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AGRI REFORMS PRESENT BRIGHT OPPORTUNITIES FOR WAREHOUSING SECTOR

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INTRODUCTION

The Covid-19 global pandemic has thrown our world into chaos in every aspect. Already, the United Nations and the World Trade Organisation have warned of a “looming global food crisis”. In India too, agricultural sector is under severe stress due to political whims and policy restrictions. Agriculture sector contributes one fifth to India’s GDP and employs over 58% of the population. Despite large number of poor people, post-harvest agriculture produce loss in India is up to 40% due to the unavailability of adequate infrastructure.[1] The situation gets worse when the sector records bumper output as is the case in the last few years. Inadequate storage capacity has resulted in shortages, wastage and price fluctuation of perishable agriculture products making it unremunerated for farmers and prohibitive for consumers. It is in this context, governments reform measures to liberate the sector from the limitations of Essential Commodities Act assumed importance.

About 50%–60% cereal grains are estimated to be lost during the storage stage due to the lack of technical inefficiency. The use of advanced, up to date technology will help reduce the losses and also, help in efficient food processing of perishable produce like potatoes, tomatoes, onions, garlic, etc. The latter will help increase their shelf life. In the recent past the Indian agri-warehousing sector has gained some traction with the government actively incentivizing private investments in warehousing. Inclusion of agri-warehousing under priority sector lending, subsidy schemes, tax sops, and the Warehousing Act have gone a long way in promoting the sector. However, there are significant bottlenecks in terms of stringent laws leading to limited action on the ground for farmers and agriculture-based businesses.

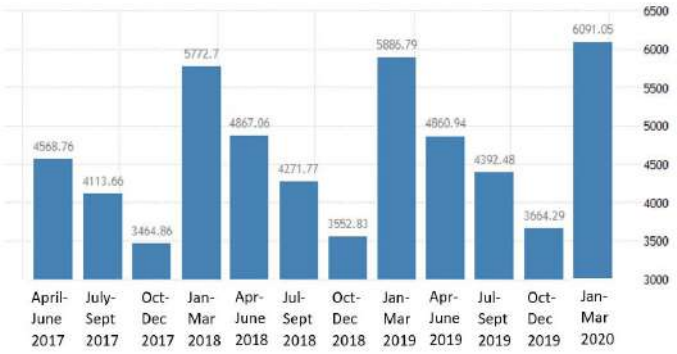
As part of stimulus package to offset Cov-19 economic loss, the government announced a number of measures for the agriculture sector, including an INR 1.63 Lakh Crore outlay, amending the stringent Essential Commodities Act (ECA) to remove cereals, edible oil, oilseeds, pulses, onions and potato from its preview. Further in the ECA, with the removal of stock limit for the traders will act as a driver for this industry. Along with this amendment, the reforms in the APMC Act to allow processors and retailers to source agri perishables from farmers directly can lead to a new revolution. This opens up avenues in the food processing industry while working in alignment with the warehousing sector in India. The whitepaper will discuss crop cycles, the need for agri-storage capacity and the opportunities created for the agriculture sector in India post these reforms.

A GRAIN SAVED IS A GRAIN PRODUCED

The Indian food industry is one of the largest in India and accounts for 32% of the total food market.

India's GDP from Agriculture

Chart 1: India's GDP from Agriculture



The above chart represents the contribution of agriculture to the India's GDP in (INR Billion) for the quarters from April-June 2017 to Jan-March 2020.

As evident, the contribution of agriculture towards GDP shows a decline as the calendar year progresses. GDP is highest during the harvest quarters i.e. from January to March. During these months of bumper harvest, it is vital to avoid wastage of perishable crops, and to do so provide adequate storage.

Crop Cycles in India

In India, the Kharif season, monsoon period which is from July to October; and the Rabi season i.e. the winter period lasting from October to March. The prominent Kharif crops include rice, jowar, bajra, groundnut, cotton, sugarcane while the major Rabi crops are wheat, barley, mustard, masoor, potatoes, etc.

Besides the Kharif and Rabi crops, there are crops that are grown throughout the year through artificial irrigation.

Figure 1: Crop Cycles in India

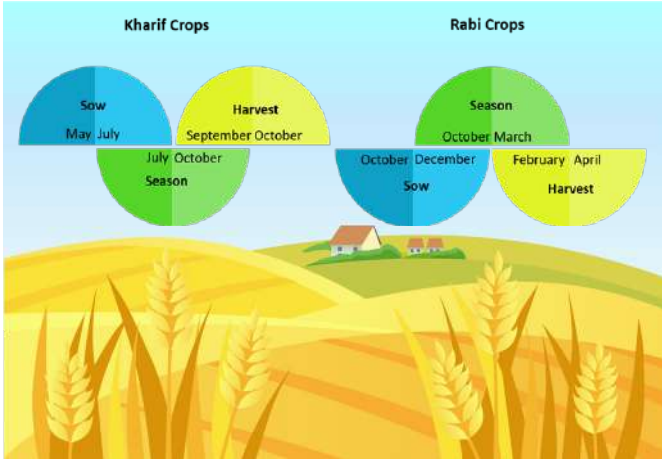


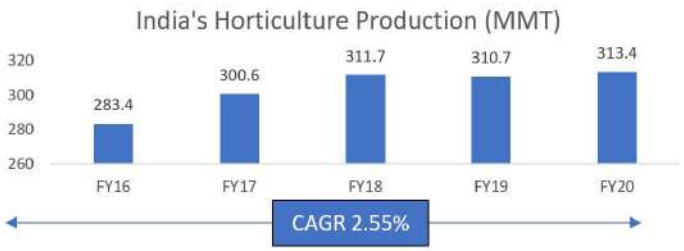
Table 1: Foodgrains and Commercial Crops Production (MT)[2]

Crop	2017-18	2018-19	2019-20
Rice	112.76	116.48	117.47
Wheat	99.87	103.67	106.21
Total Cereals	259.60	263.14	268.93
Total Pulses	25.42	22.08	23.02
Total Foodgrains	285.01	285.21	291.95

*Units in Million tonnes

As per estimates, India's foodgrains production in 2019-20 is about 291.95 million tons2. Food grains like rice and wheat are comparatively easy to store, but horticultural crops i.e. perishable produce like potatoes and onions require an environment where they can be stored in an appropriate manner, either to resell in their existing form or even for transporting them for further processing.

Chart 2: India's Horticulture Production (MMT) traffic[3]



The horticulture produce in India is estimated at 313.4 million tonnes in 2019-2022/3. This includes fruits and vegetables, which are highly perishable in nature. However, the country does not have enough storage facilities and hence it is estimated that the post-harvest losses in horticulture produce is in range of 30%-40%4[4]. Proper infrastructure like cold storages and scientific techniques are key for storage of horticultural crops. India's current cold storage capacity is 36-37 million tons with 7,845 cold storage chains across India5. Considering the horticulture produce in India and available cold storage capacity, one can estimate the requirement for additional cold storage capacity in India.

The amendment to not limit the quantity to stock at a time in the Essential Commodities Act, opens up avenues for future investment either, for direct sale or for further value-added food products.

FOOD PROCESSING POTENTIAL - CASE OF ONION

India's exports of processed foods during 2018-19 stood at INR 31,111.90 crores[5] which included processed vegetables & fruits like preserved onions, dried potatoes, dried garlic, garlic powder, apple juice, pineapple juice, tomato juice, dried apricots, cherries, etc. Numbers indicate how big the demand is and also the opportunity that lies in the sector.

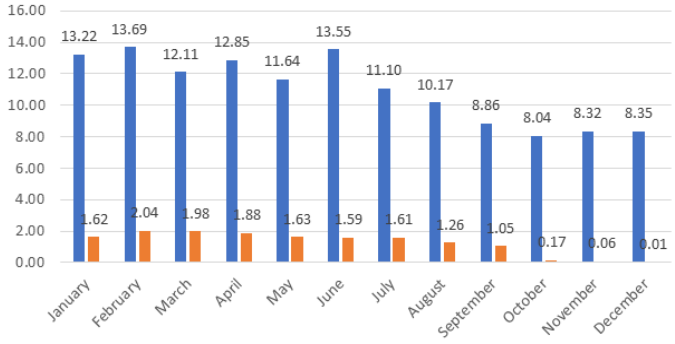
Horticulture crops are cycle specific. Let us consider the case of onions. For onions, there are three sowing seasons, 20% from Kharif, 10% from late Kharif (planted between October and November; harvested in January through March) and 70% of the production is from Rabi season.[6] A statistical representation for 2019 onion production and graph depicting onion arrival* exports & price variations are shown below in Table 2 and Chart 2 & 3 respectively:

(*Arrival of onions means crop/ product reaching APMC markets nationally either mostly through domestic production or imports, in case of low domestic output)

Table 2: Onion Production in India for 2019-20[7]

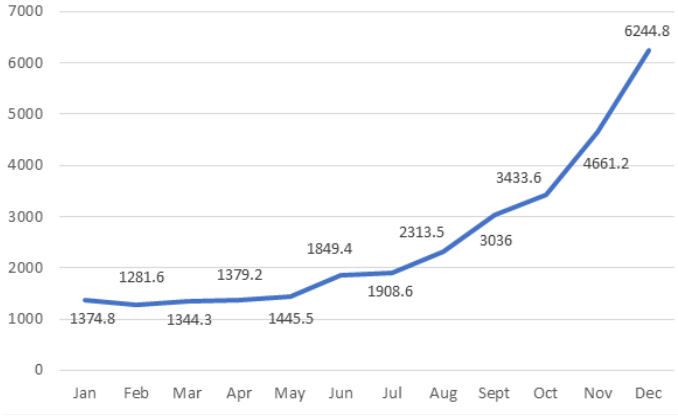
Season	Sowing	Harvesting	Production (in million tons)
Kharif	July to August	October to December	3.90
Late Kharif	October to November	January to March	1.57
Rabi	December to January	End of March to May	18.98
Total			24.45

Chart 3: Monthly Arrivals and Export of Onion for 2019[8]*



*all units in lakh tonnes

Chart 4: Average Wholesale Price of Onion in 2019 (PAN India)[79]*



*Price in INR/Quintal

From the production, monthly arrival and exports data seasonality is evident, with majority of its production happening during the Rabi season. Also, there is an inverse relationship between onion arrivals & their prices. As the arrival is slowed down/ limited, the prices shoot along with exports drying up. This is typically the September-December period.

In 2019, the unseasonal rains & a late monsoon retreat (Oct-Nov) impacted the Kharif onion produce. This resulted in low availability of onion across the markets combined with skyrocketing prices (INR 150-200 per kg). In late November, India imported 36,090 metric tonnes[10] of onions from countries like Turkey, Egypt, etc. However, this was followed by a bumper domestic harvest/ production in late December & early January. Due to this, the farmers were forced to bear losses, by selling at throwaway prices in early 2020.

The demand-supply mismatch can be avoided if the Government implements measures like boosting its domestic stocks & reducing exports. However, the Government often resorts to stock limits of 10 tonnes on retail traders and 50 tonnes on wholesale traders affecting demand at mandis & hurting farmers[11]. Also, in case of onions, the consumption is much lower than the produce hence, storage is a critical factor.

Considering the cyclical nature of the harvest, demand-supply issues & Government's capricious policies, storage facilities/ infrastructure like scientific warehouses and cold storages become even more critical for horticulture crops.

In such cases of a bumper harvest, further value addition of such crop is a must, to prevent losses and also, to convert this into a lucrative opportunity for farmers. The dehydrated onion powder is one of the solutions. The market is anticipated to become 16,540 tonnes by 2023. The onion powder can be further used as a raw material for various packaged foods such as soups, pasta, noodles, etc. This is just one of the examples that showcase the potential of the food processing sector. With the adoption of technology to inculcate proper storage of such perishable goods, that would not only give the farmers a better chance at selling their produce at a fair price, but also give an opportunity to the entrepreneurs wanting to enter into agriculture or food-processing sector.

Creating an apt environment for processing, storing and handling will take ample time, but surely the returns would be far greater, as the numbers suggest. Hence, it is vital to make use of the opportunity created by recent reforms and use them to leverage the opportunity.

KEY TAKEAWAYS

- HIGH WASTAGE IN CASE OF FOOD GRAINS DUE TO INADEQUATE STORAGE/WAREHOUSING FACILITIES
- HIGH LOSSES DURING BUMPER HARVESTS, WHEN THE DEMAND IS QUITE LOW
- POTENTIAL TO REDUCE THESE LOSSES BY MAKING EFFICIENT STORAGE AND FOOD PROCESSING UNITS
- AMENDMENTS IN THE STRINGENT ESSENTIAL COMMODITIES ACT (ECA) TO REMOVE CEREALS, EDIBLE OIL, OILSEEDS, PULSES, ONIONS AND POTATO FROM ITS PREVIEW AND THE REFORMS IN THE APMC ACT

AGRICULTURE WAREHOUSING IN INDIA

As of 2018-19, India's warehouse market is estimated to be around INR 560 billion[12] and estimated to reach INR 968 billion by 2024, with a CAGR of about 9-10%. Warehouses dealing in agricultural & horticulture products comprise about 15% of the total warehousing industry and cold storages accounting for 16%. This 15% of warehousing market has an estimated capacity of more than 120 million metric tons and amounts to INR 8000-8500 crore.12 Various types of agriculture storage units include private, public, bonded warehouses, cold storages & Container freight stations (CFS)/inland container depots (ICDs).

Current Scenario.... total warehousing space has increased by 5.65% from 2014 to 2019

Today, the concept of warehousing, especially in agriculture has gone beyond merely being the custody for goods, with value-added services like sorting, packing, blending & processing, all these being critical features in the agriculture sector. Indian agricultural warehousing has been dominated by public/ Government sector with Food Corporation of India (FCI), Central Warehousing Corporation (CWC), State Warehousing Corporations (SWCs), State Civil Supplies being the principal storage centres for food grains like cereals, pulses, oilseeds in the country. This leaves little room for the private & cooperative sectors. As of 2019, the available storage capacity with major agencies is as follows:

Table 3: Major Agencies & available storage capacity for agricultural produce (as of 2019)

Name of the Organization/ Sector	Capacity (in Million Tons)
Food Corporation of India (FCI)	36.25
Central Warehousing Corporation (CWC)	10.02
State Warehousing Corporations (SWCs)	28.33
State Civil Supplies	11.30
Cooperative Sector	15.07
Private Sector	57.75
Grand Total	158.72

Source: Care Ratings Report & FCI website

Cold storage, temperature-controlled units used mainly for storage of perishable goods like fruits & vegetables, dairy products, frozen foods – meat, ice creams, etc. & temperature-sensitive pharmaceutical products. India being an agrarian economy possesses a huge potential for cold storages. Presently, about 95% of cold storages are owned & operated by the private sector, 3% cooperative, and 2% under PSUs. The total capacity of existing cold storages in the country is about 32 million tons. Cold storage classification based on product type is as illustrated below:

Table 4: Cold Storage – Product Type & Allocated Capacity[13]

Product/ Category	Capacity (in %)
Potatoes	80
Pharma Products	7
Horticultural Crops	5
Processed Foods	5
Marine & Meat Products	3

Considering the huge potential in this segment, investment is estimated to be INR 16,000-21,000 crores & a projected growth of 13-15% CAGR during 2019-23.[14]

Inland Container Depot (ICD)/Container Freight Station (CFS) called dry ports can be defined as common user facility having public authority status equipped with fixed installations that offer services for handling & temporary storage of containers. These depots are equipped with warehousing space, adequate handling equipment and IT infrastructure.[15]

With the implementation of Warehousing Regulatory & Development Act (2007) in 2010, followed by increased investment in irrigation, agro-processing sector, emphasis on initiatives like 'Make in India' since 2016 succeeded by Goods & Services Tax (GST) implementation in 2017, there has been a significant uptick in overall Indian agriculture output & exports including agriculture warehousing & cold storage facilities in India. The active involvement of private sector companies like Sohan Lal Commodity Management (SLCM), Shree Shubham Logistics (SSL) has helped too.

The total warehousing space in India has grown by 5.65% from 919 million sq. ft. in 2014 to 1,439 million sq. ft. in 2019. These are positive indicators but still a lot of potentials to be uncovered.

As far as the cold storages are concerned, 5.35 million tons of cold storage facility has been created since 2014-15 5[16] under two dedicated schemes:

- Mission for Integrated Development of Horticulture (MIDH) of the Agriculture Ministry which has created 1104 cold storage facilities having a total capacity of 4.82 million tons and
- Pradhan Mantri Kisan Sampada Yojana (PMKSY) managed by the Ministry of Food Processing Industries has developed 208 cold storage facilities having a total capacity of 0.53 million tons till late 2019

KEY TAKEAWAYS

- OVER THE LAST DECADE, THERE HAS BEEN SIGNIFICANT IMPROVEMENTS IN INDIAN AGRICULTURE WAREHOUSING & COLD STORAGE FACILITIES
- THIS IS DUE TO GOVERNMENT INVESTMENT, REFORMS & POLICIES AS WELL AS INVOLVEMENT OF LARGE PRIVATE PLAYERS

EXISTING AGRICULTURE WAREHOUSING & COLD STORAGE ISSUES

Though India has emerged as the seventh-largest exporter of agriculture commodities, there are major losses at the post-harvest stage due to lack of infrastructure & certain irrational policies. This post-harvest loss ranges between 10-40% accounting for nearly INR 1 lakh crore12, a large number keeping in mind India's dependence on agriculture & allied activities. The main reason being the agriculture supply chain is under the control Government agencies. Some of the major challenges & issues faced by Indian agriculture industry post-harvesting includes:

- **Ineffective Policies –** Though Government procures almost 33% of crops like rice, wheat & protects the farmers from price fluctuations through Minimum Support Price (MSP) but, there is limited Government intervention on perishable horticultural products like fruits & vegetables.
- **Age-old APMC Practices –** Lack of transparency in the price-setting mechanism leading to cartelization by APMC agents, procuring agricultural output at a lower price & selling at a much higher price. Other problems include high taxes borne by the farmers & multiple hurdles faced by traders, retailers in APMC regulated markets
- **Limited reach of mandis –** Recommendations by National Farmers Commission suggest markets should be within 5km radius for farmers serving an area of 80 sq. km.[17] But in reality, farmers have to travel more than 12kms to ensure that farm produce reach markets & one mandi serves around 450 sq. km., resulting in accessibility issues for farmers. Poor road infrastructure, lack of transport facilities further add to farmers' woes
- **Inflation Issues –** Development of long marketing channels & multiple intermediaries have resulted in high inflation (up to 250% over the cost of production)[18] creating a severe impact especially on non MSP crops i.e. fruits & vegetables
- **Inadequate infrastructure –** As per an estimate by Planning Commission, the gap between agri-warehousing supply and demand for food grains is about 35 million MT for 2018-19 while that for cold storage is 12 million tons. This lack of cold storages leads to wastage of 15% fruits & vegetables produced in the country. Skewed Distribution of capacity is the other drawback, with warehouses being concentrated in tier I cities or regions like North India having access to 60% of total storage infrastructure

- **Lack of funding collateral management options** – Of late, banks have reduced lending to the core agricultural sector. Banks urge collateral companies to take responsibility for loans taken by farmers. However, since these collateral firms are mere service providers, they do not want to be held responsible

Note: Collateral management refers to the financing of agricultural goods stored at warehouses

- **Different Crops, different storage methodologies** – Since food grains have a longer shelf life compared to fruits & vegetables, they can be stored in traditional warehouses. However, fruits & vegetables have to be stored scientifically. For example, Onions have high water content, hence they are difficult to store. Annually, about 20-40% crop gets damaged due to non-availability of appropriate post-harvest storage facilities
- **Others** –
    - Discrepancies in the Warehousing Regulatory & Development Act, like warehouseman being liable for loss or damage to goods or the malpractices associated with issuing receipt; cyclical nature of Indian agriculture means during off season, these large spaces remain idle. Ever-increasing real estate prices in India result in high investments in warehouse development with owners suffering monetary losses are some of the other issues
    - Essential Commodities Act (ECA) implemented in 1955 is outdated as India's economy has changed drastically then what it was back then. It regulated & restricted the production of crops like cereals, pulses, potatoes, onions with farmers suffering losses. Though the Act was initially implemented to prevent price hoarding & boost supply in reality, price volatility and widening difference between wholesale & retail prices seen

KEY TAKEAWAYS

- **LACK OF ADEQUATE AGRICULTURAL INFRASTRUCTURE I.E. LIMITED WAREHOUSES & COLD STORAGES IS THE BIGGEST CHALLENGE RESULTING POST-HARVEST LOSSES**
- **OUTDATED PRACTICES, POLICY DISCREPANCIES, HIGH REAL ESTATE PRICES COMBINED WITH CYCLICAL NATURE OF INDIAN AGRICULTURE ARE THE OTHER MAJOR ISSUES**

RECENT REFORMS IN THE AGRI SECTOR

Various measures have been made to reduce the impact of this plight. One of the measure is the amendment in the outdated APMC Act and the Essential Commodities Act (ECA) on 15th May, 2020 in the view to empower farmers and agriculture industry amid Corona crisis

APMC Act –

- About 30 to 40% of the farm produce is being sold in the regulated APMC markets.[19]
- Once considered as a major drawback in the warehouse sector, the recent reforms in the APMC (Agriculture Produce Market Committee) Act, can be turned into a big business opportunity.
- The introduction of agriculture marketing reforms, is likely to provide choice to the farmers, and to end the practice of produce being sold only to licenses in APMCs, that constrained the ability to get a good price and limited the opportunity for the farmers, can be a boom for investors wanting to look for new avenues in the agriculture & allied warehousing sector.

Essential Commodities Act[20]

- The amendment to the Essential Commodities Act, will also enable a better price realization for the farmers. The de-regulation of certain crops such as potatoes, onions, pulses, food grains will enable the merchants to directly purchase produce from farmers in large quantities and hold as stock.
- This would be helpful during the bumper season, when the supply is maximum after harvest, and when the demand is comparatively low.
- The no-stock limit for food processing units, value-addition corporations, exporters, etc. opens up new avenues for the investors.
- The ease of barriers in the interstate movement of farm produce with a proper framework of e-trade of such items, presents an opportunity to make a single market for agro products.

EMERGING OPPORTUNITIES IN AGRI WAREHOUSING AND COLD STORAGE SECTOR

- **Expansion of Warehouse Network –** With the restriction on production & agro-processing of crops like cereals, pulses, oilseeds, edible oil, onions and potato lifted, there is bound to be a glut in production & processed food output. This, in turn, would create an opportunity to develop more warehouses & cold storages at farm gate, aggregation points and also in areas devoid of such facilities
- **Amendments in APMC Act –** Encouraging free interstate movement, this not only gives farmers a chance to sell the agro produce at attractive prices but presents an opportunity to develop agri infrastructure to stock the surplus output and sell at the right time when prices are favorable to farmers
- **Farm-Warehouse Proximity –** Considering the ease to enter and operate in the sector new investments will flow in and will create a huge opportunity to develop more scientific warehouses & cold storages with an efficient ecosystem for transportation through PPP (Public-Private partnership) models. Intervention of private companies to boost infrastructure especially within 100 kilometers radius of the farm district or group of districts, even at the village & block-level or in areas/ states that currently lack agricultural warehousing infrastructure[21]
- **Embracing Technology –** Adoption of innovative technologies & collaboration with foreign companies for the storage of fruits & vegetables. For example, to minimize loss of onions after harvesting, onions can be stacked in bulk bins in open ventilated warehouses with continuous forced air-ventilation like in Israel or develop a low-cost ventilated silo system or refrigerated storage rooms for storing onions. The latter technique is used quite effectively in Brazil.[22]
- **Technology Integration –** The integration of the farm sector with IT services would help to improve operational efficiencies. One such case is that of Sohan Lal Commodity Management (SLCM)[23], one of the leading post-harvest Agri Logistics Group, which has adopted & implemented modern techniques for efficient tracking.
- **Development of Horticulture & Food Parks -** Create horticultural parks/ vegetable gardens around cities to reduce food miles & wastage through private investments or Government allocated funds. These amendments likely to provide a fillip to ongoing & upcoming food processing projects like Mega food parks & Cold Chain
- **E Trading portal development –** Today, online/ digital is the buzzword in many sectors. With Government laying framework for e-trade, more e portals like 'eNam' could be initiated leading to help farmers in e-trading. Government also need to take steps for standard quality gradation and dispute settlement mechanism for E trading to prosper
- **Job Opportunities –** With apt investment & proper implementation, this agriculture storage sector could generate close to 3 million jobs mainly at the village level[24]

KEY TAKEAWAYS

- DEVELOPING WAREHOUSES & COLD STORAGES NEAR FARM AREAS & AGGREGATION POINTS TO ACCOMMODATE SURPLUS OUTPUT WILL BE A CRITICAL FACTOR TO MINIMIZE LOSSES
- ADOPTION & INTEGRATION OF TECHNOLOGY WILL BE THE WAY FORWARD IN AGRI STORAGE
- EMPHASIS SHOULD BE GIVEN TO E TRADING & CREATION OF MEGA FOOD PARKS

With the bold reforms, here comes an opportunity amid the COVID-19 crisis to Indian farmers and the processors with improved realization and build better market linkages for the produce. Industry experts believe as a collective effect, these measures would help farmers realize 20 % higher income and also open up new opportunities in storage business.

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REFERENCES/ LINKS

1 Nomadic - https://numadic.com/blog/poor-cold-chain-logistics-waste-40-of-crops-worth-over-14-billion-each-year/

2 Ministry of Agriculture and Farmers' Welfare. https://www.ibef.org/download/Agriculture-and-Allied-Industries-April-2020.pdf

3 The Hindu - https://www.thehindubusinessline.com/news/horticulture-output-to-be-313-million-tonnes-in-2019-20-first-advance-estimates/article30664982.ece

4 Krishijagran - https://krishijagran.com/news/reducing-post-harvest-losses-in-fv/

5 APEDA - http://apeda.gov.in/

6 The Print - https://theprint.in/opinion/how-india-can-ensure-onions-are-all-through-year-at-good-price/334477/

7 DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE -http://agricoop.gov.in/sites/default/files/ilovepdf_merged_3.pdf

8 DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE -http://agricoop.gov.in/sites/default/files/ilovepdf_merged_3.pdf

9 DEPARTMENT OF AGRICULTURE, COOPERATION & FARMERS WELFARE -http://agricoop.gov.in/sites/default/files/ilovepdf_merged_3.pdf

10 India Today - https://www.indiatoday.in/business/story/onion-dilemma-takes-new-turn-as-farmers-warn-of-production-glut-1627724-2019-12-12

11 Economic Times - https://economictimes.indiatimes.com/news/economy/agriculture/a-problem-of-plenty-indias-onion-mess/articleshow/71546979.cms

12 CII Institute of Logistics Estimate

13 Care Ratings - http://www.careratings.com/upload/NewsFiles/SplAnalysis/Warehousing%20Industry%20October%202019-.pdf

14 Business Standard - https://www.business-standard.com/article/economy-policy/cold-storage-capacity-expands-rs-21-000-crore-investment-lined-up-by-2023-119032200623_1.html

15 Cedar - https://cedar.gov.in/AR16-2018-PA-Customs-Union/English/chapter-1.php

16 https://www.ibef.org/download/Agriculture-and-Allied-Industries-April-2020.pdf https://www.business-standard.com/article/economy-policy/cold-storage-capacity-expands-rs-21-000-crore-investment-lined-up-by-2023-119032200623_1.html

17 Live Mint - https://www.livemint.com/news/india/agri-reform-creates-a-level-playing-field-for-the-farmer-11589910195876.html

18 Comcox report - https://comcox-warehousing.com/agri-problems-and-warehousing-industry-in-india/

19 The Hindu - https://www.thehindu.com/opinion/columns/amendment-to-apmc-act-is-an-attempt-to-dilute-states-intervention-in-agriculture/article31603960.ece

20 NDTV - https://www.ndtv.com/india-news/nirmala-sitharamans-day-3-break-up-of-economic-package-highlights-2229385

21 Scroll - https://scroll.in/article/959174/nine-measures-that-could-help-keep-indias-agriculture-supply-chain-from-breaking

22 The Hindu - https://www.thehindubusinessline.com/economy/agri-business/onion-storage-india-should-explore-israel-brazil-models-says-ficci/article29921884.ece

23 INC 42.com (Sohanlal) - http://sohanlal.in/tech-inovation.html, http://sohanlal.in/pdfs/SLC_interview.pdf

24 Down to Earth - https://www.downtoearth.org.in/news/agriculture/poor-post-harvest-storage-transportation-facilities-to-cost-farmers-dearly-61047

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