Ushus J B Mgt 13, 4 (2014), 1-36
ISSN 0975-3311 | doi: 10.12725/ujbm.29.1

Integrated Supply Chain Management of Vegetables in Jhansi Division of Uttar Pradesh

Ram Kumar Jha* and Anshul Kumar Jain†

Abstract

The study has been made on backward Jhansi division of Uttar Pradesh. Two stage stratified random sampling method has been adopted to collect the information from vegetables growers. Total 114 vegetables growers categorized marginal, small and large farmers, 22 middlemen and 20 retailers have been chosen to complete the present study. Objectives of the study are i) to examine the trends and percent growth rates for the area, production and productivity of different vegetable crops; ii) to estimate the trend for arrival and market prices of different vegetable crops; iii) to calculate the yearly arrival index for vegetables arrival in selected mandies, and iv) to judge integrated supply chain management of vegetables marketing in selected region.

Middlemen purchased vegetables at six percent commission on per quintal basis from producers and sold to retailer by charging three percent mandishulk on per quintal basis. Middlemen also provide space to keep their produce and stay at night for farmers in mandi.

*Policy Analyst, CUTS International, D–217, Bhaskar Marg, Bani Park, Jaipur, Rajasthan and Visiting Professor, CCDR, Lalitpur (UP); ram_econ@yahoo.co.in

†Research Scholar, Department of Management, JJTU, Jhunjhunu (Rajasthan) at Centre for Communication & Development Research, Lalitpur (Uttar Pradesh) as research centre;anshul.kcc@gmail.com

The study finds that Lalitpur and Jhansi districts have potential to increase the productivity of tomato through better governmental support. Under the marketing chain management the channel II was found most favored channel in the study area, as maximum (about 90%) quantity of produce was sold through this channel by small and large farmers.

Keywords: Arrivals, Market prices, Retention, Marketing chain management, Vegetables

1. Introduction

Horticultural products play a major role in modern society and economy. The constant growth in vegetables productivity is important for stability of the Indian economy with improving the productivity of land, generating employment throughout the year, improving economic conditions of the farmers and entrepreneurs, enhancing exports, and providing nutritional security to the people. Vegetables are part of everyday meals, including special high-value diets for infants and the elderly.

Uttar Pradesh achieved only three percent growth against the planned four percent for agriculture sector in eleventh five years plan. Therefore, in twelfth five years plan, to achieve the multidimensional potential of agricultural development in the state, government has made necessary changes in the present Agriculture Policy 2013 keeping in view the future challenges of the state.

It is mentioned in National Horticulture Board (NHB), Report - 2013 that in vegetables production, India is next to China with an annual production of 87.53 million tons from 5.86 million hectares (Mha) having a share of 14.4 per cent to the world production. Per capita consumption has also increased from 95 gram to 175 gram per day. Potato is the most widely grown vegetable crop in the country with a share of 25.7 per cent. The area under potato cultivation is 1992.2 thousand ha with total production of 45343.6 thousand metric ton (MT). Uttar Pradesh is the leading potato growing state in the country with a production of 13576.6 thousand MT followed by West Bengal and Bihar in 2013. Tomato occupies

second position amongst the vegetable crops in terms of production. The total production of tomato in the country in 2012-13 is 18226.6 thousand MT from an area of 879.6 Andhra Pradesh is the largest grower of tomato with a production of 5218.10 thousand MT. The other main tomato growing states are Bihar, Karnataka, Maharashtra and Orissa. Brinjal occupies the third position amongst vegetable crops. The production of brinjal in the year 2012-13 was 13443.6 thousand MT from an area 722.1 Tha. West Bengal is the largest producer of brinjal followed by Maharashtra and Bihar. The other main states growing brinjal are Karnataka, Maharashtra, Gujarat, Andhra Pradesh, Assam and Madhya Pradesh. Cauliflower occupies the sixth position amongst vegetable crops. The production of cauliflower in the year 2012-13 was 7887 thousand MT from an area 402 Tha. West Bengal is the largest producer of cauliflower followed by Bihar, Madhya Pradesh and Maharashtra. The other main states growing cauliflower are Karnataka, Maharashtra, Gujarat, Andhra Pradesh, and Assam. Okra occupies the good position amongst vegetable crops. The production of okra in the year 2012-13 was 6350 thousand MT from an area 231 Tha. Andhra Pradesh is the largest producer of Okra followed by West Bengal, Bihar and Maharashtra. The other main states growing of okra are Karnataka, Maharashtra, Gujarat, Assam and Madhya Pradesh. Onion occupies the third position amongst vegetable crops. The production of onion in the year 2012-13 was 16813 thousand MT from an area 1052 Tha. Maharashtra is the largest producer of onion followed by Madhya Pradesh and Karnataka. Bihar, Gujarat, Haryana and Rajasthan are the other onion growing states.

Farmers are shifting from staple crops to high-value cash crops farming such as fruits, and vegetables. This adaptation from subsistence systems to commercial agriculture poses new challenges for improving and maintaining productivity and quality to secure food security. Supply chain of horticulture is the big issue being a perishable commodity. Potato, onion can be stored for few months but other than these produce need markets to sale. Proper supply chain and suitable price attract farmers to sell their produces. Supply chain management plays an integral role in keeping business costs at a minimum and profitability as high as possible. Farmers producing agricultural produce are scattered in

remote villages while consumers are in semi-urban and urban areas. There are different marketing channels through which this produce reaches the consumer for its final use and consumption.

Agricultural produce market committee (APMC) Act has the clause to strengthen public-private approach in agricultural marketing. But the UP government did not adopt this act due to external pressure of middlemen (Amar Ujala, 2014). Kasturi (2014) pointed that the traders being the main beneficiaries of the raised prices of vegetables over an extended period this year. The trigger for rising prices can be varied - a lower harvest, an unexpected rise in demand, damage to standing crops, or even delayed sowing. Most farmers – lacking the ability to store produce – would not have gained as prices remained low in the harvest period. According to the World Bank (2007), the food supply chain linking food production with food consumption and human nutrition can be considered in terms of five pathways, namely, (1) subsistence-oriented production for the household's own consumption, (2) Income-oriented production for sale in markets, (3) reduction in real food prices associated with increased agricultural production, (4) empowerment of women as agents instrumental to household food security and health outcomes, and (5) indirect relationship between increasing agricultural productivity and nutrition outcomes through the agriculture sector's contribution to national income and macroeconomic growth.

Minister of State for Agriculture Tariq Anwar was speaking that the vegetable supply chain is crying out for reform. The government is well aware of what ails the supply chain, as the quote below shows. If farmers get paid Rs 10 per kg, while the consumers pay anywhere between Rs 80-100 per kg of onion, there is obviously something seriously wrong in the way onion market operates ... we know that there are governance issues related to licensing of wholesalers, issues related to holding capacity of farmers, issues related to market prices information and a number of issues related to the whole supply chain which creates the kind of pricing contradiction (Anwar, 2013).

Though vegetables retail has been considered as a very low-margin business but the market potential has attracted Indian business

houses and corporate, driving the forays through different models like single-format, multi format or integrated urban-rural models (Sengupta, 2008). Therefore, an attempt has been made in this paper i) to examine the trends and percent growth rates for the area, production and productivity of different vegetable crops; ii) to estimate the trend for arrival and market prices of different vegetable crops; iii) to calculate the yearly arrival index for vegetables arrival in selected mandies, and iv) to judge integrated supply chain management of vegetables marketing in selected region.

2. Methodology

The study has been made on backward division of Uttar Pradesh named Jhansi division. Division comprises three districts: Jhansi, Lalitpur and Jalaun on the basis of secondary and primary information.

2.1 Secondary Data

The secondary information is collected for area, production, productivity, arrival and market prices of tomato, brinjal, potato, onion, okra, bottle gourd, torai and cauliflower in Jhansi, Lalitpur, Jalaun districts and Jhansi division. The data has been compiled from various government department of Uttar Pradesh viz. Department of Horticulture and Food Processing, Uttar Pradesh (Statistics Department), Directorate of Agriculture and Marketing, Uttar Pradesh, District Agriculture Offices of Jhansi, Lalitpur and Jalaun districts. The data were available from 2005 to 2012 for the selected study area.

2.2 Percent Growth Rates (PGR)

To find out the percent growth rates and trend in Production, Area, and Productivity of selected vegetables in selected areas the following formula has been adopted.

$$\text{Percent Growth Rates (PGR)} = \frac{Y2 - Y1}{Y1} x100$$

Where,

Y_1 = First year's area /production/ productivity of vegetables crop

Y_2 = Last year's area/ production/ productivity of vegetables crop

2.3 Yearly Arrival Index

Yearly Arrival Index has been calculated with the help of following formula.

$$\text{Yearly Arrival Index} = \frac{\text{Yearly Arrival}}{\text{Average Arrival}} x100$$

2.4 Primary Data

The primary information has been collected from Lalitpur district of Jhansi division. There are six blocks in Lalitpur district of Uttar Pradesh (UP) viz. Bar, Birdha, Jakhoura, Madavra, Mahroni, and Talbehat. Two stage stratified random sampling method has been adopted to collect the information from vegetables growers. At first stage, three blocks i.e., Mahroni, Birdha and Jakhoura were selected through random sampling method. Pre-tested questionnaire has been used to collect the information from vegetables growers at second stage and total 114 vegetables growers categorized marginal (up to 2.5 acre land), small (> 2.5 acre land to 5 acre land) and Large (> 5 acre land) farmers, 22 middlemen *(aadatiya)* and 20 retailers have chosen to complete the present study. The reference year was 2012-13.

2.5 Limitations of the Study

a) Unavailability of secondary information in the government offices because the record were not maintained properly.

b) It was very difficult to get information from the farmers at a first visit because of their illiteracy and hesitation.

3. Results and Discussion

3.1 Vegetable Economy of Selected Regions

This section gives a brief account of vegetables economy of selected regions. This is examined in terms of the production and productivity of major vegetables at the district and divisional level. This is followed by a brief account of the market arrival and market prices along with arrival index of products in different selected mandies.

Table 1 outlines area, production and productivity of tomato, brinjal, potato, onion, okra, bottle gourd, torai and cauliflower in Jhansi, Lalitpur, Jalaun districts and Jhansi division. The maximum cultivated area for potato was in all three selected districts followed by onion. Much variation was not found in productivity of brinjal, potato, onion, okra, bottle gourd, torai and cauliflower. In Lalitpur district tomato production was highest in 2009-10 it was 2821 metric ton (MT). It was due to rise in area. The productivity throughout the selected time period was not fluctuated much more. Among the three districts maximum area covered by Jalaun district for tomato cultivation. It is seen that highest productivity for onion was in 2011-12 in Lalitpur district i.e., 22 metric ton/hectare. It was also found that the tomato productivity was also highest in Jalaun district. Therefore, Lalitpur and Jhansi districts have potential to increase the productivity of tomato through better governmental support.

Table 2 deals with yearly percent growth rates (PGR) of area, production and productivity of tomato, brinjal, potato, onion, okra, bottle gourd, torai and cauliflower in Jhansi, Lalitpur, Jalaun districts and Jhansi division. It informed regarding percentage change in present year compare to previous year. PGR shows that the selected area had much variation in cultivated area and production for selected vegetables.

Table 3 shows arrival, average market price and arrival indices for selected vegetables in selected areas. The total arrival indicated presence of vegetables in the different vegetable mandies and arrival index presented vegetables consistent presence in the mandies i.e., higher the index higher amount of quantity arrived in the mandies.

3.2 Supply Chain Management

The existing supply chain management channels of vegetables marketing by which the sampled farmers disposed of their surplus produce were found to be Middlemen and retailers. Some consumer's purchase directly from the producers at the village levels thereby saving on it and thus save marketing expenses. Sometimes, the producers directly take their vegetables produce to sale to the consumers. They pay Rs. 10-15 per quintal more than the

market price but in turn save all other marketing expenses. But at the time when supply increases consumers pay a significantly lesser amount to the producers for their produce. The supply chain management channels are present in below chart 1.The performance of these channels is presented below:

Channel I: Producer – Consumer (P-C): It was observed in the present study that producers directly sold their vegetables to consumers in rural, semi-urban and urban areas. There was no role of middlemen / intermediaries *(aadatiya)* in this channel. In this channel, the producer enjoyed cent percent share in the price paid by consumer (table 4).

Channel II: Producer – Middlemen – Retailer – Consumer (P-M-R-C): The outcome of the survey is that this channel is very common for all categories of farmers. In this channel producers sold their produce to Middlemen *(aadatiya)* and Middlemen sold to retailers and retailers sold to consumers. The end price of the produce is quite high and the producer's share in the price paid by the consumer has been observed quite low (table 4). This implies that the profit share of producer reduced while the consumers got the vegetables at higher price.

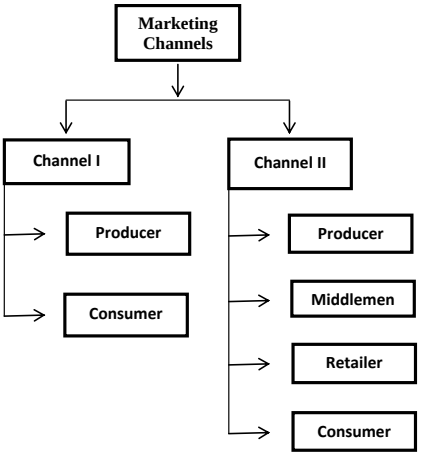

Chart 1: Supply Chain Management of Vegetables in Lalitpur District

3.3Grading, Transportation and Storing

In the selected study area vegetables growers were not grading their produce. They picked vegetables from their field and make *bora bandi* to carry in mandi. On the other hand the middlemen and retailers were grading the purchased vegetables for earning maximum profit.

Vegetables growers, middlemen and retailers used tractors, buses and taxis to carry vegetables from village to Lalitpur vegetable mandi. The vegetables growers of Mahroni block were using buses from block to Lalitpur bus stand and after that they used *haththela* and rickshaw from bus stand to mandi. From Birdha block, vegetables growers were coming by taxies and from Jakhoura block vegetables growers were bringing their produce through small loading truck *(chhotahathi)* and taxies. For direct selling (Producer to Consumer), vegetables growers and retailers used cycle and *haththela* to sell vegetables at towns and villages.

Vegetables growers did not store vegetables in home and warehouse. They were taking some amount for their home consumption. Even though, some middlemen were storing potato and onion at their shop for selling out in city at maximum price.

3.4 Production, Retention and Marketed Surplus

Table 4 outlines the total production, retention and marketed surplus of selected vegetables in selected areas. Marginal, small and large farmers sold more than 90 percent of their vegetables production into the market. The reason behind is this vegetables are considered as crops and help to fulfill farmer's daily needs and secondly vegetables are perishable and consumed within two to three days except potato and onion because these can be stored for few months. In all selected study areas retention rate was higher (60.5 percent) for Bottle Gourd in Birdha block for marginal farmers followed by large farmers (20.4) in Mahroni block. This shows that farmers were consuming some percentage of their vegetable produce even for some of the vegetables retention was zero means these were sold in to the market. Under the supply chain management the channel II was found most favored channel in the study area as maximum (about 90%) quantity of produce was sold

with this channel by small and large farmers. Channel I was mostly liked by marginal farmers.

3.5Role of Intermediaries in Vegetables Supply Chain Management

Middlemen /wholesalers /commission agents played important role in vegetables marketing. They purchased vegetables at 6 percent commission on per quintal basis from producers and sold to retailer by charging 3 percent mandi shulk on per quintal basis. Thereafter, middlemen / commission agents were responsible for depositing mundi shulk in municipality.

Table 4 depicts how much quantity of vegetables produce was sold to middlemen from total marketed surplus of both the channels. This confers middlemen's role in vegetables supply chain in the study area. In Jakhoura block, all the selected farm size categories and in Birdha block small and large farm size categories sold their cent percent vegetables produce to middlemen. Marginal farmers sold cent percent produce of Onion and Okra in Mahroni block and Torai in Birdha block to middlemen. Middlemen also provide space to keep their produce and stay at night for farmers in mandi. At some occasions middlemen also provide credits to farmers for fulfilling their agricultural and family daily needs.

4. Conclusions

On the basis of above analysis it is concluded that Lalitpur district was on top in tomato production in 2009-10 with 2821 metric ton (MT). It was due to rise in area. The productivity throughout the selected period did not fluctuate much. Among the three districts maximum area covered by Jalaun district for tomato cultivation. Lalitpur and Jhansi districts have potential to increase the productivity of tomato by better governmental support. Percent Growth Rates (PGR) informed regarding percentage change in present year compare to previous year. PGR shows that the selected cultivated area under selected vegetables and production have been showing much variation for selected vegetables.

In the selected study area vegetables growers were not grading their produce. They picked vegetables from field and make *bora bandi* to carry in mandi. On the other hand the middlemen and

retailers were grading the purchased vegetables for earning maximum profit. Preferred transportation modes were tractors, buses and taxies. But for retail selling cycle and *haththela* were mostly used. Vegetables growers did not store vegetables in home and warehouse.

The total arrival indicated presence of vegetables in the different vegetable mandies and yearly arrival index shows vegetables consistent presence in the mandies i.e., higher the yearly arrival index higher amount of quantity arrived in the mandies. In all selected study areas retention rate was higher (60.5 percent) for Bottle Gourd in Birdha block for marginal farmers followed by large farmers (20.4) in Mahroni block. This shows that farmers were consuming some percentage of their vegetable produce even for some of the vegetables retention was zero means these were sold in to the market. Under the supply chain management the channel II was found most favored channel in the study area as maximum (about 90%) quantity of produce was sold with this channel by small and large farmers. Though channel I mostly liked by marginal farmers.

Middlemen purchased vegetables at 6 percent commission on per quintal basis from producers and sold to retailer by charging 3 percent mandishulk on per quintal basis. In Jakhoura block all the selected farm size categories and in Birdha block small and large farm size categories were sold their cent percent vegetables produce to middlemen. Middlemen also provide space to keep their produce and stay at night for farmers in mandi. At some occasions middlemen also provide credits to farmers for fulfilling their agricultural and family daily needs.

Therefore, value chain promotion is an effective way of fostering rural-urban linkages. Shifting towards cash crops cultivation requires proper marketing facilities. Government should re-think on issues of better price and marketing facilities for vegetables products producers.

References

Amar Ujala (2014). Uttar Pradesh farmers shifting to high value cash crops, Hindi daily news paper, New Delhi, Sunday, August 10. Retrieved from http://www.amarujala.com/news/samachar/business/up-farmers-shifting-to-high-value-cash-crops-hindi-news/ accessed on August 10, 2014.

Anwar, T. (2013), Governance deficit pushing onion prices upwards: MoS for agriculture Tariq Anwar, *Economic Times*, 8 November 2013.

Kasturi, K (2014), Have farmers benefitted from high vegetable prices in 2013?,*Economic & Political Weekly*, XLIX(5), pp 14-17

NHB Report (2013), National Horticulture Board, Government of India. Retrieved from http://nhb.gov.in/

Sengupta, A. (2008), Emergence of modern Indian retail: Anhistorical perspective, *International Journal of Retail & Distribution Management,* 36(9), pp 689-700.

World Bank (2007), *From Agriculture to Nutrition: Pathways, Synergies and Outcomes*, Report No 40196-GLB (Washington DC: The International Bank for Reconstruction and Development / The World Bank).

Table: 1Area, Production and Productivity of Selected Vegetables (2005 -06 to 2011-12)

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Tomato	2005-06	12	325	27.08	8	329	41.13	1	41	41.00	21	695	33.10
	2006-07	12	356	29.66	7	281	40.14	1155	55056	47.67	1174	55693	47.44
	2007-08	13	481	37.00	5	201	40.20	306	14652	47.88	324	15334	47.33
	2008-09	45	1669	37.09	14	563	40.21	269	12885	47.90	328	15117	46.09
	2009-10	76	2821	37.12	14	564	40.29	259	12409	47.91	349	15794	45.26
	2010-11	49	1839	37.53	14	568	40.57	378	18137	47.98	441	20544	46.59
	2011-12	53	1986	37.47	15	613	40.87	408	19588	48.01	476	22187	46.61
Brinjal	2005-06	22	672	30.55	18	549	30.50	1	67.2	67.2	41	1893	46.17
	2006-07	22	673	30.59	21	645	30.71	13	673	51.8	56	1991	35.55
	2007-08	12	367	30.58	7	215	30.71	9	367	40.8	28	949	33.89
	2008-09	17	520	30.59	14	430	30.71	6	520	86.7	37	1470	39.73
	2009-10	26	801	30.81	10	308	30.80	3	80.1	26.7	39	1910	48.97
	2010-11	44	1363	30.98	36	1115	30.97	2	136.3	68.2	82	3841	46.84
	2011-12	48	1527	31.81	40	1249	31.23	2	152.7	76.4	90	4303	47.81

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Potato	2005-06	403	9050	22.46	402	9030	22.46	334	7502	22.46	1139	25582	22.46
	2006-07	391	8617	22.04	421	9279	22.04	495	10910	22.04	1307	28806	22.04
	2007-08	214	4755	22.22	322	7154	22.22	411	9132	22.22	947	21041	22.22
	2008-09	435	8937	20.55	438	8999	20.55	441	9061	20.55	1314	26997	20.55
	2009-10	349	8652	24.79	436	10809	24.79	396	9818	24.79	1181	29279	24.79
	2010-11	373	9008	24.15	441	10650	24.15	493	11905	24.15	1307	31563	24.15
	2011-12	517	11416	22.08	642	14176	22.08	597	13182	22.08	1756	38774	22.08
Onion	2005-06	146	2059	14.10	75	994	13.25	155	2102	13.56	376	5155	13.71
	2006-07	136	2543	18.70	44	684	15.55	96	1454	15.15	276	4681	16.96
	2007-08	97	1048	10.80	76	880	11.58	94	1818	19.34	267	3746	14.03
	2008-09	185	2190	11.84	34	477	14.03	195	2803	14.37	414	5470	13.21
	2009-10	172	2875	16.72	42	639	15.21	525	7893	15.03	739	11407	15.44
	2010-11	153	2682	17.53	64	1000	15.63	342	5043	14.75	559	8725	15.61
	2011-12	151	3322	22.00	34	512	15.06	464	5617	12.11	649	9451	14.56

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Okra	2005-06	5	70	14.0	60	653	10.88	66	925	14.02	131	1648	12.58
	2006-07	1	14	14.0	75	821	10.95	3	42	14.00	79	877	11.10
	2007-08	12	168	14.0	83	909	10.95	20	280	14.00	115	1357	11.80
	2008-09	23	331	14.39	62	670	10.81	30	425	14.17	115	1426	12.40
	2009-10	61	879	14.41	51	558	10.94	309	4457	14.42	421	5894	14.00
	2010-11	17	251	14.76	55	605	11.00	45	670	14.89	117	1526	13.04
	2011-12	18	266	14.78	57	641	11.25	47	710	15.11	122	1617	13.25
Bottle gourd	2005-06	2	76	38.0	13	359	27.62	13	351	27.00	28	786	28.07
	2006-07	2	79	39.5	13	360	27.69	18	495	27.50	33	934	28.30
	2007-08	3	83	27.67	11	305	27.73	31	855	27.58	45	1243	27.62
	2008-09	3	139	27.8	6	166	27.67	13	359	27.62	22	664	30.18
	2009-10	5	139	27.8	8	223	27.88	10	278	27.80	23	640	27.83
	2010-11	5	150	30.0	20	565	28.25	10	283	28.30	35	998	28.51
	2011-12	6	157	26.16	22	628	28.55	11	314	28.55	39	1099	28.18

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Torai	2005-06	1	12	12.0	11	171	15.55	7	109	15.57	19	292	15.37
	2006-07	2	13	6.5	3	45	15.00	16	257	16.06	21	315	15.00
	2007-08	1	15	15.0	2	31	15.50	21	338	16.10	24	384	16.00
	2008-09	2	31	15.5	8	125	15.63	23	372	16.17	33	528	16.00
	2009-10	2	31	15.5	3	47	15.67	24	398	16.58	29	476	16.41
	2010-11	1	18	18.0	11	204	18.55	21	389	18.52	33	611	18.52
	2011-12	1	18	18.0	13	234	18.00	24	447	18.63	38	699	18.39
Cauliflower	2005-06	26	524	20.15	13	263	20.23	1	20	20.00	40	807	20.18
	2006-07	32	645	20.16	3	61	20.33	2	23	11.50	37	729	19.70
	2007-08	7	141	20.14	5	101	20.20	1	34	34.00	13	276	21.23
	2008-09	25	504	20.16	6	122	20.33	1	20	20.00	32	646	20.19
	2009-10	39	788	20.21	1	20	20.00	2	40	20.00	42	848	20.19
	2010-11	15	308	20.53	56	1151	20.55	7	144	20.57	78	1603	20.55
	2011-12	17	351	20.65	62	1280	20.65	8	165	20.63	87	1796	20.64

Source: *Statistics section, State Horticulture Department, Lucknow (U.P.)*
Units: *Area in Hectares, Production in Metric Tons, and Productivity in Metric Tons/Hectare*

Table: 2 Annual Growth Rates of Area, Production and Productivity of Selected Vegetables (2006 -07 to 2011-12)

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Tomato	2006-07	0.0	9.5	9.5	-12.5	-14.6	-2.4	115400.0	134182.9	16.3	5490.5	7913.4	43.3
	2007-08	8.3	35.1	24.7	-28.6	-28.5	0.1	-73.5	-73.4	0.4	-72.4	-72.5	-0.2
	2008-09	246.2	247.0	0.2	180.0	180.1	0.0	-12.1	-12.1	0.0	1.2	-1.4	-2.6
	2009-10	68.9	69.0	0.1	0.0	0.2	0.2	-3.7	-3.7	0.0	6.4	4.5	-1.8
	2010-11	-35.5	-34.8	1.1	0.0	0.7	0.7	45.9	46.2	0.1	26.4	30.1	2.9
	2011-12	8.2	8.0	-0.2	7.1	7.9	0.7	7.9	8.0	0.1	7.9	8.0	0.0
Brinjal	2006-07	0.0	0.1	0.1	16.7	17.5	0.7	1200.0	901.5	-23.0	36.6	5.2	-23.0
	2007-08	-45.5	-45.5	0.0	-66.7	-66.7	0.0	-30.8	-45.5	-21.2	-50.0	-52.3	-4.7
	2008-09	41.7	41.7	0.0	100.0	100.0	0.0	-33.3	41.7	112.5	32.1	54.9	17.2
	2009-10	52.9	54.0	0.7	-28.6	-28.4	0.3	-50.0	-84.6	-69.2	5.4	29.9	23.3
	2010-11	69.2	70.2	0.6	260.0	262.0	0.6	-33.3	70.2	155.2	110.3	101.1	-4.3
	2011-12	9.1	12.0	2.7	11.1	12.0	0.8	0.0	12.0	12.0	9.8	12.0	2.1

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Potato	2006-07	-3.0	-4.8	-1.9	4.7	2.8	-1.9	48.2	45.4	-1.9	14.7	12.6	-1.9
	2007-08	-45.3	-44.8	0.8	-23.5	-22.9	0.8	-17.0	-16.3	0.8	-27.5	-27.0	0.8
	2008-09	103.3	87.9	-7.5	36.0	25.8	-7.5	7.3	-0.8	-7.5	38.8	28.3	-7.5
	2009-10	-19.8	-3.2	20.6	-0.5	20.1	20.6	-10.2	8.4	20.6	-10.1	8.5	20.6
	2010-11	6.9	4.1	-2.6	1.1	-1.5	-2.6	24.5	21.3	-2.6	10.7	7.8	-2.6
	2011-12	38.6	26.7	-8.6	45.6	33.1	-8.6	21.1	10.7	-8.6	34.4	22.8	-8.6
Onion	2006-07	-6.8	23.5	32.6	-41.3	-31.2	17.4	-38.1	-30.8	11.7	-26.6	-9.2	23.7
	2007-08	-28.7	-58.8	-42.2	72.7	28.7	-25.5	-2.1	25.0	27.7	-3.3	-20.0	-17.3
	2008-09	90.7	109.0	9.6	-55.3	-45.8	21.2	107.4	54.2	-25.7	55.1	46.0	-5.8
	2009-10	-7.0	31.3	41.2	23.5	34.0	8.4	169.2	181.6	4.6	78.5	108.5	16.9
	2010-11	-11.0	-6.7	4.8	52.4	56.5	2.8	-34.9	-36.1	-1.9	-24.4	-23.5	1.1
	2011-12	-1.3	23.9	25.5	-46.9	-48.8	-3.6	35.7	11.4	-17.9	16.1	8.3	-6.7

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Okra	2006-07	-80.0	-80.0	0.0	25.0	25.7	0.6	-95.5	-95.5	-0.1	-39.7	-46.8	-11.8
	2007-08	1100.0	1100.0	0.0	10.7	10.7	0.0	566.7	566.7	0.0	45.6	54.7	6.3
	2008-09	91.7	97.0	2.8	-25.3	-26.3	-1.3	50.0	51.8	1.2	0.0	5.1	5.1
	2009-10	165.2	165.6	0.1	-17.7	-16.7	1.2	930.0	948.7	1.8	266.1	313.3	12.9
	2010-11	-72.1	-71.4	2.4	7.8	8.4	0.5	-85.4	-85.0	3.3	-72.2	-74.1	-6.9
	2011-12	5.9	6.0	0.1	3.6	6.0	2.3	4.4	6.0	1.5	4.3	6.0	1.6
Bottle Gourd	2006-07	0.0	3.9	3.9	0.0	0.3	0.3	38.5	41.0	1.9	17.9	18.8	0.8
	2007-08	50.0	5.1	-29.9	-15.4	-15.3	0.1	72.2	72.7	0.3	36.4	33.1	-2.4
	2008-09	0.0	67.5	0.5	-45.5	-45.6	-0.2	-58.1	-58.0	0.1	-51.1	-46.6	9.3
	2009-10	66.7	0.0	0.0	33.3	34.3	0.8	-23.1	-22.6	0.7	4.5	-3.6	-7.8
	2010-11	0.0	7.9	7.9	150.0	153.4	1.3	0.0	1.8	1.8	52.2	55.9	2.4
	2011-12	20.0	4.7	-12.8	10.0	11.2	1.1	10.0	11.0	0.9	11.4	10.1	-1.2

Vegetables	Years	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity	Area	Production	Productivity
Torai	2006-07	100.0	8.3	-45.8	-72.7	-73.7	-3.5	128.6	135.8	3.1	10.5	7.9	-2.4
	2007-08	-50.0	15.4	130.8	-33.3	-31.1	3.3	31.3	31.5	0.2	14.3	21.9	6.7
	2008-09	100.0	106.7	3.3	300.0	303.2	0.8	9.5	10.1	0.4	37.5	37.5	0.0
	2009-10	0.0	0.0	0.0	-62.5	-62.4	0.3	4.3	7.0	2.5	-12.1	-9.8	2.6
	2010-11	-50.0	-41.9	16.1	266.7	334.0	18.4	-12.5	-2.3	11.7	13.8	28.4	12.9
	2011-12	0.0	0.0	0.0	18.2	14.7	-3.0	14.3	14.9	0.6	15.2	14.4	-0.7
Cauliflower	2006-07	23.1	23.1	0.0	-76.9	-76.8	0.5	100.0	15.0	-42.5	-7.5	-9.7	-2.4
	2007-08	-78.1	-78.1	-0.1	66.7	65.6	-0.6	-50.0	47.8	195.7	-64.9	-62.1	7.8
	2008-09	257.1	257.4	0.1	20.0	20.8	0.6	0.0	-41.2	-41.2	146.2	134.1	-4.9
	2009-10	56.0	56.3	0.2	-83.3	-83.6	-1.6	100.0	100.0	0.0	31.3	31.3	0.0
	2010-11	-61.5	-60.9	1.6	5500.0	5655.0	2.8	250.0	260.0	2.9	85.7	89.0	1.8
	2011-12	13.3	14.0	0.6	10.7	11.2	0.5	14.3	14.6	0.3	11.5	12.0	0.4

Source: Computed

Table: 3 Pattern of Arrival and Price of Selected Vegetables in Selected Region

Vegetables	Year	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price
Tomato	2005	3138	160.10	779.25	76010	78.02	617.75	NA	-	NA	79148	67.75	698.50
	2006	3291	167.91	714.25	84415	86.65	490.00	NA	-	NA	87706	75.07	602.13
	2007	2677	136.58	744.67	52511	53.90	698.00	840.50	2.89	1137.33	56028	47.96	860.00
	2008	1166	59.49	941.83	43497	44.65	789.75	2216.10	7.62	1272.07	46879	40.13	1001.22
	2009	841	42.91	875.33	145692	149.55	987.99	2318.20	7.97	878.96	148851	127.41	914.09
	2010	829	42.30	1064.42	102195	104.90	1104.60	106138.33	365.01	988.78	209162	179.03	1052.60
	2011	755	38.52	998.75	209985	215.54	914.42	55302.60	190.19	885.12	266043	227.72	932.76
	2012	1538	78.47	1078.08	181205	186.00	929.17	7653.90	26.32	953.46	190397	162.97	986.90

Vegetables	Year	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price
Brinjal	2005	4628	179.83	521.83	14585	43.81	353.63	NA	-	NA	19213	48.88	437.73
	2006	4018	156.12	544.67	17145	51.49	417.71	NA	-	NA	21163	53.84	481.19
	2007	2938	114.16	531.33	45222	135.82	418.08	804.80	23.42	404.62	48965	124.58	451.35
	2008	1409	54.75	705.58	30400	91.30	641.00	1172.60	34.13	685.67	32982	83.91	677.42
	2009	639	24.83	628.17	35382	106.27	700.65	1512.70	44.02	655.06	37534	95.49	661.29
	2010	744	28.91	728.92	40365	121.23	706.70	2031.30	59.12	579.51	43140	109.76	671.71
	2011	662	25.72	914.50	54885	164.84	745.17	9551.50	277.97	759.87	65099	165.62	806.51
	2012	1029	39.98	911.33	61475	184.64	799.75	5543.90	161.34	687.30	68048	173.13	799.46
Potato	2005	79866	107.17	485.92	379547	125.02	403.25	NA	-	NA	459413	116.14	444.58
	2006	89485	120.08	585.92	273430	90.06	516.33	2037.50	8.17	611.14	364953	92.26	571.13
	2007	62620	84.03	592.92	241780	79.64	571.75	5913.60	23.71	584.83	310314	78.45	583.17
	2008	82305	110.44	361.58	315285	103.85	346.58	7367.90	29.55	374.11	404958	102.37	360.76
	2009	106131	142.42	807.75	339367	111.78	390.56	5571.00	22.34	833.01	451069	114.03	677.11
	2010	62688	84.12	498.58	363450	119.71	460.10	98154.80	393.60	531.22	524293	132.54	496.64
	2011	56760	76.17	496.75	461040	151.86	431.58	34272.90	137.43	430.41	552073	139.56	452.91
	2012	41375	55.52	847.08	404450	133.22	811.00	21246.80	85.20	818.72	467072	118.07	825.60

Vegetables	Year	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price
Onion	2005	49185	128.67	585.75	96085	87.35	479.75	NA	-	NA	145270	98.04	532.75
	2006	60395	158.00	414.92	91223	82.93	345.83	679.7	4.34	442.27	152298	102.78	401.01
	2007	41439	108.41	940.17	103978	94.53	856.67	2954.4	18.88	938.00	148371	100.13	911.61
	2008	51073	133.61	554.50	87190	79.27	509.92	2891.9	18.49	613.53	141155	95.26	559.32
	2009	14621	38.25	937.33	NA	-	NA	2052.5	13.12	1042.16	16674	11.25	659.83
	2010	18675	48.86	952.17	126360	114.88	801.1	18346.65	117.27	801.94	163382	110.26	851.74
	2011	16280	42.59	971.08	146965	133.61	836.83	72386.6	462.70	868.27	235632	159.02	892.06
	2012	25280	66.14	692.92	155175	141.07	625.08	10198.0	65.19	625.29	190653	128.67	647.76
Okra	2005	1268	121.57	688.17	6200	53.86	1590.67	NA	-	NA	7468	59.49	1139.42
	2006	1368	131.16	668.88	4315	37.49	682.5	NA	-	NA	5683	45.27	675.69
	2007	1564	149.95	795.56	7405	64.33	807.2	NA	-	NA	8969	71.45	534.25
	2008	615	58.96	1749.75	7700	66.89	641.6	NA	-	NA	8315	66.24	797.12
	2009	279	26.75	1278.00	12473	108.36	1200.76	NA	-	NA	12752	101.58	826.25
	2010	308	29.53	1164.33	17175	149.21	1329.7	NA	-	NA	17483	139.27	831.34
	2011	428	41.04	1452.10	23946	208.03	1115.63	NA	-	NA	27374	194.16	855.91
	2012	589	56.47	1270.44	29952	260.21	1359.67	NA	-	NA	30541	243.28	876.70

Vegetables	Year	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price
Bottle Gourd	2005	3208	172.45	410.33	33430	107.32	299.6	NA	-	NA	36638	108.90	354.97
	2006	2909	156.38	443.00	41470	133.13	315.44	NA	-	NA	44379	131.91	379.22
	2007	2270	122.03	507.50	37017	118.84	350.7	551.50	52.19	477.07	39839	118.41	445.09
	2008	1302	69.99	708.50	30085	96.58	555.0	1083.40	102.53	709.26	32470	96.51	657.59
	2009	595	31.99	539.00	26685	85.67	987.88	1214.90	114.97	622.76	28495	84.70	716.55
	2010	709	38.11	599.25	27285	87.59	1254.0	562.10	53.19	659.07	28556	84.88	837.44
	2011	632	33.97	748.00	36786	118.09	738.08	642.90	60.84	762.59	38061	113.13	749.56
	2012	1035	55.64	768.50	47850	153.61	724.17	2285.40	216.28	641.25	51170	152.09	711.31
Torai	2005	1544	145.89	768.00	NA	-	NA	NA	-	NA	1544.00	32.09	768.00
	2006	1465	138.43	690.43	NA	-	NA	NA	-	NA	1465.00	30.45	690.43
	2007	1341	126.71	533.29	NA	-	NA	NA	-	NA	1341.00	27.87	533.29
	2008	581	54.90	940.57	NA	-	NA	NA	-	NA	581.00	12.08	940.57
	2009	318	30.05	903.86	NA	-	NA	NA	-	NA	318.00	6.61	903.86
	2010	296	27.97	918.00	3645	48.60	1220.0	10.80	388.49	932.67	3951.80	82.14	1023.56
	2011	425	40.16	1284.11	9735	129.81	1197.57	3.10	111.51	830.16	10163.10	211.26	1103.95
	2012	963	90.99	1492.75	16374	218.34	1356.44	13.90	500.00	881.41	17350.90	360.67	1243.54

Vegetables	Year	Lalitpur			Jhansi			Jalaun			Jhansi Division		
		Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price	Total Arrival	Yearly Index	Average Market Price
Cauliflower	2005	2657	217.31	530.50	29990	128.67	410.4	NA	-	NA	32647.00	132.84	470.45
	2006	2230	182.38	585.43	6556	28.13	316.33	NA	-	NA	8786.00	35.75	450.88
	2007	790	64.61	592.25	23087	99.05	533.8	NA	-	NA	23877.00	97.15	563.03
	2008	789	64.53	1155.20	22373	95.99	521.0	NA	-	NA	23162.00	94.24	838.10
	2009	467	38.19	958.67	21186	90.90	768.55	NA	-	NA	21653.00	88.10	863.61
	2010	462	37.79	1158.30	20000	85.81	1267.43	5.5	3.58	427.27	20467.50	83.28	951.00
	2011	571	46.70	1215.58	43015	184.55	1154.8	299.3	195.07	376.44	43885.30	178.56	915.61
	2012	690	56.43	1139.63	44940	192.81	1318.5	155.5	101.35	872.66	45785.50	186.29	1110.26

Source: *Department of Agriculture Marketing, NavinGallaMandiof Jhansi, Lalitpur and Jalaun (U.P.);*
Unit: *Arrival in Quintal, Price in Rupees; NA: Not available*

Table: 4 Total Production, Retention and Marketed Surplus of Selected Vegetables (Unit: In quintal)

Vegetables	Farm Size Group	Total Production				Marketed Quantity				Retention				Total No. of Farmers			
		Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Tomato	Marginal	328	360	41	729	321 (97.9)	342 (95.0)	39.5 (96.3)	702.5 (96.4)	7 (2.1)	18 (5.0)	1.5 (3.7)	26.5 (3.6)	4 (100.0)	6 (100.0)	2 (100.0)	12 (100.0)
	Small	680	70	150	900	672 (98.8)	62 (88.6)	147 (98.0)	881 (97.9)	8 (1.2)	8 (11.4)	3 (2.0)	19 (2.1)	5 (100.0)	2 (100.0)	2 (100.0)	9 (100.0)
	Large	300	395	330	1025	294 (98.0)	377 (95.4)	311 (94.2)	982 (95.8)	6 (2.0)	18 (4.6)	19 (5.8)	43 (4.2)	4 (100.0)	8 (100.0)	2 (100.0)	14 (100.0)
Brinjal	Marginal	266	368	488	1122	257 (96.6)	355 (96.5)	485 (99.4)	1097 (97.8)	9 (3.4)	13 (3.5)	3 (0.6)	25 (2.2)	5 (100.0)	6 (100.0)	2 (100.0)	13 (100.0)
	Small	540	238	92	870	526 (97.4)	222 (93.3)	89 (96.7)	837 (96.2)	14 (2.6)	16 (6.7)	3 (3.3)	33 (3.8)	5 (100.0)	4 (100.0)	2 (100.0)	11 (100.0)
	Large	380	888	221	1489	355 (96.5)	866 (97.5)	213 (96.4)	1442 (96.8)	18 (4.7)	22 (2.5)	8 (3.6)	48 (3.2)	8 (100.0)	7 (100.0)	4 (100.0)	19 (100.0)

Vegetables	Farm Size Group	Total Production				Marketed Quantity				Retention				Total No. of Farmers			
		Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Potato	Marginal	470	1050	390	1910	445 (94.7)	990 (94.3)	381 (97.7)	1816 (95.1)	25 (5.3)	60 (5.7)	9 (2.3)	94 (4.9)	2 (100.0)	4 (100.0)	3 (100.0)	9 (100.00)
	Small	610	1135	155	1900	577 (94.6)	1101 (97.0)	148 (95.5)	1826 (96.1)	33 (5.4)	34 (3.0)	7 (4.5)	74 (3.9)	4 (100.0)	5 (100.0)	2 (100.0)	11 (100.00)
	Large	1360	2070	445	3875	1320 (97.1)	2003 (96.8)	428 (96.2)	3751 (96.8)	40 (2.9)	67 (3.2)	17 (3.8)	124 (3.2)	8 (100.0)	9 (100.0)	4 (100.0)	21 (100.0)
Onion	Marginal	120	167	30	317	119 (99.2)	160 (95.8)	29 (96.7)	308 (97.2)	1 (0.8)	7 (4.2)	1 (3.3)	9 (2.8)	1 (100.0)	3 (100.0)	1 (100.0)	5 (100.0)
	Small	45	250	77	372	40 (88.9)	210 (84.0)	74 (96.1)	324 (87.1)	5 (11.1)	40 (16.0)	3 (3.9)	48 (12.9)	2 (100.0)	4 (100.0)	2 (100.0)	8 (100.0)
	Large	149	197	247	593	136 (91.3)	180 (91.4)	238 (96.4)	554 (93.4)	13 (8.7)	17 (8.6)	9 (3.6)	39 (6.6)	6 (100.0)	6 (100.0)	5 (100.0)	17 (100.0)
Okra	Marginal	110	152	40	302	109 (99.1)	150 (98.7)	39 (97.5)	298 (98.7)	1 (0.9)	2 (1.3)	1 (2.5)	4 (1.3)	1 (100.0)	2 (100.0)	1 (100.0)	4 (100.0)
	Small	185	0	24	209	178 (96.2)	0 (0.0)	20 (83.3)	198 (94.7)	7 (3.8)	0 (0.0)	4 (16.7)	11 (5.3)	6 (100.0)	0.0 (0.0)	2 (100.0)	8 (100.0)
	Large	410	32	90	532	403 (98.3)	29 (90.0)	90 (100.0)	522 (98.1)	7 (1.7)	3 (9.4)	0 (0.0)	10 (1.9)	6 (100.0)	1 (100.0)	2 (100.0)	10 (100.0)

Vegetables	Farm Size Group	Total Production				Marketed Quantity				Retention				Total No. of Farmers			
		Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Bottle Gourd	Marginal	290	200	82	572	283 (97.6)	79 (39.5)	80 (97.6)	442 (97.8)	7 (2.4)	121 (60.5)	2 (2.4)	130 (22.7)	4 (100.0)	2 (100.0)	1 (100.0)	7 (100.0)
	Small	510	147	170	827	406 (79.6)	144 (98.0)	164 (96.5)	714 (86.3)	104 (20.4)	3 (2.0)	6 (3.5)	113 (13.7)	4 (100.0)	2 (100.0)	3 (100.0)	9 (100.0)
	Large	410	660	760	1830	382 (93.2)	640 (97.0)	748 (98.4)	1770 (96.7)	28 (6.8)	20 (3.0)	12 (1.6)	60 (3.3)	5 (100.0)	7 (100.0)	2 (100.0)	14 (100.0)
Torai	Marginal	68	187	50	305	67 (98.5)	181 (96.8)	49 (98.0)	297 (97.4)	1 (1.5)	6 (3.2)	1 (2.0)	8 (2.6)	1 (100.0)	4 (100.0)	1 (100.0)	6 (100.0)
	Small	210	72	0	282	205 (97.6)	70 (97.2)	0 (0.0)	275 (97.5)	5 (2.4)	2 (2.8)	0 (0.0)	7 (2.5)	3 (100.0)	2 (100.0)	0 (0.0)	5 (100.0)
	Large	132	210	0	342	124 (93.9)	201 (95.7)	0 (0.0)	325 (95.0)	8 (6.1)	9 (4.3)	0 (0.0)	17 (5.0)	5 (100.0)	6 (100.0)	0 (0.0)	11 (100.0)
Cauliflower	Marginal	0	0	0	0	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0. 0)	0 (0.0)	0 (0.0)
	Small	565	0	0	565	559 (98.9)	0 (0.0)	0 (0.0)	559 (98.9)	6 (1.1)	0 (0.0)	0 (0.0)	6 (1.1)	4 (100.0)	0 (0.0)	0 (0.0)	4 (100.0)
	Large	330	78	156	564	305 (92.4)	68 (87.2)	152 (97.4)	525 (94.4)	25 (7.6)	10 (12.8)	4 (2.6)	39 (6.9)	3 (100.0)	1 (100.0)	2 (100.0)	6 (100.0)

Tomato			Vegetables		
Large	Small	Marginal	Farm Size Group		
44 (15.0)	192 (28.6)	213 (66.4)	(17)	**Mahroni**	**I (P-C)**
0 (0.0)	0 (0.0)	150 (43.9)	(18)	**Birdha**	
0 (0.0)	30 (20.4)	0 (0.0)	(19)	**Jakhoura**	
44 (4.5)	222 (28.6)	363 (51.7)	(20)	**Combined**	
1 (25.0)	2 (40.0)	2 (50.0)	(21)	**Mahroni**	**No. of Farmers**
0 (0.0)	0 (0.0)	1 (16.7)	(22)	**Birdha**	
0 (0.0)	91 (50.0)	0 (0.0)	(23)	**Jakhoura**	
1 (7.1)	3 (33.3)	3 (25.0)	(24)	**Combined**	
250 (85.0)	480 (71.4)	108 (33.6)	(25)	**Mahroni**	**II (P-W-R-C)**
377 (100.0)	62 (100.0)	192 (56.1)	(26)	**Birdha**	
311 (97.5)	117 (79.6)	39.5 (100.0)	(27)	**Jakhoura**	
938 (95.5)	659 (74.5)	339.5 (48.3)	(28)	**Combined**	
3 (75.0)	3 (60.0)	2 (50.0)	(29)	**Mahroni**	**No. of Farmers**
8 (100.0)	2 (100.0)	5 (83.3)	(30)	**Birdha**	
2 (100.0)	1 (50.0)	2 (100.0)	(31)	**Jakhoura**	
13 (92.9)	6 (66.7)	9 (75.0)	(32)	**Combined**	

Brinjal			Vegetables		
Large	Small	Marginal	Farm Size Group		
0 (0.0)	340 (64.6)	49 (19.1)	(17)	**Mahroni**	**I (P-C)**
0 (0.0)	0 (0.0)	120 (33.8)	(18)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(19)	**Jakhoura**	
0 (0.0)	340 (40.6)	169 (15.4)	(20)	**Combined**	
0 (0.0)	1 (20.0)	1 (20.0)	(21)	**Mahroni**	**No. of Farmers**
0 (0.0)	0 (0.0)	2 (33.3)	(22)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(23)	**Jakhoura**	
0 (0.0)	1 (9.1)	3 (23.2)	(24)	**Combined**	
362 (100.0)	186 (35.4)	208 (81.0)	(25)	**Mahroni**	**II (P-W-R-C)**
866 (100.0)	222 (100.0)	235 (66.0)	(26)	**Birdha**	
213 (100.0)	89 (100.0)	485 (100.0)	(27)	**Jakhoura**	
1441 (100.0)	497 (59.4)	928 (84.6)	(28)	**Combined**	
8 (100.0)	4 (80.0)	4 (80.0)	(29)	**Mahroni**	**No. of Farmers**
7 (100.0)	4 (100.0)	4 (66.7)	(30)	**Birdha**	
4 (100.0)	2 (100.0)	2 (100.0)	(31)	**Jakhoura**	
19 (100.0)	10 (90.9)	10 (76.9)	(32)	**Combined**	

Potato			Vegetables		
Large	Small	Marginal	Farm Size Group		
349 (26.6)	340 (58.8)	220 (49.4)	(17)	**Mahroni**	**I (P-C)**
0 (0.0)	0 (0.0)	620 (62.6)	(18)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(19)	**Jakhoura**	
349 (9.3)	340 (18.6)	840 (46.3)	(20)	**Combined**	
2 (25.0)	2 (50.0)	1 (50.0)	(21)	**Mahroni**	**No. of Farmers**
0 (0.0)	0 (0.0)	2 (50.0)	(22)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(23)	**Jakhoura**	
2 (9.5)	2 (18.2)	3 (33.3)	(24)	**Combined**	
971 (74.0)	237 (41.0)	225 (50.6)	(25)	**Mahroni**	**II (P-W-R-C)**
2003 (100.0)	1101 (100.0)	370 (37.4)	(26)	**Birdha**	
428 (100.0)	148 (100.0)	381 (100.0)	(27)	**Jakhoura**	
3402 (90.7)	1486 (81.4)	976 (53.7)	(28)	**Combined**	
6 (75.0)	2 (50.0)	1 (50.0)	(29)	**Mahroni**	**No. of Farmers**
9 (100.0)	5 (100.0)	2 (50.0)	(30)	**Birdha**	
4 (100.0)	2 (100.0)	3 (100.0)	(31)	**Jakhoura**	
19 (90.5)	9 (81.8)	6 (66.7)	(32)	**Combined**	

Onion			Vegetables		
Large	Small	Marginal	Farm Size Group		
25 (18.4)	23 (57.5)	119 (100.0)	(17)	**Mahroni**	**I (P-C)**
0 (0.0)	105 (100.0)	120 (75.0)	(18)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(19)	**Jakhoura**	
25 (4.5)	128 (39.5)	239 (77.6)	(20)	**Combined**	
1 (16.7)	1 (50.0)	1 (100.0)	(21)	**Mahroni**	**No. of Farmers**
0 (0.0)	0 (0.0)	1 (33.3)	(22)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(23)	**Jakhoura**	
1 (5.9)	1 (12.5)	2 (40.0)	(24)	**Combined**	
111 (81.6)	17 (40.5)	0 (0.0)	(25)	**Mahroni**	**II (P-W-R-C)**
180 (100.0)	105 (100.0)	40 (25.0)	(26)	**Birdha**	
238 (100.0)	74 (100.0)	29 (100.0)	(27)	**Jakhoura**	
529 (95.5)	196 (60.5)	69 (22.4)	(28)	**Combined**	
5 (83.3)	1 (50.0)	0 (0.0)	(29)	**Mahroni**	**No. of Farmers**
6 (100.0)	4 (100.0)	2 (66.7)	(30)	**Birdha**	
5 (100.0)	2 (100.0)	1 (100.0)	(31)	**Jakhoura**	
16 (94.1)	7 (87.5)	3 (60.0)	(32)	**Combined**	

Okra			Vegetables		
Large	Small	Marginal	Farm Size Group		
80 (19.9)	80 (44.9)	109 (100.0	(17)	**Mahroni**	**I (P-C)**
0 (0.0)	0 (0.0)	120 (80.0)	(18)	**Birdha**	
0 (0.0)	20 (100.0)	0 (0.0)	(19)	**Jakhoura**	
80 (15.3)	100 (50.5)	229 (76.9)	(20)	**Combined**	
3 (50.0)	3 (50.0)	1 (100.0)	(21)	**Mahroni**	**No. of Farmers**
0 (0.0)	0 (0.0)	1 (50.0)	(22)	**Birdha**	
0 (0.0)	2 (100.0)	0 (0.0)	(23)	**Jakhoura**	
3 (33.3)	5 (62.5)	2 (50.0)	(24)	**Combined**	
323 (80.2)	98 (55.1)	0 (0.0)	(25)	**Mahroni**	**II (P-W-R-C)**
29 (90.6)	0 (0.0)	30 (20.0)	(26)	**Birdha**	
90 (100.0)	0 (0.0)	39 (100.0)	(27)	**Jakhoura**	
442 (84.7)	98 (49.5)	69 (23.2)	(28)	**Combined**	
3 (50.0)	3 (50.0)	0 (0.0)	(29)	**Mahroni**	**No. of Farmers**
1 (100.0)	0 (0.0)	1 (50.0)	(30)	**Birdha**	
2 (100.0)	0 (0.0)	1 (100.0)	(31)	**Jakhoura**	
7 (66.7)	3 (37.5)	2 (50.0)	(32)	**Combined**	

Vegetables	Farm Size Group	I (P-C)				No. of Farmers				II (P-W-R-C)				No. of Farmers			
		Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined
		(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
Bottle Gourd	Marginal	30 (10.6)	1 (1.3)	0 (0.0)	31 (7.0)	1 (25.0)	1 (50.0)	0 (0.0)	2 (28.6)	253 (89.4)	78 (98.7)	80 (100.0)	411 (93.0)	3 (75.0)	1 (50.0)	1 (100.0)	5 (71.4)
	Small	120 (29.7)	0 (0.0)	30 (18.3)	150 (21.0)	1 (25.0)	0 (0.0)	1 (33.3)	2 (22.2)	286 (70.4)	144 (100.0)	134 (81.7)	564 (79.0)	3 (75.0)	2 (100.0)	2 (66.7)	7 (77.8)
	Large	120 (31.3)	0 (0.0)	0 (0.0)	120 (6.8)	2 (40.0)	0 (0.0)	0 (0.0)	2 (14.3)	262 (68.6)	640 (100.0)	748 (100.0)	1650 (93.2)	3 (60.0)	7 (100.0)	2 (100.0)	12 (85.7)

Torai			Vegetables		
Large	Small	Marginal	Farm Size Group		
95 (76.6)	40 (19.5)	0 (0.0)	(17)	**Mahroni**	**I (P-C)**
0 (0.0)	0 (0.0)	0 (0.0)	(18)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(19)	**Jakhoura**	
95 (29.2)	40 (14.6)	0 (0.0)	(20)	**Combined**	
2 (40.0)	1 (33.3)	0 (0.0)	(21)	**Mahroni**	**No. of Farmers**
0 (0.0)	0 (0.0)	0 (0.0)	(22)	**Birdha**	
0 (0.0)	0 (0.0)	0 (0.0)	(23)	**Jakhoura**	
2 (18.2)	1 (20.0)	0 (0.0)	(24)	**Combined**	
29 (23.4)	165 (80.5)	67 (100.0)	(25)	**Mahroni**	**II (P-W-R-C)**
201 (100.0)	70 (100.0)	181 (100.0)	(26)	**Birdha**	
0 (0.0)	0 (0.0)	49 (100.0)	(27)	**Jakhoura**	
230 (70.8)	235 (85.5)	297 (100.0)	(28)	**Combined**	
3 (60.0)	2 (66.7)	1 (100.0)	(29)	**Mahroni**	**No. of Farmers**
6 (100.0)	2 (100.0)	4 (100.0)	(30)	**Birdha**	
0 (0.0)	0 (0.0)	1 (100.0)	(31)	**Jakhoura**	
9 (81.8)	4 (80.0)	6 (100.0)	(32)	**Combined**	

Vegetables	Farm Size Group	I (P-C)				No. of Farmers				II (P-W-R-C)				No. of Farmers			
		Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined	Mahroni	Birdha	Jakhoura	Combined
		(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
Cauliflower	Marginal	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Small	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	559 (100.0)	0 (0.0)	0 (0.0)	559 (100.0)	4 (100.0)	0 (0.0)	0 (0.0)	4 (100.0)
	Large	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	305 (100.0)	68 (100.0)	152 (100.0)	525 (100.0)	3 (100.0)	1 (100.0)	2 (100.0)	6 (100.0)

Source: Primary Survey