Research Report
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Trends in Marketing and Export of Onion in India

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Rajasthan

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Preface

Onion is one of the important vegetable crops grown in India. In terms of area, India ranks first with an area of 5.54 lakh hectares (2008-09) accounting for around 22.40 per cent of the world onion area. In terms of production, the country occupies second position after China constituting 19 per cent of the global onion production. It is produced for both domestic consumption as well as exports. In the wake of galloping price rise in onion, it is imperative to understand the nature and causes of price rise and effect on consumer. Hence, an attempt has been made through this study to bring out the reasons for such high rise in the price of onion.

Findings of the study revealed that, the astronomical increase in the prices of onion was a result of hoarding of the stocks in anticipation of rise in the price and higher retailers mark-up. Moreover, the crop situations were not predicted timely and thus, the information on loss in production was not anticipated by market intelligence. Proper staggered planting of onions with suitable varieties can address supply gap during the slack period, there by stabilizing the prices across the year uniformly. As part of market reforms, implementing market intelligence systems can help in discovering the right prices for producers as well as consumers. It is expected that, findings of the study would help policy makers in giving directions for appropriate and timely action to protect interest of both consumers and producers. Dr. K. C. Gummagolmath, Assistant Director, NIAM was associated with this study.

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I would also like to express my special thanks to Dr. Purushottam Sharma and Dr. Shalendra, faculty, NIAM for helping me in analysis and draft preparation of the report. I would also like to thank the respondents i.e. Traders, Farmers, Retailers and Consumers of Rajasthan, Maharashtra and Karnataka for their timely help and furnishing valuable information for successful completion of the report.

I would also like to take this opportunity to acknowledge the valuable suggestions made by my fellow faculty members in improving the value of this report.

(Dr. K. C. Gummagolmath)

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Chapter-I:

Introduction

Onion is an important vegetable crop grown and consumed widely across the world. As a culinary ingredient it adds to the taste and flavour in a wide range of food preparations and it is also used as a salad. Thus there is a steady increase in the demand for onion across the world. China is the leading producer of onion constituting about 27 per cent of the world total production (Table-1.1). India is the second largest producer in the world with an area of 10.64 Lakh hectares and production of 151.18 Lakh tonnes (2010-11). Top ten countries including China and India, (mostly Asian countries) constitute more than 60 per cent of the total world production. Yields of onion were higher in the case of Turkey (30.3 MT/ha) followed by Brazil (23.1 MT/ha) and China (22 MT/ha). Due to lower yields, though India has the highest area under onion, it stands second in the production of onion in the world. Hence, there is a lot of potential for increasing the production of onion by improving the yields. India is also the largest exporter of onion and hence, it is crucial to improve the yields for enhancing the export level, so that it helps in earning foreign exchange for the exchequer of the country.

Table-1.1: Area, Production and Productivity of Onion across the World

County	Area (000ha)	Production (000MT)	PRODUCTIVITY (MT/HA)	% SHARE IN PRODUCTION
China	930.21	20507.76	22.0	26.99
India	1064.00	15118.00	14.2	19.90
Pakistan	124.70	1701.10	13.6	2.24
Bangladesh	117.56	872.08	7.4	1.15
Indonesia	109.47	1048.23	9.6	1.38
Viet	101.70	355.30	3.5	0.47
Russian	88.00	1536.30	17.5	2.02
Myanmar	78.90	1137.90	14.4	1.50
Brazil	67.25	1556.00	23.1	2.05
Turkey	62.69	1900.00	30.3	2.50
Other Countries	1227.02	30244.54	24.6	39.81
World	**3971.51**	**75977.21**	**19.1**	**100.0**

Source: Indian Horticulture Database, 2011

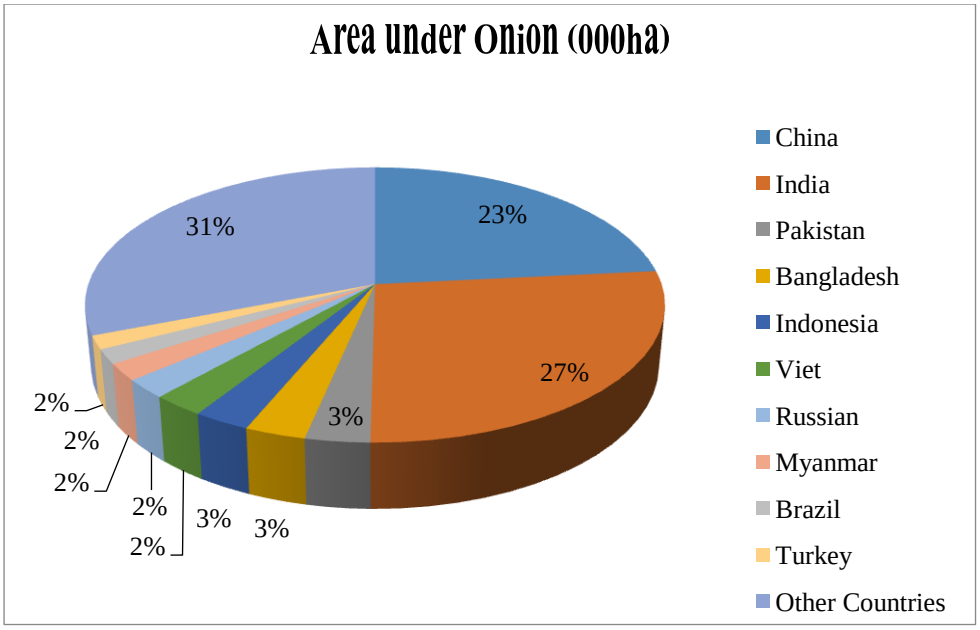

Figure-1.1: Share of Different Countries in Area under Onion in the World

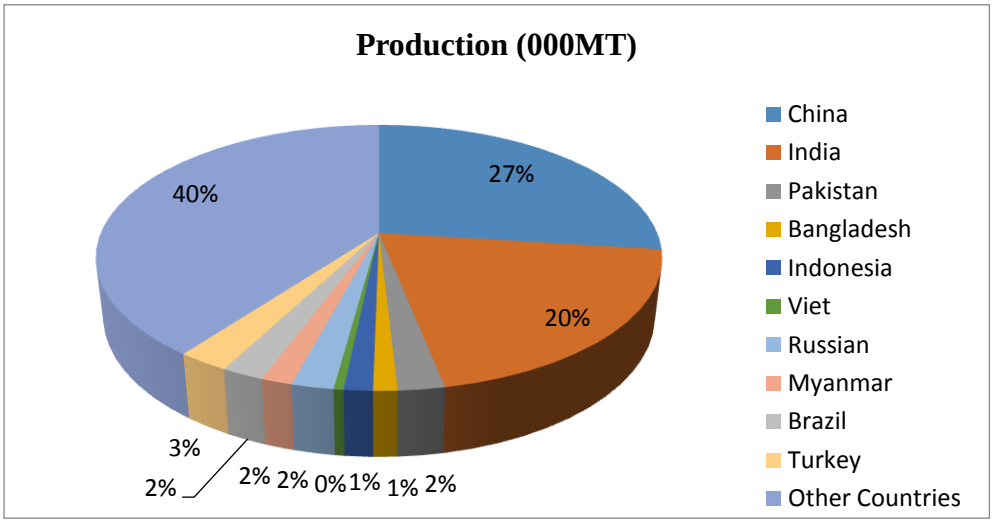

Figure-1.2: Share of Different Countries in Production Onion in the World

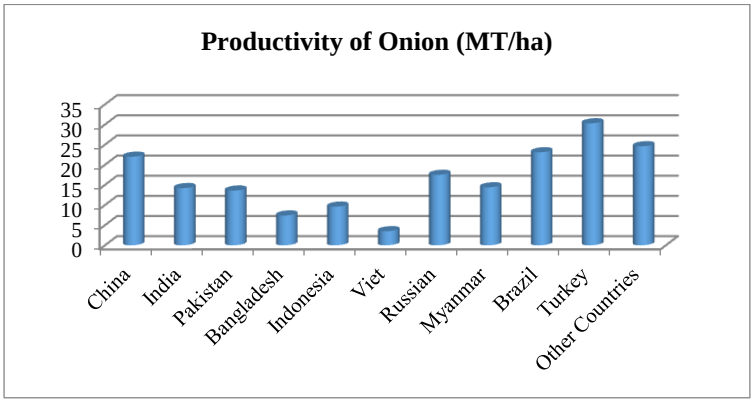

Figure-1.3: Yield of Onion in Different Countries

1.1 Area, Production and Yield of Onion in India

India produces all three varieties of onion – red, yellow and white. In some part of the country, onion is grown in all the three seasons. In the northern part of the country, onion is usually grown in winter *(rabi)* season. However, in the southern and western States of Andhra Pradesh, Karnataka, Tamil Nadu, Gujarat and Maharashtra, it is grown in winter (*rabi*) as well as in the rainy *(kharif)* seasons. Currently Kharif onion is gaining ground in northern part of the country. Thus onion is cultivated and is available to domestic consumers, as well as for export, throughout the year.

Table-1.2: State-wise Area under Onion in India (1000 ha)

STATES/UT	TE-1982-83	TE-1992-93	TE-2002-03	TE-2011-12
Maharashtra	53.93 (21.86)	62.67 (20.00)	115.70 (26.91)	334 (29.93)
Karnataka	36.17 (14.66)	45.80 (14.62)	120.37 (27.99)	153.73 (13.77)
Madhya Pradesh	12.90 (5.23)	16.37 (5.22)	22.40 (5.21)	59.90 (5.37)
Gujarat	12.93 (5.24)	20.37 (6.50)	18.53 (4.31)	54.23 (4.86)
Bihar	14.17 (5.74)	15.80 (5.04)	13.60 (3.16)	53.57 (4.80)
Rajasthan	10.00 (4.05)	17.03 (5.44)	28.87 (6.71)	51.33 (4.60)
Andhra Pradesh	15.73 (6.38)	19.47 (6.21)	29.73 (6.91)	45.67 (4.09)
Tamil Nadu	20.87 (8.46)	23.43 (7.48)	19.20 (4.47)	35.97 (3.22)
Orissa	39.20 (15.89)	44.97 (14.35)	4.07 (0.95)	34.02 (3.05)
Uttar Pradesh	19.97 (8.09)	30.87 (9.85)	23.27 (5.41)	24.23 (2.17)
All India	246.67	313.33	430.00	1116.10

In order to assess the trends in area, production and yield of onion, an analysis was carried out for three distinct periods i.e., TE-1982-83, TE-1992-93 and TE-2011-12. It is revealed from the Table-1.2 that, there was a tremendous increase in the area under onion i.e., from 246 thousand ha (TE-1982-83) to 1116 thousand ha (TE-2011-12). Although onion is produced in all the States in India, the key onion producing states are Maharashtra, Karnataka,

Madhya Pradesh, Rajasthan, Gujarat, Andhra Pradesh and Bihar which together constitute around 70 percent of the area under onion in the country. During recent years, Rajasthan, Madhya Pradesh and Bihar have emerged as an important onion growing States. On the contrary, Orissa, Uttar Pradesh and Tamil Nadu have lost their proportion in the total area under onion in the country.

Table-1.3: State-wise Production of Onion in India (000' tones)

STATES/UT	TE-1982-83	TE-1992-93	TE-2002-03	TE-2011-12
Maharashtra	739.70 (29.28)	825.23 (24.04)	1473.83 (27.14)	4624.50 (32.94)
Karnataka	234.90 (9.30)	352.43 (10.27)	640.73 (11.80)	2205.03 (15.71)
Gujarat	286.17 (11.33)	497.77 (14.50)	496.27 (9.14)	1312.40 (9.35)
Bihar	99.77 (3.95)	136.20 (3.97)	116.80 (2.15)	1064.17 (7.58)
Madhya Pradesh	144.77 (5.73)	196.50 (5.72)	314.10 (5.78)	986.30 (7.03)
Rajasthan	32.87 (1.30)	122.67 (3.57)	175.70 (3.23)	729.00 (5.19)
Andhra Pradesh	116.10 (4.59)	164.00 (4.78)	538.63 (9.83)	661.20 (4.71)
Tamil Nadu	251.40 (9.95)	217.40 (6.33)	173.27 (3.16)	470.43 (3.35)
Orissa	264.60 (10.47)	318.97 (9.29)	24.37 (0.44)	367.90 (2.62)
Uttar Pradesh	312.07 (12.35)	424.80 (12.37)	283.17 (5.21)	349.53 (2.49)
All India	2526.68	3433	5481.90	14039.00

Table-1.4: State-wise Yield of Onion in India (Tones/ha)

STATES/UT	TE-1982-83	TE-1992-93	TE-2002-03	TE-2011-12
Maharashtra	13.71	13.21	12.73	14.20
Karnataka	6.49	7.56	5.31	14.40
Gujarat	22.18	24.58	25.22	24.27
Bihar	7.07	8.61	8.59	19.86
Madhya Pradesh	11.24	11.99	14.03	16.50
Rajasthan	3.25	7.24	6.62	14.28
Andhra Pradesh	7.41	8.42	16.84	14.66
Tamil Nadu	12.24	9.27	7.78	13.04
Orissa	6.76	7.09	5.97	10.77
Uttar Pradesh	15.55	13.85	12.15	14.44
All India	11.41	12.47	12.63	16.05

The top five onion producing states include Maharashtra, Karnataka, Gujarat, Bihar and Madhya Pradesh accounting for about 70 per cent of the total production also (Table-5.3). The next five such states leading in onion production are Rajasthan, Andhra Pradesh, Tamil Nadu, Haryana and Uttar Pradesh. The top ten states account for about 90 per cent of the onion output in India. The output per hectare during TE ending 2011–12 (Table-1.4) varied across states wherein Gujarat is leading with 24.25 MT/ha to as low as 10.77 MT/ha in the case of Odisha. Over the years, per hectare output has increased among all the States except Maharashtra which was found to be relatively stagnant. At all India level, the yield of onion increased from 11.41MT/ha to 16.05 MT/ha during the period from 1982-83 to 2011-12.

Table-1.5: CAGR of Area, Production and Productivity of Onion in Major Onion Producing States in India (1974-75 to 2011-2012)

States/ Items	Area			Production			Productivity		
	1974-2000	2002-2012	Over All	1974-2000	2002-2012	Over All	1974-2000	2002-2012	Over All
Andhra Pradesh	3.42	4.80	3.60	8.05	3.08	7.14	4.50	-1.64	3.43
Bihar	1.86	14.25	2.62	3.23	24.91	4.64	0.48	9.39	1.56
Gujarat	3.21	14.37	4.78	4.24	14.06	5.37	1.70	-0.28	0.90
Karnataka	6.39	3.31	6.12	5.87	16.51	7.19	-1.29	12.78	0.63
Madhya Pradesh	3.79	11.20	4.75	4.59	13.23	6.09	1.47	1.82	1.61
Maharashtra	3.08	12.36	5.34	1.50	13.83	4.92	-1.33	1.31	-0.31
Orissa	2.01	21.72	-1.68	3.28	27.25	-0.43	1.13	4.54	1.22
Rajasthan	5.88	5.88	5.93	9.24	16.29	9.78	3.15	9.83	3.62
Tamil Nadu	2.21	2.46	1.84	1.53	2.16	1.46	-0.41	-0.28	-0.25

1.2 Growth in Area, Production and Productivity of Onion in India:

Compound Annual Growth Rates (CAGR) of area, production, and productivity for a period from 1974-75 to 2011-12 were calculated and the results are presented in the Table-1.5 It is revealed from the Table that, that the area under onion cultivation has grown by 1.84 per cent in the case of Tamil Nadu to a high of 6.12 percent per annum in the case of Karnataka. The growth in area in the case of major onion producing states has been encouraging. However, there was a decline in growth of onion in the case of Odisha. Rajasthan has shown

impressive growth in onion production over the years (9.78%) due to higher growth in yield during the same period (3.62%) Similar trend was observed in the case of Andhra Pradesh wherein production of onion increased despite decline in yield during recent decade. However, in the case of Karnataka, the growth in yield was moderate for the period considered under the study.

The foregoing analysis with respect to area, production and productivity of onion revealed that, apart from local demand, the exports of onion from India have grown to a considerable extent in the recent decade. Increase in local demand coupled with increase in exports and good price, there is a many fold increase in both area and production of onion. Though there is increase in the yield of onion over the years, still there exists lot of potential to reach to the global level yields. But the onion crop has suffered from fluctuations in the price due to intermittent production failures and lack of proper market intelligence. Hence, a detailed analysis of factor responsible for the price behaviour of onion becomes imperative.

As per the opinion of think tank in political arena, onion has got capacity to bringing down governments and scarring political careers. Political experts believe that, due to 1998 price crisis, the then government in Delhi was voted out. Similarly, during the second and third week of December, 2010, reports of rising onion prices have made headline news both in media and dailies and absorbed the attention of the government. The onion is an invariable item of cooking of all classes and most vital ingredient in Indian diet. No dishes are prepared without onion and normally use to be available at relatively cheaper price. But in recent days, the onion has become luxury item for India's poor due to unaffordable price during slack period of its production.

In the wake of galloping price rise in onion, it is imperative to understand the nature and causes of price rise and effect on consumer. Hence, an attempt has been made through this

report to bring out the reasons for such high rise in the price of onion. In order to give holistic approach, analysis of past policies to promote production of onion, trend in production and arrivals, prices and consumer behaviour also have been discussed with the following specific objectives:

1. To estimate the growth rates and trends in the area, production and yield of onion in India
2. To analyze the time series data relating to market arrivals and prices of onion in selected markets across the country
3. To ascertain the market intelligence status for onion in India
4. To analyze the trends in export of onion from India
5. To analyze the institutional arrangement for domestic as well as export marketing of onion in India
6. To suggest policies and strategies based on the findings of the study

Chapter-II:

Profile of Onion

2.1: Harvesting Season Of Onion Crop in Leading States

	- Lean season		- Peak season

State	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Maharashtra												
Gujarat												
Bihar												
Karnataka												
Andhra Pradesh												
Madhya Pradesh												
Rajasthan												
Haryana												
Uttar Pradesh												

Source: APEDA Exchange

2.2: Description of varietal Characteristics of Onion grown in India

Agrifound Dark Red

Developed by	National Horticultural Research and Development Foundation, Nasik
Colour of bulbs	Dark red
Shape	Globular
Measure	4–6 cm with tight skin
Description	Notified in 1988 by Government of India
Characteristics	Moderately pungent, keeping quality average
Average yield	300–400 quintal per hectare.
Season	Recommended for kharif season all over the country

Agrifound Light Red

Developed by	NHRDF
Colour of bulbs	Light red
Shape	Globular with tight skin

Size	4–6 cm
Description	Notified in 1996 by Government of India
Characteristics	Good keeping quality.
Average yield	300–325 quintal per hectare
Season	Recommended for rabi all over the country. It can be grown in late kharif season also in Nasik district of Maharashtra.

Red (L-28)

Developed by	National Horticultural Research and Development Foundation, Nasik.
Colour of bulbs	Dark red
Shape	Globular round and reddish thick inner scales
Size	5–6 cm
Description	Notified by Government of India in 2006
Special characteristics	Good keeping quality. Very much preferred by the consumers due to its attractive dark colour.
Average yield	220–250 quintal per hectare
Season	Recommended for rabi season in northern, central and western India

Agrifound White

Developed at	National Horticultural Research and Development Foundation, Nasik
Colour of bulbs	White
Size	Medium
Weight	55–60 g per clump
Characteristics	Maturity in 90 days. Fairly pungent with medium TSS.
Average yield	100 quintal per hectare
Season	Adopted throughout India

Agrifound Rose

Developed at	National Horticultural Research and Development Foundation, Chickballapur
Colour of bulbs	Deep scarlet red
Shape	Flattish round
Size	2.5–3.5 cm
Characteristics	Pickling type, grown in Kolar and Bangalore districts of Karnataka and Cuddapah district of Andhra Pradesh exclusively for export.
Average yield	190–200 quintal per hectare
Season	Suitable for growing in kharif season in Cuddapah district and in all the three seasons in Karnataka.

Agrifound Red

Developed at	National Horticultural Research and Development Foundation, Dindigul
Colour of bulbs	Light red
Cluster	Size: 7.15 cm, number of bulblets per cluster: 5.79 (average), weight: 65–67 g
Bulblets	Size: 3.64 cm, weight of single bulblet: 8.85 g
Characteristics	TSS 15–16%. Matures in 65–67 days after planting
Average yield	180–200 quintal per hectare
Season	Rabi

2.3 Common Varieties of Onions Grown in India

2.3.1 Big Onions

Agrifound Dark Red: Bulbs are dark red in colour, globular in shape with tight skin, moderately pungent. Mature in 95–110 days after transplanting. Recommended for growing in Kharif season all over the country.

Agrifound Light Red: Bulbs are globular in shape with tight skin and light red colour. Mature in 110–120 days after transplanting and keeping quality is good. Recommended for growing in Rabi season all over country.

NHRDF-Red (LINE-28): Bulbs are attractive dark red in colour. This variety is very popular among farmers in North India because of its attractive dark red colour and better storage performance. Mature in 110–120 days after transplanting. Recommended for cultivation in Northern, Central and Western India in Rabi season.

Agrifound White: Bulbs are globular in shape, with tight skin and silvery attractive white colour. Mature in 110–130 days after transplanting and keeping quality is good. Suitable for cultivation in late Kharif and Rabi seasons. Good variety for dehydration. Recommended for Maharashtra, Madhya Pradesh and Gujarat.

2.3.2 Small Onions

Agrifound Rose: Bulbs are flattish round in shape, deep scarlet red in colour. Mature in 95 to 110 days from sowing. This variety is suitable for growing in Kharif in Andhra Pradesh and in all three seasons in Karnataka.

2.3.3 Multiplier Onions

Agrifound Red: Average size of cluster is 7.15 cm with weight of 65–67 g. Average number of bulblets per cluster is 5–6. Colour of bulblets is light red. Mature in 65–67 days after

planting. Recommended for cultivation in Kharif and Rabi seasons in Tamil Nadu, Karnataka and Kerala.

Table-2.1: Criteria and Description of Grades

Grade Designation	Grade Requirements	Provision Concerning Sizing	Grade Tolerances
1	**2**	**3**	**4**
Extra class	Onion shall be of superior quality. They shall be characteristic of the variety and/or commercial type. The bulbs shall be: - firm and compact; - un sprouted (free from externally visible shoots); - properly cleaned; - free from swelling caused by abnormal development; - free of root tufts, however, onions harvested before complete maturity, root tufts are allowed. They shall be free of defects, with the exception of very slight superficial blemishes, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package.	As per table 'A'	5% by number or weight of onion not satisfying the requirements of the grade, but meeting those of class I grade or, exceptionally, coming within the tolerances of that grade.
Class I	Onion shall be of good quality. They shall be characteristics of the variety and/or commercial type. The bulbs shall be: - firm and compact; - un sprouted (free from externally visible shoots); - properly cleaned; - free from swelling caused by abnormal	As per table 'A'	10% by number or weight of onion not satisfying the requirements of the grade, but meeting those of class II grade or, exceptionally, coming

	development; - free of root tufts, however, onions harvested before complete maturity, root tufts are allowed. The following slight defects, however, may be allowed, provided these do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package. - a slight defect in shape. - a slight defect in colouring; - light staining which does not affect the last dried skin protecting the flesh, provided it does not cover more than one-fifth of the bulb's surface. - Superficial cracks in and absence of part of the outer skins, provided the flesh is protected.		within the tolerances of that grade.
Class II	Onions which do not qualify for inclusion in higher grade but satisfy the minimum requirements. They shall be reasonably firm. The following defects, however, may be allowed, provided the onion retain their essential characteristics as regard the quality, the keeping quality and presentation. - defects in shape; - defects in colouring; - early signs of shoot growth visible from outside(not more than 10% by number or weight per unit of presentation); - traces of rubbing; - slight marking caused by parasites or disease; - small healed cracks; - slight bruising, healed,	As per table 'A'	10% by number or weight of onion not satisfying the requirements of the grade but meeting the minimum requirements.

	unlikely to impair keeping qualities; - root tufts; - stains which do not affect the last dried skin protecting the flesh provided they do not cover more than half the bulb's surface; - Cracks in the outer skins and the absence of a part of the outer skins from not more than one third of the bulb's surface, provided the flesh is not damaged.		

Source: APEDA EXCANGE

Table-2.2: According to AGMARK standards Onions are classified into following classes:

Size Code	Diameter (in mm.)	Difference between the diameter of the smallest and the largest onion in the same package (in mm.)
A	10-20	5
B	21-40	15
C	41-70	20

2.4 POST-HARVEST MANAGEMENT OF BULBS (Source: NHRDF, Nasik)

Adequate information was not available on post-harvest technology of onion particularly under Indian conditions till NHRDF initiated the work on this aspect at their own and in Collaboration with other agencies as well as under All India Coordinated Research Project on Post-Harvest Technology of ICAR. The trials on various aspects were carried out to assess the performance and the recommendations are now available for adoption by onion growers.

The impact of post-harvest technology is found better when it is combined with pre-harvest factors determining shelf-life and thus integrated approach is absolutely essential as no

single factor can show required impact as also the response of various factors depend on prevailing weather conditions.

Shed curing

Among pre-harvest factors, use of good store varieties such as Agrifound Light Red and Arka Niketan has proved much beneficial. Restriction on use of excessive and delayed nitrogen application (not exceeding 100 kg/ha under normal fertility condition and application of N in 2-3 splits within 60 days of transplanting), use of ammonium sulphate instead of urea for topdressing, more use of organic manures to fulfil nutritional requirement, use of vermicompost, neem cake etc. have also showed encouraging results. Many new formulations of organic manures are now available and these can be tried by onion growers.

A good storage variety

Over-watering of onion crop is always harmful. Irrigation at 1.25 ID/CPE with reduced N and irrigation frequency depending on weather conditions as well as more gaps between 2 irrigations till 60 days after transplanting is beneficial. Similarly last irrigation given 10-15 days before harvesting reduces microbial losses in stored onions compared to withholding of irrigation before 5 days.

Major response was, however, recorded with pre-harvest pesticides sprays on decay in storage giving better results for 0.02% streptomycin and 0.1% carbendazim 10 days before harvesting. Application of thiophanate methyl @ 0.1% + streptocyclin or klorocin @ 0.2% + ekalux @ 0.25% immediately after neck cut and combined with field and shade curing is promising under North Indian conditions while use of maleic hydrazide @ 2000-3000 ppm 75 days after planting for *kharif* onions and @ 2500 ppm combined with 0.1% carbendazim spray 10 days before harvesting in *rabi* onions give promising results.

Stage of harvesting plays a major role in determining the shelf-life of onions as it is linked with physiological maturity of bulbs. Harvesting one week after 50% neck fall and field curing by windrow method for 3-5 days till foliage turn yellow is recommended. Curing of *kharif* onions in sun or solar dryer with foliage and storage with dried foliage is better while curing in perforated crates with forced air circulation is recommended for *rabi* onions.

Stage of curing is another important step of post-harvest handling to reduce losses and maintain quality of bulbs in storage. Shade curing after field curing and neck cut to remove excess moisture from surface of bulbs and to remove the field heat before packing, transportation or storage is essential operation. Shade curing for 10 days is optimum as extended

Windrow curing

shade curing has no any detrimental effects. It also helps the detachment of soil attached to roots, shedding of dried roots and thereby eliminating the chances of microbial infection in storage. Removal of foliage leaving 2.5 -3cm neck is beneficial.

Sorting and grading should be done at field level to minimize post-harvest losses at subsequent stages. Use of consumer packing for graded bulbs, avoid drop of bulbs from more than 30 cm height, avoid sunscald by eliminating over-drying of outer scales directly in sun etc. improve shelf-life of onions.

Perforated hessian bags and plastic-woven bags are used for onion packing to permit proper ventilation. Tier system of transportation on poor roads, restriction of loading height in trucks and wagons, providing ventilation in railway wagons and quick movement of onion wagons or truck loads are other factors which can help in minimizing the post-harvest losses of onions.

2.5 Use of irradiation improves shelf-life of onions

Exposure of onion bulbs after harvesting when bulbs are in dormant stage with 60-90 Gy inhibit their sprouting regardless of crop season, environmental condition and type of storage. However, to reduce the microbial and other losses, combined use of irradiation with improved storage and providing the irradiation facilities at production level are to be considered.

Onions when spoiled if not disposed off immediately cause nuisance and environmental pollution. Such spoiled bulbs, scales, peels and rejected portion of onion bulbs from processing units form a large quantity and thus conversion of this into compost or manure or vermicompost is suitable alternative. Such manures after complete decomposition, since has

manurial value comparable with farmyard manure, can be used for various crops.

2.6 Storage of onions

In Maharashtra, Gujarat, Haryana and Western Uttar Pradesh large-scale storage of onions is taken in conventionally-designed structures. In other states, the storage is taken only on small scale but now showing increasing trend after the post-harvest technology and improved storage structures have been popularized by NHRDF.

Traditional storage practices result in substantial losses in stored onions; hence use of improved storage structures as well as use of good store varieties, judicious use of fertilizers, timely irrigation and post-harvest technology is essential to reduce the losses in stored onions.

Manglore tiled storage

Storage temperature and humidity affect loss in weight, respiration rate, sprouting, rotting and quality of bulbs in storage. The dormancy in onion bulbs is the main factor to determine as how long the bulbs can be stored. Inherent characters of dormancy based on equilibrium of inhibitors in onion bulbs also gets affected by temperature where lower (0^0C) and higher (30^0C) temperature increase the dormant state of onion bulbs and moderate (10-15^0C) temperature enhance the sprouting losses by breaking dormancy. Higher temperature, however, increases the rottage if accompanied with high humidity and desiccation/water loss is reduced at higher humidity but it increases the rooting and rotting. Hence equilibrium of temperature and relative humidity by providing sufficient aeration/ventilation is needed in improved onion store houses. The improved storage godown designed by NHRDF is based on the above factors.

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Improved ventilated storage structure

Salient features of improved storage structures

- Construction of structure on raised platform to prevent moisture contact and dampness.
- Use of Mangalore tiled roof or other suitable material to prevent build-up, high temperature inside. Providing bottom ventilation for free and faster air circulation to avoid formation of hot and humid pockets between the onion layers.
- Avoid direct sunlight on onion bulbs to reduce sunscald, fading of colour and quality deterioration.
- Restriction on width of each stack to 60-75 cm for hot and humid weather, 75 - 90 cm for mild and humid weather and 90-120 cm for mild and dry weather conditions.
- Maintenance of stacking height to 100 cm for small and multiplier onions and hot weather and 120 cm for mild weather and for big onions to avoid pressure bruising.
- Providing cubicles instead of continuous stack and sufficient space for ventilation from all sides.
- One cubic meter area of store accommodates about 750 kg onions. Accordingly construction of godown for required capacity and construction of more units instead of single big structure and in zigzag manner when constructed in more rows to have better aeration.
- Providing 2-tier if space available is insufficient.
- Periodical disinfection of structures and premises to check rottage. The cost-efficient of structures is based on locally - available materials and labour.

Chapter-III:

3. AGRICULTURAL MARKETING IN KARNATAKA AND MAHARASHTRA

3.1 AGRICULTURAL MARKETING IN KARNATAKA

The state of Karnataka has highly diversified cropping patter varying from high value export oriented spices to completely home market focused foodgrains. Agricultural produce at the primary level in the state is routed mainly through four channels i.e. direct to consumers; through private wholesalers and retailers; through public agencies and through processors. Marketing structure of the agricultural produce and the share of different channels in total marketed surplus vary from commodity to commodity and across regions. However, regulated markets are an important link in the movement of agricultural produce as a large quantity of produce is transacted through them mainly the foodgrains.

The institutional arrangement in place for marketing of various commodities consists mainly of various commodity specific boards and market cooperatives. These Boards usually covered plantation crops like coffee, tea, cardamom, spices, etc. Other commercial crops like cotton and tobacco are also controlled by commodity boards. The functioning of the boards involves procuring, marketing, price fixation, export, dissemination of technical knowledge and other support to the farmers. The other important institutional arrangement is the network of regulated markets spread throughout the state. A total of 152 principle market yards with 352 sub-yards were operational in the state during 2010-11 (Table 3.1). In addition, there are 730 rural primary markets to facilitate the movement of agricultural commodities from farm gate to the consumer.

The agricultural marketing in the state is practiced under the Karnataka Agricultural Produce Marketing (Regulation) Act 1966. The Act has been enacted to provide a uniform law relating to the better regulation of buying and selling of Agricultural Produce and the establishment of Markets for Agricultural Produce throughout the State. The Act has been

enacted & given effect to from 1st May 1968 by repealing and replacing the following Acts which were in force in the several areas in the state.

Table-3.1. Status of Regulated Markets in Karnataka

Year	Main Markets	Sub Markets	Total Markets
2000-01	141	343	484
2001-02	141	342	483
2002-03	144	343	487
2003-04	145	350	495
2004-05	145	347	492
2005-06	145	350	495
2006-07	146	352	498
2007-08	146	352	498
2009-10	146	355	501
2010-11	152	352	504

1. The Bombay Agricultural Produce Markets Act, 1939 (Bombay Act, 22 of 1939 as in force in Bombay area)
2. The Madras Commercial Crops Markets Act, 1933 (Madras Act, 20 of 1933) as in force in the Madras area and as in force in Bellary District
3. The Coorg Agricultural Produce Markets Act, 1956 (Coorg Act, 7 of 1956) as in force in Coorg District
4. The Hyderabad Agricultural Produce Markets Act, 1339 F(Hyderabad Act, 2 of 1339 F) as in force in Hyderabad area
5. The Mysore Agricultural Produce Markets Act, 1939 (Mysore Act, 16 of 1939) as in force in Mysore area
6. A Market at Bailahongal was established under the Bombay Agricultural Produce Markets Act, during 1936 and at Tiptur under The Mysore Agricultural Produce Marketing Act, during 1948 in the State. Department of Agricultural Marketing which was earlier a unit of the Co-operation Department started functioning as an independent department during the year 1972.

Agricultural marketing structure in the state is a two pronged integrated vertical administrative organization consisting of Department of Agricultural Marketing and Karnataka State Agricultural Marketing Board (KSAMB). The main task of the Department of Agricultural Marketing is the establishment of Market Yards, submarket yards and developing

and maintaining the market yards and sub market yards through Agricultural Produce Market Committees (APMCs). Enforcing the regulatory measures in respect of sale and purchase of Agricultural produce brought by the Agriculturist to the market yards, providing a platform to ensure competitive prices, correct Weighment, payment and creating an exploitation free atmosphere by preventing illegal activities in the marketing of agricultural produce. In addition, the Department has also to regulate the activities of warehouses by enforcing the licensing conditions and establishment and maintenance of laboratories for the purpose of grading of agricultural produce in the State.

The Karnataka State Agricultural Marketing Board (KSAMB) takes care of the development aspects of the agricultural marketing in the state. The Board, established on 1st September 1972 as per section 100 of the Karnataka Agricultural Produce Marketing (Regulation and Development) Act, 1966 and Rules 1968, acts as a link between the Market Committees and the Government of Karnataka for all round development of agricultural marketing in the State. The Board is the policy and decision making body. The executive Head of the Board is the Managing Director. These are four divisional offices at Bangalore, Mysore, Belgaum and Gulbarga. In addition, there are the Karnataka Institute of Agricultural Marketing at Mysore and Agricultural Marketing Training College at Hubli.

The Karnataka State Agricultural Marketing Board (KSAMB) has implemented numerous welfare schemes such as Raitha Sanjeevini Scheme, Hamals Housing, Janashree Vima Yojana for weighmen, cartmen and Hamals, Insurance Scheme for the benefit of farmers and market functionaries.

3.1.1 Pledge loan scheme

The State of Karnataka has implemented the pledge loan scheme under which the loan is distributed to the farmers through market committees against the pledge of agricultural

commodities. This scheme was initiated on 01-04-1994 and commenced its operation on 15-08-1995. During the time of fall in price, agriculturists can store their produce in the APMC godowns or warehouses and avail short-term loan up to 60 percent of the value of the agricultural produce to a maximum of Rs 50,000/-, whichever is lower against the pledge of their agricultural produce for a period of 90 days. No interest is being charged for the first 30 days, interest at the rate of 8 per cent and 12.5 per cent is being charged for the next two successive 30 days period, respectively. The market committee is empowered to dispose off the produce after 90 days in case the farmer fails to repay the loan.

3.1.2 Revolving fund scheme/floor price scheme

In order to ensure price stability in the agriculture sector, it is necessary to ensure remunerative prices for the farmers' produce. It is, with this objective that floor price scheme for agricultural commodities in Karnataka has been implemented and it was later known as revolving fund scheme. The aim is to protect the interests of the farmers against severe price fall of agricultural commodities by assuring a floor price. The scheme shall be applicable to all the notified agricultural and horticultural commodities grown in the entire state. The scheme has come into effect from November 1999. A Revolving Fund of Rs.100 crores has been mobilized by equal contributions from the state government and market committees. The money available in the Revolving Fund is not only utilized to supplement the Minimum Support Price (MSP) operations of the Government of India but also to procure commodities that are not covered under the MSP Scheme. Under this scheme, floor price for onion was fixed and purchases were made at a cost of Rs. 1.06 crores during 1999-2000. Government extended the scheme for other commodities such as maize, jowar etc., as well by increasing the quantum of revolving fund by time to time. The state Government enhanced the Revolving Fund to about Rs.400 crores during the year 2003-04. In this connection the rate of market fee of one per cent was enhanced to 1.5 per cent. This additional market fee helped in mobilizing

addition collection to the tune of 50 crores annually which is exclusively ear marked for the Revolving Fund. It would ensure that no farmer in the state is forced to make distress sale. Each market committee contributes 5 per cent of its income by way of market fee to Karnataka State Agricultural Marketing Board (KSAMB). The annual income of the Board from the source of market fee was Rs. 88.29 crores during 2002- 03.

3.1.3 Raitha Sanjeevini Scheme

This is an accident benefit scheme implemented by KSAMB since 1996. All the farmers and their family members of the state in the age group of 18 to 75 are eligible for the benefits available under the scheme. Under the scheme, there is provision for a compensation of Rs 25,000/-, if a farmer dies due to the accident while performing any agricultural production or marketing operation. The incentive ranges from Rs.1, 500 to Rs.15, 000 for other kinds of disability. The beneficiaries may apply to the APMCs and the KSAMB, Bangalore will sanction the money. There is an annual budget of Rs. 50 lakhs for this scheme. The Board has so far settled 5,967 claims with a budget of Rs.14.76 crores.

3.1.4 Janashree Vima Yojana for Weighmen, Hamals and Cartmen

The Board has implemented an insurance scheme with the help of LIC for the benefit of 16,000 licensed Weighmen, Hamals and Cartmen working in different APMCs of State. The benefit available under the scheme is Rs 30,000/- in case of natural death and Rs 75,000 in case of accidental death. The total amount released as compensation since 1996 is Rs.3.55 crores benefiting 1,338 persons.

The introduction of regulated markets and creation of infrastructure in the state have been responsible for bringing favorable changes in the marketing of agricultural produce in the state. Increase in the proportion of total production reaching markets, control on unscrupulous activities lead to improvement in the efficiency of markets, better dissemination of market

information, introduction of facilities for framers like storage and standardization of charges to be paid by the farmers are some of the desired changes. Introduction of innovative initiatives like e-tendering of agricultural commodities in the selected markets has been implemented to make the prices discovery mechanism more competitive and transparent. The system has also introduced the facility of grading in some selected commodities and markets. The government has adopted, through on selected basis, ICT use in agricultural marketing, e-tendering in agri-trade and grading facility with the vision to integrate the various markets with in the state. These efforts by the state government have helped the state in being one of the progressive states in terms of agricultural marketing development (Figure 3.1 and Table3. 2).

Figure 3.1. Status of Karnataka in terms of Number of Regulated Marketing operating in the State

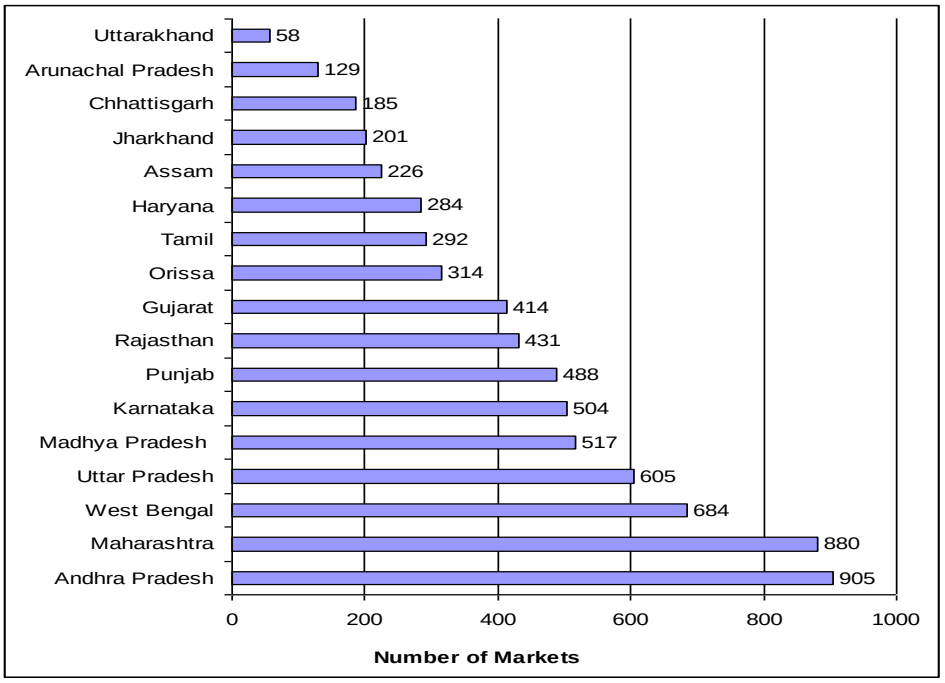


Table3. 2. Status of Karnataka in Agricultural Marketing

As on 31.03.2011

States	Regulated Markets	Area Served by Each Market (SqKm)	Population Served by Each Market
Andhra Pradesh	905 (1)	304 (4)	84210 (4)
Maharashtra	880 (2)	350 (6)	110089 (6)
West Bengal	684 (3)	130 (2)	117282 (10)
Uttar Pradesh	605 (4)	398 (9)	274707 (17)
Madhya Pradesh	517 (5)	596 (13)	116799 (8)
Karnataka	504 (6)	381 (7)	104862 (5)
Punjab	488 (7)	103 (1)	49916 (2)
Rajasthan	431 (8)	794 (16)	131107 (13)
Gujarat	414 (9)	473 (11)	122394 (12)
Orissa	314 (10)	496 (12)	117212 (9)
Tamil Nadu	292 (11)	445 (10)	213718 (16)
Haryana	284 (12)	156 (3)	74453 (3)
Assam	226 (13)	347 (5)	117945 (11)
Jharkhand	201 (14)	397 (8)	134059 (14)
Chhattisgarh	185 15	731 (15)	112615 (7)
Arunachal Pr.	129 16	649 (14)	8511 (1)
Uttarakhand	58 17	963 (17)	146368 (15)

Note: Figures in parenthesis are the Ranks

The regulated markets, as suggested by various studies, have achieved limited success and their relevance have declined in the time of liberalization, globalization, better purchasing power on account of economic growth and demand for safe and healthy food. Accordingly, the Government of India on the recommendation of the Expert Committee for Agricultural Marketing and the Inter-Ministerial Task Force has prepared a Model Act for bringing about the desired changes in the APMR Act. Karnataka is one of early states who recognized the importance of these reforms for strengthening and development of agricultural marketing in the state and have amended their APMR Act on the lines suggested in Model Act circulated by the Government. The amended act have introduced provisions mainly for direct marketing; contract farming and development of markets in private/ cooperative sectors. The Act also speaks in favour of setting up of special markets and special commodity market, public private partnership (PPP) in market extension activities of market committee, Single point levy of market fee, promote and encourage e-trading to bring efficiency and transparency in price discovery, etc.

3.2 Status of Agricultural Marketing in Maharashtra

Agricultural Marketing and Market Infrastructure in Maharashtra Amended Maharashtra Agricultural Produce Marketing (Regulation) Act, 1963 as per the Model Act circulated by GoI, Maharashtra has made suitable amendments in its Maharashtra Agricultural Produce Marketing (Regulation) Act, 1963. The State amended the Act in June 2006 and framed rules in June 2007. In the amended Act, the concept of development was introduced along with regulation. The amended Act is entitled as "Maharashtra Agricultural Produce Marketing (Development and Regulation) (Amendment) Act, 2006. The following are the important amendments made in the Act: 1) Introduction of greater competition: Most of the agricultural markets in the state have always suffered due to dominance of certain market functionaries. Some of the provisions of Maharashtra APMC 1963 Act prohibited the farmers to enter into

direct contact with the processors/manufacturers located outside the market area. The commodity sell was channelized through regulated markets and it led to inefficient market outcomes. However, as per the amended Act 2007, rules have been framed to allow greater freedom to farmers to sale their produce directly to consumers, processors or manufacturers. For this, the Act has made provision for establishment of private markets, farmer- consumer markets and direct marketing. In this, farmers can deal with any licensed person, partnership firm, co-operative society, NGO or companies who have established a private market as per stipulated conditions of DMI.

Apart from this, provisions are also made to declare certain markets as special commodity markets on the basis of arrivals, turnover, and geographical area. This is to encourage development of specialized markets having modern infrastructure and storage facilities with private sector participations. This is a great step particularly for promoting efficiency in onion markets. The Maharashtra APMC Act, 1963, has been amended so as to promote competitive marketing. After the amendment, the State has issued 72 licenses under direct marketing, gave approval to 7 private markets, identified 33 locations for Farmer-Consumer Markets, facilitated contract farming under 1 Lakh hectares, organized 20 festivals for promoting special commodity markets and given licenses to 09 private players under Single License System. State has also made some efforts to promote Public Private Partnership and has proposed to set up terminal market for fruits and vegetables at Mumbai, Nasik and Nagpur. The project will be implemented by competitive bidding process. The key objective of terminal market is to ensure a more transparent, efficient and modern marketing system for perishable fruits and vegetables with few or no middlemen so that farmers/growers/producers can receive more remunerative prices for their produce. The terminal markets provide multiple options to farmers for disposal of produce. Such markets are expected to reduce post harvest losses and increase farmer's realization. Marketing infrastructure in the state has also

undergoing major changes. Under MARKNET project, computerization of 291 APMCs and 54 submarkets is completed. Agri-Export Zones (AEZ) has been set up in the state and six facility centres for export have been created. The concept of AEZs aims at strengthening the entire value chain in a comprehensive manner for an identified crop coming from a geographically contiguous manner. Rural godowns, and onion storage structures are being constructed and grading and standardization of produce is encouraged. Television to disseminate arrival and price information of agricultural commodities has made inroads to strengthen infrastructure. A Memorandum of Understanding (MoU) between Reuters and MSAMB was signed in May 2007 to provide information about market arrivals, prices, weather forecast, and market guidelines to farmers through mobile telephones. More than 10,000 farmers have subscribed to this facility. It can be observed that under amended APMC Act, there exists scope for private investment in agricultural markets and also direct buying of produce from farmers by traders and processors. Thus the monopoly of APMC controlled markets has been restricted and the scenario related to agricultural marketing has begun to change. In view of the changes made in APMC Act, direct marketing, contract farming, corporate entry into agricultural markets etc. have begun to make inroads into agricultural marketing. The Act of 1963 led to the supply chain in India becoming inefficient because of the presence of a large number of intermediaries in agricultural marketing. The presence of intermediaries in India is a substitute for infrastructure. These intermediaries perform the distribution function as produce is normally consolidated at the village markets and reconsolidated again by intermediaries at least two to three times before it reaches the final consumer. The supply chain is dominated by traders who operate on high margins for no value addition. In such a process there is wastage and huge losses besides both the farmer and consumer lose in terms of price. A more integrated market structure where the farmer is provided by both backward and forward linkage as incorporated in the amended Act will therefore help to minimize on inefficiencies in the marketing system.

Chapter-IV

Data and Methodology

Price rise of essential food articles has always been a cause of concern for politicians, economists, as well as policy makers and consumers. With the spiralling rise in the prices of onion in the country during 1998 and second and third week of December 2010, the price and consumption situation was analyzed using both primary and secondary data. Secondary data is used to find out the historical and recent trends in onion production, area under onion cultivation and yield of the onion in India. The primary and secondary data have also been used to analyse the seasonality of market arrivals and prices of major consuming markets and markets located in the hinter's land of onion production. The data has been gathered from websites of international organizations such as Food and Agriculture Organization (FAO), International Food Policy Research Institute (IFPRI) and World Bank Ministry of Agriculture, Ministry of Finance, Agriculture Marketing Departments of different states and websites of different institutes such like NAFED, NHRDF etc.

The primary data has been collected through personal interview method with the help of pre-structured schedule from all the stockholders participating in onion market process. The data from the stakeholders is mainly collected to know the cost of production and marketing of onion. Apart from it, a major issue of postharvest losses was also addressed in order to know as to how it affects the realisation of income by the farmers in view of wide fluctuations in the prices of the onion. The primary data from the stakeholders is collected from the selected markets of Maharashtra and Karnataka. The details of sample farmers and other stakeholders selected for the study are given in the Table-4.1. Among the selected markets for the study, Pune, Bangalore and Jaipur were consuming markets. On the other hand, Hubli, Belgaum and Ahmednagar are the markets located in the hinterland of onion production.

The survey for Jaipur market was conducted during January 2011 to study the reasons for skyrocketing of prices of onion.

Table-4.1: Sampling Method

Place	APMC	Farmers	Commission Agents (CA) and			Retailers	Consumers
			CA	WS	Total		
I. Maharashtra							
1) Ahmednagar	1	20	05	05	10	10	
2) Pune	1	20	05	05	10	10	
Sub-Total	2	40	10	10	20	20	
II. Karnataka							
1) Hubli	1	25	10	10	20	10	
2) Bangalore	1	25	10	10	20	10	
3) Belgaum	1	25	10	10	20	10	
Sub-Total	3	75	30	30	60	30	
III. Rajasthan*							
Jaipur	1	-	5	5	10	25	96
Grand Total (I+II)	**12**	**115**	**45**	**45**	**90**	**75**	**96**

* Survey in Rajasthan was conducted during 2010-11

4.1 Analytical tools used

Seasonal Variation Index for each month is calculated with the following formula. For example for the month of January,

$$\frac{\text{Average of monthly averages}}{\text{Monthly average for January}} \times 100$$

Apart from this, to examine the price stability between markets the variability in prices of Onion in these markets is determined by co-efficient of variation and this is used to assess the market-wise extent of variation in jasmine price across the month. In order to study, the variability in Onion prices, the following formula is used.

$$\text{Mean} \div \text{Standard deviation} \times 100$$

Apart from these techniques, the Cob-Douglas form of Production function was used to calculate the growth rates in area, production and yield of onion.

Chapter-V: Results and Discussion

Table-5.1: Details of Arrival Pattern of Onion in Leading States

S.No.	States	Cropping season	Availability
1.	Maharashtra and Gujarat	Kharif crop Late Kharif Rabi	October – December January – March April – June
2.	Tamil Nadu, Karnataka and Andhra Pradesh	Early Kharif Rabi	August October – November March – April
3.	Rajasthan,Bihar,Uttar Pradesh, Haryana,Punjab,West Bengal and Orissa	Kharif Rabi	November – December May – June

Source: APEDA, AGRI-EXCHANGE

Table-5.2: Concentrated Pockets

State	Districts
Maharashtra	Nasik, Ahmednagar ,Pune, Sholapur, Yeola, Pimpalgaon, Malegaon
Karnataka	Dharwad ,Belgaum Chitradurg, Gadag, Haveri, Bagalkot, Davengere
Andhra Pradesh	Kurnool, Medak, Rangareddy, Cuddapah, Mehboobnagar.
Uttar Pradesh	Varanasi, Patan, Kanpur ,Lucknow, Allahabad, Faizabad
Tamil Nadu	Coimbatore, Perambadur, Namakkal ,Dindigul Anna, Thirichirapalli, Periyar
Gujarat	Bhavnagar, Surendranagar, Mahua
Punjab	Ropar and Ludhiana

5.3 Spatial Distribution of Total Market Arrivals of Onion

Spatial Distribution of Total Market Arrivals of Onion

The National Horticulture Research and Development Foundation (NHRDF) are reporting arrivals of onion for more than 100 markets. The researcher tried to document the arrivals during 2011-12. But the reporting in some markets was not complete. Hence, the arrivals during 2010-11 as reported by NCAER are discussed here. The market arrival patterns of onion in 107 agricultural markets for the years 2008–09 to 2010–11 is given in Table 1.4. The total arrivals increased from 4,617 thousand MT in 2008–09 to 6,040 thousand MT in 2009–10 and then declined to 5,897 thousand MT in 2010–11. Thus,

while the reported arrivals increased by 30.4 per cent in 2009–10 over 2008–09, the same declined by 2.4 per cent in 2010–11.

Table-5.3: Gross Arrivals of Onion in Major Markets in India

SN	Market	2009	2010	2011	Share (%) 2011
1	Bangalore	5167641	5072436	5710423	9.7
2	Kolkata (West	3798885	3854982	3495320	5.9
3	Solapur	780514	2330162	3310419	5.6
4	Delhi	3073828	3870179	3307363	5.6
5	Pune	3081095	3784469	3268482	5.5
6	Mumbai	2351960	2633820	2921005	5.0
7	Pimpalgaon	3849672	3159210	2796128	4.7
8	Lasalgaon	3830136	3398807	2506441	4.3
9	Mahuva (Gujarat)	886214	1906796	2021964	3.4
10	Yeola	1502238	1926720	1756394	3.0
11	Malegaon	1769195	2585137	1685027	2.9
12	Indore (Madhya	393439	748296	1671166	2.8
13	Ahmednagar	398375	1447910	1505243	2.6
14	Chennai (Tamil	1262000	1228020	1393800	2.4
15	Hubli (Karnataka)	312748	1118793	1295883	2.2
16	Bhavnagar	152288	1220596	1268348	2.2
17	Manmad	1765438	1848978	1150378	2.0
18	Ahmedabad	752166	737716	1135418	1.9
19	Nagpur	315087	868836	901114	1.5
20	Rahuri	55817	389891	892120	1.5
21	Chandvad	251833	832500	858746	1.5
22	Sangamner	432280	584835	833946	1.4
23	Agra (Uttar	588871	635229	756755	1.3
24	Gondal (Gujarat)	70368	272086	711048	1.2
25	Devala	590490	770736	647555	1.1
26	Kolhapur	724659	642922	621405	1.1
27	Satana	114232	753063	567588	1.0
28	Alwar (Rajasthan)		635323	514523	0.9
29	Surat (Gujarat)	337930	405800	504890	0.9
30	Jaipur (Rajasthan)	236604	266928	495760	0.8
31	Sinnar	116048	266853	495219	0.8
32	Rahata	100114	734779	455982	0.8
33	Kurnool (Andhra	258267	311022	431820	0.7
34	Niphad	390218	484801	420755	0.7
35	Kalvan	107830	421710	411900	0.7
36	Bhubneswer	511050	394750	396100	0.7
37	Guwahati	338375	371414	389280	0.7
38	Bampada (Orissa)	7810	650	368644	0.6
39	Dhavangere	142377	260144	351421	0.6
40	Deoria (Uttar		696	331950	0.6

41	Hyderabad	650377	625719	327030	0.6
42	Dhulia	238558	434065	321726	0.5
43	Jodhpur	158777	165698	314257	0.5
44	Belgaum (Karnataka)	300268	305958	311066	0.5
45	Kanpur (Uttar	582925	401877	300365	0.5
46	Newasa	428557	634812	268813	0.5
47	Nasik	189362	238446	253112	0.4
48	Rajkot (Gujarat)	12424	203368	250628	0.4
49	Vani	66932	449154	213864	0.4
50	Jammu (Jammu	90800	110970	190765	0.3
	Total	**43537072**	**56748062**	**57309349**	**97.2**
	Share of Top 50	**94.3**	**93.9**	**97.2**	
	Grand Total (107	46167636	60402945	58972963	

Source: NCAER Report

The total arrival put together across all the markets in the country is not a true representation of total production in the particular season. Because, there are cross arrivals recorded due to movement of onion from one market to another market and hence there is duplicity of recording quantum of arrivals of onion. Moreover, the database maintained by many agencies does not cover the satellite towns and major markets across the country. These towns receive their supplies from the nearby villages as well as from major receiving markets close to these small towns. Hence, the total arrivals of onion in all the markets across may be a multiple of the arrivals reported for these markets. The arrivals do not incorporate that portion of the onion output that is self consumed or gets sold off within the villages and towns without passing through the markets.

The arrivals in the top 50 markets account for around 95 per cent of the total arrivals in all the 107 markets for which data are available. The corresponding share of the top ten markets is about 55 per cent. Maharashtra alone accounts for 24 of the 50 top markets followed by six in Gujarat. These are followed by Karnataka (4); Rajasthan and Uttar Pradesh (3 each); Andhra Pradesh and Orissa (2 each); and Assam, Delhi, Jammu and Kashmir, Madhya Pradesh, Tamil Nadu, and West Bengal (1 each).

The top ten markets with the highest onion arrivals include Bangalore, Kolkata, Solapur, Delhi, Pune, Mumbai, Pimpalagon, Lasalgaon, Mahuva, and Yeola. Six of the top ten arrival markets are in Maharashtra with one each in Karnataka, Gujarat, Delhi and Gujarat. These ten markets account for about 55 per cent of the total reported arrivals.

Table-5.4: Seasonal Indices of Prices of Onion in Major Consuming Markets in India (2002-2012)

Month	Markets							
	Ahmedabad	**Bangalore**	**Chennai**	**Delhi**	**Jaipur**	**Kolkata**	**Mumbai**	**Pune**
January	123.19	122.09	130.47	123.12	129.32	118.70	117.71	120.77
February	89.48	94.87	94.47	97.54	102.02	90.46	83.18	79.80
March	70.87	69.33	73.45	76.87	80.08	62.75	67.27	61.16
April	58.83	63.24	69.82	68.43	67.74	59.84	60.22	55.18
May	57.66	65.54	65.97	62.58	57.27	63.21	61.84	58.47
June	73.09	79.43	78.81	69.25	60.74	74.84	75.56	78.33
July	85.45	91.85	86.49	85.66	75.33	86.86	86.87	89.64
August	102.58	106.04	96.01	104.76	94.05	101.67	99.22	103.11
September	114.31	104.03	98.60	119.74	124.29	115.10	115.09	114.32
October	127.40	120.37	120.44	140.77	148.55	135.40	135.00	132.16
November	144.26	142.49	140.56	126.49	132.91	143.05	150.81	150.04
December	152.89	140.72	144.91	124.81	127.70	148.13	147.23	157.02

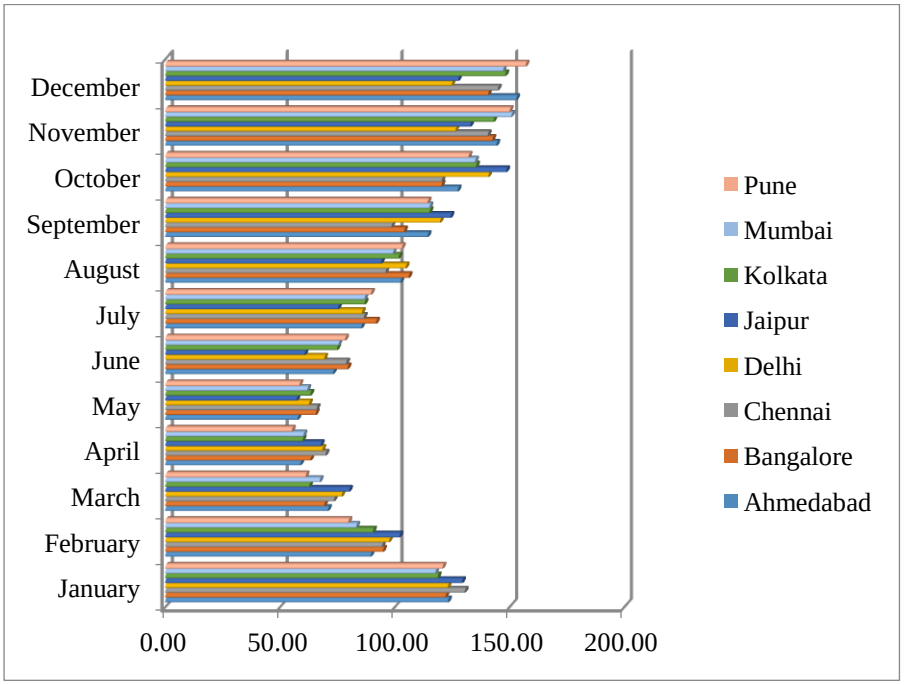


Figure-5.1 Seasonal Trends in Prices of Onion in Important Consuming Markets of India (2002-2012)

Table-5.5: Seasonal Indices of Arrivals of Onion in Major Consuming Markets in India

Month	Markets							
	Ahmedabad	Bangalore	Chennai	Delhi	Jaipur	Kolkata	Mumbai	Pune
January	108.85	79.44	105.15	83.07	84.61	98.31	114.05	123.46
February	103.56	61.10	100.97	81.43	75.89	122.95	108.79	163.38
March	109.00	65.91	105.10	109.76	89.83	94.70	120.93	158.99
April	127.59	67.30	88.05	100.33	103.95	70.45	102.23	113.53
May	80.63	71.72	101.21	103.45	130.55	106.35	88.79	105.49
June	89.24	64.55	104.41	113.29	154.23	99.32	94.56	86.49
July	93.16	64.44	109.57	103.63	128.90	118.75	97.08	79.99
August	86.58	78.37	88.33	89.04	115.08	109.58	81.89	72.89
September	83.34	126.29	103.54	83.00	97.65	97.74	90.20	65.96
October	88.07	221.61	88.94	88.54	79.84	95.87	90.68	69.79
November	111.01	176.69	102.96	131.69	75.49	84.85	100.35	74.26
December	118.98	122.57	101.78	112.77	63.97	101.15	110.43	85.76

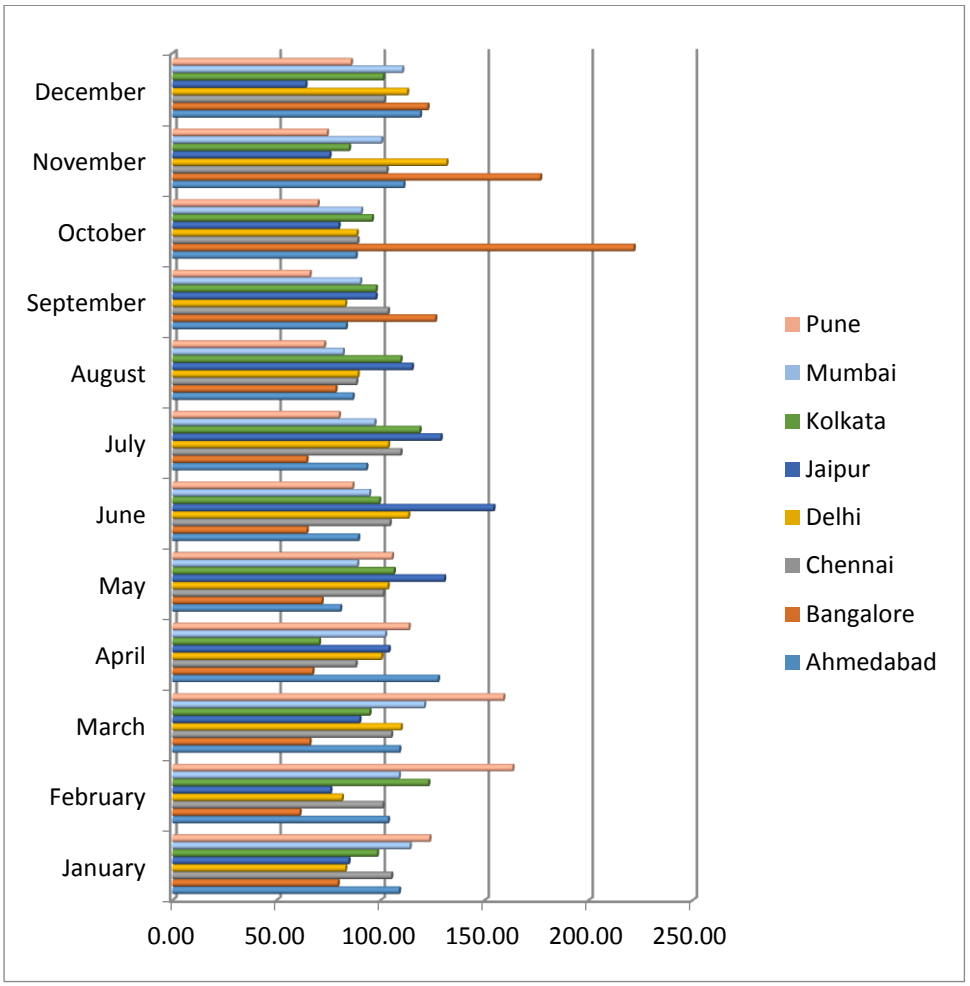


Figure-5.2 Seasonal Trends in Arrivals of Onion in Important Consuming Markets of India (2002-2012)

5.4 Seasonality in Arrivals and Prices of Onion in Major Consuming Markets in India

Depending on the production of onion, the seasonality in arrivals and prices occurs regularly every year. The changes in arrivals may occur due to rise or fall in production, poor storage, early harvesting, lack of retention power by growers and export. Keeping in view of recent spurt in the price of onion, the seasonality of arrivals and prices were analyzed for different markets for a period from 2002 to 2012, and discussed in the following paragraphs. The analysis emphasized more to the year 2010 as the situation of 1998 was almost repeated and hence, there is an effort to elicit the reason for occurrence of such things (Table-5.4 & 5.5).

5.4.1 Jaipur Market

The seasonal behaviour of the arrivals and prices of onion in major markets of the country were calculated and are depicted in the Table-5.4 and 5.5 and Figure 5.1 to 5.3. Onion is grown in both *rabi* and *kharif* season and it can be stored for longer period compared to other vegetables except potato. Hence, the arrivals of onion are persisting throughout the year across country. The highest arrivals were found during April-July in Jaipur market and the prices were lowest for the corresponding months. The value of arrivals started declining from September onwards and the trend continued up to the Month of February. Similarly the prices started increasing from the same month and were maximum during October-January, This trend indicates that, with the increase in the arrivals, the prices declined and is in conformity with the law of supply and demand. It is also interesting to note that, since onion is grown in *rabi* season in Rajasthan, the values of arrivals were maximum during March-July. Most of the requirement for rest of the period in a year in Jaipur market is met by western part of the country. Major arrivals to this market are from Nasik, Lasalgaon and Pimpalgaon.

5.4.2 Delhi Market

The arrivals started increasing from March and were found to be highest during June-July and November-December in Delhi market. Surprisingly the market prices were highest during higher arrivals (November – December). The values of arrivals started declining

marginally from August until October and were low during January and February. However, the prices were higher during August to January, despite increase in the values of arrivals in the corresponding period except for January month. This phenomenon reveals that, with the increase the prices, arrival from other markets of the country started flowing into Delhi market as there is huge demand for onion due to large mass of consumption. Moreover, Delhi market is also a largest centre for dispatch of produce to other parts of country, mainly to northern States. Most of the requirement for Delhi market is met by all parts of the country including southern States. Interestingly, Delhi Market is also a Terminal market, as substantial quantity of produce from Delhi flows back to many parts of the country.

5.4.3 Bangalore and Other Markets

A peculiar situation could be observed from the trend in arrivals and prices of onion in Bangalore market and continued to increase during November-December. The values of arrivals started increasing from September and touched peak during October. Similarly, prices started increasing during the August month and the trend continued up to January. From February onwards, both prices and arrivals started declining. This situation was noticed mainly due to entry of more number of traders for purchase during higher arrivals from different part of country and subsequently they supplied the onion to other markets across the country. At the same time, the exporters also became active during this period as they could get best quality produce during harvesting season. Another probable reason might be the increasing trends in the prices attracted farmers to bring more and more produce into the market. More arrivals coupled with large scale purchases led to rise in the price contrary to law of demand. However, the onion from Bangalore do not flow to Delhi market as it feeds markets in West Bengal, Orissa and some parts of Andhra Pradesh. Large quantities of onion are also exported to Srilanka and gulf countries. Similar trends were noticed for Mumbai and Ahmedabad markets.

While in the case of Pune, Chennai and Kolkata markets, the trends in arrivals and prices behaved as per law of demand and supply.

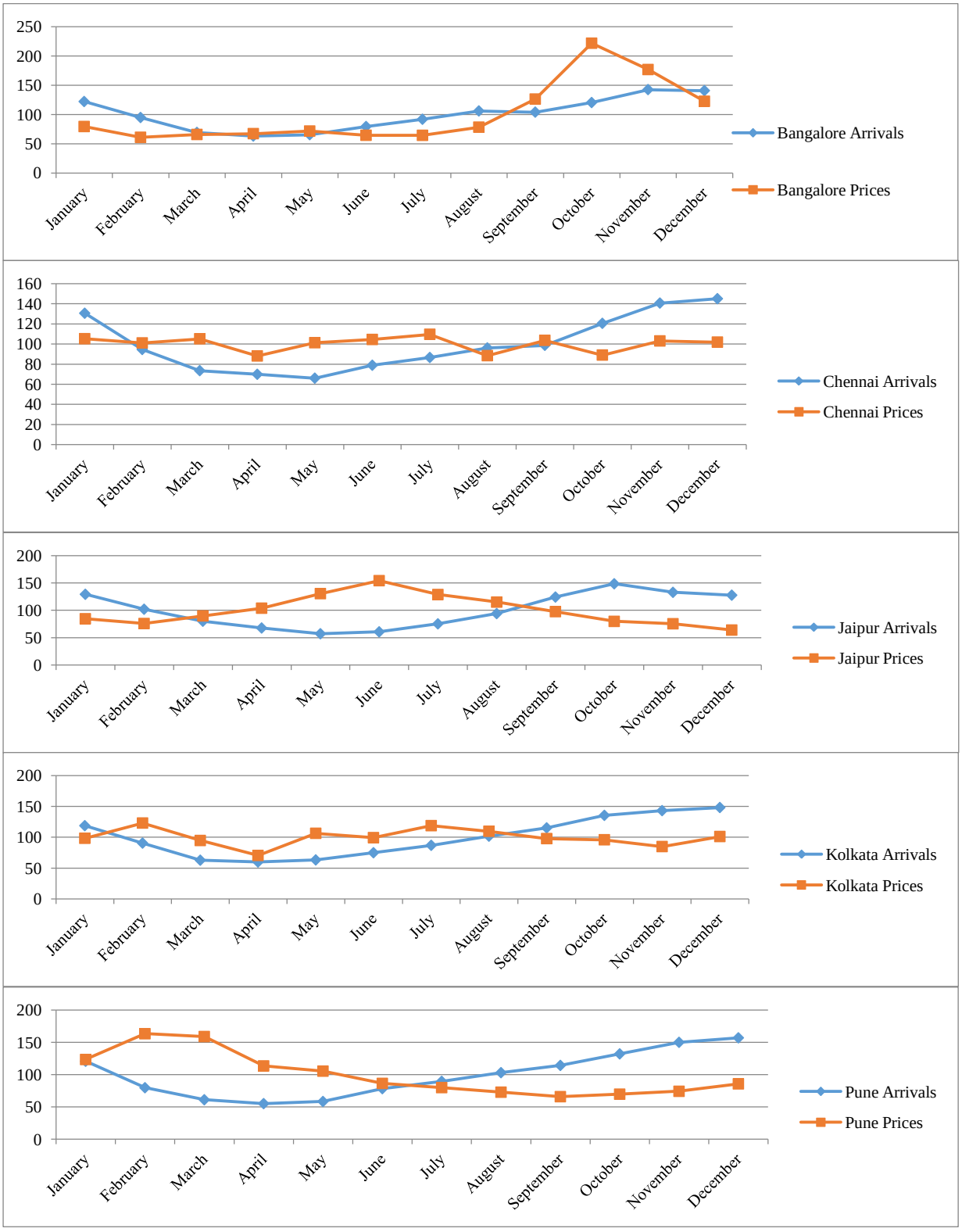


Figure-5.3 Seasonal Trends in Arrivals and Prices of Onion in Important Consuming Markets of India (2002-2012)

Table-5.6 Seasonal Indices of Prices of Onion in Markets Located at Production Hinterland

	Markets						
Months	**Hubli**	**Lasalgaon**	**Mahuva**	**Nasik**	**Sholapur**	**Pimpalgaon**	**Yeola**
January	108.19	120.14	124.99	122.74	121.55	118.17	125.64
February	86.74	87.66	94.83	93.16	96.22	87.97	95.01
March	73.81	61.84	72.99	67.35	71.28	61.22	60.39
April	68.02	57.55	61.23	60.35	56.20	58.20	51.55
May	72.35	56.76	60.87	57.80	61.59	59.64	51.06
June	88.24	77.50	63.71	74.70	80.04	77.97	74.99
July	101.16	88.54	84.95	84.39	98.13	88.83	87.90
August	115.80	109.20	96.61	101.37	111.99	108.78	112.19
September	117.44	122.61	108.20	117.04	105.93	123.93	121.47
October	118.55	141.39	145.39	140.25	114.38	142.49	143.60
November	125.78	136.81	157.53	143.57	132.07	137.98	148.61
December	123.92	140.00	128.70	137.29	150.61	134.82	127.60

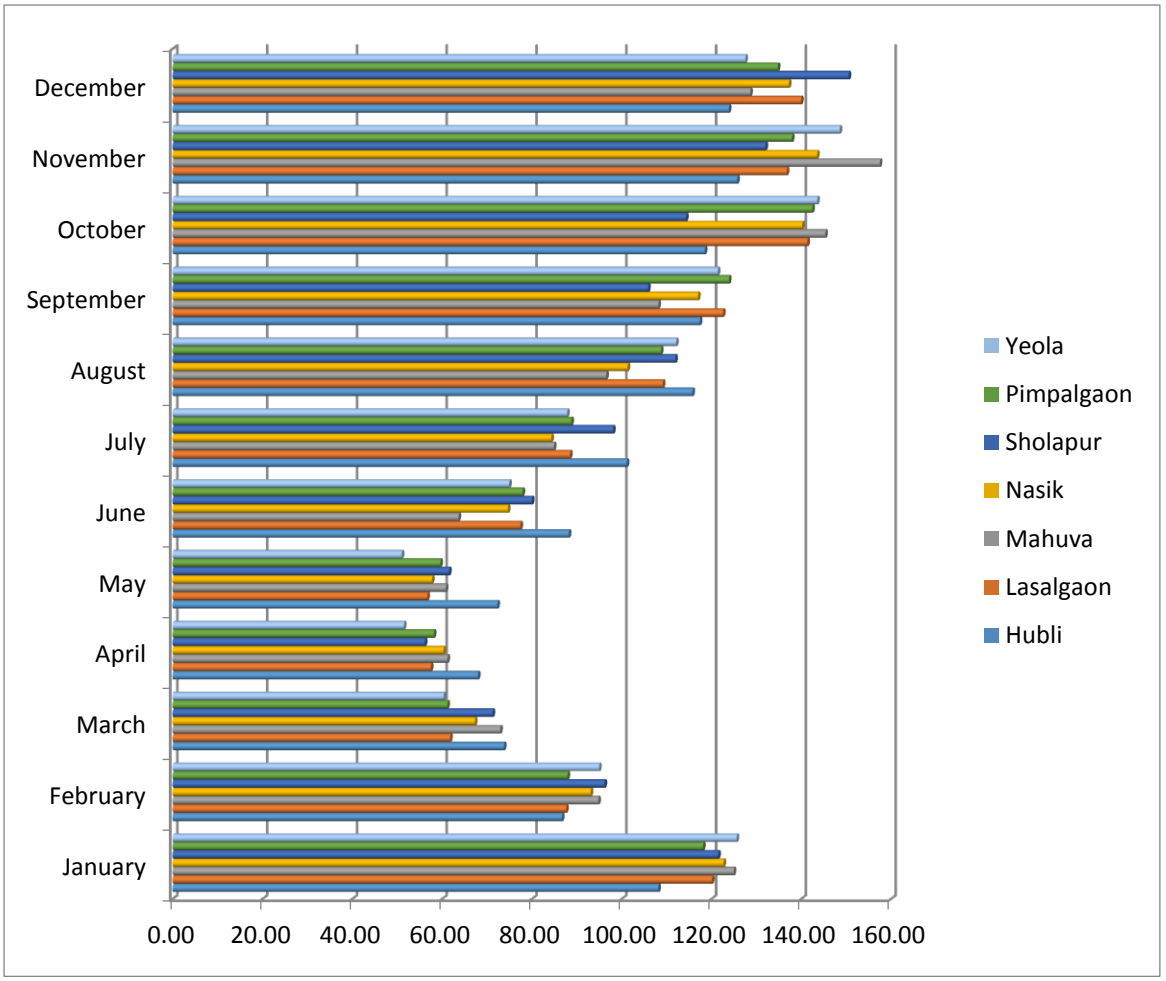


Figure-5.4: Seasonal Indices of Prices of Onion in Markets Located at Production Hinterland

Table-5.7: Seasonal Indices of Arrivals of Onion in Markets located at production hinterland

Markets							
Months	Hubli	Lasalgaon	Mahuva	Nasik	Sholapur	Pimpalgaon	Yeola
January	61.02	151.49	169.27	110.18	196.31	131.18	173.03
February	42.26	134.47	255.56	105.95	119.88	110.33	211.49
March	47.91	99.96	246.62	82.84	111.91	82.20	134.95
April	39.22	101.09	235.64	88.69	119.86	93.41	94.75
May	45.18	110.16	173.98	119.85	85.62	141.36	83.01
June	44.27	86.59	19.46	108.32	65.23	103.09	65.14
July	47.85	94.51	12.26	135.24	58.67	102.49	85.66
August	38.23	82.59	18.13	121.76	60.28	93.02	81.25
September	58.27	72.61	9.71	95.40	54.11	79.65	74.45
October	226.98	64.88	5.93	79.30	61.53	62.01	62.64
November	335.15	71.76	6.56	51.14	104.77	74.84	29.61
December	213.65	129.89	46.87	101.32	161.81	126.44	104.02

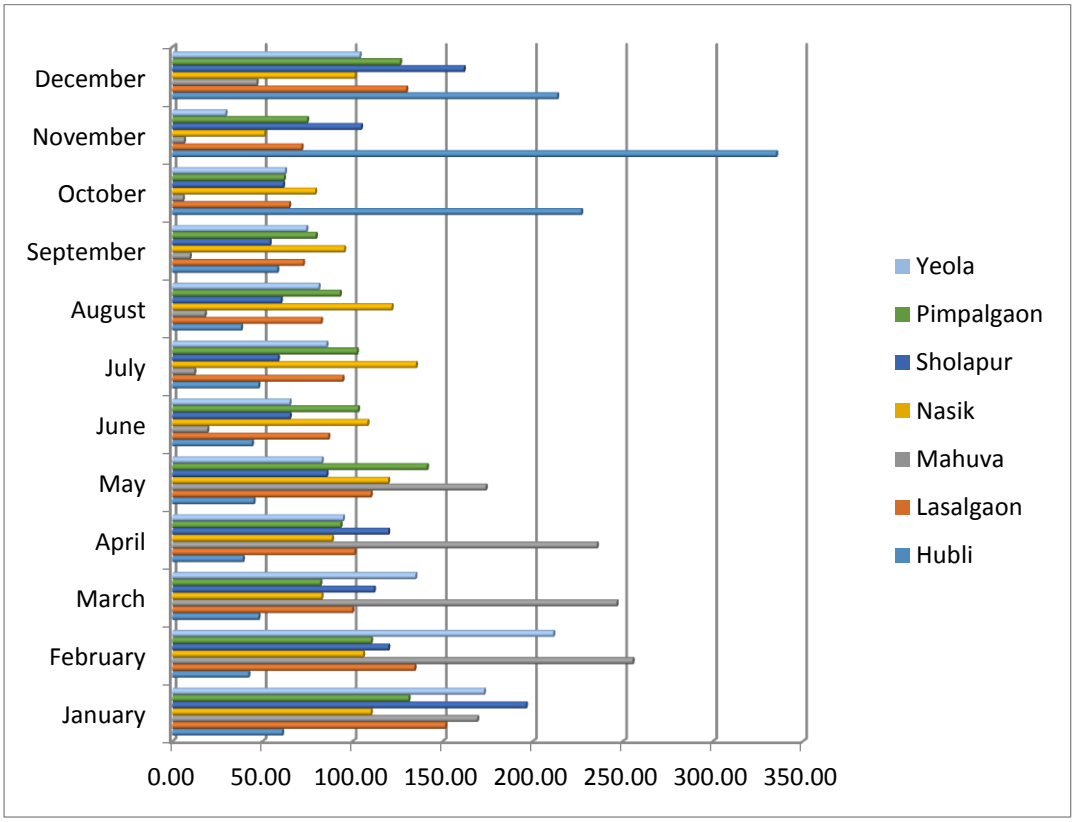


Figure-5.5: Seasonal Indices of Prices of Onion in Markets Located at Production Hinterland

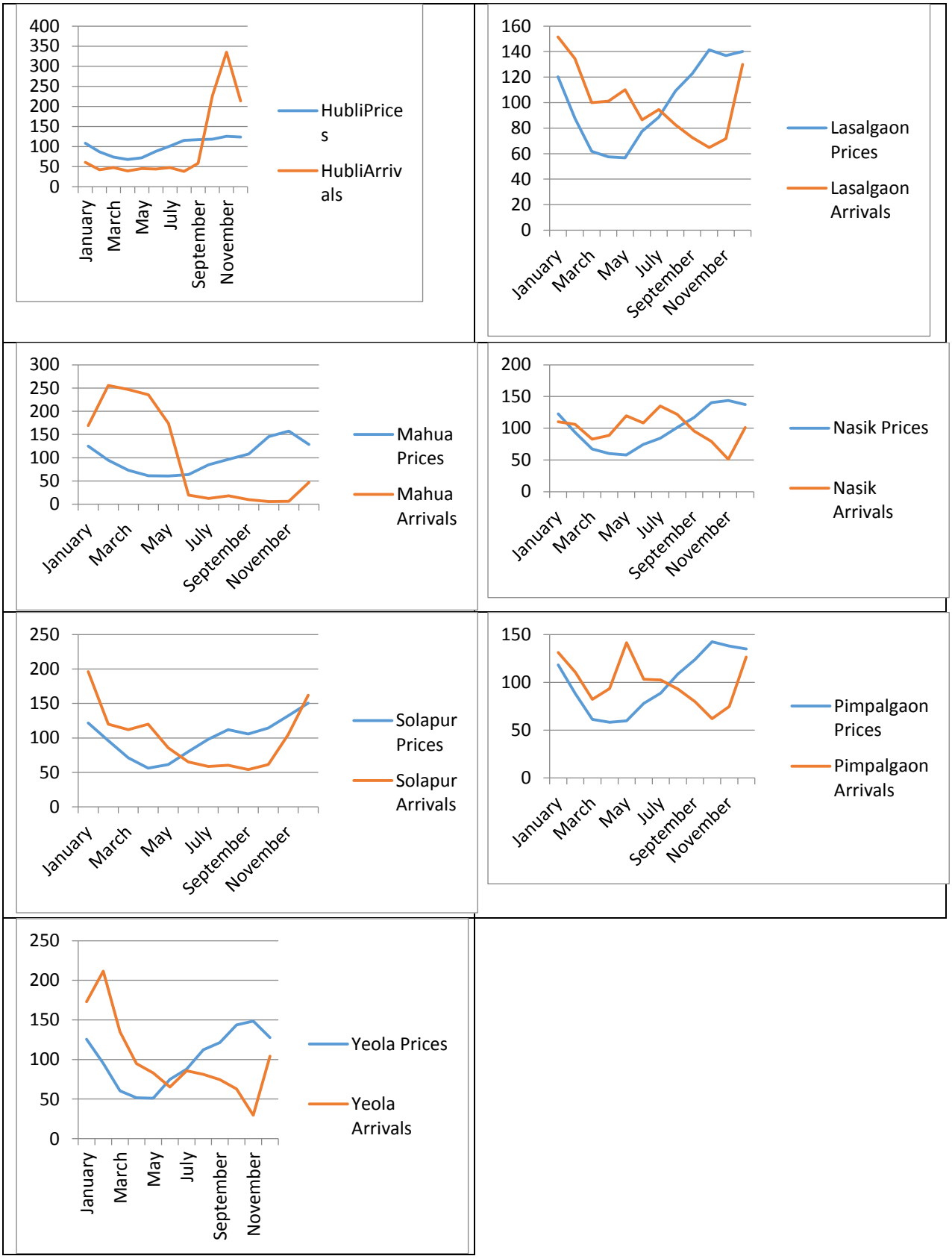


Figure-5.6: Seasonal Indices of Prices of Onion in Markets Located at Production Hinterland

5.5 Seasonality in Arrivals and Prices of Onion in Markets located in Production hinterland:

After analysing the seasonality of prices and arrivals in major consuming markets, it becomes imperative to know the same with respect to the markets located in production hinterland. Because these are the areas from where the bulk of output arrives in to nearby market and flows towards consuming markets. The price discovery in consuming markets largely depends on the seasonality and availability of onion in these markets.

5.5.1 Hubli Market

It is interesting to know from the results presented in the Table-5.6and 5.7 and Figures-5.4 to 5.6 that, there is an exceptional behaviour of prices and arrivals in Hubli market. Except for January month, there is a positive correlation between arrivals and prices of onion in this market. Especially during August to December, there is a tremendous increase in both prices and arrivals of onion in contrast to law of demand. Traders in the region opined that, the reason for such behaviour is that, during this period more number of traders operate and buy onion in large quantities for supplies to the other markets in eastern India and also they procure good quality of onion for export purpose. Around 10 per cent of the total arrival in this market is exported to gulf countries and Sri Lanka. When arrivals start declining, only traders operating in the APMC would buy onions and also during low arrivals, the quality of onion is poor and thus commands low price. Similar trend is noticed in the case of other markets only during December or January month where both the arrivals and prices are high. During rest of the period, there is an inverse relation between the arrivals and prices of onion. Generally in all the markets, except Hubli, the price starts declining from March and reaches a lower level in the month of May-June. This is mainly due to higher arrivals during these months as in most of the States; the onion is harvested during this period.

5.5.2 Lasalgaon and other Market:

The trends in arrivals and prices of Lasalgaon market revealed that, arrivals were higher during December-February and then during April-May. The higher arrival during these months is mainly due to harvesting of crop during rabi and late kharif season respectively. The prices in Lasalgaon market started increasing from August and continued up to January with a maximum price prevalent during October and December. Similar trends were noticed for the markets like Sholapur, Pimpalgaon and Yeola in Maharashtra. In these markets, the increase in the arrivals of onion led to decline in the price and thus situation was in conformity with the law of demand.

5.5.3 Mahua Market in Gujarat

There was a distinct trend observed with respect to arrivals and prices of Mahua market in Gujarat. Mahua is an important production centre for onion. The arrivals during January to May were almost two times higher than the lean season. While, the prices started showing increasing from September and continued up to the month of January. Hence, we can infer that, there is no set pattern in behaviour of arrivals and prices. The prices, except for the period from September to December, were lower during higher arrivals. During September-December, both arrivals and prices were on higher side.

5.5.4 The 1998 Situation

The modal prices in Lassalgaon market and Pimpalgaon market ranged from Rs.186 to Rs.492 per quintal in 1996, and Rs.168 to Rs.837 per quintal in 1997 and Rs. 258 to 2632 in 1998 indicating sky rocketing of prices (figure-5.7). The same trend was noticed in Hubli market also. In the case of other markets considered for the study, the price of onion remained around Rs.2000/Qtl. During the year 1998, prices of August-September and up to December were on pretty higher side in almost all the markets across the country, compared to other

months. This trend was observed mainly due to low production of onion and low volume of stored produce coupled with delayed and reduced arrivals of fresh *kharif* harvest due to excessive rains. Prices in 1998 however, remained higher and reached a record level of Rs.26.32 per kg in October in Lasalgaon market. Similar trend was noticed in different markets across country during this period. Though the prices of onion started declining, from November 1998, they were still comparatively higher to the corresponding period during other years. From January 1999 onward, situation, however, improved when production increased and due to different interventions from various agencies during late *kharif* season.

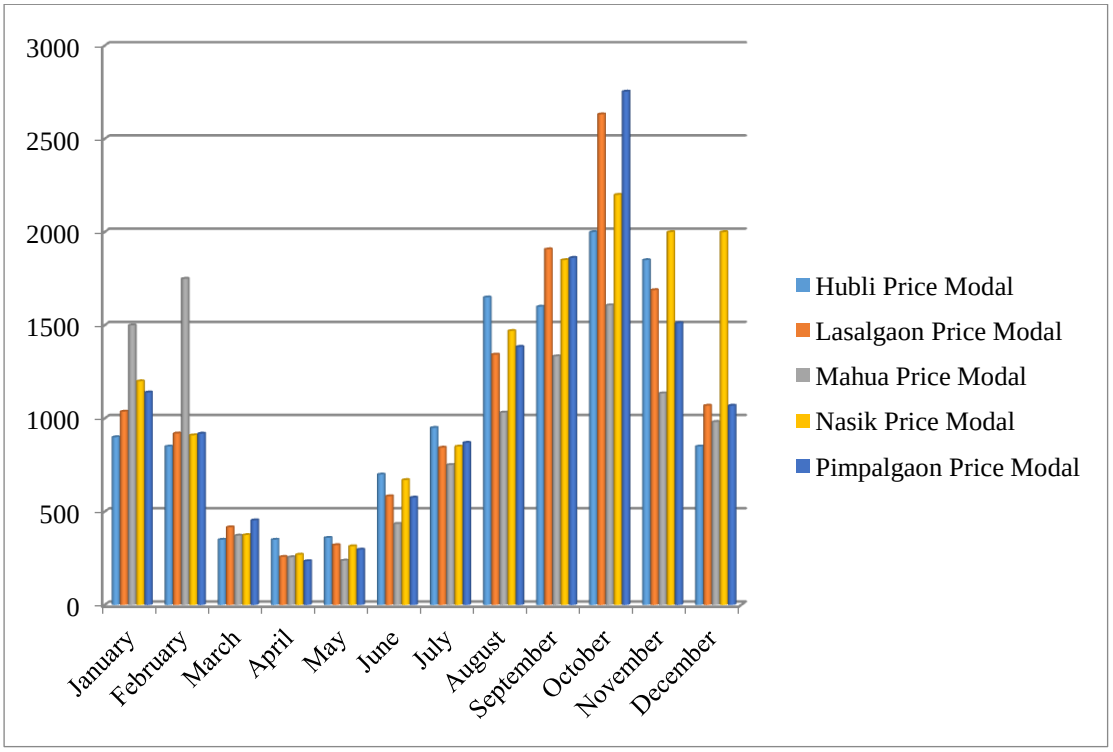


Figure-5.7: Modal Prices of Onion during 1998

Since the episode of 1998, the government of India has made it a practice of observing the situation and intervening in the market whenever necessary to ensure availability of essential commodities to consumers to protect them from exploitation by traders. This was done by procurement operations at domestic level and by regulating Export/Import in international Market. Some of the States like Karnataka and Andhra Pradesh government have gone in for market intervention since 1998. Market intervention involves stabilisation of prices

through procurement of onion when/where the prices are low and distribution to consumers at reasonable prices when the ruling retail market prices are high. For the purpose of price stabilization, government of Karnataka has created revolving funds for the same. It has also set up its own export promotion agency called KAPPEC (Karnataka state agricultural produce processing export corporation) which along with onion is involved in promotion of exports of other crops from Karnataka.

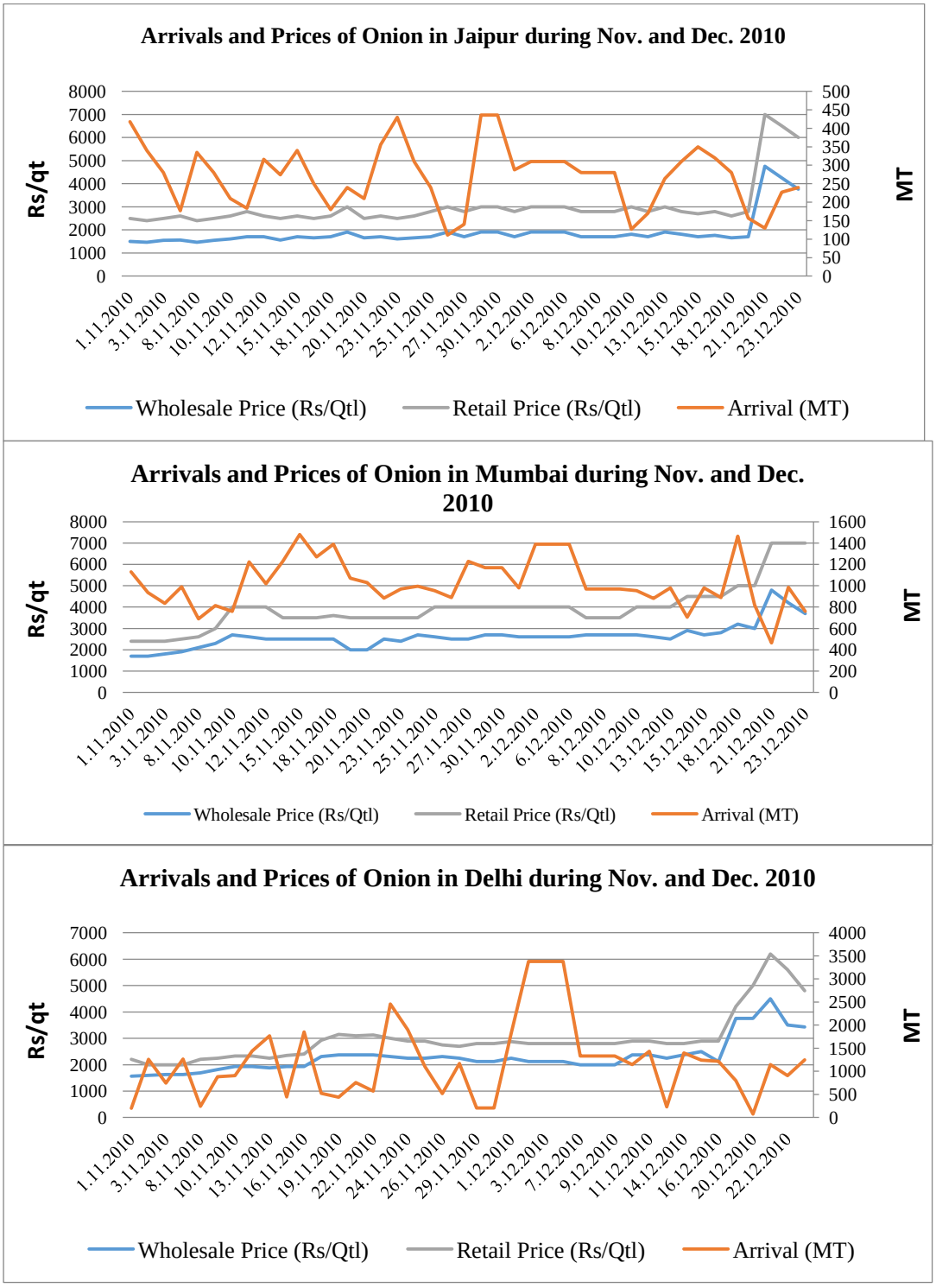
5.5.5 The 2005 situation

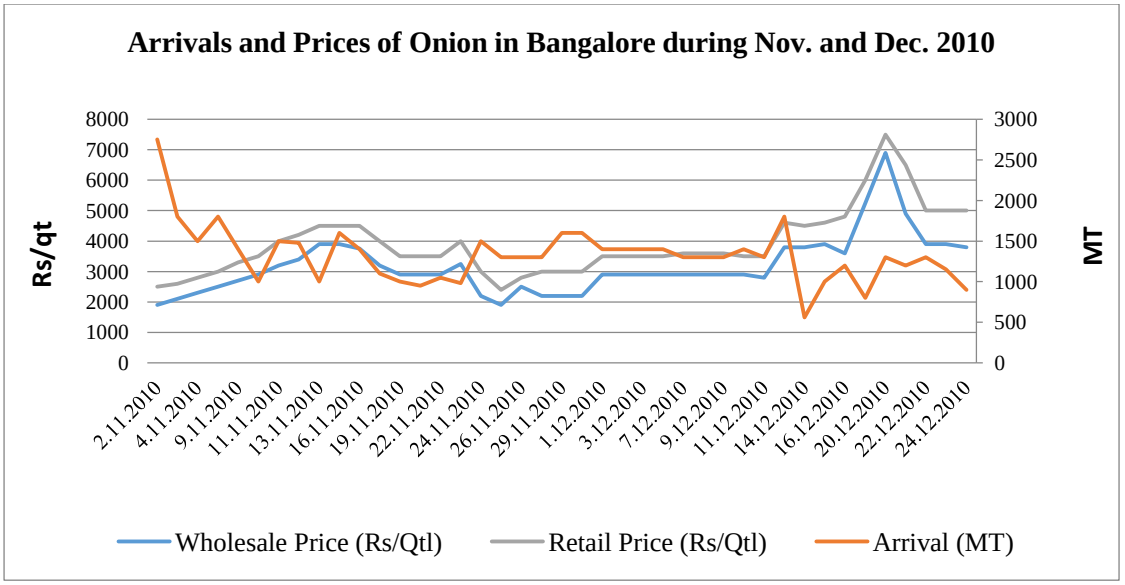
The sky rocketing of onion prices was observed during 2005 also. The rise in prices of onion during October, 2005 was mainly due to delayed sowing of kharif onion in major producing States (As per report on impact of excess rainfall on onion by ICAR). However, the policy decision to import onion again led to steep fall in the prices of onion. The prices of onion during October and November, 2005 were in the range of Rs.1000-1500 in major markets considered for the present study and declined to Rs.300-500 during January and February, 2006. In the process, it was learnt from the various research studies that, farmers suffered about 10-20 per cent losses during the *kharif* 2005 season. Very few farmers could take advantage of the higher prices that prevailed during October and November, 2005 as the *kharif* sowings were delayed. The fact that, high prices the consumers are paying are not translating into higher incomes for the farmers as revealed by the wholesale and retail price mark up analysis in the subsequent section of this paper. The inefficiencies in the marketing channels account for such a situation where in both consumers and producers do not gain.

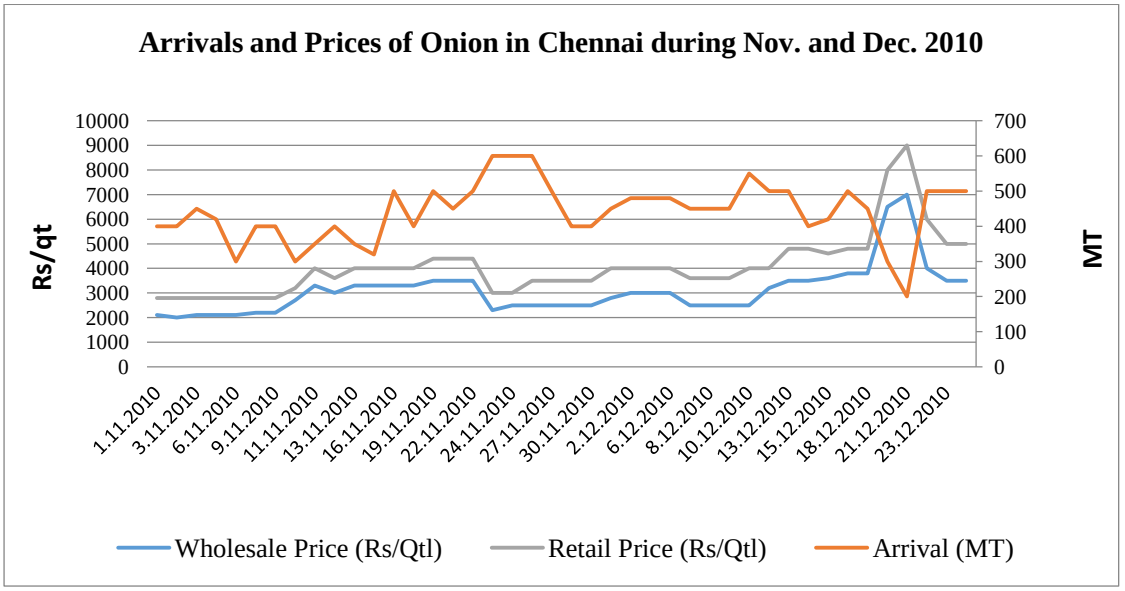
5.6 Daily Arrivals and Prices during Crisis Period of 2010

Trend in arrivals and prices of onion in different markets for November and December months during current years of the country are presented in Figure-5.8 to 5.9. It is evident from the figures that during the third week of December, prices of onion have skyrocketed and the arrivals have reduced drastically. The selected markets are mainly consuming

markets and receive secondary arrivals in sizeable proportion. The pattern of reduction in arrivals in this particular period (third week of December 2010) was partly due to low production owing to excess rainfall and partly might be due to retaining of stocks by onion traders.







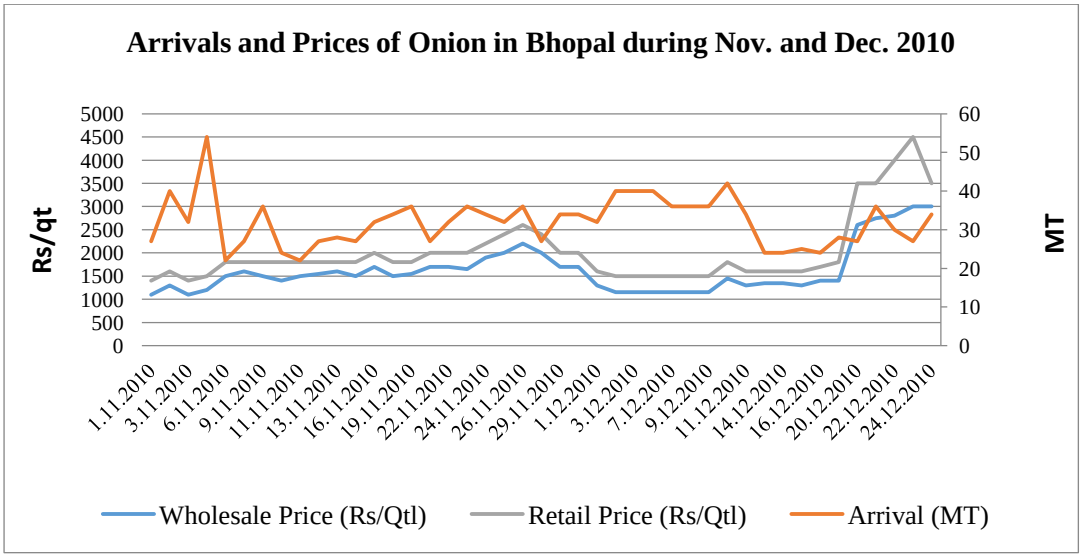


Figure-5.8: Daily Arrivals and Prices of Onion during November to December, 2010

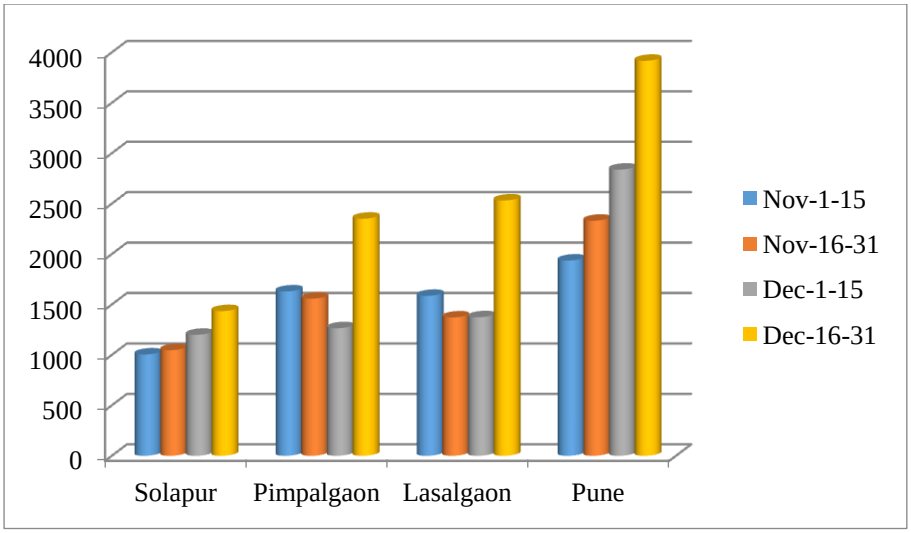


Figure-5.9: Daily Prices in Different Markets of Maharashtra during Nov-Dec-2010

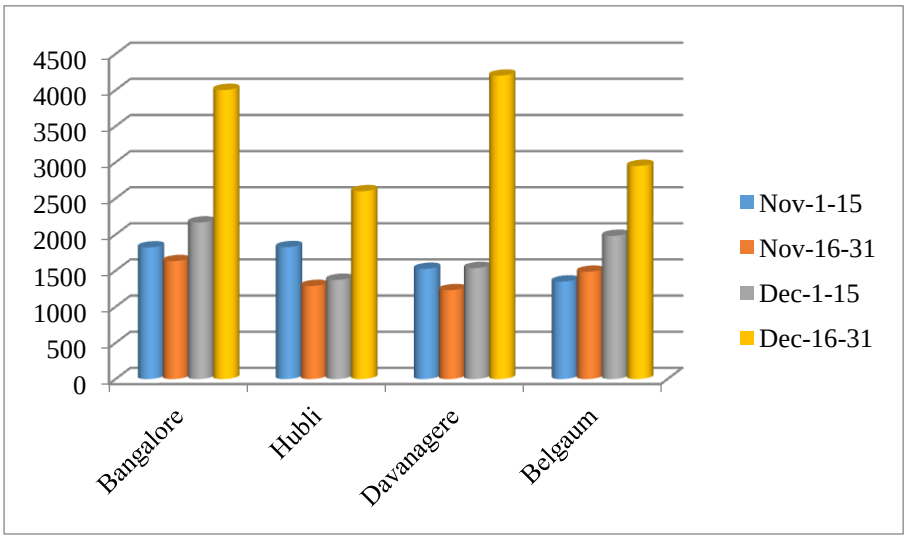


Figure-5.10: Daily Prices in Different Markets of Karnataka during Nov-Dec-2010

5.6.1 Prices and Role of Demand and Supply

The measure cause for the price crisis during 2010 in onion was mainly due to shortage of supply on account of unseasonal rains across the major onion growing states, mainly Karnataka and Maharashtra. There were no precise estimates of extent of onion crop damage due to rain across the country. However, some of the daily news paper government agencies (NHRDF) put it at 30-35 per cent in Maharashtra, 40- 50 per cent in Gujarat, 20-25 per cent in Rajasthan, 30-40 per cent in Madhya Pradesh and 15-20 per cent in Andhra Pradesh and Karnataka (NCAER, 2012). Further, Late kharif crop in Maharashtra and Gujarat were also

reported to be damaged to the extent of around 15-20 per cent by continuous heavy rains. The onion crop was affected in Andhra Pradesh and Karnataka due to cyclonic rains at the end of October. In other States such as Maharashtra, Gujarat, Madhya Pradesh and Rajasthan, the crop was affected due to untimely and erratic rains in November.

The damage caused to the onion crops increased the woes of consumers, especially during the last week of December, 2010. The price fluctuations were pretty high in consuming markets like Delhi, Kolkata, Mumbai, Pune and Chennai than the markets located in onion producing areas. The level of prices was also high among major consuming markets. In order to know the extent of fluctuations in the price during this crisis period, daily arrivals and prices were studied for both consuming markets and markets located in onion producing areas. The results are depicted in Figure-5.9. The markets in the State of Maharashtra and Karnataka were analysed as they rank first and second in production of onion respectively. Delhi was also included as it acts as a transit market for Northern States and Karnataka act as a transit point for Eastern States. They supply onion during the months of November and December.

A perusal of figures on arrivals and prices of onion during December, 2010 revealed that, the price touched a high of more than Rs.6000 in the case of Delhi, Bangalore and Chennai. It is also clear from the figures that, the arrivals for corresponding days fell sharply, indicating the shortage of supply. Thus this trend observed for Delhi market supports fact that the sudden spurt in the price towards end December may be attributed to a substantial fall in arrivals due to crop damage. Other factors might have had a very minute influence on the rise in the price. It is also speculated by some of the players in the market that, the shortage in supply of onion during this period was partly due to hoarding by some of the traders as per the feedback received by the researcher during field survey at Jaipur (Sharma etal.2011). Subsequently, some of the traders also incurred loss during this process due to

speculation of rise in the price which did not happen after December, 2010.

Though similar trends were observed in markets located at production centres, the magnitude of the price was not as high as in Delhi and other metro cities. Skyrocketing of prices during the second half of December 2010 in major producing belts of Maharashtra as well as in the major transit market of Pune was pertinent due to their supplies to consuming markets like Delhi, Jaipur and other places. However prices in Sholapur market showed a gradual increase in the modal prices over the reference period while, in the case of other markets like Pimpalgaon and Lasalgaon, modal price showed a drastic increase during December 16th to 31st.

As per the findings of the NCAER, contrary to the trends observed in Delhi market, where a sharp increase in the average modal price (62%) during last fortnight of December may be attributed to a substantial fall in arrivals (41%) during the same period. In the case of Maharashtra factors such as overall demand scenario, market information etc. seem to be holding a higher influence on the modal price. In fact, though there was only a 10% fall in total arrivals in top 10 markets of Maharashtra during the second fortnight vis-à-vis the first fortnight, the prices shot up on average by around 70% across these markets are (NCAER). The possible reason for sudden spurt in the modal prices of onion may be (Box.I) due to rise in the MEP for onion.

Box.I Notification Date	**MEP notified for the month of**	**USD (PMT C&F)**
31st August 2010	**September 2010**	**280**
13th September 2010	**Revised for remaining period of September 2010**	**355**
1st October 2010	**October 2010**	**430**
29th October 2010	**November 2010**	**380**
15th November 2010	**Revised for remaining period of November 2010**	**530**
30th November 2010	**December 2010**	**530**

Source: NAFED

As per the discussion with the officials of the NHRDF, it is learnt that, Maharashtra, apart from being the largest producer of onion, it hosts maximum number of exporters also. It is estimated that Maharashtra state accounts for about 80-85% of total onion exports from the country. Hence, it is also termed that, the export demand coupled with the hike in MEP for onion (see table- recent policy announcement) during the crisis period (November-December 2010) may have also exerted an upward influence on the prices given the constrained supply. The increase in Minimum Export Price coupled with low arrivals and partly hoarding by some of the traders led to sudden spurt in the prices of onion during 2010 across the country. A perusal of Table given below reveals that, another reason for skyrocketing of prices during December, 2010 was hike in MEP. The MEP of onion during 2010 was consistently raised from USD 280 at the beginning of September 2010 to USD 430 till end October.

Similar to the trends observed in case of Karnataka, a sudden jump in the prices of onion was observed during the latter half of December 2010. Thus the trend observed for important markets of Karnataka supports our hypothesis that the sudden spike towards end December may be attributed to a substantial fall in arrivals due to crop damage. However, since the onion crop was affected in Karnataka due to cyclonic rains at the end of October and the reported losses were in the range of 15-20% (much lower than other major producing regions) such a sudden fall in arrivals during last fortnight of December may recur in future and hence, needs attention.

A proper weather and market information in place by NAFED and timely intervention of other agencies could have been provided to avert the crisis. However, the e trend in skyrocketing of prices was not seen during 2011-12 and 2012-13. During October to January, as usual, the prices remained higher compared to other months. But to some extent there was a partial restriction on export and increase in rabi supplies averted one more crisis.

5.6.2 Policy Announcement During 2010

Month	Policy decision	Impact
1.10. 2010	Raised the minimum export price of onions by $75 to $425 a tonne for October, the third straight month in a row, to discourage overseas shipments and tame domestic prices	
2.11.2010	Reduced MEP by $50 a tonne from $425 for November to encourage exports as domestic prices are expected to soften in the near future on arrival of new kharif crop by middle of this month. This is the first reduction in onion MEP since August	Price Increase
15.11. 2010	NAFED had last increased the minimum export price (MEP) of the onion from $375 a tonne to $525 a tonne for this month	
24.11.2010	Fix the limit to a maximum of 500 tonnes daily	
Dec. 2010	Decision to import of Onion from Pakistan	
20.12.2010	Ban on Export of Onion until Jan 15, 2011 in light of skyrocketing prices of the commodity. and raise Minimum Export Price (MEP) to $1,200 per tone	
21.12.2010	DGFT prohibited export of all varieties of Onion with immediate effect and until further orders	Price decrease
21.12.2010	Reduce the basic customs duty to ‘zero' per cent from 5 per cent. Import of onions has been made duty-free against the earlier 5 per cent basic Customs duty and 4 per cent special countervailing duty applicable on the product.	Price decrease

5.7 Onion Price Rise and Consumer Behaviour in Jaipur

Onion prices have risen up to Rs 70-80 per kg in retail markets across the country from just Rs. 35-40 during November, 2010. Other key vegetables like tomato and garlic, which are commonly used by households, are also witnessing a sharp rise.

An attempt was made to find out the trends in consumption of onion with the change in the prices of onion in Jaipur city. It is apparent from the results presented in the Table-5.7 that, the extent of price paid by the consumer was as high as 148 per cent ending December third

week as compared to last week of November. In absolute terms, the price of onion rose from Rs.22.26 per kg to Rs.55.22 per kg.

Table-5.8: Onion Price Rise and Consumption Pattern in Jaipur City

S. No.	Particulars	High Income Group	Middle Income Group	Low Income Group	Overall
	Sample households (hh)	38	27	31	96
1	Av. Age	44.74	40.19	45.03	42.75
2	Av. No. of family members	6.00	5.17	4.42	5.36
3	Av. Monthly Income	61080.65	23055.56	8719.35	31667.39
4	Av. Weekly purchase of onion (Kg/week/hh)				
4.1	Nov-IV	2.58	1.45	0.82	1.64
4.2	Dec-I	2.58	1.47	0.82	1.65
4.3	Dec-II	2.25	1.19	0.52	1.34
4.4	Dec-III	1.55	0.70	0.15	0.81
5	Extent of Decline in qty purchased (kg/wk/hh)	1.03	0.75	0.68	0.83
6	Extent of Decline in qty purchased (%)	40.00	51.59	82.35	50.38
7	Price elasticity of onion demand	0.28	0.36	0.50	0.34
8	Price of onion (Rs./Kg)				
8.1	Nov-IV	25.26	22.22	19.19	22.26
8.2	Dec-I	29.68	26.07	23.65	26.49
8.3	Dec-II	33.39	29.74	27.16	30.14
8.4	Dec-III	61.94	53.89	50.97	55.22
9	Extent of weekly price rise in onion (Nov-IV wk to Dec-III wk in %)	145.21	142.50	165.55	148.12

There has been a consistent rise in the price of onion in the month of December, 2010. The rise in price was quite steep in December third week as compared to the prices in second week of December. The price rise per kg of onion for vulnerable group (lower income group) witnessed higher magnitude (165.55%) as compared to other consumers of higher income group and middle income group. Consequently, the consumers in the low income group reduced their consumption of onion by 82.35 per cent. This trend was observed in other categories of consumers also wherein the consumers in middle income group reduced the consumption of onion by 51.50 per cent and that high income group by 40 per cent. In the

mean time, prevailing wholesale prices of onion in Jaipur market were in the range of 2000 to 4000 per quintal based on quality of produce.

Traders in Jaipur reported that the arrivals from Karnataka, Maharashtra and Gujarat have come to an end by April. They were anticipating rise in price to the level of Rs.15-25 a kg. but not to the level as they were prevailing during December, 2010. They opined that, retailer is responsible for the hike in the prices of onion. An analysis of retail mark-up (Table-5.8) between wholesale and retail price (Nov-Dec. 2008 to 2010) revealed that the retail mark-up was as high as 176 per cent during December 2008 and 160 per cent during the same month of 2010. This higher mark-up of retailers also supports the opinion of the traders. Because, the tendency of the retailers observed reveals that, despite decline in wholesale price on a particular day, the retailers have sold onion at previous day's price. To prove this, researcher surveyed different markets in different localities of Jaipur. It was found that, an average quality of onion purchased from wholesaler for Rs. 20-25 a kg was sold at Rs.30-50 in retail. While wholesale price of excellent quality of the onion was around Rs. 38 a kg and was sold at Rs.60-70 in retail.

Table-5.9: Volatility of Prices and Arrivals of Onion in Jaipur Market

Month	CV Wholesale Price	CV Arrivals	CV Retail Price	Wholesale to Retail Price Mark-up
Nov, 08	12.66	24.08	14.75	170.77
Dec, 08	4.53	24.82	5.77	175.91
Nov, 09	10.43	36.27	12.37	168.87
Dec, 09	11.75	22.82	8.57	165.59
Nov, 10	8.15	33.79	7.46	158.68
Dec, 10	43.72	27.10	39.46	159.29

On the other hand, as opined by the traders, it was also observed that, due to rising trend in the price, farmers have resorted for early harvest with high moisture content leading to

weight loss for further sale. To makeup this loss, wholesalers and semi wholesalers have resorted for sale of onion at higher price.

5.8 Volatility of Prices and Arrivals of Onion in Jaipur Market

The volatility index is an index which measures *expectations* of volatility or fluctuations in price of commodities. Higher values for the volatility index indicate higher the fluctuations. To measure volatility, Co-efficient of variation was calculated for arrivals and prices of onion in Jaipur market. It is revealed from the Table-5.8 that, the variability in daily arrivals ranged between 22.82 in December, 2009 and 36.27 in November, 2009 depicting no definite pattern in variability. While the magnitude of variability in daily wholesale and retail prices were low until December, 2010. The magnitude increased to 43.72 and 39.46, respectively indicating high volatility within a shot span of time. It is interesting to note that, the retail mark up was more than 150 per cent indicating that; retailer sold the onion at double the wholesale price. In other words, retailers are on earning 40% margin over wholesale prices after meeting about 10% Mandi and other charges borne by them. This is also evident from the observation of the researcher from the field. A good quality of onion was sold at Rs.3800/qtl. While on the same day, the retail price of such quality onion was around Rs. 60-70 a kg in Jaipur city.

5.9 Trends in Exports of Onion from India

India is a traditional exporter of onion in the world. Onion exports increased in recent years after onion was removed from the official list of essential commodities and onion exports were progressively deregulated. Prior to this, exports were periodically banned or restricted, which prevented the growth in export of onion. In India, no onion production is undertaken specifically for export; however, there is a greater demand for onion grown in India.

It is apparent from the Table-5.9 that, during TE ending 1953-54 the India was exporting 39848 MT of onion valued at Rs 1.06 crores. The spurt in export of onion was

observed during the 1960s wherein, the quantum of export reached a high of 106875 thousand MT during TE-1962-63. There was substantial increase in per unit value of onion from Rs 1630 per MT during TE, 1982-83 to Rs 4065 per MT during TE, 1992-93. During recent decades, there is a tremendous growth in export of onion. It touched a peak of 1873 thousand MT during 2009-10. The quantum had touched a level of 1170 thousand MT during the financial year of 2012-13 (up to November 2012). It is surely one of the reasons for skyrocketing of prices of onion during December 2010.

Table-5.10: Trends in Export of Onion from India

Year	Quantity (MT)	Value (Rs. Lakhs)	PUV (Rs/T)	Source
TE-1953-54	39848	106	267	NAFED
TE-1962-63	106875	250	234	NAFED
TE-1972-73	87085	372	427	NAFED
TE-1982-83	181581	2959	1630	NAFED
TE-1992-93	363733	14785	4065	NAFED
TE-2002-03	460781	37407	8118	NAFED
2003-2004	8,40,717.00	82,122.59	9,768.16	NAFED
2004-2005	9,41,448.00	81,749.13	8,683.34	NAFED
2005-2006	7,78,134.00	71,596.71	9,201.08	NAFED
2006-2007	11,61,062.00	1,13,542.80	9,779.22	NAFED
2007-2008	11,01,404.00	1,28,582.30	11,674.43	NAFED
2008-2009	17,83,820.00	2,24,312.30	12,578.63	NAFED
2009-2010	18,73,002.00	2,83,428.50	15,132.31	NAFED
2010-2011	13,40,771.00	2,15,905.50	16,103.08	NAFED
2011-2012	15,52,904.00	2,14,142.90	13,789.84	NAFED

However it is revealed from the Table-5.9 that, although there has been an increasing trend in the quantum and value of exports of onion from the country, onion exports are subjected to wide fluctuations from year to year. This may be attributed to the fact that the exports of onion have not been totally free but are canalized through NAFED and now some other agencies are also involved. Such agencies are protecting the domestic consumer and producer from unduly high prices and gluts as well. These agencies have been designated to regulate export of onion considering the domestic market scenario. Also, the export of onion is regulated by reduction/enhancement through MEP. The cause of fluctuations in the exports

may also be due to fluctuations in the MEP determined during a particular period. No doubt exports of onion have fetched the country a valuable foreign exchange and at the same time have been responsible for high price per tonne to the producer as well. At the same time, consumers are also hit by the spurt in the prices of onion intermittently. The profitability and the potential offered by the exports of onion are evident from the fact that, on a national basis, the area, production and yield of onion are steadily increasing, having almost three times between 1980-81 and 2011-12 (Table-1.3).

Table-5.11: Export Destinations of Onion from India (2010-11)

Country	Qty (MT)	Value (Rs lakhs)	PUV (Rs/Ton)	Source
Bahrain	13,141.00	1,985.74	15,111.03	NAFED
Bangladesh	**916,118.00**	**141,418.68**	**15,436.73**	**NAFED**
Dammam	14,497.00	2,344.03	16,169.07	NAFED
Doha/Qatar	19,099.00	2,693.77	14,104.25	NAFED
Dubai	**149,761.00**	**19,819.37**	**13,234.00**	**NAFED**
Indonesia	8,678.00	1,395.12	16,076.52	NAFED
Kuwait	13,762.00	1,924.96	13,987.50	NAFED
Malaysia	**320,616.00**	**47,653.96**	**14,863.25**	**NAFED**
Maldives	6,103.00	1,287.38	21,094.22	NAFED
Mauritius	13,782.00	3,138.97	22,775.87	NAFED
Muscat	8,387.00	1,151.58	13,730.54	NAFED
Nepal	37,562.00	5,805.10	15,454.71	NAFED
Oman	8,047.00	891.64	11,080.40	NAFED
Pakistan	**104,637.00**	**11,168.36**	**10,673.43**	**NAFED**
Philippines	16,241.00	3,781.65	23,284.59	NAFED
Singapore	27,153.00	4,033.96	14,856.41	NAFED
Sri Lanka	**137,618.00**	**22,770.16**	**16,545.92**	**NAFED**
U.A.E	9,533.00	929.41	9,749.40	NAFED
Total	**1,873,002.00**	**283,428.50**	**15,132.31**	

India's onion exports cater mainly to the neighbouring South East Asian countries and some Middle East nations. Pakistan, Malaysia, UAE, Sri Lanka, Bangladesh, Singapore and Saudi Arabia, account for the major share of exports from India (Table-5.10).

5.10 Institutional Arrangement for Export Marketing of Onion

Exports of onions from India are regulated and permitted only through certain designated canalizing agencies. One of the prime agencies is the National Agricultural Cooperative Marketing Federation of India, Limited (NAFED), which is operating from 1974-75 till date, the sole agency meant for exports of onion from India. NAFED, was setup in 1958 with its head office in New Delhi, provide market support to various agricultural products. This market support to producers is provided by NAFED through various state level Marketing Federations, Primary Agricultural Cooperative Marketing societies and the National Cooperative Development Corporation.

This market support to producers is provided by NAFED through various state level Marketing Federations, Primary Agricultural Cooperative Marketing societies and the National Cooperative Development Corporation. During 1999, the new export–import policy of the Government of India introduced certain changes in the system of onion trade by including additional canalizing agencies for onion trade. These were the Maharashtra Agricultural Marketing Board and the Gujarat Agro Industries Corporation. In December 1999, the list was further expanded with the inclusion of Karnataka State Cooperative Marketing Federation, Andhra Pradesh Marketing Federation, Spices Trading Corporation Limited, National Consumers' Cooperative Federation, and Andhra Pradesh State Trading Corporation as canalizing agencies for onion exports.

As reported in a report prepared by NCAER, India is presently exporting onion mainly to Gulf countries, Far East countries, Bangladesh, and Sri Lanka where there is not much scope to increase the quantity as some countries have also started their own production. The scope, however, exists for diversifying the market to European countries and Japan. These countries do not prefer strong and pungent onions. In these countries, yellow onions having mild pungency, bigger bulb size with thick fleshy layers are preferred. The

possibility of growing yellow onions in Maharashtra, Orissa, Madhya Pradesh and other parts was explored by NHRDF by taking trials on farmers' fields where bulbs of new varieties could be successfully produced during late Kharif season. Evaluation of various exotic varieties has been carried out in the past and continues to be taken up by NHRDF where good bulbs with required size and quality could be produced during late Kharif season and thus their exports from February to May in electrically- ventilated containers could be explored. For this, however, contract production is preferred as there may not be much local demand for these onions. Similarly, there is scope for exporting dehydrated onions as many processing units under export-oriented unit schemes have been installed in India. These are not presently running to their installed capacity mainly for want of raw material. Thus, there is scope for development of varieties suitable for dehydration. Onion Agrifound White developed by NHRDF holds promise in this regard. This variety has already been given for evaluation under ICAR coordinated trials. The various export markets have slightly different grading requirements. The Gulf market demands slightly larger onions and pays a higher price, while Bangladesh takes smaller and cheaper ones. After grading, onions are loaded into containers for shipping to various markets. Sometimes they will be loaded on to smaller "country craft," a cheaper but more erratic form of transport than containers on cargo ships. Bangladesh regularly receives material through trucks.

The government allowed other agencies to enter into the canalized exports of onion because it did not want any agency to monopolise the sector and also to facilitate easy procurement, distribution, and exports of the commodity from the widely distributed producing centres of the country. However, NAFED continues to be a monitoring agency. Each canalizing agency is allocated a quota for exports. An inter-ministerial group comprising representatives of the ministries of Commerce, Consumer Affairs, and

Agriculture, and NAFED decide the quotas for exports to be allocated to each canalizing agency. These quotas are decided for varying periods of, say, 15 days to one month and generally not for a long period.

The share of NAFED in the total quantity exported is around 50 per cent, with the remaining being shared among the other canalizing agencies. Having been responsible for exports of onions since its inception, NAFED has been able to establish markets for Indian onion abroad, which is evident from the increasing volume of onion exports.

5.10.1 Price Support Programmes of NAFED

NAFED acts on behalf of government to provide market support to the producers and ensure that they receive a remunerative price for their product. It also undertakes support price purchases of various commodities (mainly onion) for the government. It is the key agency for implementing the price support policy programme in respect of oilseeds and coarse grains. For onion, NAFED intervenes in the domestic marketing whenever there is glut in the market and prices becomes uneconomical. Prices prevailing in major markets all over the country are reviewed every day in this process. Based on the cost of production during the current season, the procurement prices of onion are decided by NAFED. Procurement is initiated in event of crash in the price in the markets across country and from the farmers directly as well. This benefits producers, particularly the small producers, who have low storage capacity and are constrained to sell immediately after harvesting on account of financial constraints.

In case of external trade, NAFED is responsible for fixing the minimum export price (MEP) of onions, which is done on a monthly basis. The Price Fixation Committee of NAFED decides this price. Factors such as market trends, world prices, domestic prices, and margins are considered for arriving at the MEP of onion. After last year's onion price

spike, this role has been delegated to the Directorate General of Foreign Trade (DGFT) with NAFED in the advisory role of providing pricing inputs.

5.10.2 Technological and Extension Support

NHRDF (National Horticultural Research Development Foundation) was set up by NAFED to undertake research on development of varieties of onion suitable for cultivation in different agro-climatic regions of the country as well as the development of suitable production practices. NAFED has also set up units for the production of bio-fertilizers and rhizobium culture. Besides NAFED, other public research agencies like National Research Centre for Onion and Garlic, Pune are also involved in technology development and up-gradation of all aspects of onion production.

The technologies and package of practices developed are passed on to the producers through an extensive system of extension. Seed and other critical inputs are provided to farmers by NAFED. Plant protection operations have also been undertaken to provide protection against pest and disease infestations. Technical know-how is extended to farmers to improve production and productivity. Seed production is undertaken by NHRDF and sold by NAFED. NAFED has set up modern state-of-the-art storage facilities in Maharashtra, Gujarat and Tamil Nadu near its major procurement centres. Onions require storage facilities that require sufficient inflow of fresh air.

5.10.3 Canalization

Export of onion was restricted by Government of India till 1998 and was controlled through a single canalizing agency, NAFED. In 1998 the government appointed 12 other canalizing agencies for onion export as follows:

1. Maharashtra State Agricultural Marketing Board, Pune (MSAMB)
2. Gujarat Agro Industries Corporation, Ahmedabad (GAIC)
3. Karnataka State Co-operative Marketing Federation Ltd, Bangalore (KSCMF)
4. Andhra Pradesh State Trading Corporation Ltd, Hyderabad (APSTCL)

5. National Co-operative Consumers Federation of India Ltd, New Delhi (NCCF)
6. Spices Trading Corporation Ltd, Bangalore (STCL)
7. North Karnataka Onion Growers' Co-operative Society Ltd, Hubli (NKOGCS)
8. Madhya Pradesh Agro Industries Development Corporation Ltd, Bhopal (MPAIDC)
9. Andhra Pradesh State Co-operative Marketing Federation Ltd, Hyderabad (APFed)
10. Madhya Pradesh State Co-operative Oilseed Growers' Federation Ltd, Bhopal (MPOGF)
11. Karnataka Agricultural Produce Processing and Export Corporation Ltd, Bangalore
12. West Bengal State Essential Commodities Supplies Corporation Ltd, Kolkata (WBSECS)

5.11 SUPPLY CHAIN ANALYIS OF ONION

Supply chain considered in this study mainly focuses the flow of commodities from farmer to the consumer involving producers, traders and retailers. Producer is a vital link in such a model. The strengthening of producer is also crucial so as to make him competitive with other players of supply chain during transition state i.e. from unorganized to organized supply chain. Otherwise the better placed players in the commercially organized supply chain tend to take undue advantage at the cost of farmers. The real challenge will be to integrate large number of small-holder horticulture producers into the exiting supply chain and place them at par with other players. The supply-chain for horticultural products in India is highly fragmented, characterized by heavy post harvest losses, cost inefficiency and thus resulting in low producers' share in consumers' price. The supply chain seems to be skewed away from producers for its inherent features like small land holding, illiteracy, poor access to organized finance, markets and information (World Bank, 2008b).

A number of supply chains are operating in India for movement of commodity from farm gate to the ultimate consumer. Predominantly, it is still the traditional supply chain where horticultural products are routed to the unorganized retailers through the wholesale markets.

These wholesale markets are set up by the state government under Agricultural Produce Market Regulation Act wherein it is mandatory for buyers to purchase from these markets. However, these aspects including several others have been addressed in some of the leading states by introducing reforms in agricultural marketing. One such pro-active state in reforming agricultural marketing is Madhya Pradesh. The amended Act, 2005 allows direct marketing and product to flow through alternate routes. However, these channels are still in primitive stage as all the state governments have not enacted the reforms in the right spirit of the Model Act. The above observations reveal that still there exist fragmented supply chain and is characterized by lack of connection between different players. The same has been observed in the study area where supply chain consists mainly of three players, the poorly placed farmers against better placed traders and retailers.

5.12 Cultivation Pattern, Yield and Consumption Pattern of Onion in Karnataka and Maharashtra:

The study tried to elicit the information from the farmers with respect to various parameters such as, extent of area allocation, yield and utilization of onion by the farmers both in Karnataka and Maharashtra. The results of the same are presented in the Table-5.11: It is apparent from the table that, the onion cultivation is found in both the season in Maharashtra with an allocation of 38.28 percent and 23.32 percent of total cropped area respectively. On the other hand, it is cultivated only in Kharif season in Karnataka where the proportion of area put under onion is 29.58 per cent of cropped area. The kharif yields were slightly higher in Karnataka (281.60q/ha) than in Maharashtra (218.4q/ha). However, the yield of onion was much higher in the rabi season in Maharashtra (310.20q/ha) as it is grown under irrigated conditions. The concerning point with respect to both the States is that, the postharvest losses at farmer level are high (14%). Better handling, grading, harvesting at appropriate time can

lead to savings of at least 10% of these losses. Thus realisation of 10 per cent higher income is possible without any hike in the price also.

Table-5.12: Cultivation Pattern, Yield and Consumption Pattern of Onion in Karnataka and Maharashtra

S. No.	Crops	Karnataka	Maharashtra
	Average Area allotted for Onion crop (% of total cropped area) (Kharif)	29.58	38.28
	Rabi	0.00	23.32
	Yield of Kharif Onion (Qntls./ha)	281.60	218.4
	Yield of Rabi Onion	--	341.5
	Average yield of Onion	281.6	310.2
	Used for home consumption (Quintals/HH)	1.28 (0.45)	1.83 (0.59)
	Used to gift relatives/ friends (Kgs.)	39 (0.14)	56 (0.18)
	Post-harvest losses (%) at farmers level	39.34 (14.01)	38.09 (12.28)
	Total use and losses (%)	41.01 (14..56)	40.48 (13.05)
	Total marketable surplus	240.19 (85.41)	269.52 (86.93)

As depicted in the Table-5.12, the postharvest losses among intermediaries are high at Traders and Commission agent's level. The total postharvest losses put together accounts for 28.16 per cent in the case of Karnataka and 25.65 per cent in the case of Maharashtra. The postharvest losses are relatively higher in the case of Karnataka mainly due to poor keeping quality and lack of proper handling by the farmers. Moreover, the modified modern storage structures developed by NHRDF and ICAR are predominantly used by the farmers in Maharashtra and as per the feedback of the farmers the postharvest losses will be still minimized in future.

Table- 5.13: Post Harvest Losses of Onion during Marketing in the Study Area

(Per cent of total transaction)

		Karnataka			Maharashtra		
S. N.	**Particulars of Losses**	**Retailer**	**Trader**	**Wholesaler**	**Retailer**	**Trader**	**Wholesaler**
1	Loss during transportation	0.64	0.9	0.28	0.52	1.1	0.1
2	Loss during loading unloading	1.06	0.32	0	0.8	0.2	0
3	Loss during marketing	2.7	3.5	4.2	1.7	4.58	3.6
4	Total loss at marketing level	4.4	4.72	4.48	3.02	5.88	3.7

S. N.	**Level**	**Losses (%)**	
		Karnataka	**Maharashtra**
1	Farm/ Aggregation	14.56	13.05
2	Trader	4.72	5.88
3	Wholesale	4.48	3.7
4	Retail	4.4	3.02
5	Total	28.16	25.65

5.13 Marketing Cost, Margin and Price Spread of Onion in the Study Area:

An attempt has been made to workout marketing cost, margin and price spread in the value chain of onion in the State of Maharashtra and Karnataka and the results of the same are presented in the Table-5.13. There were four marketing channels found during the survey. However, only two channels were considered for value chain analysis.

1. Producer ⇨ Wholesaler (Commission agent) ⇨ Retailer ⇨ Consumer
2. Producer ⇨ Local Trader ⇨ Wholesaler (Commission agent) ⇨ Retailer ⇨ Consumer
3. Producers ⇨ Consumers
4. Producer ⇨ Retailer ⇨ Consumer

Table-5.14: Marketing Cost, Margin and Price Spread of Onion in the Study Area

		Karnataka				Maharashtra			
		Channel-I		Channel-II		Channel-I		Channel-II	
		Rs	%	Rs	%	Rs	%	Rs	%
1	Price received by the producer	754.00	49.96	887.79	58.83	805.00	51.90	974.00	64.54
2	Marketing cost of producer	0.00		92.96	6.16	0.00	0.00	115.00	
	Postharvest loss	110.01		146.23		105.05		127.11	
3	Net price received by producer	643.99	42.67	701.87	46.51	805.00	51.90	744.00	49.30
3	Marketing cost of								
	a. Village trader	48.92	3.24	-	-	38.25	2.47	-	-
	Postharvest loss	35.44				35.86			
	b. Wholesaler/CA	65.26	4.32	65.26	4.32	70.25	4.53	70.25	4.65
	Postharvest loss	36.19		44.26		27.71		31.35	
	c. Retailer	38.25		38.25	2.53	42.25	2.72	42.25	
	Postharvest loss	33.18		40.57		24.61		27.84	
5	Village trader purchase price	754.00	49.96	-	-	805.00	51.90	-	-
6	Profit of Village Trader	57.90	3.84	-	-	64.79	4.18	-	-
7	Wholesaler / CA purchase price	896.26	59.39	887.79	58.83	908.04	58.54	974.00	64.54
8	Profit of WS/CA	64.25	4.26	96.36	6.38	78.51	5.06	67.33	4.46
11	Purchase price of Retailer	1061.96	70.37	1049.41	69.53	1056.80	68.13	1111.58	73.65
	Profit of Retailer	302.00	20.01	307.16	20.35	286.54	18.47	228.53	15.14
	Consumer Price	1509.20	100.00	1509.20	100.00	1551.12	100.00	1551.12	
12	Total postharvest Losses	214.81		231.05		193.24		186.30	
13	Producer's Share in consumer price	49.96		58.83		51.90		62.79	

It is apparent from the results presented in the Table-5.13 that, the producer share in consumer rupee was least in the case of marketing channel-I involving local traders. It was 49.96 percent for Karnataka and 51.90 percent in the case of Maharashtra. In this study an attempt was made to include the postharvest losses at different stages treating it as a marketing cost (Table-5.13). A Major proportion of cost was added in the value chain at different levels of market players. The total loss per quintal was around Rs.200 per quintal accounting for around 13 percent of the consumer's price. This amount would eventually reduce with decline in the

price and increase with the rise in price, ultimately putting burden on consumers. Due to fragmented supply chain and lack of storage and perishable nature of onion, the marketing margin in the value chain is significant and needs measures to reduce it. The reduction of loss in the value chain will lead to supply of commodities at a reasonable price to consumer and will enhance realisation of income by the farmers also.

Conclusions and Recommendations

A time series analysis of trends in area and production of onion revealed that there is significant increase in onion production resulting in rise in market arrivals. However, due to unseasonal rains, the production of onion declined by about 20% in three major growing states during 2009-10 and 2010-11. To some extent, this reduction in production was offset by marginally higher production in other states like Rajasthan and MP. The magnitude of decline in production did not affect much on arrivals in the market.

The astronomical increase in the prices of onion was a result of hoarding of the stocks in anticipation of rise in the price and higher retailers mark-up. The rise in price was also partly due to reduction in MEP and consequent increase in exports during November, 2010. Moreover, the crop situations were not predicted timely and thus, the information on loss in production was not anticipated by market intelligence.

Proper staggered planting of onions with suitable varieties can address supply gap during the slack period, there by stabilizing the prices across the year uniformly. As part of market reforms, minimum support prices for onions and implementing market intelligence systems can help in discovering the right prices for producers as well as consumers. The blame game should be stopped and policies should aim at providing right price to the producers and supply of onion to the consumer at reasonable price.

Policy Recommendations

1. Results of seasonal indices, daily, monthly arrivals their prices etc. indicated the volatile nature of marketing of onion. The prices went up by more than two and half time during lean season. This indicates that, there exists a problem of storage of onion and thus none could have control on regulation of supply of onion. Moreover, during survey it was observed that, few giant players (buyers) had control over the market. This might have led to hoarding of onion stock at different points of time. This situation can be overcome by encouraging farmers to go for storage during glut season. Various agencies have developed cost effective and simple storage structure wherein onion can be stored for more than three months. Thus concerned government agencies should come forward to encourage storage and APMCs should also monitor the dominance of few traders by issuing more number of licenses.
2. The situation of 2010 was mainly due to lack of forecasting of quantity of onion produced and the loss caused by the unseasonal rainfall. Forecasting of production with appropriate meteorological observation in place would help in averting such an exceptional situations
3. The tremendous increase in area and production of onion has been attributed to the rising exports in the recent decade. However, the spurt in export should not lead to price rise. Hence, an appropriate export policy along with policy on fixing Minimum Export Price during glut season should be in place. This will bring a balance in the price discovery of onion
4. NAFED should purchase produce directly from the farmers rather than purchasing it from traders. Market intervention should be at an appropriate time so that neither producer is put under loss nor consumer is affecting by skyrocketing of prices.

5. The analysis of retail mark up in some of the markets revealed that, retailers are taking undue advantage of rise in the price. This practice should be curbed by increasing competition by allowing more number of private players, investment in retailing, storage strengthening information dissemination system.

6. The marketing cost, margin and price spread analysis revealed that, the total marketing margin is too high. It happens due to long and multiple chains in the supply chain of onion. Hence, there is a need to promote orderly marketing and linking farmer directly to retail chains.

7. Proper staggered planting of onions with suitable varieties can address supply gap during the slack period, there by stabilizing the prices across the year uniformly. As part of market reforms, minimum support prices for onions and implementing market intelligence systems can help in discovering the right prices for producers as well as consumers.

Chapter-VI References:

References

Anonymous (2012) "A Report on Competitive Assessment of Onion Markets in India" Competition Commission of India

Anonymous (2012) "A Report on Price and Competition Issues in the Indian Market for Onions" National Council of Applied Economic Research, India

Indra, T. Pushpa Jothi and M. Sendhil Velan (2004). "A Study on Marketing of Onion in Dindigul District of Tamil Nadu", Indian Journal of Agricultural Marketing, Vol. 18 (2), May-August, pp. 98-104.

Kalamkar, S.S. (2006). "Agricultural Marketing Infrastructure in Maharashtra", Agricultural

Khunt K. A., H.M. Gajipara and S. B. Vekariya (2006): "Price Behaviour of Major Vegetables in Gujarat State", *Indian Journal of Agricultural Marketing*, 20 (1); 28-37.

Kumar, Sant, P.K. Joshi and Suresh Pal. (2004) *Impact of Vegetable Research in India*. NCAP Workshop Proceedings No.13. National Centre for Agricultural Economics and Policy Research, ICAR, New Delhi.

Marketing, Vol. 18, No. 2, May-August, pp. 45-55.

Mathur, V. C. (2001): Export Potential of Onion: A Case Study of India, paper presented in "Regional Workshop on Commodity Export Diversification and Poverty Reduction in South and South-East Asia", held from 3-5 April, 2001, at Bangkok, Thailand by UNCTAD and ESCAP.

Mittal, Surabhi. (2007). Strengthening Backward and Forward Linkages in Horticulture: Some Successful Initiatives. *Agricultural Economics Research Review*, 20 (Conf. Issue): 457-469.

Murthy, D. Sreenivasa and T.M. Gajanana; M. Sudha and V. Dakshinamoorthy (2009). "Marketing and Post-Harvest Losses in Fruits: Its implications on Availability and Economy", Indian Journal of Agricultural Marketing, Vol. 64, No. 2, April-June, p 260-273

NHB. (2011) Horticulture Database, 2010, National Horticulture Board, Gurgaon, India

Samra, et. al. (2006): "*Impact of Access Rains on Yield, Market Availability and Prices of Onion*", Information Bulletin - Hyderabad: Central Research Institute for Dry land Agriculture (ICAR)

Shalendra, Gummagolmath, K. C. and P. Sharma. (2011) ICT Initiatives in Indian Agriculture-An Overview. *Indian Journal of Agricultural Economics*. 66 (3):489-497.

Sharma, P., K. C. Gummagolmath and R. C. Sharma (2011). Prices of Onion: An Analysis, Economic and Political Weekly, Vol. XLVI (2); 22-25.

Shroff, Sangeeta (2004). "Marketing of Onions in Maharashtra", Indian Journal of Agricultural

Shroff, Sangeeta; S.S. Kalamkar and Jayanti Kajale (2011). 'Impact of Emerging Marketing Channels in Agriculture Marketing in Maharashtra: Benefit to Producers-Sellers, Marketing Costs and Margins of Major Agricultural Commodities", Pune: Gokhale Institute of Politics and Economics.

Situation in India, Vol. LXII, No. 7, October 2005, pp. 489-500.

Sudhir, B. (2004): "Onion Prices and State Intervention", *Economic and Political Weekly*, August 14, 2004; 3684-3686.

World Bank. (2008b) *India: Taking Agriculture to the Market*. Report No. 35953-IN, World Bank.

Annexure

Market Intervention Scheme of Government of Karnataka

Karnataka is also one of the main growing regions of potato, onion, tomato, chillies and other horticultural crops. Horticulture crops occupy about 15.2 Lakh hectares of land with an annual production of about 97 Lakh tones. Although, the area comprises only 14 per cent of the net cultivated area in the State, the total income generated from horticulture crops account to over 40 per cent of the total income derived from the agricultural sector as whole. All these crops are not covered under MSP. With liberalized international trade in agricultural and horticultural commodities under WTO regime, the farmers growing these crops are likely to encounter the situation of volatile prices. IN the absence of safety net in the form of MSP and government market intervention, the producers were often faced with the problem of distress sale and getting lower price, which not only distorted incentives to production but also adversely affected their livelihood. IN the case of these horticultural crops, due to occasional glut in production and lack of effective local demand, a large proportion of the produce was destroyed, resulting in heavy losses to farmers.

Recognizing the critical importance of agricultural price policy and the need for government intervention, the Government of Karnataka, with its strong commitment to the welfare of farming community, has passed. The Agricultural Policy Resolution in 1999, which stressed the need to bring in "Price and Market Reforms" in the agricultural sector of the State "Farmers in Karnataka often complain that they produce more only to get a lower price for their produce, indicating the absence of any affected support policy in the State. While it is recognized that the Central Government announces support prices of several agricultural commodities, but the support mechanism remains effective basically for wheat and rice and that too primarily in the north-western States. There are several occasions when prices of coarse cereals go below minimum support prices announced by the Centre…."

The price policy implemented by the Government of Karnataka is known as "Floor Price Scheme for Agricultural / horticultural commodities in Karnataka". The floor price as per the policy resolution means a price declared by the Government of Karnataka as minimum price for a commodity having the prescribed Fair Average Quality (FAQ) standards to be purchased under the FPS, not covered by MSP of Government of India. The objective of the Floor Price Scheme (FPS) is to protect the farmers against distress sale of agricultural / horticultural commodities by assuring minimum support price. Para-36 of the policy resolution, however clearly states as follows:

Thus, the intention of the FPS is not to fix or control the market prices of agricultural produce. Pricing of produce would be determined by the market forces overall demand and supply conditions. The policy of providing a floor price support is only to act as an instrument against any sudden and precipitous fall in its price below the floor price announced by the Government. This would prevent distress selling by farmers during conditions of glut in production or a consequence of inadequate or ineffective demand. The FPS is also expected to operate as complementary to MSP scheme of Government of India and not as a substitute for it. To start with, the FPS is expected to applicable to onion and potato growth in Karnataka and it could be extended as and when considered necessary by the Government of Karnataka to cover other agricultural/ horticultural commodities, which are not covered under MSP of Government of India. The FPS can be also operated to supplement the MSP scheme for commodities which is covered under it if necessary. The FPS is applicable in the whole of Karnataka State in agricultural and horticultural produce.

The operational features of the FPS are stipulated as under:

1. A Revolving Fund was established for funding the operation of the FPS through contribution, for the Revolving Fund has come from the State Government contribution, Central Government contribution and the contribution of Agricultural

Produce Marketing Committees (APMCs) of the State by way of a part of the market fee levied for the produce marketed. The Revolving Fund would be replenished using the sale proceeds of the commodities procured under FPS as well as from contribution of APMCs from the market levy from time to time. The Karnataka Agricultural Marketing Board (KSAMB) as an apex marketing body is made responsible for maintenance and operation of the Revolving Fund.

2. Agriculture Price Commission was set up at the State level to advise the State Government on the measures necessary for effective implementation of the price policy for all agricultural and horticultural commodities. A Cabinet Sub-Committee of concerned agricultural ministries under the Chairmanship of Minister of Agriculture constituted to take decisions regarding fixation of floor price grade, opening of purchasing points, marketing arrangements etc.

3. A State Level Committee (SLC) under the Chairmanship of Additional Secretary / Development Commissioner-cum-Agricultural Production Committee, Government of Karnataka comprising Secretaries of concerned ministries and heads of the Departments and The Director of Agricultural Marketing, Government of Karnataka and the Managing Director of KSAMB as convener was set up to implement and oversee the planning and implementation of the FPS.

4. A District Level Committee (DLC) under the Chairmanship of the divisional Commissioner of the District was constituted at district level for effective operation of FPS. The composition of the DLC included the Chief Executive Officer of Zillah Parishad, District Heads of concerned agricultural departments, Deputy Registrar of Cooperative Societies, representative of Lead Bank, Member of KSAMB representative of Purchasing Agency and Deputy Director of Agricultural Marketing as convener.

5. The procurement under the fps WOULD BEMADEBY THE Purchase Agency authorized by the Cabinet Sub-Committee of the State Government from time to time to purchase the specified agricultural / horticultural commodities. The purchase agencies authorised mainly included public sector and cooperative marketing bodies.

6. The modus operandi for procurement operation as envisaged under the scheme is as under:

- All notified commodities procured under the scheme should meet the FAQ standards and no purchase to be made of commodities which do not meet the FAQ standards.
- The Purchasing Agency should make immediate payment to farmers and settle the accounts towards purchase of commodities.
- The Purchasing agency should properly transport, trade, store and handle the commodities purchased under this scheme so as to avoid quantitative and qualitative losses.
- The commodities procured under the scheme by the Purchasing Agency should be disposed of as early as possible and should not be kept beyond the normal shelf life.

In pursuance of the Floor Price Policy objectives and with its commitment to the welfare farmers, Karnataka State Government has set up Agricultural Price commission (KAPC) with well defined terms of reference. Ti s preamble States: ***"It has been felt the need for the constitution of an independent, professional and technically qualified State Agricultural Price Commission. The Commission will recommend standard prices that can be sustained in the market and the support prices at which the State Government may intervene in the market"/*** As per the terms of reference set out by the State Government, the

main function of the APC is to estimate costs of production as per the methodology already laid down by the Government of India under MSP policy and recommend minimum support prices for crops, which do not fall within the purview of the Government of India minimum support price policy.

The Floor Price Scheme has come into operation since 1999. It is operated through a Revolving Fund set up by the government of Karnataka. The Revolving Fund is administered by the KSAMB as an apex marketing body. The scheme is implemented mainly through government agencies and public sector and cooperative marketing bodies as procurement agencies. Under the scheme, the Government as so far released over Rs.500 crore for market intervention operations for fourteen notified crops. The scheme e is in operation during the last seven years.

Though the pricing intervention for agricultural and horticultural products is a continuous phenomenon, the monitoring the evaluation of the operation of the scheme periodically is critically important to ensure effective functioning of price policy and realization of its set objectives. The evaluation is also essential to examine the performance of institutional mechanism involved for undertaking minimum support price procurement storage disposal operations with a view to improve their institutional capability for effective market intervention under the scheme.

Market Intervention for Perishable Crops: Onion

The Government of India's Minimum Support Price policy coves almost all the cereals, oilseeds and pulses besides cotton and sugarcane. It does not include perishable horticultural crops. These crops have in fact serious marketing problems in the absence of processing facilities and due to perishability and lack of storability. Moreover, any glut in production results in sudden and precipitous fall in prices and distress selling, which affect adversely

farmers' livelihood. The State Government Floor Price Policy is, therefore, more intended to provide support mechanism to farmers who produce perishable horticultural crops, which are not covered under the Minimum Support Price Policy of the Government of India. Accordingly, the State Government in its FPS has accorded top priority to potato, onion, tomato and chillies.

Karnataka is one of the major producers of onion. Due to glut in production and precipitous fall in prices of onion during crop year 2006-07, the State Government intervened massively in the market under the FPS to protect the interest of onion growers. In this chapter, an attempt is made to evaluate the performance and efficacy of the Government market intervention operations and to examine whether onion growers have really benefited under the FPS and whether the Government has achieved the set policy objectives.

Minimum Support Price for Onion:

87 per cent of onion in Karnataka is grown as rainfed crop during Kharif season. In Dharwad, Gadag and Chithradurga Districts which are the main onion growing districts, it is grown as rainfed crop in 98 per cent of the total area and production. The risk and uncertainty involved in the production of onion in these districts are very high due to vagaries of nature. Moreover the local variety of onion growth is of poor quality with high moisture content and highly perishable. Because of the high perish ability of the type of onion grown; farmers in these districts are often faced with the problem of precipitous depression in prices, resulting in distress sale. Therefore, assurance of minimum remunerative and stable price environment for onion growers is considered as imperative to protect the income of farmers.

In pursuance of the Floor Price Policy objectives, the Karnataka Agricultural Price Commission has for the first time estimated cost of production of onion based on the methodology laid down by the Commission for agricultural Cost and Prices. Based on the cost of production estimate, the Commission had recommended a minimum support price of

Rs.340 per quintal of FAQ onion for the crop year 2001-02. Prior to the prevailing minimum procurement price fixed by the State Government for market intervention was Rs.300 per quintal. Since there were no changes in prices of important inflation in general, the minimum support price for onion remained unchanged at Rs.300 per quintal till 2005-06. Though during this period, the wholesale price for onion was fluctuating around Rs.800 to 1000 per quintal, the farm level market price remained stagnant at Rs.360 per quintal.

During the crop year 2005-06, due to pressure from the farmers' organizations, Karnataka Agricultural Price Commission has reviewed the minimum support price for onion and fixed at Rs.370 per quintal of FAQ onion. Annexure provides data on per acre estimate of cost of production and the basis of recommending the minimum support price for onion for the crop season 2006-07.

Though the APC has recommended the minimum support price of Rs.370 per quintal, the State Government, due to political pressures, has increased the minimum support price for onion initially to Rs.400 per quintal and subsequently, to Rs.500 per quintal. Moreover, the Government has, for the first time, fixed minimum support price for three different grades as under:

Grade –I	Rs.500 per quintal
Grade –II	Rs.270 per quintal
Grade-III	Rs.100 per quintal

Market Intervention Operations:

Announcement of minimum support prices for agricultural commodities does not automatically mean direct Government intervention in the market at minimum support prices every crop year. The Government intervention would be only as a last resort, whenever the market prices fall below the minimum prices and when there is no buyer at the minimum price. With the Government intervention, the market price is expected to recover and stabilize at

price above the MSP. Whenever market prices are above the minimum fixed by the Government, farmers are free to sell at the prevailing market prices. The question of the Government intervention does not arise.

The Government market intervention operations with minimum support price under the FPS actually took place for onion only thrice during the last eight years of its implementation. In the first year of operation 1999-2000, it was only marginal intervention. The total amount disbursed from the Revolving Fund for the procurement operation during that year was only Rs.1.06 crore. The quantity of onion procured was 3204 tons, mainly in Dharwad and Belgaum districts. During the crop years 2004-05 and 2006-07, the Government market interventions in onion market were significantly higher. Table-I shows the magnitude of the Government market intervention in the onion market in different districts.

Table–I: Government's Market Intervention in the Onion Market

(Amount –Rs. in crore; Quantity procured in Tons)

Districts	1999-2000		2004-05		2006-07	
	Amount	Quantity	Amount	Quantity	Amount	Quantity
Dharwad	**0.98**		**5.75**		**62.00**	**105936**
Gadag	**0.08**		**4.73**		**16.67**	**26958**
Belgaum			**--**		**6.47**	**10212**
Chithradurga			**0.50**		**--**	**--**
Bijapur			**0.50**		**--**	**--**
Bagalkote			**0.50**		**0.01**	**13**
Koppal			**0.50**		**--**	**--**
Raichur			**0.50**		**0.04**	**88**
Total	**1.06**	**3204**	**12.98**	**26333**	**85.19**	**143207**

Note: Amount includes besides price payable to farmers, transport costs, storage costs and margin for Purchasing Agencies.

During the crop year 2004-05, the Government market intervention involved procurement of 26,333 tons of onion at the cost of Rs.12.98 crore. As against this, during the crop year 2006-07, the Government involvement has increased more than five times. The quantity procured has gone up to 1, 43,207 tons and the financial outlay has gone up to Rs.85.19 crore. Surprisingly, the main thrust areas for market intervention during all these three years were Dharwad, Gadag and Belgaum districts. In other important onion growing districts such as Chitradurga, Bijapur and Bellary, the market intervention was only marginal. The number of onion growers covered under this scheme also increased fourfold from 7,982 during 2004-05 to 31,689 during 2006-07. The highest number of farmers benefited under this program was from Dharwad district, accounting for 67 per cent of the total followed by Gadag district with 23 per cent and Belgaum with nine per cent.