Identification of Potential Sourcing Areas for Selected Organic Fruits and Vegetables (Mango, Onion and Pomegranate) in Maharashtra and Andhra Pradesh, India

Abstract:

India is an agricultural country with more than half its population relying on agriculture. The diverse climate and vast potential for fruit and vegetable cultivation in India made it a forerunner in fruit and vegetable production. Excessive pesticide usage and its harmful effects have laid the emphasis on organic agriculture and it has been increasing. India has greater potential for organic cultivation of fruits and vegetables and needs to be exploited by identification of potential sourcing areas for fruits and vegetables. The present study was carried out in Nashik and Solapur districts of Maharashtra and YSR Kadapa and Chittoor districts of Andhra Pradesh state for the identification of sourcing areas for mango, onion, and pomegranate. A total of 150 samples of organic farming FPOs/traders/farmers in the selected districts of Maharashtra and Andhra Pradesh were taken. Finally, based on the organic certification and availability of selected crops (onion, mango, pomegranate), 60 respondents were considered for further study. Based on the results, nine FPOs, seven traders and four farmers from the Nashik district of Maharashtra are identified as a potential source of organic onion and two FPOs, two traders and one farmer from the Nashik district and eight FPOs, four traders and three farmers from Andhra Pradesh and finally seven FPOs, four traders and two farmers from Solapur district and three FPOs, two traders and two farmers from Nashik district as potential sources for procurement of selected organic fruits and vegetables.

Keywords: Climate, Organic Agriculture, Traders, Framers and FPOs.

Introduction:

India is an agricultural country in which around 54.6 percent of the population is dependent on agriculture and allied activities and added 17.8 percent to the country's gross value during the financial year 2019-2020. The diverse climate and the massive potential of India in fruit and vegetable cultivation established it as the second-largest producer of fruits and vegetables after China. India produced 107.10 million metric tonnes of fruits and 204.61 million metric tonnes of vegetables during 2021-22. The area under cultivation of fruits stood at 7.01 million hectares, while vegetables were cultivated in 11.28 million hectares during 2021-2022 **(**PIB INDIA, 2022). Hence, India is assured of the availability of all varieties of fruits and vegetables as fresh produce. According to the Food and Agriculture Organization

(FAO, 2021), India is the largest producer of ginger and okra and ranks second in producing potatoes, onions, cauliflower, brinjal, cabbage, and other vegetables. The country ranks first among fruits producing bananas, mangoes, and papayas. The vast production base offers India tremendous export opportunities. During 2021-22, India exported fresh fruits and vegetables worth Rs. 11,412.50 crores/1,527.60 USD million.

The Green Revolution era of the 1960s brought significant changes in Indian agriculture by introducing high-yielding seeds and fertilizers to the farmers to augment food production and achieve food security. But later, the utilization of fertilizers and pesticides increased drastically. This caused severe environmental consequences, such as soil infertility and the production of hazardous food products. Hence, to make farming sustainable, it is necessary to decrease the use of agricultural chemicals. In the current scenario, organic farming is gaining colossal prominence, and Andhra Pradesh, with its massive potential for fruit and vegetable cultivation, is no exception to this trend. Similarly, Maharashtra has also witnessed significant growth and development in organic farming in recent years. To exploit the organic production potential of these two states, there is a need to identify the potential sourcing areas for organic fruits and vegetables in these two states. This study was carried out with the aim of identifying the potential sourcing areas for organic mango, onion and pomegranate in these two states.

Materials and Methods:

The present study was carried out in selected districts of Maharashtra (Nashik, and Solapur) and Andhra Pradesh (Chittoor, Kadapa) states as most of the select organic fruits and vegetables, i.e., onion, mango, and Pomegranate cultivation is observed in these districts. To collect the primary data regarding select organic fruits and vegetables. A total of 150 samples of organic farming FPOs/traders/farmers in the selected districts of Maharashtra and Andhra Pradesh were taken. Finally, based on the organic certification and availability of selected crops (onion, mango, pomegranate), 60 respondents were considered for further study. Data was collected from 60 respondents, including FPOs, traders, and farmers in the Chittoor and Kadapa districts of Andhra Pradesh and Nashik and Solapur districts of Maharashtra. For each selected organic crop, data was collected from 20 respondents. The purposive sampling method has been used to select the samples.

Results and Discussions:

The data collected has been analyzed to determine the firm's supply sources of organic onion, mango and pomegranate. Among the 60 respondents, 45 belong to the state of Maharashtra and 15 to the state of Andhra Pradesh. The maximum percentage of samples are from Maharashtra 75% and 25% are from Andhra Pradesh. The distribution of the sample respondents is shown in Table 1. Among the total sample respondents from Maharashtra, 45, 21 were FPOs, 15 were traders, and nine were farmers, whereas in Andhra Pradesh, in the total sample size of 15 respondents, eight were FPOs, four were traders, three were farmers.

Table:1. Distribution of samples Respondents

S. No	**State**	**Samples respondent**	**Percentage of total sample (%)**	**FPOs**	**Traders**	**Farmers**
1	Maharashtra	45	75	21(35%)	15 (25%)	9 (15%)
2	Andhra Pradesh	15	25	8(13.3%)	4(6.6%)	3 (5%)
3	**Total**	**60**	**100**	**29**	**19**	**12**

Details of Sources for Procuring Organic Onions

The FPOs, traders, and farmers of the Nashik district of Maharashtra are identified as the potential sources for procuring organic onion: nine FPOs (Table 2), seven traders (Table 3), and four farmers (Table 4). All the identified FPOs have Participatory Guaranty System (PGS)-India (organic certification) from the Ministry of Agriculture, Govt. of India.

Details of Sources for Procuring Organic Mangoes

The FPOs, traders, and farmers of Kadapa and Chittoor districts of Andhra Pradesh and Nashik district of Maharashtra are identified as the potential sources for procuring organic mangoes, which include two FPOs, two traders and one farmer from Nashik district and eight FPOs, four traders and three farmers from Andhra Pradesh. All the identified FPOs have Participatory Guaranty System (PGS)-India (organic certification) from the Ministry of Agriculture, Govt. of India. All the identified potential FPOs, traders and farmers for procuring mangoes from both states together are presented in table 5, table 6 and table 7 respectively.

Details of Sources for procuring organic Pomegranate

The FPOs, traders, and farmers of Solapur and Nashik district of Maharashtra are identified as the potential sources for procuring organic Pomegranate which are seven FPOs, four traders and two farmers from Solapur district and three FPOs, two traders and two

farmers from Nashik district. All the identified FPOs have Participatory Guaranty System (PGS)-India (organic certification) from the Ministry of Agriculture, Govt. of India. The identified potential FPOs, traders and farmers for pomegranate from both states together are presented in table 8, table 9 and table 10 respectively.

S. No	FPO	District	No. of farmers	Acres	Major crops cultivated	Certification	Avg area under onion (acre)	Avg productivity(q/acre)
1	Manikgadh FPO	Nashik	87	300	Onion, Tomato and Mango	PGS-India	70	110-120
2	Darana Valley FPO	Nashik	78	290	Onion, Tur and Flowers	PGS-India	70	110-120
3	Navsanjivan FPO	Nashik	96	320	Onion and Pulses	PGS-India	70	110-120
4	Samruddha Kisan FPO	Nashik	126	360	Onion, Paddy and Vegetables	PGS-India	90	110-120
5	Mhalungi Nad FPO	Nashik	152	400	Onion, Tur and Spices	PGS-India	120	110-120
6	Sarvvtirth FPO	Nashik	160	480	Onion,Brinjal and Vegetables	PGS-India	150	110-120
7	Sangameshwar FPO	Nashik	156	450	Onion,Grapes and Vegetables	PGS-India	140	110-120
8	Velmurugan FPO	Nashik	140	500	Mango, Other Horticulture crops and Vegetables	PGS-India	180	110-120
9	Palamaner FPO	Nashik	130	400	Mango, Orange and Pulses	PGS-India	160	110-120
10	**Total**		**1125**	**3500**			**1050**	**110**

Table 2. Details of FPOs for sourcing organic onions

Table 3. Details of traders for sourcing of organic onion

S. No	Trader	District	Experience (Years)	Major commodities	Avg Qty of onion handled/month in tons	Trading License
1	Balaji Trading Company	Nashik	19	Onion, Paddy vegetables	110	Yes
2	Swastik Traders	Nashik	23	Onion, Potato and other vegetables	120	Yes
3	Saisiddha Traders	Nashik	17	Onion, Grapes pulses	120	Yes
4	Vishal Suryabhan Barke Traders	Nashik	25	Onion, Vegetables, Flowers and Horticulture products	120	Yes
5	Spin global traders	Nashik	26	Onion, Wheat and Spices	130	Yes
6	Fizans traders	Nashik	19	Mango, Banana and Orange	120	Yes
7	Sterling Overseas	Nashik	16	Mango, Vegetables, and Food grains	130	Yes

Table 4: Details of farmers for sourcing organic onions

S. No	Farmer	District	Land holdings (acres)	Major crops	Organic farming Experience	Area under organic onion, acres	Avg productivity (q/acre)
1	Naresh Jadhav	Nashik	3	Onion, Tomato and other vegetables	5	1.5	110
2	Vinod Davkhare	Nashik	4	Onion, Brinjal and Grapes	5	1.5	120
3	Nazir Hussain	Nashik	3	Onion and other vegetables	6	2	110
4	Anjaneyuli	Nashik	6	Mango, Pulses and vegetables	6	2	120
5	Average		4		5	2.5	120

Table 5. Details of FPOs for sourcing organic mangoes

S. No	FPO	District	No. of farmers	Area (acres)	Major crops	Certification	Avg area under organic mango (acre)	Avg productivity (t/acre)
1	Sapuzari FPO	Nashik	110	350	Mango, Grapes	PGS-India	95	2.5
2	Waghnadi FPO	Nashik	120	350	Mango, Tomato and vegetables	PGS-India	90	2.5
3	Saahithy FPO	Kadapa	105	300	Mango, Mulberry and Pulses	PGS-India	90	3

4	Rly-Koduru Prakruthi FPO	Kadapa	90	280	Mango Citrus and Red gram	PGS-India	80	3
5	Radha prakruthi FPO	Kadapa	90	260	Mango, Orange and Vegetables	PGS-India	80	3
6	BVR organic FPO	Kadapa	60	200	Mango and Watermelon	PGS-India	80	2.3
7	Sri Sai Sangameswara Horticulture FPO	Kadapa	120	380	Mango, Food grains and Pulses	PGS-India	110	2
8	Balaji FPO	Chittoor	130	420	Mango, Citrus and Vegetables	PGS-India	120	2.6
9	Maathota FPO	Chittoor	160	520	Mango and Other Horticultural crops	PGS-India	200	3
10	Kuppam Rural FPO	Chittoor	80	260	Mango and Vegetables	PGS-India	70	2.4
	Total		**1065**	**3320**			**1015**	**2.6**

Table 6. Details of traders for sourcing organic mangoes

S. No	Trader	District	Experience (Yrs)	Major commodities	Trading Licence	Qty handled/month (tons)
1	Green India Fruits and Vegetable Company	Nashik	13	Mango, other fruits and vegetables	Yes	1200
2	Delicious Mangoes	Nashik	15	Mango and Other fruits	Yes	1200
3	Labline Trading Co.	Chittoor	15	Mango, Orange and Foodgrains	Yes	1500
4	Mithoona foods traders	Chittoor	20	Mango, Other Fruits and Vegetables	Yes	2000
5	YC Fresh	Kadapa	20	Mango, Oranges and Bananas	Yes	1800

6	Artkeval	Kadapa	20	Mango, Other Fruits and Vegetables	Yes	2000

Table 7. Details of Farmers for sourcing organic mangoes

S. No	Farmer	District	Land holdings (acres)	Major crops	Experience in organic farming	Area under organic mango acres	Avg productivity (t/acre)
1	Rajaram desai	Nashik	4	Mango and Onion	5	1.5	3
3	Venkat Reddy	Kadapa	6	Mango vegetables	6	2	3
4	Ramana Raju	Chittoor	5	Mango oranges vegetables	6	2	3
5	Jagadish Reddy	Chittoor	15	Mango, citrus food grain	8	3	3
	Average		**7**		**6**	**2**	**3**

Table 8. Details of FPOs for sourcing organic Pomegranate

S. No	FPO	District	No. of farmers	Area (Acres)	Major crops	Certification	Avg. area under organic pomegranate (acre)	Avg productivity (t/acre)
1	Murumkhed Agro FPO	Solapur	210	650	Pomegranate, Onion, Grape and Other fruits	PGS-India	180	3.4
2	Kunwara FPO	Solapur	158	500	Pomegranate, Tur and Spices	PGS-India	110	3.5
3	Dhurgawati FPO	Solapur	120	370	Pomegranate, Sapota and Soyabean	PGS-India	100	3

4	Parvatanchal FPO	Solapur	160	500	Pomegranate and vegetables	PGS-India	130	3.6
5	Govardhan FPO	Solapur	110	370	Pomegranate, Spices and Vegetables	PGS-India	80	3.5
6	Jai kisan FPO	Solapur	120	410	Pomegranate, Potato and Grapes	PGS-India	110	3.4
7	Sapuzari FPO	Solapur	140	450	Pomegranate, Sapota and Onions	PGS-India	110	3
8	Dawaleshwar FPO	Nashik	112	340	Pomegranate, Mango and Onion	PGS-India	80	4
9	Waghnadi FPO	Nashik	134	430	Pomegranate, Grape and Vegetables	PGS-India	90	3.4
10	Bhojapur khore pomegranate FPO	Nashik	154	510	Pomegranate, Mango and Vegetables	PGS-India	80	3.5
	Total		**1418**	**4530**			**1070**	**3.4**

Table 9. Details of Traders for sourcing of organic pomegranate

S. No	Trader	District	Experience (Yrs)	Major commodities	Trading Licence	Qty handled/month in tons
1	Shappire agro tech	Solapur	18	Pomegranate, grapes, vegetables	Yes	1000
2	Deepak hanumathu sagat	Solapur	15	Pomegranate, foodgrains and spices	Yes	1500
3	Agrobeet Agritech Private Limited	Solapur	17	Pomegranate, onion, grapes and other fruits	Yes	900

4	Herbo Nutra Extract Private Limited	Solapur	20	Pomegranate, vegetables and food grains	Yes	1000
5	Bhavar Ventures Private Limited	Nashik	23	Pomegranates, sapota and other fruits	Yes	950
6	Dinlife Systems Private Limited	Nashik	19	Pomegranate, fruits and vegetables	Yes	1400

Table 10. Details of farmers for sourcing organic pomegranate

S. No	Farmer	District	Land holdings (acres)	Major crops	Experience in organic farming	Avg area under an organic pomegranate (acres)	Avg productivity (t/acre)
1	Vasanth Patil	Nashik	7	Pomegranate, Paddy Mango and Onion	5	1.5	3.2
2	Hassim Dalwai	Nashik	4	Pomegranate, Soyabean and pulses	6	2.2	3.3
3	Ram Singh	Solapur	5	Pomegranate, Foodgrains and vegetables	4	1	3.3
4	Dayanand Joshi	Solapur	5	Pomegranates, Potato, Orange and vegetables	5	1.6	3.2
	Average		**5**		**5**	**2**	**3.3**

Conclusion:

The diverse climate suitable for fruit and vegetable cultivation made India a potential country in terms of fruit and vegetable cultivation. The increase in demand for organic fruits and vegetables and the suitability for organic cultivation resulted in an increase in organic farming area under fruit and vegetable cultivation. The identification of potential sourcing areas and marketing is essential for providing fair and remunerative prices and making the products available for consumers. The identification of nine FPOs, seven traders and four farmers from the Nashik district of Maharashtra as a potential source of organic onion and two FPOs, two traders and one farmer from the Nashik district and eight FPOs, four traders and three farmers from Andhra Pradesh and finally seven FPOs, four traders and two farmers from Solapur district and three FPOs, two traders and two farmers from Nashik district as potential sources will aid in procurement and marketing of selected organic fruits and vegetables.

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