivity up to North east states weekly twice this can increase demand from east

From Farmers & Exporters - Key Gaps

Farmers

- Weather station to control disease
- Less agri-input requiring varieties
- Support in Global gap certificate
- Less agri-input requiring varieties
- Plastic cover for reduce cracking from cold temperatures
- Kisan rail connectivity up to North east states weekly twice this can increase demand from east

Exporters

- Develop higher demand varieties(Better diseases resistant varieties)
- Early season varieties
- Containers issue
- Lack of pre cooling and cold storages availability
- Impose of restrictions on Indian grapes imports in USA
- Higher freight cost (shipping) is around 1500 US dollar per container is keeping less competitive with other competitive countries of Egypt and South Africa.

Section 2: Production and Trade Flow

INTRODUCTION ABOUT GRAPES

Grapes (Vitisvinifera) are an important fruit crop in India. Grapes are the third most widely cultivated fruit after citrus and banana. Globally grapes production contributes to about 16% of the total fruit production. India produced 2900 thousand tones during 2019-20. Maharashtra is the largest producer of grapes in the country. It contributes about 85 percent of the total domestic production. Grape is one of the most delicious and nutritious fruit. Grapes are widely consumed as fresh fruit in India. It is also used for producing raisins, wine, juice, juice concentrate, squash, beverages, jams and marmalades

Worldwide 77,518 thousand tonnes of grape is produced per year. China is the largest grape producer in the world with 14, 842, thousand tonnes production volume per year. Italy comes second with 8, 201 thousand tones yearly production. India is with 2,590 thousand is ranked at 7.

The commercial production of grapes started in India only after seedless varieties were introduced in Maharashtra during the 1960s. Maharashtra accounts for 80 percent of India's total grape acreage, and 75 percent of production. More than 25 varieties grown include Thompson Seedless, Sonaka, Sharad Seedless and Tas-e-Ganesh, Manikchaman, sharad seedless, Jumbo, Crimson, Flame, Red globe and other different table and wine making varieties and harvesting starts from late November to early May. Within Maharashtra, the grape crop comprises 12-15 percent of the total fruit acreage, the major growing districts are Nashik, Sangli, Pune, Solapur Ahmednagar and Lathur and Sathara. On the other hand, the exportable grapes (Global GAP or Apeda registered) area is rising from last one decade across Maharashtra grapes growing regions, particularly the target markets are EU, UK, Canada, Russia and other East and South East Asian countries.

AREA & PRODUCTION IN STUDY CLUSTERS

District	Area in 000' Hec	Production in 000'MT	Productivity (MT /Hec
Nashik	57.69	1300.15	22.53
Sangli	24.68	708.93	28.72
Pune	2.48	57.73	23.27
Solapur	16.02	352.44	22

Total	100.87	2419.25	24
Source, Horticulture Department- Crop year Nov-Oct			

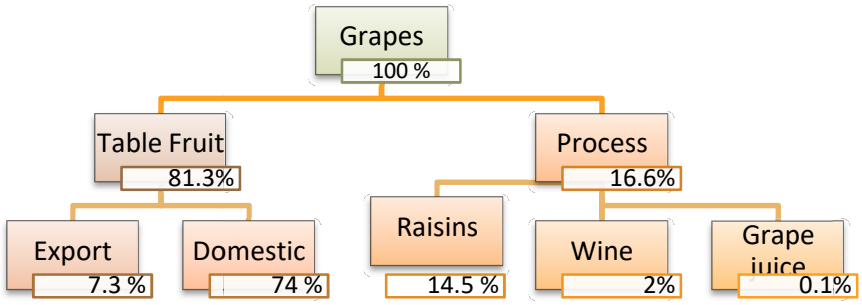
Grapes Diversion

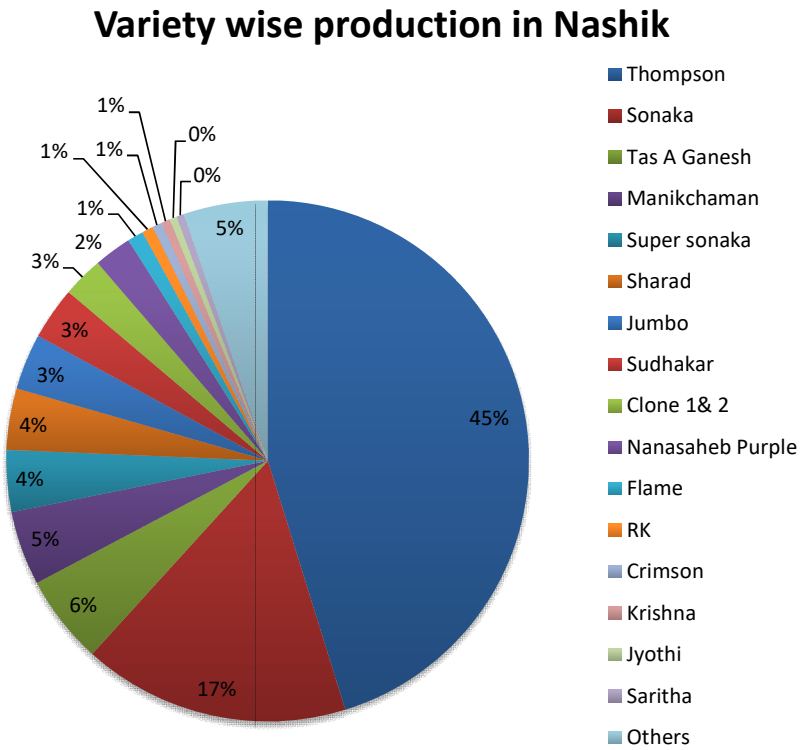
S.no	Particulars	Nashik 000,MT	%	Solapur 000,MT	%	Pune 000,MT	%	Sangli 000,MT	%
A	Production in 000'MT	1300	100	352.44	100	58	100	709	100
B	Table Fruit Retail	960	73.80%	231.88	65.80%	46	79.50%	558	78.70%
C	Raisins	122	9.40%	110	31.20%	5	9.00%	113	15.90%
D	Wine	35	2.70%	0	0.00%	2	2.70%	12	1.70%
E	Pulp	2	0.10%	0	0.00%	0	0.70%	2	0.20%
F	Table Fruit Exports	159	12.20%	2.81	0.80%	4	6.30%	12	1.70%
H	Post Harvest Losses	23	1.80%	7.75	2.20%	1	1.80%	13	1.90%

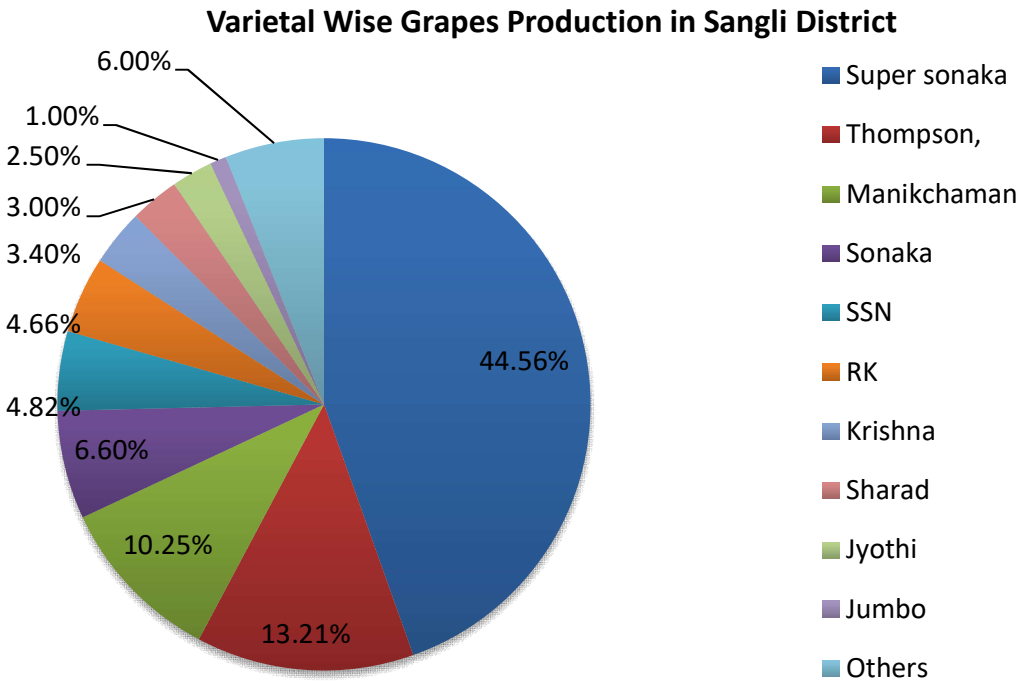
Totalforall4surveyedDistricts	**2019-20 (000'MT)**	**% of Production**
Grapes production	2419.2	100
Grapes diversion for Retail	1795.2	74.2
Grapes diversion for Raisins	349.8	14.5
Grapes diversion for Winemaking	48.5	2.0
Grapes diversion for Pulp making	3.50	0.1

Grapes exports	176.8	7.3
Post-harvest losses	45.31	1.9

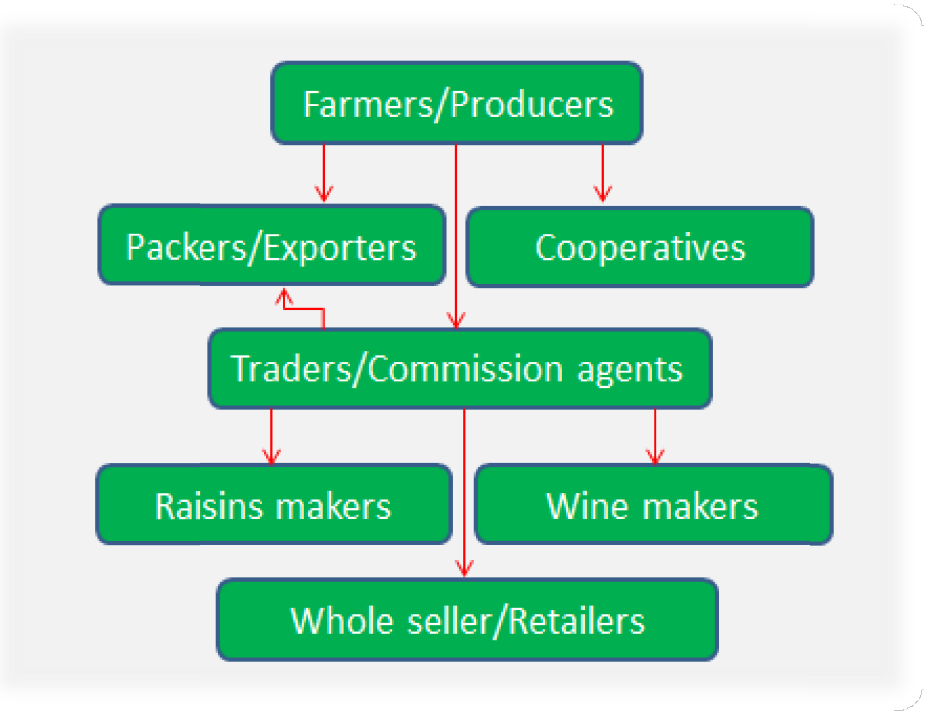
Chart- Grapes Distribution in %






Varietal Wise Grapes Production in Sangli District
6.00%
1.00%
2.50%
3.00%
3.40%
4.66%
4.82%
6.60%
10.25%
13.21%
44.56%
Super sonaka
Thompson,
Manikchaman
Sonaka
SSN
RK
Krishna
Sharad
Jyothi
Jumbo
Others

TRADE FLOW



The following channels exist in the trade flow of grapes in the studied districts:

- Farmers – Pre harvest contractor – Wholesaler – Retailer –Consumer (10% of fresh market trade happens in this way).
- Farmers – Commission agent/ Wholesaler – Retailer –Consumer (70% of trade in fresh market happens in this route).
- Farmers-Exporters (10% of trade in fresh market happens in this route).
- Farmers-Agents-Raisins Makers / Winery (10% of trade in fresh market happens in this route)

Section 4:

Infrastructural Assessment, Gaps and Recommendations

INFRASTRUCTURE ASSESSMENT AT EACH LEG OF VALUE CHAIN

Infrastructure assessment is done from and angles of Transportation, Cold storages and pack-houses (also covering exports) and Raisin making. Issues faced by farmers are covered thereafter.

As we have seen in the trade flow, around 14% of the total produce goes into Raisin making.

The way this is done is: 90% of Raisin making is done at farmer level and 10% is done by large organized players.

Other than the 14% going for Raisins, 74% is going for Table purpose and 7% is getting exported.

In the next section, we will be talking about capacities and infrastructural gaps in these major legs of value chain. Since Transportation is a common thread connecting retail/processing/exports, we will cover gaps in Transportation as well.

TRANSPORTATION:

- Current situation: As of today, for sale within India, around 12% of the fresh fruit is transported through reefer vans and rest all in normal vehicles, without any cold-transport.
- The general transportation (without reefer vans) will keep the shelf life of grapes up to 5 days. Whereas if transported in Reefer vans, the shelf life can be extended by another 3 to 4 days.
- Other than low shelf-life, transportation in normal vehicles is leading to fruit damage. It is observed that Transportation-related damage is to the tune of 3-5%, which can be reduced to less than 1% when transported through reefer vans.
- The scenario is different when it comes to exports. For the 7.5% of the total material that is getting exported, around 95% of the same is getting transported through Reefer vans. i.e. from farmer level till the export originations such as Ports (Mumbai port exports 98% out of the total grapes exported, other than for Bangladesh & Nepal).
- (Except for exports to Bangladesh and Nepal, where in around 50% of the material is getting transported in Reefer vans and rest in normal vehicles).
- (The major transporters in Grapes and their capacities are given in Excel file).
- Gaps in Transportation:
- Transport agencies are not offering their services to interior villages. 2-3 tons Mini Reefer vans should be made available to cater to needs of small farmers.
- In the current availability, reefer vans are very expensive, leading to an addition of Rs. 7 to 10 rs. Per kg of Grapes.
- While we are seeing these issues from the angle of producers, if we look at it from the Transport providers perspective (from those who supply Reefer Vans), they do not have business throughout the year. The business mainly happens in Grapes season and not in other months.

- Transporters are complaining about higher cost of Diesel and toll prices.
- Many areas in the surveyed districts and for other districts transportation, road conditions are poor and vehicle breakdown is a common occurrence.
- Unloading time at ports and at Railway rake points – waiting period is very high. At Rake points, ideally unloading should happen in 2-3 hours, but it is taking 12-13 hours, because of congested roads, less no. of unloading staff and poor infrastructure.
- Parking issues in big cities- not available in Mumbai
- Restriction timings in Metro cities- mostly trucks are allowed at night. So if they reach during day time, they need to wait outskirts for 10-12 hrs and then enter into city. This is leading to delays in delivery, damage of fruit and health issues to the drivers.
- There are no sufficient resting rooms for drivers on National highways. Those offered by private Dhabas are not sufficient.
- Truckers as well as buyers are asking about neutrality in transportation prices. Something like Baltic exchange for sea transport across the globe, if the same can be established in India for road transport, can bring about neutrality and transparency in Transportation.
- Uberisation of commodity Transportation – there is a large gap or trucking space which is empty, due to several reasons, majority being: lack of material on reverse transport and seasonal nature of commodities. Some private companies like Porter (for small capacity), Rivigo, Blackbuck solutions (Zinka logistics) etc have linked trucks across different capacities, but there holds still a large portion of untapped / unutilized capacity. The department can think of coming out with policies supporting new entrants in the space.

COLD STORAGES AND PACK HOUSES

- Current situation: Most of the pack houses (90%) are owned by exporters only. So the structure is like: Exporters, especially those who export to European Union are fully aware of the necessary requirements in terms of sorting/grading/packing and accordingly established pack-houses. Some of these pack-houses also house cold storages.
- Typically, the export packing consists of making 400 grams to 500 grams packs (depending on the customer requirement) in plastic and a pack of 10 plastic bags are kept in a corrugated box. So a container consists of 3300 corrugated boxes. (One container weight is 13.2 tons). After packing, the boxes are kept in cold storages.
- Importers in importing countries are direct retail chains (super markets); there are no middlemen in between. So the exporters pack the material, according to the client's requirements.
- The total capacity of pack-houses is estimated to be around 3.5 to 4 lakh tons, which seems to be sufficient for current pace of exports, which are 2 to 2.5 lakh tons before Covid and 1.76 lakh tons during last year Covid period. (Time period is November 2019 to October 2020, which is the Grapes crop year).
- Major issues as told by pack-houses:
- Higher cost of packaging –corrugated box is turning out to be very expensive. Each box of corrugated box costs around Rs. 25 per box, which adds a cost of Rs. 5 to 6 per kg of Grapes. (adding 10% to fruit cost)
- Electricity costs are also expensive –6 Rs. per unit. Pack-houses are seeking a subsidy or discounted rate, the way industries get in Food parks.
- Off-season – No activity in off-season. Other than intensive activity during 4 months of Grapes exports, other fruits are not occupying much of a space in pack-houses. There is a need for integrated pack-house usages.

Since we are talking about exporters also here, here is a stock of exports situation,

GAPS AND RECOMMENDATIONS

Exports current situation:

- Out of 24 lakh tons of Grapes production in the studied clusters, 6 lakh tons is the production of exportable grapes.
- Out of the production of 6 lakh tons of exportable grapes, actual exports stay around 2 lakh tons to 2.5 lakh tons.

Exportable (MRL 0.4 EU grade) Grapes APY in study clusters (2019-20 season)			
District	Area (000 ha)	Production (000 MT)	Productivity (MT per ha)
Nashik	24.60	556.00	22.53
Sangli	1.40	41.00	28.72
Pune	0.55	12.80	23.27
Solapur	0.32	7.00	22.00
Total	26.92	615.53	22.86
Source, horticulture department- crop year Nov-Oct			

Issues faced by exporter's infrastructure:

- Only seasonal work, maximum up to 3 months
- Major issue exporters are talking about is of : Higher packaging cost and higher cost of reefer vans
- Quality issues- rejection rate is higher. Pest and fungicide content is higher, more than the acceptable MRL levels (Minimum Residue Levels of 0.4). Last year 40 containers to Russia were rejected due to higher MRLs.
- Time taking process for lab testing –in spite of lab tests being done before exports, which declare the product fit, there are lapses in testing and by the product reaches the destination markets, it is getting rejected. So the standards of lab equipment & testing should be enhanced, in order to reach to zero errors in testing.
- At the same time, there is a need for more number of testing labs. Currently there are 15 testing labs, conducting a number of tests on different parameters as specified by importing countries. (Import certification requirements for EU is given in excel file. These standards are considered the highest. And if these are followed, then exports to other countries, viz., Middle East and Canada are not an issue).

- Coming to the capacity of these testing labs to handle the testing: the way it operates is – from each orchard, the exporter will collect 5 kgs. (It is not per acre or per hectare; it is 5 kgs per orchard). There are 35,000 exportable orchards in the surveyed districts. So the total test quantity collected is 175 tons, out of which 100% is done between Novembers to April and intensively 60% is done between Februarys to March.
- So there is a heavy demand during those peak months, leading to delay in testing. Daily 2 tons have to be tested by these 15 testing labs and the procedure demands anywhere between 12 hrs to 24 hrs to come out with the result. But during the season, it is taking 48 hours to come out with the result because of higher samples. We could not get exact capacities of these testing labs, but the survey respondents have indicated that there is a delay in getting test results.
- So it is emerging that there is a clear need to increase the testing labs capacity and investment in this field is a much needed requirement by the industry.

- Higher shipping costs – 1500 dollars per container, which went up to 4000 dollars during Coved times.
- During Covid situation the exporters faced short supply of containers from shippers (particularly for EU markets), which has reduced 10-12% of Indian grapes exports during 2019-2020 export season (Jan-Mar).
- Pack houses are sufficient, but cold storage facilities are less.
- USA is not allowing Indian grapes exports (Phytosanitary issue). Government or APEDA should take initiatives and discuss with the commerce industry or required authorities.
- 60% exports happen between Februarys to March, meaning daily exports of 1500 tons to 2000 tons. During that time, rail connectivity should be enhanced between Nashik to Mumbai. Also reefer containers capacity and numbers should be increased.
- To reduce the time in reaching Europe, any special shipment during February and March is required. Generally grapes are shipped out along with containers carrying other commodities. The shipment company, MAERSK has started a separate shipping line for Grapes in these lines, but due to higher costs, had to discontinue. While formulating supportive policies, MOFPI could consider this need. A specialized shipment will reduce shipping time by 5 days.

What needs to be done at farmer level, to enhance exportability?
Need to create higher awareness about cultivation of Export quality Grapes. Export quality requirements for Grapes:

1. TSS- should be more than 17 Brix.
2. Bunch weight- should be between 300-750 g.
3. Bunch colour- milky green.
4. The selected bunch should not be compact.
5. All the berries should be of uniform colour and size in a bunch.
6. Less than 2% sun burnt or Sulphur bleached bruised or crushed berries.
7. Pedicel should be fresh and green.

- To offset the impact of erratic weather on Grapes quality, Farmers needs to protect the fruit bunches with a polythene rapper. But this turns out be expensive to the farmers, to the tune of an additional Rs. 1 laky per hectare, or 4.5 to 5 rs. Per kg of Grapes.
- If government can provide any support in terms availability of such kind of polythene covers, the same can help reduce the burden on farmers and bring more farmers under “cultivating exportable quality” grapes.

- Colored varieties demand is increasing from ME, South East Asia and Europe, but the exportable production of such varieties is not increasing in that pace. Colored varieties shelf life is also less (compared to white varieties) and therefore in turn increasing the demand for pre-cooling facilities.
- Red Globe, Crimson, Flame, Jumbo, Araa and Golden Berry – these are the color varieties which have high demand potential.
- Weather stations in village level: Capturing weather data and timely communicating to farmers, which will help them to take timely action on pest/fungal management.
- FPOs – There are only 3 FPOs in Grapes in studied area. There is a need to give big impetus for formation of FPOs, which helps in many ways including Good agricultural practices, aiding in exportability and utilization of infrastructure facilities much better.

ROLE OF MAHA GRAPES IN OVERALL INFRASTRUCTURE DEVELOPMENT AND FACILITATING IN EXPORTS

MahaGrapes is a co-operative partnership firm established with the help of the Maharashtra State Agricultural Marketing Board, Pune. The main objective of Mahagrapes is to boost the export of grapes for which facilities like pre-cooling and cold storages has been erected at each grape grower co-operative society. There are 16 such cooperative societies who are members of MahaGrapes. But we found out that only 3 are active as of now, 2 other than Sahyadri.

The Mahagrape has already established 15 pre-cooling units, in which temperature of grape is brought down within 2 to 6 hours after the harvest. In pre-cooling, temperature is maintained at 0-4^{o}C and relative humidity at 90% and above. The voyage transit period to the European markets ranges between 20 to 30 days. Therefore, unless the shelf life of grapes is extended to 60 days, it may not be possible to maintain quality during the post shipment transit period.

There is a need to enhance the number of pre-cooling chambers and cold storages to boost up export of grapes and reduce post-harvest losses. The grapes are either pre-cooled in naked form or after packing into individual paper bags or in ventilated CFB cartons. The pre-cooling service has facilitated the export diversification of grapes to Gulf, Europe and South Asian countries.

Requirement from the angle of Maha Grapes:

- Out of 16 Grape grower Cooperative societies, 3 are active in terms of functioning like a group. There's a need to revive group activity and bring other societies up to Sahyadri farms.
- Pre-cooling facilities are not sufficient. 80% of the pre-cooling capacities, established by MahaGrapes are utilized for Onions, leaving lesser space for Grapes. Keeping the need for Onions intact, capacity for Grapes should be enhanced.
- Sangli and Solapur is the Raisin cluster. There the need for pre cooling is even higher, for export of Raisins and also need for sorting/grading of Raisins, after processing ofGrapesintoRaisinstosortoutbasedoncolorandsize.Therearemuchsmallerfacilitiesinthisaspectcomparedtotheneed.

List of pack house that are also exporters-Volume of exports in MT (2019-20) Nov-Oct crop year

S no	Exporter	Volume of exports in MT (2019-20) Nov-Oct -crop year
1	AJINKYA AGRO EXPORTS	249
2	AMAYA FOODS PRIVATE LTD	664
3	ANIRUDHA MARKETING SERVICES	266
4	Atharva International	1455
5	B. K. INTERNATIONAL	2186
6	B.K.EXPORTS	38
7	BHALERAO AGRO PROCESSING INDUSTRIES	327
8	BHOSALE AGRO EXPORTS	36
9	CHAITANYA AGRO PROCESSING INDUSTRIES	3623
10	CHAUDHARY ENTERPRISES	1087
11	CHOPDE FARMS AND EXPORTS LLP	793
12	EMPIRE EXPORTS	1395
13	EURO FRUITS PVT. LTD.	2368
14	FARM FRESH EXPORTS	925
15	FRESH AGRO EXPORTS	84
16	Fresh Express Logistics Pvt Ltd	826
17	FRESH FILL EXPORTS	1421
18	FRESHARA EXPORTS	82
19	FRESHTROP FRUITS LTD.	2636
20	Gangotri Agro Export	2099
21	GAURI AGRO EXPORTS	1748
22	HOLLY GRAPES	329

23	INDO GLOBLE FRESH FRUIT SERVICES	503
24	Indy global Ventures	5803
25	JIJAMATA AGRO EXPORTS	325
26	K AND B EXPORTS	288
27	KAIVALYA AGRO EXPORTS LLP	114
28	KALYA EXPORTS	3799
29	KALYANI IMPEX	3866
30	KAMAL EXPORTS	1218
31	KRISHIRATH FARM,	1102
32	KSHIRSAGAR COLD STORAGE	302
33	LATE.ASHOKRAO BANKAR NAGARI SAHAKARI PATSANSTHA MA	90
34	LEADING AGRO EXPORTS	13
35	LUSIS GRAPES PVT. LTD.	93
36	MAHESH EXPORT	390
37	MAHINDRA AGRI SOLUTIONS LIMITED	3487
38	MATOSHRI AGRO EXPORTS	1540
39	MGS GRAPES PRIVATE LIMITED	400
40	MOGAL AGRO COMPANY PVT. LTD.	335
41	MONSOON FOODS	1849
42	N.D. EXPORTS	1394
43	NAMDHARI SEEDS PVT.LTD	110
44	NANDADEEP EXPORTS	618
45	NATURE ONE FRESH PRODUCE	2477
46	ONS TRADING CORPORATION	463
47	ORCHID EXPORTS	889

48	P B AGRO EXPORT	184
49	PANACEA EXIM	489
50	PPF EXPORT	2432
51	PRINCE AGRO EXPORTS	519
52	RAIEN TRADING CORPORATION	432
53	RAINBOW EXPORTS AND LOGISTICS	1042
54	RAMSONS EXPORTS	539
55	ROSHNI AGRO EXPORTS	15
56	S G FARM	169
57	S.K.EXPORTS	712
58	SAHEBRAO VISHNU GAIKWAD	86
59	SAHYADRI FARMERS PRODUCER COMPANY LIMITED	13652
60	SAMARTH AGRO EXPORTS	404
61	SARASWATI FARM	141
62	SATYABHAMA EXPORTS (PROP. RAJENDRA T. BORASTE)	122
63	SEVEN STAR FRUITS PVT LTD	1320
64	SHIVSHANKAR AGRO EXPORTS	1583
65	SHIVSHANKAR FRUITS COMPANY	668
66	SHRAMIK FRUITS	1827
67	SHREE GANESH COLD STORAGE	793
68	SHREE SAMARTH AGRO EXPORTS	603
69	SHRI BALASAHEB SAMPATRAO KADAM	544
70	SUNRISE AGRO EXPORTS	166
71	SUSHIL GRAPE EXPORTS CO.	493
72	TRAMBAKBHAU BORASTE COLD STORAGE	655

73	VAARAD COLD STORAGE	803
74	VAKRATUND COLD STORAGE AND WAREHOUSES	37
75	VARAD VINAYAK EXPORT PVT. LTD.	1111
76	VEGETABLE & FRUIT CO-OP. MARKETING SOCIETY LTD.	286
77	VIJAYSHREE EXPORTS	113
78	VIVEKSHEEL AGRO PROCESSING INDUSTRIES	1589
79	YASH AGRO EXPORTS (PROP. KHANDERAO A. MALODE)	393
	Total exports	90029

SNAPSHOT

- There is a Total 90 thousand MT Exports of Table variety Grapes
- Total exports from Maharashtra is around 1.76 Lakh tons Out of 1.76 Lakh tons exports to Europe is 1.06 Lakh tons
- So, It is to be noted that this table captures 90% of exports to EU For which pack house is must for EU grade exports
- Other exports to Bangladesh and Nepal doesn't necessitate pack house,Farmers and traders, commission agents directly loading in trucks at farm gate
- We didn't get the total capacities of these 90 pack houses, but we understand from the interviews that they were operating around 60% capacity
- Generally they operate 70-75% capacity, But, due to covid situation last year exports 1.76lakh tons which previous years stood around 2-2.5Lakh tons.
- Therefore we can assume that the capacities of pack houses are 3.5lakhtons.
- It is to be noted that these pack houses have been established exclusively for grapes, however, since grapes exports happen 4 month of the year, the capacities are used for other fruits during remaining 8 months (May-Nov)
- Mostly we can say that the pack houses are underutilized and there is larger need to bring in additional volumes of grapes as well as other fruits.
- 90% of the exporters have their own pack houses. Small exporters take service from other pack houses.

TESTING LABS

TUV-SUD South Asia Pvt. Ltd.
First Source Laboratory Solutions LLP (Analytical Services)
Nawal Analytical Laboratories
Micro Chem Silliker Pvt. Ltd.
TUV India Pvt. Ltd.(TUV Nord Pune)
National Collateral Management Services Limited (NCML)
SGS India Pvt. Ltd.
National Horticultural Research & Development Foundation (NHRDF)
Edward Food Research & Analysis Centre Ltd. (EFRAC)
Interstellar Testing Centre Pvt. Ltd
Geo Chem Laboratories Pvt. Ltd.
National Collateral Management Services Limited (NCMSL)
MAARC Labs Pvt. Ltd.
Vimta Labs Limited Bhakti Genesis

Gaps

Quality issues- rejection rate is higher. Pest and fungicide content is higher, more than the acceptable MRL levels (Minimum Residue Levels of 0.4). Last year 40 containers to Russia were rejected due to higher MRLs. o Time taking process for lab testing –in spite of lab tests being done before exports, which declare the product fit, there are lapses in testing and by the product reaches the destination markets, it is getting rejected. So the standards of lab equipment & testing should be enhanced, in order to reach to zero errors in testing. At the same time, there is a need for more number of testing labs. Currently there are 15 testing labs, conducting a number of tests on different parameters as specified by importing countries. (Import certification requirements for EU is given in excel file. These standards are considered the highest. And if these are followed, then exports to other countries, viz., Middle East and Canada are not an issue).

Coming to the capacity of these testing labs to handle the testing: the way it operates is – from each orchard, the exporter will collect 5 kgs. (It is not per acre or per hectare; it is 5 kgs per orchard). There are 35,000 exportable orchards in the surveyed districts. So the total test quantity collected is 175 tons, out of which 100% is done between Novembers to April and intensively 60% is done between Februarys to March. So there is a heavy demand during those peak months, leading to delay in testing. Daily 2 tons have to be tested by these 15 testing labs and the procedure demands anywhere between 12 hrs to 24 hrs to come out with the result. But during the season, it is taking 48 hours to come out with the result because of higher samples. We could not get exact capacities of these testing labs, but the survey respondents have indicated that there is a delay in getting test results. So it is emerging that there is a clear need to increase the testing labs capacity and investment in this field is a much needed requirement by the industry.

PRIMARY PROCESSING

S.No	Name of Facility	Location	Project components	Capacity
1	Onion, Grapes, Pomegranate export facility centre , Kalvan	A/p- Bhendi Tal Kalvan Dist Nasik	Precooling	5 M.T. / Batch
			cold storage	50 M.T
			Pack house	4350 Sq.feet X2
			Handling Line	2 M.T / hr
			Onion Storage	8 x 50 M.T
			D.G.Set	160 &30 KVA
			Transformer	160 KVA
			Weigh bridge	60 M.T
			Plastic Crates	1000
			Staff Quarter	2x1 BHK
2	Onion, Grapes, Pomegranate export facility centre , Chandwad	APMC, Chandwad , A/P-Chandwad, Tal -Chandwad, Dist – Nasik	Pre cooling	5 M.T. / Batch
			cold storage	50 M.T
			Pack house	4765 Sq.feet
			Onion Storage	350 M.T

			D.G.Set	160 KVA
			Transformer	160 KVA
			Plastic Crates	500
3	A) Fruit and Vegetable export facility centre, Indapur Dist-Pune.	Agricultural produce market committee, Shivlinagar Indapur – Akluj Road, Indapur, Dist Pune	Cold Storage	3 x MT
	B) Ice Making Unit			
			Precooling	5 MT/Batch
			Transformer	160 KVA
			D.G.Set	100 KVA
			Ice Storage	40 MT
			Ice Tank	5 MT /day
4	Agro produce export facility center, Indapur	Agricultural produce market committee, Shivlinagar Indapur – Akluj Road, Indapur, Dist Pune	Handling System	10 MT / hr
			Onion Storage Structure	500 MT
			Exporter Shops	360 sq. mtr
			Admin building	233 sq. mtr
5	Export facility center, Talegaon Dabhade	Horticulture Training Center, Talegaon Dabhade , Tal-Maval Dist- Pune	Precooling	5 MT/Batch

			Cold Storage	50 MT
			Packhouse	800 Sq.feet
6	Grapes and Pomegranate export facility Centre, Baramati	Jalochi, Tal- Baramati Dist-Pune	Pre cooling	5 MT/Batch
			Cold storage	2 x 25
			Packhouse	4035 Sq.feet
			Handling system	1.5 MT / hr
			D.G.Set	125 KVA
			Transformer	160 KVA
7	Pomegranate and Grape export facility Centre , Atpadi	Agricultural produce market committee , Atpadi , Tal Atpadi , Dist Sangali	Precooling	5 MT/Batch
			coldstorage	2 x 25 MT
			Pack house	2000 Sq.feet
			D.G.Set	200 KVA
			Transformer	200 KVA
			Plastic Crates	500

10	Fruit and Vegetable Modern Facilities Centre Thangaon Dist: Nashik	Agricultural Produce Market Committee, Sinnar, Sub market Thangaon, (Tamburwadi) Tal. Sinnar Dist Nashik
11	Fruit and Vegetable Modern Facility Centre, Shelpimpalgaon, Tal- Khed, Dist.- Pune	Agricultural Produce Market Committee, Khed, Shel Pimpalgaon, Ta.Khed, Dist. Pune
12	Fruit and Vegetable Modern Facility Centre,Barshi, Dist. Solapur	Lakshmi Agricultural Products Development and Marketing Co-operative Society, Barshi, Raut Chal, Arangaong Road Ta Barshi, Dist. Solapur

SECONDARY PROCESSING

Raisins

- Raisins current situation: As give in the trade flow, approximately 14% of the total production is diverted for Raisins, forming a significant part of Grapes Economy. Since 90% of Raisin production is done at the farmers' level only, there are a range of issues that need to be addressed to enhance effective processing and profitability.
- 96 to 98% of Raisin production is currently happening manually, i.e. Grapes are first dried using Calcium Carbonate, then dipping of bunches in oil solutions, removing moisture and drying, and then cleaning & grading of dried grapes, after that washing and drying once again. Storage (cold storage) is the next step.
- This entire process when done manually- takes 1 week to 10 days for conversion of one batch. This process leaves large scope for fungus development and in the open area, the dust particles mix with Raisins, carrying till the end to the customer, impacting quality and consume ability of Raisins.
- Now a lot of new technology has come into the market, for drying (solar drying, electric drying and air drying). Application of this technology will improve the quality of Raisins and help improve exports. (Out of the total Raisin production of ~ 80-85 thousand tons, which is 25% recovery of 3, 50,000 tons of Grapes utilization, exports are to the tune of 24 thousand tons.).
- It is to be noted that in spite of such large production within the country, we are also resorting to imports to the tune of 26,000 tons, mostly from Turkey and Afghanistan. Imports happen during domestic off-season for grapes. (June to October)

- By increasing the number of cold storages (for storing grapes beyond the production season, which can be converted into Raisins during off-season), a volume similar to the current production, i.e. close of 85 thousand tons of Raisins can be additionally produced.

- Zebrallic acid is one nutritional product sprayed for yield improvement in grapes. But this is negatively impacting Grapes quality and intern Raisin quality. Scientific research may aim to find alternatives to this product.
- The aspect of groups formation was discussed in previous sections as well and the effectiveness of groups in various areas of processing, including in Raisin making needs to be fully leveraged.
- Higher packaging costs for Raisin packing. It is observed that packaging cost is Rs. 30 per kg of raisins, which accounts to 30% of manufacturing cost. Food grade plastics are used as primary packing, which intern is kept in cloth bags and vacuum packed. This entire cost is turning out to be higher, impacting margins.
- Connectivity between Raisin makers and consumers – need for better E-Commerce. Online retailers have not yet approached to the farmers, and the Raisins makers, who are mostly farmers, are dependent on aggregators to sell Raisins.
- Phyto-sanitary certificate is required for exports of Raisins.
- Raisin imports do not carry any duty. Landed cost from Afghanistan is in the range of Rs.170 to 250 per kg, where as FOB price in India is also the same, so not leaving any cost advantage for Indian Raisins. There is a need for discussion with commerce ministry to bring Raisins under restricted list to be able to impose duty.
- Sangli – farmers were asking for ICD dry port (Inland Container Depot) - for connectivity to JNPT port. Like the way Dry port is currently being constructed in Nashik, Sangli also has good potential for exports that can be better leveraged with the help of a dry port.
  A combined logistical hub along with ICD will go a long way in fulfilling the infrastructural needs.
- There are no testing facilities in Sangli and Solapur. As we see in trade flow, exports from these districts are much lower compared to Nashik. (1.7% and 0.7% of production) But these regions need to develop like the way Nashik has been developed, with push in all the required infrastructure, viz., pack houses, cold storages and testing labs. There is an immediate need to establish 1 pack house in Solapur with a capacity of 500 tons capacity per month. (Currently exports from Solapur are 350 tons).

Si no	Raisin makers	Region	Raisin capacity MT
1	Bafna group	Sangli	1500
2	Bhavani trader	Tsgaon	1200
3	Hingmire trader	Tsgaon	500
4	Gavli trader	Tsgaon	600
5	Saisha	Tsgaon	400

6	Raka	Nashik	250
7	Bandari	Nashik	200
8	Bora	Nashik	150
9	Bhalerao	Nashik	400
10	Sahyadri	Nashik	1000
11	Omni fresh	Nashik	200
12	Baswant	Nashik	350
13	Mahale	Nashik	250
	Others		1000
	Total		8000

Notes:

Grapes production Maharashtra (4 districts) all units in MT		**2419100**
Total grapes diversion for raisins	**14%**	**338674**
Done by farmers	**90%**	**304807**
Done by major organized players	**10%**	**33867**
Raisin recovery	**25%**	**8467**

The adjacent list covers organized raisin makers

And as mentioned above 90% raisins making happening at farmer level

In Sangli and Solapur 50% (10500-11000 of the farmers) do raisin making at farm level

While in Nashik the around 15% (4000-4500 of the farmers) do raisins at farm level

WINERY

- Winery current situation: After Raisins, the second major processing of Grapes in Maharashtra is Wine making. While this is still in preliminary stages (diverting only 2% of grapes produced) compared to any global benchmarks, there has been an improvement from Wineries. Quality of wine produced from India has improved and new brands made a name for themselves. Consumption growth in India is around 14%, but the growth is largely captured by imported wines.
- From our interviews, the wineries expressed less of a concern from Infrastructure gaps and more concern is on the availability of suitable varieties in wine making. Suitable varieties are: Sauvignon Blanc, Chenin Blanc, Ugni Blanc, Chardony, Clairette, Cabernet Sauvignon, Shiraz, Merlot, Zinfendel, Grenache, Convent Large Black, and Carignane.
- Whereas farmers on the other hand are going more towards Table purpose varieties. Farmers fetch a higher price of Rs.50-60 when producing table purpose varieties and exporting, whereas Wineries are procuring material at 40 Rs.
- Cost of production is very high in Winery. So our export wine is not competitive in European market. And the quality is also not equal with European quality.
- Wine makers are asking “Marketing promotion”. Wine should be allowed in hotels, restaurants tourist places without license.

Sr. No.	Name	Capacity in liters
1	Sula Wine	1375000
2	Soma Wine	67500
3	Renaissance Winery	700,000
4	Seven Peaks	500000
5	Vallonne Vineyards	4000000
6	Vintage Wines	1000000
7	N D Vines	991000
8	York Winery	400000
9	Chandon India Wines	1000000
10	Wagha Wines	50000
11	Flamingo Wines	150000
12	V. M. Agrosoft Wines	540000
13	Girna Vally Winery	1125000
14	Sailo Wines	300000
15	Mountainview Winery	2545

16	Red Wing Wines	NA
17	Chateau d' Ori	NA
18	Maharaja Winery	NA
19	Shivprasad Wines	NA
20	Venus Celler Pvt.Ltd	NA
21	Sahyadri Valley	NA
22	Vallee de vin Pvt.Ltd	NA
23	Grower Zampa	NA
24	J K Wines	NA
25	Nipha Winery	NA
26	Vinsura Winery	NA
27	Somanda wines	NA
28	Pernod Rechard	NA
29	Sergam Wines	NA
30	Prathamesh Wines	NA
31	Terrior India Wines	NA
32	A D Wines	NA
33	Sankalp Winery	NA
34	Rajdhir Wines	NA
35	Sigma Wineries	NA
36	Mercury Winery	NA

THE OTHER POTENTIAL AREAS FOR SECONDARY PROCESSING

The Other potential areas for secondary processing, which are in nascent stage now

- A very minor portion of grapes produced is going for Grape juice making. Around 1500 tons is converted into juice by Sahyadri farms. With Grape juice, Grape syrup can be made, which has multiple usages. This is one potential area.
- The other new industries, which are practically non-existent as of now, are: Grape Vinegar and Grapes Jam and Jellies. Anti-oxidants extracted from Grapes and Grape seeds are another potential value added product from Grapes.
- To support these 3 industries, Government may give subsidies in initial years, which is likely to attract potential investors.

DOMESTIC TABLE PURPOSE

- Current situation: A large percentage (74%) of production goes for table purpose consumption within India. This trade typically consists of Farmers to aggregators to distributors at destination markets and from there to super markets / retailers.
- Gaps in domestic infrastructure :
  - Grade distribution is a point to be noted –
  - To supply better quality fruits, Reefer vans are required.
- Satellite markets: create small markets around metros and create direct connect of farmers/farmer groups to these satellite markets.
- To reduce, transportation cost within India, Sea transportation should be given impetus. For example, from Mumbai Port to Trivandrum, Tuticorin, Chennai, Vishakhapatnam, Bhubaneswar and Kolkata.
- Farmers to retail connectivity through online platforms need to be encouraged and also connectivity with big retailers likes Flipkart, Big Baazar. Like the way there is a dedicated body in the form of APEDA for export promotion, a dedicated function needs to be established for promoting domestic trade and making farmer-consumer connect stronger.
- Consumers are seeking:
  - Consumers in domestic market prefer High Bricks fruit. In order to obtain a higher shelf-life, farmers are generally resorting to early harvest when the fruit is not fully mature, with Bricks content of 17-18. Where as consumers prefer 21 Bricks. This brings us back to the discussion on the need for cold infrastructure, including Reefer vans, Cold storages and Pre-cooling facilities, which will allow farmers to harvest crop at right stages without fearing of damage and the consumers being able to obtain better fruit.
  - In terms of packing, it is observed that not all packing is food-grade. With increased consumer awareness and health, there is a need to allow only food-grade plastic or paper packing.
  - Grape juice directly is not preferred, but in a mixed form with other fruit juices is well accepted. The juice making industry can be given an impetus.
  - Organic grapes are picking up demand and a separate branding and marketing drive to promote organic grapes will find success in table purpose.

AT FARMER LEVEL – ISSUES FACED:

- Most of the farmers in Nashik, Sangli and Pune growing regions are following (GAP) good agriculture practices and yield levels are good.
- **Farmers are going for early crop.** Instead of normal crop, which should give harvest from February, farmers are harvesting from December itself. Pruning should ideally be done in October/November, but farmers are doing from July/Aug. This is being done, as farmers are getting higher prices, if harvested early. But because of this practice, there are other losses, viz., cracking due to cold temperatures in December and January. Since this practice cannot be reversed, there is a need to develop crack-resistant varieties. And the insurance for early crop is also very expensive. Insurers are charging Rs.70, 000-80,000 per ha, for early crop vs. Rs.15, 000 per ha for normal crop. Efforts should be made to reduce insurance cost for early harvesting.
- **Confusion with pesticides:** Availability and push of different kinds of pesticides (traditional chemical pesticides and bio-pesticides is creating confusion for farmers). Minimal residual level that should be maintained is 0.4 as per European standards, but since farmers are using a combination of different types of

pesticides, without proper knowledge, the residual levels are crossing the required levels, leading to rejection of exports in labs.

- **Higher packaging costs:** Farmers typically pack grapes in plastic crates. Temporary, one-time usage plastic crates cost around Rs. 110 per crate, which handles 15 kegs of Grapes. Whereas durable crates, that can be used multiple times cost around Rs.330 to 350 per crate. General practice is Traders buy the crates and provide to farmers and include in the cost. So farmers realize a lower potential price. In a scenario where farmers can get crates at a lower price, farmers can afford to purchase crates at a lower price and realize a better price than what they are getting in today's scenario.
- **Transportation at farmer level:** Now kisan rail connectivity is available from Nashik to Delhi, Kolkata, Punjab and Haryana. For South India, Kisan rail facility is available for Hyderabad. But farmers are asking for extension of Kisan rail facility to South India also, viz., Chennai, Trivandrum, Benguluru. And since Bangladesh is the second largest importer of Grapes from India, farmers are expecting direct connectivity up to Bangladesh border, until dry port at MytriSetu in Tripura.
- **FPOs/Cooperatives in Grapes:** Other than the largest cooperative, viz., Sahyadri Farms, there are no major activities around formation of FPOs or the existing FPOs are not very actively processing or exporting. Out of a total number of around 50,000 Grapes farmers, 6000 farmers are members of Sahyadri Farms. Other than that Sahyadri, there are 5 other FPOs, out of which 2 are active. These FPOs are able to sell directly to super markets and do online sale, proving that even small scale FPO farmers are able to realize better than farmers otherwise who are dependent on traders/aggregators for trade.
  So there is a need to do a large scale drive for formation for FPOs in Grapes.
- **Need for marketing promotion:** Newly formed e-commerce companies like Agri-Baazar, Nurture Farms, and Ninja Cart are buying directly from few selected farmers. The farmers are selected based on quality of the product and package of practices. Farmers are seeking more and more market connect activities such as Trade Fares, Export promotion activities, in order to arrive at better connect of farmers to retail super markets / exporters / e-commerce companies.

- **Higher cost of production:**
  Total cost of production per hectare is Rs.5, 77,000. And income is Rs.7, 35,000. (Yield of 21 tons per ha and price of grapes at farm level at Rs. 35 per kg). So net profit is Rs.1, 57,000 per ha.
  Major component (30%) in cost of production is for Agri-inputs, which is Rs.1, 60,000. Government control is minimal in pesticide sales and farmers are complaining about expensive pesticides.

- **Low quality nurseries:** Unorganized nurseries supplying low quality vines are an issue farmers are complaining about. There has to be certified nurseries.

- **Infrastructure related:**
  - Spray blowers –Farmers need upgraded spray-blowers. The spray-blower cost is 4.5 to 5 lakhs per unit. And there is no subsidy for it. In our survey, most of the farmers have asked for subsidy in Spray-blowers.

WASTE TO WEALTH

Grapes relatively produce much lesser waste, but whatever is left out can also be utilized for commercial usages. Following are the waste to wealth opportunities.

Yoghurt enriched with antioxidants from Wine Lees

- Presently wine lees, which is the waste material after production of wine is disposed by burning in open fields or flowed in water bodies. But since grapes are rich source of anti-oxidants, wine lees also have that property which can be used to enrich Yoghurt.
- Wine lees shows significant antibacterial properties as well as antioxidant properties
- and includes as spreads, none caloric thickeners, flavor enhancers, and functional food
- Additives. The fine wine lees from fermentation of red grapes are source of natural colour also.
- Wine lees obtained from red wine of Cabernet Sauvignon has numerous properties like
- Antioxidant activities, rheological properties beside natural colour and aroma.
- The raw material i.e. fine wine lees from red wines may be acquired from any winery on
- Prior booking of the material.
- For processing of fine wine lees, equipment for freeze drying is required which will dry
- The lees at −65°C, 0.12 mBar pressure for 3–4 h to remove ethanol content and preserve maximum amount of phenolics content and anthocyanins.

Enrichment of Cookies by Using Grape Pomace Powder

- High value cookies prepared through replacing of Maida by grape pomace powder
- The wineries are generating about 3 lakh tones of grape waste. Its disposal is a major environmental problem. Presently, waste material is disposed by burning in open fields, which results in loss of potential source of organic matter and valuable plant nutrients.
- Wastes generated during wine and grape juice preparation have huge quantity of phenol compounds. The grape pomace from red wine and juice (Manjari Medika) contain viable functional ingredients and can be added in cookies to increase total phenolic content, radical scavenging activity and dietary fibers.
- The cookies are developed by processing of wine grape pomace powder, alteration in normal process of cookies making and product is also very specific.
- The addition of grape pomace powder obtained from red wines, increased antioxidant
  Properties comprising ferric reducing antioxidant power, total phenol content, flavonoid and anthocyanin.
- Wine grape pomace powder imparts brown colour to cookies as compared to control.
- Improved sensory properties were recorded in cookies enriched by addition of wine grape pomace powder.

Fine wine Lees Enriched Ice Cream with Health Benefits

- The fine wine lees are a waste product collected after 2nd racking in process of red wine making, and are having significant antibacterial and antioxidant properties Addition of processed fine wine lees can significantly affect physico-chemical parameters of ice cream. This is a technology of preparation of ice cream with higher nutraceutical properties by utilization of wastes from wine industry.
- Enriched ice-cream have health benefits including nutritional, functional properties,
- Delayed melting and attractive natural colour with excellent aroma.

GOVERNMENT SCHEMES

Schemes available in Grapes:

MEIS: An incentive of 6% is available on the export of grapes under the Merchandise Exports from India Scheme (MEIS). The Agricultural & Processed Food Products Export Development Authority (APEDA), under the administrative control of Department of Commerce, has been mandated with the export promotion of grapes.

APEDA has implemented Grape Net, which is a web-based service offered to the stakeholders for facilitating testing and certification of grapes for export from India in compliance with the standards identified by NRC Pune, on the basis of consultation with the exporters. GrapeNet collects stores and reports – forward and backward traces and quality assurance data entered by the stakeholders within the grapes supply chain in India. Moreover, APEDA has also been providing assistance to the grape exporters under various components of its export promotion scheme.

Mission for Integrated Development of Horticulture (MIDH)

Mission for Integrated Development of Horticulture (MIDH) is a Centrally Sponsored Scheme for the holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo. Under MIDH, Government of India (GOI) contributes 60%, of total outlay for developmental programmers in all the states except states in North East and Himalayas, 40% share is contributed by State Governments.
Main objectives of the Mission are: a) Promote holistic growth of horticulture sector, including bamboo and coconut through area based regionally differentiated strategies, which includes research, technology promotion, extension, post harvest management, processing and marketing, in consonance with comparative advantage of each State/region and its diverse agro-climatic features; b) Encourage aggregation of farmers into farmer groups like FIGs/FPOs and FPCs to bring economy of scale and scope. c) Enhance horticulture production, augment farmers, income and strengthen nutritional security; d) Improve productivity by way of quality germplasm, planting material and water use efficiency through Micro Irrigation. e) Support skill development and create employment generation opportunities for rural youth in horticulture and post harvest management, especially in the cold chain sector

SUBSIDY AND SCHEMES BY DEPARTMENT OF INDUSTRIES

Classification of Areas for Scheme-2019

The detailed taluka-wise classification of different areas of the State as Group, A /B/ C/ D/ D + etc., on the basis of their level of industrial development is as follows-

1. Group A : Denotes industrially developed areas
2. Group B: Denotes areas where some industrial development has taken place, but is less developed than the areas under Group A.

3. Group C: Denotes areas, which are less developed than those covered under Group B.
4. Group D: Denotes the lesser-developed areas of the State, not covered under Group A/ Group B/ Group
5. Group D+: Denotes the least developed areas, not covered under Group A/ Group B/ Group C/ Group D. (No Industry District: Denotes District having no industries viz Hingoli and Gadchiroli.
6. Naxalism Affected Area: Denotes area affected by naxalism,
7. Aspirational Districts: defined by Government of India viz. Washim, Gadchiroli, Osmanabad and Nandurbar.

Definitions

Micro & Small Manufacturing Enterprises, Medium Manufacturing Enterprises /Large Scale Industries /Mega Projects and Ultra Mega Projects

MSMES AND SMALL INDUSTRIES

MSMEs Gross Fixed Capital Investment (FCI) up to Rs. 50 crores.

*** Note: In case of expansion / diversification project, the sum total of Gross FCI of existing unit and Gross FCI of proposed expansion / diversification project should be up to Rs. 50 crore for qualifying for incentives under this category.**

LARGE SCALE INDUSTRIES (LSI)

Industrial Units, having investment more than the Medium Manufacturing Enterprises up to FCI of Rs. 50 crores but less than the Mega Projects

Table 1 - Eligibility Criteria for LSI

Taluka / Area Classification	Minimum FCI (INR crore)	Minimum Direct Employment (number of people)
A & B	750	1000
C	500	750
D	250	500
D+	150	400
Vidarbha, Marathwada, Ratnagiri,	100	300
No Industry Districts, Naxalism Affected Areas* and Aspirational Districts**	100	250

* Naxalism affected areas as per Government Resolution No.: PSI -2013 / (CR- 54)/IND-8 Dated

1st April 2013 issued by Government of Maharashtra Industries, Energy and Labour Department.

** Aspirational Districts - Osmanabad, Gadchiroli, Washim and Nandurbar

MEGA PROJECTS / ULTRA MEGA PROJECTS

Industrial Units satisfying the minimum threshold limits of Fixed Capital Investment OR Direct Employment prescribed in the following table shall be classified as Mega Projects / Ultra Mega Projects.

Table 2 - Eligibility Criteria for Mega and Ultra-Mega Units

Type	Taluka / Area Classification	Minimum FCI (INR crore)	Minimum Direct Employment (number of people)
Mega Industrial Units	A & B	1500	2000
	C	1000	1500
	D	750	1000
	D+	500	750
	Vidarbha, Marathwada, Ratnagiri,	350	500
	No Industry Districts, Naxalism Affected Areas* and Aspirational Districts **	200	350
Ultra Mega Industrial Units	Entire State	4000	4000

* Naxalism affected areas as per Government Resolution No.: PSI -2013 / (CR- 54)/IND-8 Dated

1st April 2013 issued by Government of Maharashtra Industries, Energy and Labour Department.

** Aspirational Districts - Osmanabad, Gadchiroli, Washim and Nandurbar

IMPLEMENTATION AGENCIES

S. No.	Category of Industrial Units	Area	Implementing Agency
1	• Micro & Small Manufacturing Enterprises • Integrated Cold Storages and processing units	Mumbai and Mumbai Suburban Districts	The Joint Director of Industries (Mumbai Metropolitan Region) [JDI (MMR)]
		All other Districts	Concerned District Industries Centre
2	• Medium Manufacturing Enterprises as Units with eligible project FCI up to Rs. 50 crores. • Integrated Cold Storages and processing units up to Rs. 50 crores.	Mumbai and Mumbai Suburban	The Joint Director of Industries (Mumbai Metropolitan Region)
		Regions	The Regional Joint Directors of respective
		Nanded Sub-Region	Superintending Industries Officer,
3	Special (LSI) / Large Scale Industries (LSI) / Mega Projects / Ultra Mega Projects Integrated Cold Storages and processing Units wherein investment in equipment is more than Rs. 50	Entire State	Directorate of Industries, Government Of Maharashtra.

FINANCIAL INCENTIVES FOR MSMES

Table 3 - Basket of Incentives for MSMEs

Taluka/ area Classification	Maximum Permissible Fixed Capital Investment (INR crore)	Maximum Ceiling of Basket of incentives as % of FCI	Eligibility Period (Years)
A	For the purpose of this policy, MSME shall include units as per the MSMED Act,2006, as well as the units with FCI of up to INR 50crore	--	-
B		30%	7
C		40%	7
D		50%	10
D+		60%	10
Vidarbha, Marathwada, Ratnagiri,		80%	10
No Industry Districts, Naxalism Affected		100%	10
*Naxalism affected areas as per Government Resolution No.: PSI -2013/ (CR- 54) /IND-8 Dated 1st April 2013 issued by Government of Maharashtra Industries, Energy and Labour Department.			

Provided that

The incentives will also be available to MSME Units in Group A and B areas as well.

The total quantum of incentives for the food / agro processing units (secondary and tertiary processing units and Primary Processing Units set up by Farmer's Producer Companies and the units set up in government assisted Food Parks) eligible green energy / bio-fuel manufacturing units will be 20% over and above the limits mentioned above and such units will get two more years of eligibility to avail the incentives. However, in any case total incentives admissible to the eligible unit will not exceed 100 % of eligible FCI.

Expansion / Diversification Units: Existing / New Micro, Small and Medium Manufacturing Enterprises and Small Industries (including Manufacturing IT/BT) Units, qualifying as Expansion / Diversification Units, will also be eligible to get the incentives for Expansion / Diversification, equivalent to 80% of the incentives admissible for New Units. The eligibility period for availing of the incentives will however be reduced by one year than that admissible to a New Unit in case of Expansion / Diversification Units.

Industrial Promotion Subsidy (IPS)

1. The eligible New / Expansion Micro, Small and Medium Manufacturing Enterprises, which are set up in different parts of the State, will be eligible for Industrial Promotion Subsidy (IPS), as per there taluka Categorization.
2. Eligible Micro, Small & Medium enterprises shall be offered Industrial Promotion Subsidy (IPS) on 100 % Gross State Goods & Services Tax (SGST) payable by the unit on the first sale of eligible products billed and delivered within Maharashtra. The modalities for disbursement of incentives shall be as per the guidelines issued.

Interest Subsidy

All eligible new Micro, Small and Medium Manufacturing Enterprises will be eligible for interest subsidy in respect of interest actually paid to the Banks and Public Financial Institutions (excluding unsecured loans, private loans / borrowings, loans from NBFCs etc.) for claim period, on the amount of term loans taken for acquisition of new Fixed Assets required for the project accepted by the implementing agency. The amount of interest subsidy will be calculated @ effective rate of interest, after deducting the interest subsidy receivable from any agency of the State Government or under any Govt. of India Scheme and the penal / compound interest or 5 % per annum, whichever is less. The quantum of interest subsidy payable to the eligible unit every year will not exceed the bills paid for electricity consumed during the relevant year.

Exemption from Electricity Duty

All Eligible New Units in Group C, D, and D+ areas, No-Industry District(s), Aspirational Districts and Naxalism affected Area will be exempted from payment of Electricity Duty during applicable eligibility period. In Group A and B areas, only eligible 100% Export Oriented Units (EOUs), Information Technology Manufacturing Units and Bio-Technology Manufacturing units will also be exempted from payment of Electricity Duty for a period of 7 Years. Necessary Notification under the provisions of the Electricity Duty Act 1958 will be issued separately by the Energy Department.

Waiver of Stamp Duty

New Units as well as Units undertaking Expansion / Diversification will be exempted from payment of Stamp duty during the Investment period in Group C, D, D+ Talukas, No Industry Districts, Aspirational Districts and Naxalism affected areas for acquiring land (including assignment of lease rights and sale certificate) and for term loan purposes. However, in Group A and B areas, stamp duty exemption would be available as given below:

- BT Manufacturing and IT Manufacturing Units in Public IT / BT Parks: 100%
- BT Manufacturing and IT Manufacturing Units in Private IT / BT Parks: 75%

Power Tariff Subsidy.

Eligible New Micro, Small and Medium Enterprises (MSME) and Small Industries will be eligible for power tariff subsidy. The subsidy will be to the tune of Rs 1/- per unit for the Units located in Vidarbha, Marathwada, North Maharashtra and the Districts of Raigad, Ratnagiri and Sindhudurg in Kokan Region, No Industry Districts, Naxalism Affected Areas and Aspirational Districts and Rs 0.50 per unit for the Units in other areas of the State for a period of 3 years from the date of commencement of commercial production, for the energy consumed and paid. The Units in Group "A" areas will however not be eligible for this incentive.

Additional Incentives for Strengthening MSMEs.

1. The followings incentives shall be admissible to the Expansion Projects of MSMEs so as to promote quality competitiveness, Zero Defect Zero Effect (ZED scheme), Research & Development, technology up-gradation, water & energy conservation, cleaner production measures and credit rating –
   Expansion projects of MSMEs and Small Industries will be eligible for following incentives

a. 5% subsidy only on additional capital equipment acquired for Technology Up-gradation, subject to a maximum of Rs. 25 lakh.

b. 75 % subsidy on the expenses incurred on quality certification limited to Rs. 1 Lakh.
c. 25% subsidy on additional capital equipment acquired for cleaner production measures, limited to Rs.5Lakhs.
d. 75 % subsidy on the expenses incurred on patent registration limited to Rs.10 Lakh for the National patents and Rs. 20 lakh for the International
e. Patents.
f. 75% of cost of water audit limited to Rs. 1.00 lakh.
g. 75% of cost of energy audit limited to Rs. 2.00 lakh.
h. 50% of the cost of Capital Equipment under the measures to conserve/recycle water, limited to Rs. 5 lakh.
i. 50% of the cost of additional Capital Equipment for improving energy Efficiency, limited to Rs. 5 lakh.

2. **Incentives for Credit Rating of MSMEs**,
   75% of the cost of carrying out Credit Rating by Small Industries Development Bank of India/ Government accredited Credit Rating Agency, limited to Rs. 40,000.

3. Listing on Stock Exchange
During the policy period, first 250 SMEs in all areas of the State, based in Maharashtra, fulfilling the criteria for listing, which will be enlisted on the SME Stock Exchange, Mumbai will be given refund of listing expenses equal to Rs.6 lakhs or actual C.A. certified listing expenses, whichever is lower. The detailed modalities for getting this refund will be issued separately.

INCENTIVES FOR LARGE SCALE INDUSTRY/ SPECIAL LSI

- New Large Scale Industrial Units and Special LSI Units will be eligible for a basket of incentives .The total quantum of which will be linked up to the actual eligible Fixed Capital Investment
- The units applying for incentives and going into commercial production in the first year of policy period will be given full basket of eligible incentives as defined, for respective category and location of the unit. If the unit applies or goes into commercial production in subsequent years of the policy period, the ceiling of basket of incentives will be reduced by 5% for each year of delay in going into commercial production (e.g. if the ceiling as per the basket is 25% and there is a delay of 1 year in submitting valid application or going into commercial production, the unit will be eligible for basket of incentives equal to 20% of eligible FCI).
- The total quantum of incentives for the food / agro processing units (secondary and tertiary processing units only and in case of Farmer Producer Companies and the units set up in government assisted Food Parks for manufacturing / processing and carrying out primary processing activity also) mentioned in eligible green energy / bio-fuel manufacturing units and will be 20% over and above the limits mentioned in Table below below and such units will get two more years of eligibility to avail the incentives. However, in any case total incentives admissible to the eligible unit will not exceed 100 % of eligible FCI.

Table 4 - Basket of Incentives for LSI and Spl. LSI Units / Projects

Taluka / Area Classification	Minimum Qualifying Fixed Capital Investment (INR crore)	Minimum Direct Employment (number of people)	Maximum Ceiling of basket as % of FCI	Incentive period in years
A & B (Only LSI)	750	1000	25%	7
C	500	750	40%	7
D	250	500	60%	7
D+	150	400	70%	7
Vidarbha, Marathwada, Ratnagiri, Sindhudurg &	100	300	80%	9
No Industry Districts, Naxalism Affected Areas* And Aspirational	100	250	100%	9
*** Naxalism affected areas as per Government Resolution No.: PSI -2013 / (CR- 54)/IND-8 Dated 1st April 2013 issued by Government of Maharashtra Industries, Energy and Labour Department.**				

Expansion / Diversification Units

Existing / New Large Scale Industries (LSIs) and Special LSIs (including Manufacturing IT/BT) Units, qualifying as Expansion / Diversification Units, will also be eligible to get the incentives for Expansion / Diversification, equivalent to 80% of the incentives admissible for New Units. The eligibility period for availing of the incentives will however be reduced by one year than that admissible to a New Unit in case of Expansion / Diversification Units.

Industrial Promotion Subsidy for Large Scale Industries AND Special LSIs

4. The eligible New / Expansion / Diversification Large Scale Industries, which are set up at single location, will be eligible for Industrial Promotion Subsidy (IPS).
5. For the purpose of this policy, Large Scale Industrial Units shall include units as Defined in Table 1.
6. Eligible LSI units shall be offered Investment Promotion Subsidy (IPS) on 50 % of Gross SGST payable by the unit on the first sale of eligible product(s) billed and delivered within Maharashtra.
7. Eligible Special LSI units shall be offered Industrial Promotion Subsidy (IPS) @ 40 % of NET SGST paid by the unit on the first sale of eligible product(s) billed and delivered within Maharashtra. However, units falling under this category located in "A" & "B" Zones will not be eligible for Incentives.

Exemption from Electricity Duty

All Eligible New Units in Group C, D, and D+ areas and No-Industry District(s), Aspirational Districts and Naxalism affected Area will be exempted from payment of Electricity Duty during applicable eligibility period,(Incentive Availment Period). In Group A and B areas, only eligible 100% Export Oriented Units (EOUs), Information Technology Manufacturing Units and Bio-Technology Manufacturing units will also be exempted from payment of Electricity Duty for a period of 7 Years. Necessary Notification under the provisions of the Electricity Duty Act 1958 will be issued separately by the Energy Department.

Waiver of Stamp Duty

New Units as well as Units undertaking Expansion / Diversification will be exempted from payment of Stamp duty during the Investment period in Group C, D, D+ Talukas, No Industry Districts, Aspirational Districts and Naxalism affected areas for acquiring land (including assignment of lease rights and sale certificate) and for term loan purposes. However, in Group A and B areas, stamp duty exemption would be available as given below:

- BT Manufacturing and IT Manufacturing Units in Public IT / BT Parks: 100%
- BT Manufacturing and IT Manufacturing Units in Private IT / BT Parks: 75%
- Large Projects (defined in Table 4) and mega and ultra-mega projects : 50% for first lease conveyance deed only

INCENTIVES FOR MEGA PROJECTS / ULTRA-MEGA PROJECTS

- The template for quantum of incentives for Mega Projects and Ultra Mega Projects shall be decided by the High Power Committee under the chairmanship of the Chief Secretary, Government of Maharashtra. However, the Cabinet Sub Committee for mega projects, under the chairmanship of the Chief Minister of Maharashtra will have the powers to sanction customized package of incentives and even offer special / extra incentives for prestigious Mega Projects I Ultra Mega Projects, on a case to case basis with recommendation of High Power Committee.
  - Ultra-Mega/ Mega projects based on employment criteria shall be required to maintain the qualifying direct employment on rolls of the company throughout the year. If the employment criteria are not maintained for any period of the year, then Industrial Promotion Subsidy shall not be admissible for such year(s).
  - Minimum Direct Employment prescribed in the table 2 above should be created within a period of two years from the date of commercial production.
  - The investment in Captive Power Plant including solar power plant shall be considered for determining the qualifying criteria for eligibility as Mega Project / Ultra Mega Project. But, shall not be incentivized (However Investment in captive power plant will be limited to 20% of total project cost).
  - 100% Captive Process Vendor (CPV) investment can be considered as a part of admissible FCI. However, CPV investment will not be counted for determining qualifying criteria as Mega/ Ultra Mega Projects.
- High Power Committee (HPC), under the Chairmanship of Chief Secretary, constituted will recommend to the Cabinet Sub Committee under Chairmanship of the Chief Minister the customized Package of Incentives to Mega and Ultra Mega projects on case-to-case basis.
- Cabinet Sub Committee under Chairmanship of the Chief Minister constituted for Industry will approve customized incentives on case-to-case basis.

- For Mega and Ultra-mega Projects availing incentives from the State Government under Package Scheme of Incentives will have to provide employment to local persons as stipulated by the State Government. Failing to do so may result into reduction of offered incentives.
- Government may consider providing customized package of incentives on case-to-case basis as deemed necessary for Projects of Special Importance (Large, Mega / Ultra-Mega Projects). The High Power Committee (HPC) under the Chairmanship of Chief Secretary shall recommend the customized package of incentives for any such project to the Cabinet Sub-Committee under the Chairmanship of the Chief Minister for approval.

Note: Apart from Industries Departments Package Scheme of Incentives Micro, Small, Medium, Large, Mega and Ultra-Mega Units are given incentives/ concessions by other administrative departments of State Government (e.g. Textiles, Food processing, Tourism, IT) the financial refunds / incentives to an industrial units from all sources put together shall not exceed admissible Fixed Capital Investment as per respective Taluka category.

The template of incentives approved by the Cabinet Sub Committee with recommendation of High Power Committee shall be implemented by the department of Industries for Mega and Ultra-mega Projects.

Yearly cap for the incentives

The amount of incentives to be disbursed to the MSMEs, LSI, Special LSI and Mega / Ultra Mega Units every year will be limited to the total quantum of incentives divided by the number of years as per the applicable Eligibility period with the provision of carrying forward the surplus differential between the actual sanctioned amount for a given year and the yearly disbursement limit. Deficit differential will not be carried forward.

SUBSIDY BY DEPARTMENT OF HORTICULTURE

Sl. No.	Component	Unit cost	Pattern of Assistance
1	Low cost onion storage Structure 25 MT	Rs. 1.75 lakh /per unit	50% of the total cost.
2	Cold Storage (Construction, Expansion and Modernization)		
A	Cold storage units Type 1 - basic mezzanine structure with large chamber (of >250 MT) type with single temperature zone	Rs. 8,000/MT, (max 5,000 MT capacity)	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs.

B	Cold Storage Units Type 2 with add on technology for Controlled temperature in Multiple Chambers	Rs. 10,000/- / MT (max 5000 MT capacity)	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs.
3	Integrated pack house with facilities for conveyer belt, sorting, grading units, washing, drying and weighing.	Rs. 50.00 lakh per unit with size of 9Mx18M	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs.
4	Pre-cooling unit	Rs. 25.00 lakh / unit with capacity of 6 MT.	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs
5	Cold room (staging)	Rs. 15.00 lakh/ unit of 30 MT capacity	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs.
6	Cold room (staging) with add on Component	Rs. 15.00 lakh/ unit of 30 MT capacity	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs.
7	Mobile Pre Cooling Unit	Rs. 25.00 lakh / unit	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas for individual entrepreneurs

8	Refrigerated Transport vehicles or Reefer Van	Rs. 26.00 lakh for 9 MT (NHM & HMNEH) PRORATA basis on lesser but not below 4 MT	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly &Scheduled areas for individual entrepreneurs.
9	Primary / Mobile/ Minimal processing unit	Rs 25.00 lakh / unit	Credit linked back-ended subsidy @ 40% of the capital cost of project in general areas and 55% in case of Hilly & Scheduled areas.
10	Ripening chamber	Rs. 1.00 lakh / MT.	Credit linked back-ended subsidy @ 35% of the capital cost of project in general areas and 50% in case of Hilly & Scheduled areas for a maximum of 300 MT per beneficiary.
11	Evaporative Cooling Chamber	8 MT Rs 5 Lakh /Unit	50 % of cost
12	Integrated Cold Chain supply System	Project Based. Project should comprise of minimum two components listed under S.No1 to 11 above, with maximum cost of Rs. 600.00 lakh	Credit linked back-ended subsidy @ 35% of the cost of project in general areas and 50% of cost in case Hilly & Scheduled areas, per beneficiary.
13	Static/Mobile Vending Cart / platform with a Cool Chamber	Rs. 30,000/ unit	50 % of the Cost
14	Functional Infrastructure for: Collection, sorting/ grading, packing units etc.	Rs.15.00 lakh	Credit linked back-ended subsidy @ 40% of the capital cost of project in general areas and 55 % in case of Hilly & Scheduled areas, per

Beneficiary.

INFRASTRUCTURE GAPS AND RECOMMENDATIONS IN GRAPES ASSESSMENT CLUSTERS

TransGraph consulting has conducted the Infrastructure assessment study in Grapes Cluster of Nashik, Pune, Sangli and Solapur based on primary and secondary research, we are coming out with the following recommendations. The following write up gives the context of why we are making recommendations, which is followed by the table of recommended investment. The investment is classified into two categories: One investment interest that is emerging more clearly from the interactions and two that is not as clearly coming out but an extrapolation of the first category and our own vision. The write up is given for the total 4 Grapes production districts, whereas the investment recommendations are given cluster wise.

Basis for recommendations in Grapes:

The grapes harvesting season in all surveyed cluster starts from Dec to April, but the peak arrivals season is during Feb-Mar. During the peak arrivals season, farmers, exporters, and other transporters are facing two key issues: Price decline due to peak season pressure and Fruit damage. Prices during peak arrivals drop down to Rs.25 to 35 per kg, which would normally be 45 to 55. Sales of approximately 25-30% of quantity happen under lower price. Overall Fruit damage is estimated to be 1.8 to 2%, which goes up to 6 to 8% during peak arrival season. These problems can be addressed through establishing of Pre-cooling chambers, pack houses and transportation through Reefer vans. With support from Operation Greens in these infrastructure developments, the current processing, exports, and consumption will enhance, thereby enhancing the overall industry stakeholder's prosperity.

Coming to the secondary processing, which is majorly Raisin making, there is a visible gap in terms of manual process which is currently followed, which can be improved to automated process.

Our recommendation flow is centered on these two pivots, i.e. one aimed at improved fruit delivery and two improved processes in raisin making.

Below is the assessment of current infrastructure and recommendations for future.

Before getting into the infrastructure assessment and recommendations, let us understand how currently Grapes are getting traded.

1. Out of the total Grapes production of 24 lakh tons, 74%, i.e. 18 lakh Tons gets traded within domestic market as table purpose fruit.
2. Around 7.3% of fruit is getting exported (1.77 lakh tons in Covid times, which was 2.2 to 2.5 lakh tons before Covid or 10%). Out of that16, 000 tons gets exported to Bangladesh & Nepal and 1.61 lakh tons get exported to EU, Canada and ME.
3. 14.5% or 3.5 lakh tons of grapes are converted into Raisins.
4. A miniscule portion(48,000 tons or 2%) is getting to wine processing

Infrastructure is primarily applied in category 2, i.e. exports and very little in 1st category, i.e. in domestic trade. In exports, due to stringent requirements of importing countries, almost every exporter has a pack house and pre-cooling (combined facility). After catering to the needs of exports, these pack houses use the remainder of the capacity for domestic trade also. Because of insufficient availability of pack-houses, a recent trend is emerging in domestic trade, where in traders/commission agents only are bringing in labor to pack at the farms. This can be called un-organized packaging and pre-cooling doesn't take place here. This is still a better way of delivering Grapes to the consumer, compared to loose sales, but this would not increase the shelf-life of Grapes, which would otherwise be extended by 5-6 days when pre-cooling is provided.

As we can see, the demand for packed Grapes is increasing from demand perspective on one hand, and on another, farmers do need facilities to reduce damage and protect price for an extended period.

Now let us look at the capacities of organized pack houses and the need for more. (It is to be noted that in Grapes, typically Pack houses and Pre-cooling chambers are established together as one unit).

Section 1: Pre cooling chambers, integrated Pack house with cold storages:
In assessment clusters, the pre cooling and pack houses storages capacities are 537 thousand tons in cluster 1 (Nashik & Pune) and 200 thousand tons (Cluster 2: Solapur & Sangli), totally 737 thousand tons of Grapes handling capacity. All this capacity is almost fully utilized during the Grapes season. (Total Grapes season expanding from December to April).

INVESTMENT NEEDED IN PACKHOUSE+PRECOOLING FACILITIES

Pack house + Precooling- current situation	Cluster 1 (Pune+Nashik)	Cluster 2 (Sangli+Solapur)	Total
Grapes handling capacity of existing pack houses (all units in thousand tons)	537	200	737
Grapes exported through these pack houses	170	20	190
Exported Grapes utilize how much of capacity? (@ 40% recovery)	425	50	475
Remaining capacity	112	150	262
From this, how much grapes are packed, and sold for domestic trade (@80% recovery)	90	120	210

Packed grapes sold in India	148	152	300
So, how much is getting packed at farm level	58	32	90
Note: for exports, recovery is 40%; i.e. out of 100 kgs getting into the facilities, 40% gets packed and gets into the container. In domestic trade, it is not as stringent, so it is 80%			

Need Assessment 1 - to prevent damage and to protect price	Cluster 1 (Pune+Nashik)	Cluster 2 (Sangli+Solapur)	Total
Domestic consumption in lakh tons	10.1	7.9	18
Arrivals during peak time of Feb-March	60%	60%	60%
in lakh tons	6.06	4.74	10.8
Fruit damage	6%	6%	6%
in lakh tons	0.36	0.28	0.65
in thousand tons	36	28	64.8
Capacity needed to prevent all this damage - A	45.45	35.55	81

Need assessment 2 - to cater to increased demand for packed grapes	Cluster 1 (Pune+Nashik)	Cluster 2 (Sangli+Solapur)	Total
Quantity of Grapes, currently being packed and sold in India (lakh tons)	1.48	1.52	3
Expected demand in 3 years (growth rate of 15% per year)	2.25	2.31	4.6

Additional demand projected	0.77	0.8	1.6
Additional capacity required to cater to this demand	1.0	1.0	2.0
in thousand tons - **Capacity needed – B**	97.0	99.0	196.0

Short term vs. futuristic Investment	Cluster 1	Cluster 2	Total
No. of interested investors- came up during survey	5	3	8
Each facility investment - in Rs. Crores	5	5	5
Immediate requirement -in Rs. Crores	25	15	40

Total capacity needed	Cluster 1	Cluster 2	Total
Total capacity needed in thousand tons A + B	142.5	134.6	277.0
No. of pack houses required to handle this capacity	30.0	28.0	58.0
Each facility investment - in Rs. Crores	5	5	5
Futuristic requirement in Crores (3 years) -in Rs. Crores	150	140	290

Back up calculation -Pack house capacity calculation	
tons per day- each pack house capacity	60
tons in season of 80 days	4800

Section 2: Reefer vans – need assessment: As of today, for sale within India, around 12% of the fresh fruit is transported through Reefer vans, and the rest all in normal vehicles, without any cold transport. The general transportation (without Reefer vans) will keep the shelf life of grapes up to 5 days. Where as if transported in Reefer vans, the shelf life can be extended by another 4 to 5 days. Other than low shelf-life, transportation in normal vehicles is leading to fruit damage. It is observed that Transportation-related damage is to the tune of 3-5%, which can be reduced to less than 1% when transported through Reefer vans. The scenario is different when it comes to exports. For the 7.5% of the total material that is getting exported, around 95% of the same is getting transported through Reefer vans. i.e. from farmer level till the export originations such as Ports (Mumbai port exports 98% out of the total grapes exported, other than for Bangladesh & Nepal). (Except for exports to Bangladesh and Nepal, wherein around 50% of the material is getting transported in Reefer vans and rest in normal vehicles).

Investment needed in Reefer Vans:

Reefer vans requirement in surveyed clusters(Value in Rs. Lakhs)				Immediate interest	
Districts/Cluster	Requirement in no's	Each unit costing	Total costing	No's	Total costing
Nashik and Pune	35	8	280	4	32
Sangli and Solapur	20	8	160	2	16
Total - Cluster 2	55	16	440	6	48

Section 3: Raisin making- Infrastructure needs assessment:

Technology in raisins making, (solar dryers, electrical dryers, and air dryers): 96 to 98% of Raisin production is currently happening manually, i.e. Grapes are first dried using Calcium Carbonate, then dipping of bunches in oil solutions, removing moisture, and drying, and then cleaning & grading of dried grapes, after that washing and drying once again. Storage (cold storage) is the next step. This entire process when done manually- takes 1 week to 10 days for the conversion of one batch. This process leaves large scope for fungus development and in the open area, the dust particles mix with Raisins, carrying till the end to the customer, impacting the quality and consumption ability of Raisins. **Now a lot of new technology has come into the market, for drying (solar drying, electric drying, and air drying). The application of this technology will improve the quality of Raisins and help improve exports.** (Out of the total Raisin production of ~ 80-85 thousand tons, which is a 25% recovery of 3, 50,000 tons of Grapes? If support is provided by govt in technology, this would bringing up raisins process, like solar dryers, electric and air dryers that might improve raisins quality. Consequently, this would help in increasing exports and domestic consumption.

Raisins process and potential by infrastructure development (quantities in thousand tons) (Each machine capacity is taken as 6.8 tons in a season of 80 days of processing)								Immediate interest		
Dt.	Current raisins production	Made by manually	Made by machinery	Potential by machinery @10%	Each Season capacity (in tons of raisin production)	No of machinery require	Costing for each machinery in lakh	Total costing in lakh	No's	Value in lakh
Nashik	30.5	27.45	3.05	2.745	6.8	403.68	10	403.68	20	200
Pune	1.25	1.125	0.125	0.1125	6.8	16.54	10	16.54	6	60
Total - Cluster 1	31.75	28.575	3.175	2.8575	6.8	420.22	10	420.22	26	260
Sangli	28.25	25.425	2.825	2.5425	6.8	373.90	10	373.90	12	120
Solapur	27.5	24.75	2.75	2.475	6.8	363.97	10	363.97	5	50
Total - Cluster 2	55.75	50.175	5.575	5.0175	6.8	737.87	10	737.87	17	170

Now, the subsidy for Air dryers and electric dryers the NHM and MIDC is offering 50 & 45% subsidy, but in solar dryers so far do not have any subsidy it's a new product for raisin makings.

Summary of investment needed:

If the Govt supports by subsidy and by investment support the products quality will improve, labour issue and cost of production can be reduce. Therefore Indian farmers and processors can compete with global markets

Total short term investment required:

In selected cluster for making proper infrastructure, the short term investment is required around 42-43 crores. Integrated Pack house with cold storages- ~40 crores, Raisins machinery -1.7 crores and Reefer Vans ~ 0.48 crores.

Futuristic investment to tap the identified potential:

In selected cluster for making proper infrastructure, the futuristic investment is required around 310 crores. Integrated Pock house with cold storages- ~290 crores, Raisins machinery -11.58 crores and Reefer Vans ~ 8.8 crores. In addition to promote the sector Common Facility Center cum Incubator can be established so that more enterprises can emerge and provide newer player to get into business with no capital investment.

In addition, as there is lot of concern on right varieties to be grown to suit global market requirements and quality, a Center of Excellence can be established which will address market direct research and also demand based value creation and continuously map and bridge research, supply and demand gaps to make the sector and value chain more vibrant and capable.

Additionally Societies, Stakeholders and State Government from non-infrastructural point of view suggested the following support to be extended:

The following requirements are very important from quality point of view and in consumption in export market and in domestic market, this additional requirement is very essential and farmers in our survey are demanding it

1. **Global Gap certification**

Many importing nations are asking global GAP certifications for import agri commodities, such as the developed nation's rigid compulsory Global GAP certification. In Maharashtra the grapes growers (particularly in Nashik 20-25% farmers adopted GAP certificate), But the exporters and other importers are looking for more farmers in GAP certification for availability of higher exportable grapes.

The Chile and Peru countries farmers adopted largely Global GAP certification. So, they are standing at top level in export quantity in global market.

The framers are urging for more subsidies in obtaining farm equipments (drift and other farm equipments)

There was a concern raised by Raisin Processors to get their produce quality certified and related accreditation is desired and maybe facilitated either by MOFPI or APEDA as the Solar Dried Raisins currently lack clarity as they cannot be treated on par with Sun Dried Raisins. Solar Dried or Controlled Dried Raisin will definitely have higher food safety and quality standards which need to be highlighted to create better market value.

2. **Mulching (**Grapes netting a poly propylene cover with a elastic mesh)

Due to adverse climatic condition from (Oct-Dec) resistance from rains, cold and hailstorms and anti fungal the farmers and exporters are asking protective structures with poly covers (now the Spain, Italy and South African farmers are using to polythene cover to protect from dieses and adverse weather condition). Now few Nashik farmers adopted same technology, bit is very expensive for farmers and the cost is hovering around 5-6 lakh per acer. At the same time, 50% import duty is enforced on the same products. The farmers also urging remove current 50% import duty on grapes netting polypropylene covers.

If farmer adopt above technology on grapes farming, the farmers can produce quality products which will increase Indian grapes export quantity.

3. Weather stations and Disease forecasting

Grapes crop (Vineyards) are most affected plants from disease, the weather monitoring is very important to take precautions before disease impact. The farmers and FPOs are requesting to Govt to proper weather measuring stations to be installed at every village. This will help to scientific forecast and avoid crop losses.

The above report consists of the details of work done, Available infrastructure capacities, Gaps and recommendations for infrastructure addition. As is presented above, infrastructure additions are divided into two parts:

1. As emerging from the survey
2. As we see as potential

We are thankful to MoFPI for the opportunity and State Government of Maharashtra for providing the Valuable insights.

END OF REPORT

THANK YOU

TRANSGRAPH
RESEARCH - CONSULTING - TECHNOLOGY
commodity market mentors

TransGraph Consulting Private Limited
1-98/9/3/30, Plot No.47, Silicon Valley, Madhapur, Hyderabad – 500081, India

Research Queries: services@transgraph.com
Sales: mktg@transgraph.com
TransRisk software: demo@transgraph.com
Tel: +91 40 4661 9999