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ANALYSIS OF POTATO PRODUCTION AND MARKET STRUCTURE IN INDIA

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ABSTRACT

Potato commonly known as 'The king of vegetables', has appeared as fourth most vital food crop in India after rice, wheat and maize. Indian vegetable basket is incomplete without Potato. Potato is a nutritionally superior vegetable due to its edible energy and edible protein. It has become an essential part of breakfast, lunch and dinner among the larger populace. Being a short duration crop, it produces more amounts of dry matter, edible energy and edible protein in lesser duration of time associated to cereals like rice and wheat. Hence, Potato is considered to be an important crop to achieve nutritious security of the nation. Potato is a predominant vegetable in India, at present most of the domestic supply of potatoes is consumed as fresh (68%) followed by processing (7.5%) and as seed (8.5%). The rest 16% potatoes are wasted due to post harvest losses. However, the proportion of potato used/ wasted due to various reasons is expected to change in the medium and long term scenario. At present, the country has an area of approximately 2.05 million hectors under potato and requires about 6.15 million tonnes of quality seed. Therefore, area to be planted under various classes of seed will be around 0.40 million hectares. To cover this area, our country requires about 7908 tones breeder seed for meeting the requirement of seed potato after three multiplications at state/farmer's level for 1.65 million he under ware potato production. With this background the study is to estimate the growth in area, yield and production of potato in India and identify the channels of potato crops marketing. Finally, the study concludes the cultivation of Potato is the fastest growing sector within Indian agriculture.

Keywords: Potato, Cultivation, Irrigation, Production, Marketing, Crop, Harvest

INTRODUCTION

The horticulture sector has been a driving force in stimulating growth in Indian agriculture. India is currently producing 277.7 million tonnes of horticulture produce from an area of 23.2 million hectares, which has surpassed the estimated food 4.46. The horticulture sector has been a driving force in stimulating growth in Indian agriculture. India is currently producing 277.7 million tonnes of horticulture produce from an area of 23.2 million hectares, which has surpassed the estimated food grain production of 257 million tonnes. Though the production of food grains and horticultural produce are not meaningfully comparable due to fundamental differences in the nature of their farming, characteristics of produce, nature of land requirements, and most importantly, their nutritional purpose and value, it has come to light that horticultural farming is much productive and gainful. The productivity of horticultural crops has increased by about 34 per cent between 2009-10 and 2019-20. The special attention given to the sector, especially after the introduction of the Horticulture Mission for North East and Himalayan States (HMNEH) and the National Horticulture Mission (NHM) in the 11th Plan, has borne bumper fruit. Given the increasing pressure on land, growth strategies have been focusing on raising productivity through high density plantations, protected

cultivation, micro irrigation, quality planting material, rejuvenation of senile orchards and an emphasis on post-harvest management and marketing of produce for better price realization.

With a production of 88.8 million tonnes, fruits account for about 31 per cent of total production of horticulture crops. The area under fruit crops cultivation during 2018-19 was 6.3 million hectares, which is about 27 per cent of total area under horticulture cultivation in India. The area under fruit crops cultivation has increased from 5 million hectares in 2009-10 to 6.24 million hectares in 2019-20, with a corresponding increase in production from 50.9 to 86.2 million tonnes. A large variety of fruits, such as banana, mango, citrus, papaya, guava, grape, sapota, pomegranate, pineapple, aonla, litchi, pear, plum and walnut are grown in India. India accounts for about 13 per cent of the total world production of fruits and leads in the production of mango, banana, papaya, sapota, pomegranate, acid lime and aonla.

During 2019-20, Maharashtra stood first in terms of fruit production with a 12.22 per cent share in total production followed by Andhra Pradesh with 10.57 per cent, Uttar Pradesh with 10.03 per cent, and Gujarat with 9.27 per cent and Tamil Nadu with 6.26 per cent shares. These states together contributed about 50 per cent of the total fruit production in the country. Banana is the most cultivated fruit accounting for 33 per cent of total production, followed by mango at 21 per cent, citrus at 14 per cent, papaya at 6 per cent, guava at 4 per cent, grapes at 3 per cent, apple at 2 per cent and others with a 16 per cent share in the country. In the case of the Himachal Pradesh and Jammu and Kashmir, the value of output from apples, plums, pears and stone fruits exceeds the value of output from cereal crops.

MAJOR VEGETABLES PRODUCING COUNTRIES IN THE WORLD

The details of the major vegetables producing countries in the world during 2020-21 are presented in table –1. During 2020-21 the area under major vegetables grown was 57.01 million hectares, 1012.07 million tonnes of vegetables were produced and 18.8 tonne per hectare productivity is estimated.

Table - 1

Major vegetables producing countries in the world in 2020-21

Country	Area (Million Hectars)	Production (Million Tonnes)	Productivity (t/he)
China	24.05 (42.19%)	473.06 (46.74%)	22.5
India	8.50 (14.90%)	146.55 (14.48%)	17.3
USA	1.12 (1.95%)	35.29 (3.48)	31.4
Turkey	1.11 (1.94%)	25.83 (2.56)	23.7
Egypt	0.76 (1.32%)	19.52 (1.92)	25.7
Iran	0.71 (1.25%)	18.68 (1.85)	26.2
Italy	0.54 (0.95%)	13.05 (1.29)	25.1
Russian Fed	0.76 (1.32%)	13.23 (1.32)	17.4
Spain	0.34 (0.60%)	12.68 (1.25)	37.2
Mexico	0.66 (1.21%)	12.13 (1.19)	18.5
Others	18.46 (32.37%)	242.05 (23.92)	13.1
World	**57.01 (100%)**	**1012.07 (100%)**	**18.8**

Source: NHB, National Horticulture Database. | Figures in parenthesis are percentage share to the world total.

Major vegetable producing countries of the world during 2020-21 were: China [473.06 million tonne (48% world production)]; India [146.55 million tonne (14% world production)]; USA [35.29 million tonne (3% world production)]; Turkey [25.83 million tonne (2.2% world production)]; and Egypt [19.51 million tonne (2% world production)]. India with vegetable production of 146.55 million tonne is the second largest producer of vegetables contributing 14% of world's vegetable production. With an area of 8.5 million hectares under vegetables, the average productivity of vegetables in India is 17.3 t/he in 2020-21.

The details of the productivities of different vegetables in India and world during the year 2020-21 are presented in table – 2.

Table –.2

Productivities of different vegetables in India and world (2020-2021)

Vegetable	Highest productivity	Productivity in India	Average world productivity
Brinjal	Egypt (49.2 t/he)	17.5 t/he	25 t/he
Cabbage	Japan (66 t/he)	21.5 t/he	27.7 t/he
Cauliflower & Broccoli	Pakistan (24.8 t/he)	18.3 t/he	16.9 t/he
Okra	Saudi Arabia (13.3 t/he)	11.6 t/he	6.9 t/he
Onion	Turkey (30.3 t/he)	14.2 t/he	19.1 t/he
Potato	USA (44.3 t/he)	22.7 t/he	17.7 t/he
Tomato	Spain (74 t/he)	19.1 t/he	32.8 t/he

Source: NHB, National Horticulture Database.

The productivity of vegetables in India is seen to be lower than Spain (37.2 t/he) and world average (18.8 t/he). India ranks first in production of okra in the world (73% of world production) and second in other vegetables such as brinjal (27.55%), cabbage (13%), cauliflower & broccoli (36%), onion (19.90%), potato (13%) and tomato (11%). The details of India's global ranking of India for area, production and productivity in world during 2020-2021 are presented in table – 3.

Table – 3

India's global ranking for area, production and productivity of vegetables (2020-2021)

Vegetable	Area	Production	Productivity
Brinjal	2	2	8
Cabbage	2	2	8
Cauliflower & Broccoli	2	2	5
Okra	2	1	4
Onion	1	2	7
Potato	3	2	4
Tomato	2	2	11
All vegetables	**2**	**2**	**10**

Source: NHB, National Horticulture Database.

Horticulture also plays an important role in national economy. Horticulture accounts for about 20% of India's agricultural GDP from 13.08% of cropped area. The sector has received focused attentions in country's five-year plans mainly from the VII plan period. According to

a World Bank report (2015) entitled as "From Competition At Home to Competing Abroad: A Case Study of India's Horticulture", India is a large, low cost agricultural producer; however, its share in global agricultural exports is minuscule. During 2011-2012, India produced nearly 11 per cent of all the world's vegetables and 15 per cent of all fruits, yet its share in global exports of vegetables was only 1.7 per cent and in fruits a meagre 0.5 per cent indicating vast opportunity for Indian horticulture sector in WTO regime.

It is estimated that the total vegetable exports from India were accounted for Rs. 2,706.97 crores in 2015-16, sharing 2.25% of total agricultural exports and 0.23% of total national exports during the period. The quantities and value of exported vegetables are given table-3.4. Major importers of our vegetables are UAE, Nepal, Sri Lanka, UK and Saudi Arabia accounting for around 55% of the total vegetable exports from India. Though India is second largest producer of vegetables in the world it ranks 24th in the export value of vegetables. Top ranking vegetable exporters in the world are the Netherlands followed by Spain, Mexico, China and France. However, Indian export is suffering from non-harmonization of international quality standards, inadequacies of export infrastructure and export friendly policies. Rejection of Indian horticultural consignments due to standards gap had been a common feature. Owing to awareness among exporters and quality control initiatives by the government, such rejections are reducing in recent years. The details can be had from the following table.

Table – 4

Export of vegetables and vegetable products from India (2020-2021)

Commodity	Quantity (t)	Value (Rs. In Lakhs)
Cabbage	405	45.6
Cauliflower	830	33.2
Onion	1163473	174155
Peas	1005	264
Tomato	68184	11481
Potato	184277	15424
Sweet potato	769	77.3
Fruit and vegetable seeds	11182	17520
Dried and preserved vegetables	110174	51697
Total	**15,40,299**	**2,70,697.1**

Source: NHB, National Horticulture Database.

During the last one decade it has been noticed that among all horticultural crops there has been higher increase in productivities of vegetable crops. This increase in productivity is in spite of the fact that plan schemes did not have substantial components supporting development of this crop segment. If India has to achieve 4% agricultural growth rate, the required growth rate in horticulture has to be 6-7%. Seasonal and annual crops like vegetables can contribute to rapid growth in initial period itself which can later on be supplemented by perennial fruit and plantation crops.

Objectives of the Study

The study is undertaken with the following specific objectives:

- To estimate the growth in area, yield and production of potato in India.
- To identify the channels of potato crops marketing

- To identify the constraints in production and marketing of potato crops

Methodology of the Study

The present study is confined to India. The study has been carried out by using secondary data. The present study is restricted to 5 Years period from 2016-17 to 2020-21. The secondary source of data relating to potato crop in India and Karnataka state has been collected from

- Economic Survey of India and Karnataka,
- Department of Horticulture Reports
- National Horticulture Mission Reports
- Other learned journals regarding horticulture,
- Annual reports of various years published by District Horticulture Department

Area production and yield of potato in India

The area, production and yield of potato in India details are presented in table – 5. The details are confined to 2016 to 2021 respectively. The data in table clearly indicates the interesting trends in area, production and yield of potato in World and India. During 2016 the total area of potato was grown in the world was estimated to 18.42 million hectares and in India it was 375 hectares only. The production of potato during 2016 was estimated 307.34 million tonne in the World whereas in India it was 29174.60 tonne. About yield of potato it was 16.69 in World and 18.59 tonne per hectare in India. The trend has been gradually increased both in World and in India respectively. During 2021 the area was 19.25 million hectares in world and in India 1863.20 hectare, about production of potato it was 374.38 million tonne in world and 42339.40 tonne in India and regarding yield 19.45 tonne per hectare in entire world and in India it was estimated 22.72 tonne per hectare. On an average compare to world level, the yield of potato in India is commendable. The details can be obtained from table – 5.

Table - 5

Area, Production and Yield of Potato

Years	World			India		
	Area (Million he)	Production (Million tonne)	Yield (t/he)	Area (000'he)	Production (000'tonne)	Yield (t/he)
2016	18.42	307.34	16.69	1569.20	29174.60	18.59
2017	18.66	323.92	17.36	1742.80	28599.60	16.41
2018	18.17	329.91	18.15	1796.00	34658.00	19.30
2019	18.62	333.96	17.93	1828.30	34390.90	18.81
2020	18.77	334.26	17.81	1835.30	36577.30	19.93
2021	19.25	374.38	19.45	1863.20	42339.40	22.72
ACGR for - last ten years	**0.26**	**1.21**	**1.47**	**4.57**	**6.07**	**1.43**

Source: www.faostat.fao.org.

The major potato growing states are Uttar Pradesh, West Bengal, Punjab, Bihar, Haryana, Madhya Pradesh, Gujarat and Maharashtra. More than 90% potato crop is grown in winter

season (Rabi) under assured irrigation facility from October to March. The rest is being taken up during rainy season (Kharif). The area and production of potato in the country during 2020-21 is estimated around 20.64 lakhs he and 455.99 lakhs MT respectively.

Table – 6

Area, Production and Productivity of Potato

Sl. No	Year	Area (Lakh He)	Production (Lakh Mt)	Productivity (Tones/He)
01	2015-16	17.89	405.63	20.02
02	2016-17	18.63	409.78	21.02
03	2017-18	19.73	415.55	21.06
04	2018-19	20.76	480.09	23.13
05	2019-20	20.63	455.69	22.09
06	2020-21	20.55	454.50	21.06

Source: Horticulture Division, Ministry of Agriculture, Government of India, New Delhi.

Approximately 220-225 lakh MT potatoes are stored in different cold storages of the country. Major potatoes were stored in Uttar Pradesh, West Bengal, Bihar, Punjab, Haryana, Gujarat, Madhya Pradesh and Rajasthan.

Status of Kharif Potato in India

Kherif potatoes are mainly grown in the states of Himachal Pradesh during current kharif season is around 18,000 he which is similar to last year and harvesting will start from September onwards. Total area sown in Uttarakhand is around 25,889 he which is less compared to last year's area of 28,360 he. The harvesting of potato in Heldwani area started and expected to be continued till August. Around 8,854 he area in Karnataka covered, which is less compared to last year's area of 20,107 he under kharif season. Harvesting will be done from August onwards. Kherif potato in Maharashtra is mostly taken in Pune and Satara districts. The seed sowing of kharif potato is expected to start from August onwards and harvesting will be done October onwards.

Potato prices are expected to be on higher side in coming months, due to controlled release of stored stock from cold storages by farmers/traders and less production by around 5%. Kherif potato is taken in very less area in few states as stated above, which is also less compared to last year.

In Europe the potato crop is grown in summer having long photoperiod of up to 14 hours a day and the crop duration is of 140-180 days. The potato in Indian plains is, however, grown in completely contrasting situations. Nearly 85 percent of the crop is grown during winters having short photoperiod (with about 10-11 hours a day) and the crop duration is also limited to 90-100 days because of short and mild winter. The mornings usually have fog, which further reduces the sunshine hours posing severe constraints on photosynthetic activity. Besides, the post-harvest period consists of long hot summer, which creates storage problems.

The increase in the area (he), production (quantity) and productivity (yield per he) from 1949-50 to 2020-21 has been 550 percent, 1,745 percent and 178 percent respectively. India

now ranks third in potato area (1.99 million he) and second in production (45.34 million tonnes) in the world with an average yield of 22.8 MT/hectare.

Table – 7

Area, Production and Yield of Potato in India

Year	Area (million he)	Production (million tonnes)	Yield (q/he)
1949-2010	0.239	1.543	65.9
2015-16	1.863	42.339	227.0
2016-17	1.907	41.483	218.0
2017-18	1.992	45.344	228.0
2018-19	2.110	45.563	230.6
2019-20	2.235	46.253	231.2
2020-21	2.356	47.695	236.2

Source: Horticulture Division, Ministry of Agriculture, Government of India, New Delhi.

Top Potato producing States in India

Table – 8 analyses the top potato producing states in India. It includes area and production of potato from 2017-18 to 2020-21 respectively. During 2017-18 the total area of potato grown was in 1,863 hectares, production of potato was estimated 42,339. During 2018-19 this trend has been increased to 1,917 and 41,483 respectively. During 2020-21 the area and production of potato has been tremendously raised to 2,032 and 46,609 respectively. The details of top potato producing states in India can be obtained from the following table.

Table - 8

Top Potato Producing States in India

Units: A – Area in '000 He | P - Production in '000 MT

States/ UTs	2017-18		2018-19		2019-20		2020-21		Average Productivity (MT/He)
	A	P	A	P	A	P	A	P	
Uttar Pradesh	556.5	13577	568	14125	604	14430	616	15013	24.4
West Bengal	406	13391	377	9693	387	11591	400	12000	29.7
Bihar	314	5784	315	6102	323	6641	318.5	6536	19.7
Madhya Pradesh	62	743	88	1817	109	2299	109.9	2322	18.7
Punjab	84	2088	84	2104	85	2132	87.20	2180	25.0
Gujarat	65	1882	81	2396	81	2500	81	2500	30.1
Others	375	4874	395	5247	404	5750	418	6044	13.7
Total India	**1863**	**42339**	**1917**	**41483**	**1992**	**45344**	**2032**	**46609**	**22.5**

Source: Horticulture Division, Ministry of Agriculture, Government of India, New Delhi.

Market Arrival of Potato

Market arrival of potato in 2020-21 in different states of India details are presented in table – 8. The details confined to November 2017, 2018 and December 2019, 2020 and January –

February 2020-2021 respectively. The major states include Uttar Pradesh, West Bengal, Madhya Pradesh, Punjab, Gujarat and other states of India.

Potato Pries in Major Markets in India

The price of potato in major markets includes Ahmadabad, Amritsar, Bangalore, Bhopal, Burdwan, Chandigarh, Chennai, Delhi, Jaipur, Jammu, Lucknow, Mumbai and Patna respectively. The minimum price of potato is high in Chennai market compare to other markets in India followed by Bangalore market (1700) and Mumbai (1500). The lowest minimum price found in Ahmadabad i.e., Rs.900/-. In the case of maximum price also Chennai and Bangalore stands first, Mumbai and Patna obtained second place respectively. The details of potato prices in major markets in India are furnished in table – 9.

Table- 9

Potato Pries (Rs/quintal) in Major Markets (2020- 2021)

States	Min. Price	Max.Price	Model Price	Retail Price	Min. Price	Max.Price	Model Price
Ahmadabad	900	1600	1250	1800	1200	1600	1500
Amritsar	900	1200	1100	2000	800	1200	1000
Bangalore	1700	1900	1800	2600	2000	2450	2150
Bhopal	1200	1400	1300	1600	-	-	-
Burdwan	1230	-	-	-	1430	1450	1440
Chandigarh	1200	1400	1300	2500	-	-	-
Chennai	2000	2200	2100	3000	-	-	-
Delhi	1300	1600	1450	2000	1400	1500	1450
Jaipur	1100	1200	1160	2000	-	-	-
Jammu	1400	1500	1450	2000	1500	1700	1600
Lucknow	1400	1500	1450	2000	1400	1500	1425
Mumbai	1500	1800	1700	2400	1400	1700	1550
Patna	1400	1650	1525	2100	-	-	-

Source: AGMARKNET

Summary

On the basis of above analysis and interpretation about the production and marketing of vegetable crops in India it can be said that the horticulture is the fastest growing sector within Indian agriculture. There has been a perceptible change in the consumption pattern characterized by declining share of food grains and increasing share of non-food grain items in the consumption baskets particularly fruits and vegetables. Consequently, horticulture is set to assume a greater role and importance within the agriculture sector and eventually in the national economy. Vegetables are important constituents of Indian agriculture and nutritional security due to their short duration, high yield, nutritional richness, economic viability and ability to generate on-farm and off-farm employment. Our country is blessed with diverse agro-climates with distinct seasons, making it possible to grow wide array of vegetables. India is the second largest producer of fruits and vegetables in the world. Total area under horticultural crops is 21.83 million he and production is 240.53 million tonne. Fruits and vegetables together contribute about 92% of the total horticultural production in the country.

REFERENCES

1. Aswathereddy, K.P., (2001) Economics of production and marketing of irrigated potato in Chikkaballapura taluk of Kolar district, Karnataka. M.Sc. (Agri.) Thesis, Univ. Agric. Sci., Bangalore.
2. Bizoza, A. R. and Graaff, J. de. (2012) Financial cost-benefit Analysis of Bench terraces in Rwanda. Land Degradation & Development, 23 (2):103-115.
3. Dibyajyoti Nag,Priyadarshi Roy,Avijit Kumar Dutta (2015) "seasonal potato cultivation in Ranchi district- a comparative study" Human Resource Reflection ISSN(ONLINE):2348-7518.
4. Elias, S. M. A. Jubber and N. I. Mondol (1980) An Economic profile of potato cultivation in Bangladesh. Agricultural Economics Research Report No. 2 Joydebpur, Agricultural Economics Division, BARRI.
5. Hekim M. A. (1993) A Comparative Economic Analysis of Cardinal And Malta varieties of potato in kotwali Thena of Bogra District. M.Sc. Ag. Econ. Thesis Submitted to the department of Agricultural Economics, Bangladesh Agricultural University, Mymensing.
6. Jame, Kamal., Kumar, Dinesh and Ezekiel, R., (2001) Market status of different processed Potato products in Meerut, Gheziabad and Delhi. Journal of the Indian Potato Association, 28 (1): 169171.
7. Nagaraja, G.N., Narayanaswmy, T.C. And Bhaskar, V., (2006) Production and marketing constraints in potato. J. Agril. Marketing.
8. Nandekar, D. N. (2005). Effect of seedling tuber size and fertilizer levels on growth, yield and economics of potato production. Potato Journal, 32 (1&2).
9. Narappanavar, S.R. And Bavur, S.B., (1998) The marketing of potato – A case study in Dherwad district of Karnataka. The Biher J. Agricultural. Marketing, 6(2): 154-159. 23(1): 1-3.