2019

Long Term Sustainable Solutions Needed to Resolve Onion Crisis





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Background: Onion is an important vegetable crop of country not only for internal consumption but also as one of the important foreign exchange earners among fruits and vegetables. The production of onion in the country is 23.48 million tonnes[1]. However, India lags behind other countries in productivity. Average productivity of Indian onion is about one third of the same in United States. Despite such productivity constraints in comparison to countries like China, USA and Egypt (Table 1), India is the 2nd largest producer of onion in the world. India exported 2.2 million tonnes of onion with earnings of worth USD 497.97 million in 2018-19 fiscal year.

Table 1: Productivity comparison of onion: India Vs benchmark countries	
Country	**Yield(T/Ha): 2016**
India	16.18
China	22.00
USA	56.40
Egypt	36.71

Source: FAOSTAT accessed on 6th June 2018

However, onion has been in the news since September 2019 for a different reason. The rise in the retail prices of onion to approximately Rs 80 per kg in September 2019 in major cities of India, including Delhi, has agitated the urban consumers and invited attention of the Government. Generally, the price of onion remains in a limited range in retail market from January to May and it escalate around September and October.

Many factors have contributed to the run-up in onion prices this year. Excessive rains in Karnataka, Maharashtra and Madhya Pradesh which produce 60% of India's onion, being the immediate one. External factors such as climatic changes, deficient rainfall leading to delayed sowing and abnormally high rainfall in the month of September were beyond the control of the Government. However, the seasonal price and arrival pattern of onion, mentioned below could give some directions to strategize a sustainable policy in future.

[1] India's horticulture output- 3rd advance estimates of 2018-19

1. Production strength of Indian onion

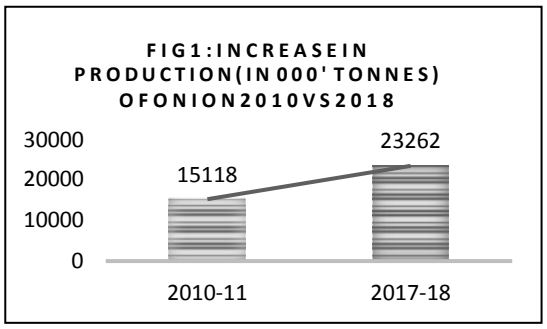


Table 2: Production and marketing cycle of Onion		
Season	**Transplanting**	**Harvesting period**
Kharif	July- August	October- December
Late Kharif	October- November	January- March
Rabi	December- January	End of March- May

Source: Horticulture Statistics Division, DAC & FW

An analysis of production since 2010 shows the enormous strides by Indian farmers. There is an increase of 53.8% in production of onion from 2010-11 till 2017-18. In 2018-19 also, such positive outcomes have continued, as onion production reached 23.48 million tonnes in 2018-19. This persistent rise in the production of onion in past several years could be credited to the Government as outcome of incentives offered by National Horticulture Mission (NHM), which encouraged farmers in various states to increase area under onion cultivation. Madhya Pradesh witnessed a massive increase in production figures from 2014-19 (Table 3).

Table 3: Increase in production of Onion in Madhya Pradesh					
2014-15	2015-16	2016-17	2017-18	2018-19	% Change in production (2014-19)
2842	2848	3721	3701	3714	**30.68**
Production in '000 tonnes					

Source: Horticulture Statistics Division

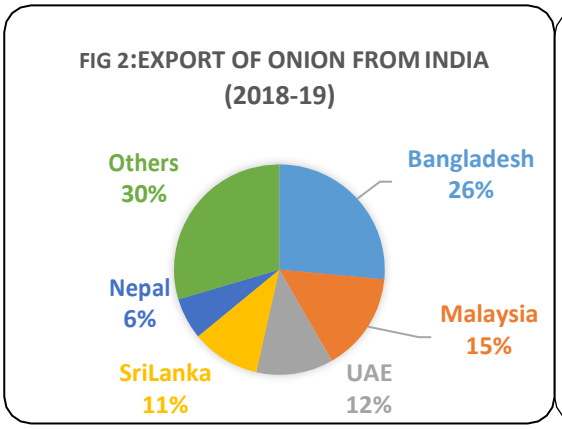
In 2009-10, Madhya Pradesh (MP) produced 0.95 million tonnes of onion. By 2018-19, the production increased to 3.71 million tonnes. Between 2015-16 to 2017-18, the productivity of onion declined in the major producing states of Andhra Pradesh, Telangana and Rajasthan, but in MP, the productivity escalated to 24.53 (metric tonnes/hectare) [2]

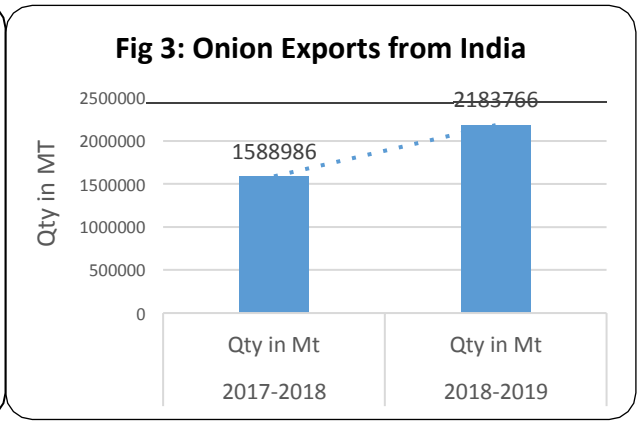
2. Export potential of Indian onion

India is one of the largest producers of onion in the world, second only to China. India exported 2.2 million tonnes of fresh onions in the 2018/19 fiscal year ended March 31.[3] On a positive note, onion exports from the country have also increased by 37.43 percent from 2017- 2019 FY. (Fig 3).

[2] Horticulture Statistics at a Glance 2018-19

[3] APEDA





Source: APEDA

India exports onion to Bangladesh, Malaysia, United Arab Emirates (UAE), Sri Lanka and Nepal. In 2018-19, Bangladesh imported 5.78 lakh metric tonnes of onion from India.[4] In Indian export basket, the share of Bangladesh, Malaysia and UAE is 26%, 15% and 12% respectively. As per Commerce Ministry data, Bangladesh imports 75% of its total onion imports from India.

3. Despite production and export potential, Indian onion is vulnerable to seasonal shortages, price rise and export bans.

The production cycle of onion can be classified into three major seasons: Kharif, late Kharif and Rabi. The natural rotation of onion production has evolved over many years that provides us onion for maximum time in a year.

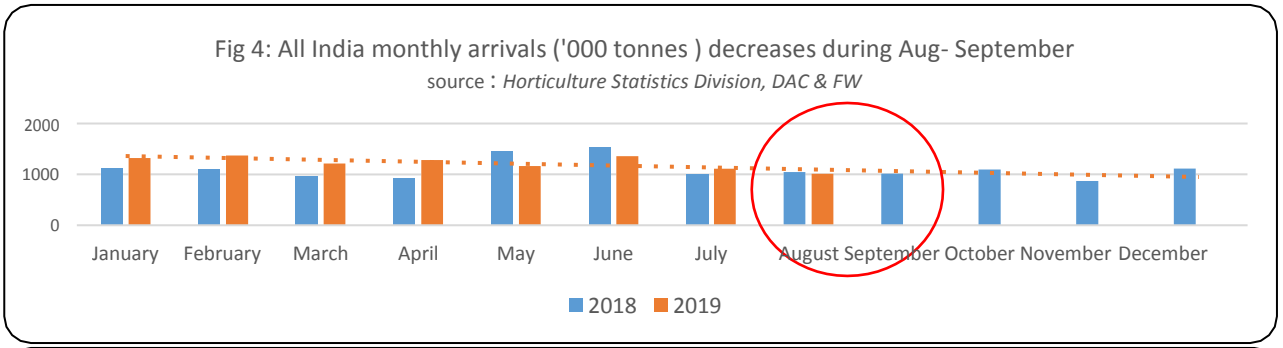
The onion crop harvested during the R*abi* season accounts for about 65% of production and comes to market from March to June. The same crop continues to meet the consumer demand till October-November every year before the *kharif* crop is harvested and brought to the market. The trend of price rise in onion is usually seen around August -September when stock of Rabi onion is low and kharif onion is still in cultivation phase*. Therefore, it becomes pivotal to successfully store Rabi onion so as to maintain its steady supply in the markets during lean months of arrival*.

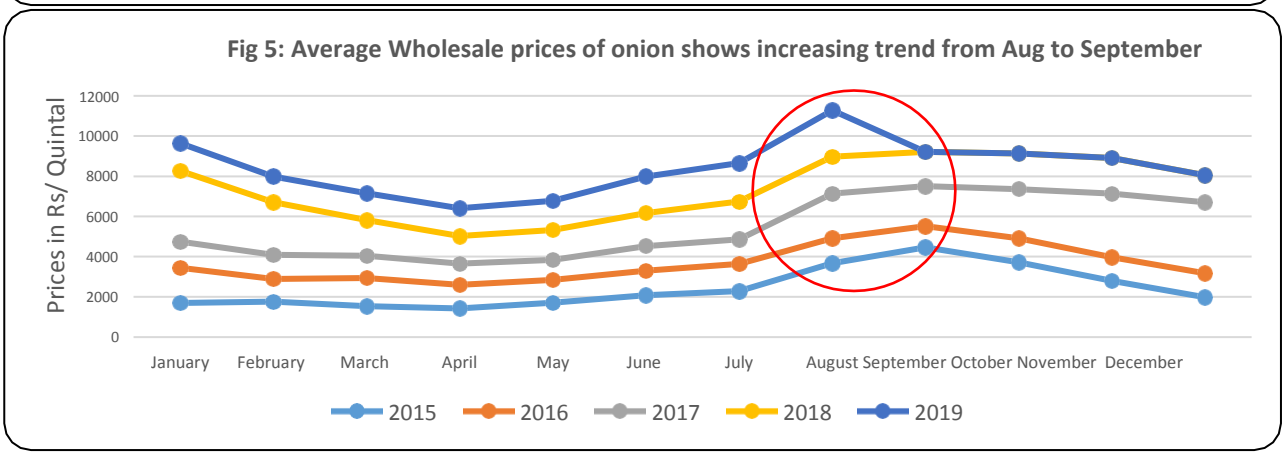
Table 4: Rabi onion contributes 65% to total production and is pivotal to store them

Season	Harvesting period	Contribution to annual production	Remarks
Kharif	October- December	**15%**	***Price rise trend in onion is usually seen around August -September when stock of Rabi onion is low and kharif onion is still in cultivation phase.*** ***Markets are dependent on stored produce of Rabi crop***
Late Kharif	January- March	**20%**	
Rabi	End of March- May	**65%**	

[4] APEDA

A study of wholesale prices signifies that onion prices follow a seasonal pattern in increase in prices, particularly in the months of August and September, when stored onion is in market.





Source: AGMARKNET

The price of onion which generally remains in normal range in retail market from January to June, tends to escalate in September and October. The supply volatility creates market distress causing a steep rise in the price of onion that eventually affects the end consumers. In 2015-16, Modi 1.0 Government operationalized a Price Stabilization Fund for purchasing an agriculture commodity at market prices and releasing the same in market in case of price rise. However, it is not possible for government to build a massive stock of perishable commodities. Organizations such as NAFED, the apex body of Agri-marketing cooperatives and Small Farmers Agribusiness Consortium (SFAC) do play an active role in storage of onions. This year, NAFED purchased about 56,000 tonnes of Rabi onion for selling in big cities to bring down onion prices. However, in long run, it is not easy to hold perishable produce like onion for long period. Adequate and scientific storage facility will help in checking the supply volatility and steep rise in onion prices.

August 2017: It should be noted that about two years back, in 2017, farmers in Madhya Pradesh were forced to sell their onion at Rs 200 per quintal, as there were no buyers in mandis. Ultimately, the state government of MP purchased 8.76 lakh tonnes from farmers at Rs 800 per quintal. Due to high perishability and prospects of huge losses, it had to be sold at almost one-fifth of the cost and the state exchequer incurred a loss of about Rs 785 crore.

Table 5: Comparison of Average Wholesale Prices of onions in Rs/ Quintal

S.No	States	August 2018	August 2019	% change in prices
1.	Maharashtra	941.81	1802.32	**91.36**
2.	Madhya Pradesh	768.67	1155.03	**50.26**
3.	Karnataka	1111.07	1731.86	**55.87**
4.	Telangana	817.76	1535.27	**87.74**
5.	Rajasthan	1095.10	1407.31	**28.50**
6.	Andhra Pradesh	1050.09	2242.28	**113.53**
7	NCT of Delhi	1188.17	1663.30	**39.98**

Source: AGMARKNET

The increase in price of onion leads to a distress at customer end. To take the easy route Government either imposes a ban on exports or increase the Minimum Export Price (MEP) of onion. Recently limit for stocking onions has been set at 100 quintals for retail traders and 500 quintals for wholesale traders.

Is Ban on exports a favourable option? Government resorts to banning agriculture exports in the event of sudden rise of onion in the domestic prices. Such measures are against the farmers as well as traders and exporters. Such ad-hoc measures dilute the overall objective of country's Agri- export policy. In the last several years, Government has either banned the exports of onion or increased MEP various times. Between 2014- 2019 the MEP for onions was fixed between US$ 300 to US$ 850 per tonne (Table 6). This continuous revision in MEP and ban on export and its withdrawal when situation eases adversely impacts country's export.

In the long run, such measures will also act as hindrance in accomplishing Government's goal of becoming a USD 5 trillion economy by 2030. Hence, rather than adopting short-term solutions, Government should put more emphasis in finding the long-term solutions for addressing the fluctuations in onion prices in the country.

Impact of sudden Export ban on international clients: The ad-hocism in imposing export bans has serious ramifications in terms of relations with international clients also. Most of the trade not only depends on price parity but also on trust between trading partners. Inability to fulfil trade commitment due to domestic policy uncertainty may lead to loss of clients and the importing countries then explore other exporters. In the last few years, Egypt and China have emerged as exporters of onion, thus competing with India. Policy uncertainty will further erode India's credibility in global trade. It also results in reluctance of private sector in investing in right infrastructure.

In short, any sudden change in policies which impact trade from an economic point of view is a challenge.

- Bangladesh suffered from this sudden ban on onion export as there is shortage in Bangladesh's market which led to rise in prices from TAKA 75 to TAKA 95 per kg (September

2019). Federation of Bangladesh Chamber of Commerce and Industry (FBCCI) has shared that Govt. is considering Egypt & Turkey as an alternative. Bangladesh imports 75% of its total onion imports from India. This could impact export of fruits and vegetables to Bangladesh in the long run if Bangladesh create other reliable buyers.

- United Arab Emirates also suffered from the sudden ban by Indian Government on export of onion. There is surge in prices from Dh1 to Dh3.50 per kg (September 2019) due to insufficient supply in the UAE market. This is because approximately 40% of UAE onions are imported from India. Hence, this will have an adverse impact on UAE onion consumers and also on India's long-term reputation in terms of exports policy.

Table 6: Ban on export of onion in last several years and increase in MEP

Year	*Announcements*	Notifications
29/09/2019	Amendment in Export Policy of Onions (Prohibited with immediate effect)	21/2015-20
13/09/2019	Export Policy of Onions- Imposition of Minimum Export Price. (**MEP fixed at US$ 850 F.O.B**)[5]	19/2015-20
02/02/2018	Export Policy of Onions (**Removal of MEP)**	48/2015-2020
19/01/2018	Export Policy of Onions - Imposition of Minimum Export Price (MEP **Fixed at US$ 700 F.O.B**)	45/2015-2020
29/12/2017	Export Policy of Onions - Imposition of Minimum Export Price (MEP Fixed **at US$ 850 F.O.B**)	43/2015-2020
23/11/2017	Export Policy of Onions-Imposition of Minimum Export Price (MEP Fixed at **US$ 850 F.O.B)**	39/2015-2020
24/12/2015	Export Policy of Onions Removal of Minimum Export Price	29/2015-2020
11/12/2015	Export Policy of Onions- (Revision in Minimum Export Price fixed at US**$ 400 F.O.B)**	26/2015-2020
26/06/2015	Export Policy of Onions-increase in MEP	13/2015-2020
21/08/2014	Export Policy of Onions - (MEP Fixed at **US$ 300 F.O.B)**	91 (RE-2013) / 2009-2014
02/07/2014	Export Policy of Onions **(MEP) of US$ 500 per MT.)**	86 (RE-2013) / 2009-2014
17/06/2014	Export Policy of Onions (**MEP Fixed at US$ 300 F.O.B**)	82 (RE-2013) / 2009-2014
12/03/2014	Export Policy of Onions (Export **of onion has been made free.)**	73 (RE-2013) / 2009-2014
06/03/2014	Export Policy of Onions (Requirement of MEP on export of onions stands removed)	72 (RE-2013) / 2009-2014
20/09/2011	Removal of ban on export of Onions.	75(RE-2010)/2009-14
09/09/2011	Ban on export of Onions.	73(RE-2010)/2009-14
18/02/2011	Removal of ban on export of Onions.	24(RE-2010)/2009-14

Source: DGFT

It is felt that restricting or banning exports suddenly is against the spirit of Agriculture Export Policy released in December 2018, which clearly states its vision Harness vision Harness export potential

[5] F.O.B –Free on Board

of Indian agriculture, through suitable policy instruments, to make India global power in agriculture and raise farmer's income. "

Long term solutions

1. **Time to look at onion wastages:** Onion is cultivated in various parts of India almost throughout the year and can be made available in fresh form, except in the months of July, August & September. To maintain regular supply in this lean period of about 3 months, onions are being traditionally stored in ventilated warehouses (in bulk) where the losses are very high (range between 20-40% mainly because of poor pre-harvest and post-harvest practices.

Table 7 : Deficit in net weight of Onion during storage : Onion needs innovation in storage technologies

Marketing months of stored onion	**Number of storage months**	**Deficit in net weight**
Onions reaching market in June- July (stored produce of May)	2-month storage	3 kg net weight
Onions reaching market in Aug- Sept (stored produce of May)	4-month storage	6 kg net weight
Onion reaching market in Oct- Nov (stored in month of May)	6-month storage	9 kg net weight

1.1 **Increase investment in producing dehydrated onion which has long shelf life and have export potential:** Onion, being high in water content, is a delicate commodity to store. Due to non-availability of appropriate post-harvest storage facilities, up to 40 % of the total produced onions can be damaged in some areas in periods of high rainfall. For a long-term solution, onions could be dehydrated to prepare onion chips and onion powder. These products are used in foreign countries as an alternative to fresh onion. This is a cost effective alternative when the price of onion sky rockets. *Converting fresh onion to dehydrated onion would minimize the waste up to the level of 3 to 4%, therefore dehydration of onion should be encouraged. It is the time that Indian consumers start using relatively new products like dehydrated onions, the way they adopted milk powder, ginger-garlic paste and frozen peas.*

1.2 Integrated model is crucial in long run to reduce wastage: Product specific integrated model should be built to have a grass root level impact. While devising ways to tackle the issue of onion shortage and price rise, it's important to look at the concerns in the entire value chain and give holistic solutions considering pre-harvest and post-harvest concerns. This should start from selection of right cultivars/varieties of onions that are storable and by diligently following the required pre-harvest & post-harvest practices. Onions can be successfully stored in ventilated warehouse for short periods and in refrigerated warehouse for longer

periods, depending on the technology. There is a need to invest in research to find optimum technological solution for storage of onion. *The losses are likely to come down to about 5-10% by following standard operating procedure of storage.*

2. Special campaign for processed onion: To exploit the immense business potential that the processed onion offers, there is a need to bring a paradigm shift in the way we look at this business. Government should undertake a campaign to popularize the consumption of processed onion, as was done by National Egg Coordination Committee. This can be done by shifting our focus from trying to market what is produced to producing processed products, which has long shelf life and are easy substitutes at time of shortage. This has already happened in some way in case of peas.

3. Reforms in Agriculture Marketing should be at center stage:

Competition Commission of India (CCI) had found that price discovery in the APMCs is opaque and farmers consider only the prices in mandis (wholesale markets) in their vicinity while traders take into account the onion prices in distant markets as well as export destinations. Due to entry barriers for new traders in the mandis, the farmers have limited options to sell. The commission agents favor the wholesale traders rather than the farmers. Secret bidding in mandis was found to be common. CCI studied the matter and submitted a report in October 2012. Several recommendations of CCI remain unimplemented.

It is imperative that a uniform APMC Act is put in place across all the states to facilitate direct purchase from the farmer in a transparent way. This will not only reduce the number of marketing intermediaries but will also facilitate control on quality that is crucial for processing and export.

The performance of Private Mandis in Maharashtra should be studied to assess if they are able to provide better prices to farmers.

4. Onion should be removed from purview of Essential Commodities Act: Stock limits curtail the functioning of industries who need large stocks of underlying commodity to run their operations smoothly. Leaving such things to market forces will lead to organized trading and will bring in economies of scale and reduced costs in supply chain, resulting in increased returns to the farmers.

5. Ad-hocism in export bans has serious repercussions: Periodic banning of export of onion by the government has put Indian export sector in poor light. There should be no restrictions on export and the farmers should in fact be supported through extension services/cluster development to improve quality and productivity since such diversification helps in increasing farmer's income. Cluster development should also be encouraged for increasing onion export.

6. Short shelf life of onion: *storage in onion still waiting for technological breakthrough*: As soon as the crop is harvested, farmers have to directly bring the produce to market and sell. A trader/

merchant, who buy the onion, supply the produce immediately to other parts of the country within 20-25 days of its harvesting at different stages. The method of storing onion crop should not be considered similar to normal agriculture produce such as grains, potatoes etc. *Technological innovations for storing onions are required in long run. ICAR research institutes and State Agriculture Universities should play a serious role and Government should engage with IITs, IARI and other research institutions.*

7. Developing production protocols and standardization of onion requires a focused Research and result oriented planning by ICAR established Directorate of Onion and Garlic Research:

- *ICAR Directorate of Onion and Garlic Research, Pune, have developed various low-cost onion storage structures which have 5-50 tonnes storage capacity of onion. It is believed that these storage structures reduce storage losses by 20-50%.*[6] *However, there is no commercial implementation of such storage facilities across country. Therefore, there is a need for National Research centers to expand the base of such research interventions and bring out more feasible solutions that have commercial utility.*

- *National Research Centers for onion should work in tandem with private sector to release varieties which have long shelf life and can be better stored. Government should encourage such joint Research projects and provide finance for Research projects which have commercial value.*

8. Investment in low cost modern technology for storing onion:

8.1 International low-cost models should be studied:

In Israel, onions are stored in open ventilated warehouses with continuous forced air-ventilation through a stack of sets in bulk or bulk bins.[7] Adoption of such measures will help in storage of onions with innovative methods during the bumper production seasons and reducing the fluctuations in the onion prices. Such methods should be studied and customized for Indian conditions

8.2 Low cost farm gate storage should be scaled:

For ensuring cost effective storage of onions, emphasis should be laid on building low cost farm gate storage. In Brazil, for the procurement and storage of onions, low cost ventilated silos system is being used at farm level. They also use refrigerated storage rooms which is the most efficient system. In India, start-ups such as Inficold Inc. are using multi commodity

[6]Directorate of Onion and Garlic Research, Pune
[7] http://www.csbe-scgab.ca/docs/journal

efficient farm level cooling systems for perishables. Low cost thatched bamboo storage have been promoted by Government under National Horticulture Mission (now known as Mission for Integrated Development of Horticulture). However, we need better technology to reduce losses during monsoon.

Agri startups working on creating efficient farm level cooling systems should be encouraged

9. Railway rakes for reducing transportation cost: Transporting onion in normal unrefrigerated rakes via railways is considered to be the cheaper source in comparison with other means of transport. Tomato Onion Potato (TOP) scheme of Government announced in the 2018-19 Union budget was expected to address the problem of surplus in producing areas but the scheme has not taken off.