

Growth and Direction of Agricultural Trade from India – An Application of Markov Chain Analysis

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Abstract

Agricultural sector is playing an important role in linking Indian farmers to ultimate consumers in the domestic and international markets. The major groundnut, guar-gum and onion producing states are Gujarat, Rajasthan and Maharashtra respectively which are situated in the western region of India. Western region contributes about 62.85, 74.13 and 60.59 percent to India's total groundnut, guar-gum and onion production respectively in 2018-19. Present paper analyzed the growth trend for processed groundnut, guar-gum and onion export both in terms of quantity and value and direction of trade. The compound growth trend was used to find the growth rate and also the Markov chain analysis was used to assess the direction of foreign trade for selected agricultural commodities. Results of the study suggests that export quantity for processed groundnut, guar-gum and fresh onion was growing with compound growth rate of 9.91, 5.61 and 6.11 percent per annum respectively, whereas export value of processed groundnut, guar-gum and fresh onion was growing with compound growth rate of 16.86, 13.23 and 11.92 percent per annum respectively during 2000-01 to 2020-21. The Markov chain analysis suggests that most loyal importing countries were Indonesia, Russia and Nepal for processed groundnut, guar-gum and fresh onion respectively.

Key words: Direction of trade, Markov chain, Compound growth rate, Trade balance, Processed foods

Indian agricultural sector is playing an important role in supplying sufficient food to meet the food demand for fast growing population of the country, raw materials for agro-based industry, export surplus and employment opportunity to 42.60 percent population in the country during 2019. In 2020-21, gross value added by agriculture and allied sector was Rs 35879.86 billion at current prices. The share of agriculture and allied sector to India's total gross value added (Rs 177811.20 billion) at current price was 20.18 percent in 2020-21 [7]. India's agricultural sector has gone to a remarkable transformation from food-deficit to the exportable surplus generation after meeting the domestic requirements of the fast-growing population of the country [11].

Economic reform and trade liberalisation policies have been widely adopted by developing countries including India to improve their visibility in world trade. India adopted the Liberalisation-Privatisation-Globalisation policy since 1991 and more focus was given towards export promotion through enhancing both domestic and export competitiveness of agricultural commodities [12]. After advent of World Trade Organisation (WTO) in 1995, it was envisaged that India would

be benefited through multilateral trade. Export performance of Indian agricultural commodities has undergone paradigm shift through the structural and qualitative changes during post WTO regime. During 1985 to 1992, three long-term export-import (EXIM) policies was announced by Indian government. As a consequent, export-led growth began with the announcement of EXIM policy for the year 2000-01 [11]. India's agricultural export and import was Rs 2529.76 and Rs 1474.46 billion respectively with net trade balance of Rs 1055.30 billion during 2019-20 [7]. The agricultural export may be considered as gainful in improving the economic and financial scenario balance of the country [14], [3], [10], [15]. After WTO formation, the tariff barriers have reduced and trade in value added and high-quality products have increased, but exports are facing risk in terms of meeting the required certifications and also compliance with national and international food safety standards [1], [5], [9]. The recent increase in regional/bilateral trade agreements has also brought additional challenges in terms of changes in the direction of trade of food products [13].

Western region of India consists of Gujarat, Rajasthan, Maharashtra, Madhya Pradesh and Goa states. Among the

Received: 01 Nov 2022; Revised accepted: 20 Dec 2022; Published online: 05 Jan 2023

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Citation: Singh OP, Anoop M, Singh PK. 2023. Growth and direction of agricultural trade from India – An application of Markov Chain analysis. *Res. Jr. Agril Sci.* 14(1): 38-43.

different agricultural commodities, a sizable quantity of processed groundnut, guar-gum and fresh onion are exported from India to different parts of world. The share of western region to India's total production of groundnut, guar-gum and onion was 62.85, 74.13 and 60.59 percent respectively. In 2018-19, largest groundnut producing Indian state was Gujarat with the share of 32.69 percent to India's total production (6.73 million tonnes), whereas Rajasthan state was highest producer of guar-gum with contribution of 64.80 percent to India's total production (1.312 million tonnes). In case of onion production, Maharashtra state was the largest producer and contributing about 35.26 percent of India's total production (22.819 million tonnes) during 2018-19 [7].

In 2000-01, export quantity of processed groundnut, guar-gum and onion from India was 137.07, 129.53 and 343.25 thousand tonnes respectively and it was increased to the level of 638.58, 234.87 and 1578.02 thousand tonnes respectively in the year 2020-21. The export value for processed groundnut, guar-gum and onion from India to different parts of world was Rs 3164.03, Rs 6029.52 and Rs 2762.19 million respectively during 2000-01 and it was augmented to the level of Rs 53816.13, Rs 19490.73 and Rs 28265.35 million respectively by the 2020-21 [2]. Looking into the importance of agricultural sector, present study was carried out to find the growth trend for value and quantity of export and direction of trade from India. The specific objectives of the present study was: [a] to estimate the growth trend for export quantity and value of processed groundnut, guar-gum and fresh onion from India; and [b] to analyze the direction of trade for processed groundnut, guar-gum and fresh onion.

MATERIALS AND METHODS

Data used

India is exporting many agricultural commodities to other member and non-member countries of WTO. Western region of the country consists of Gujarat, Rajasthan, Maharashtra, Madhya Pradesh and Goa states. Gujarat, Rajasthan and Maharashtra are the leading producer of groundnut, guar-gum and onion respectively and these commodities were exported from India to different parts of the world. Out of several agricultural commodities, export-oriented commodities from western region of India i.e., processed groundnut, guar-gum and fresh onion was considered for present study. The study was based on the secondary data. The yearly data for export, both in terms of quantity and value was collected from the Agricultural and Processed Food Products and Export Development Authority (APEDA), (<https://agriexchange.apeda.gov.in/>) for the period of 2000-01 to 2020-21.

Analytical procedure

Growth trend

The exponential function ($Y = a * b^t$) was used to analyze the growth trend in other processed foods export from India. Where, Y is export value, t is the independent variable, a is the functional coefficient and b is the compounding coefficient [16].

Analyzing trade directions

The pattern of direction of trade for selected other processed foods was analyzed by using a first order Markov chain approach. The Markov chain analysis is the estimation of transitional probability matrix P_{ij} . The element of P_{ij} of the matrix P indicates the probability that export will switch from i^{th} country to j^{th} country with the passage of time [6]. The diagonal elements P_{ij} in the matrix measure the probability the export share of a country will retained [17], [4]. Hence, the assessment

of the diagonal elements indicates the preference of an importing country for a particular country's exports. In the context of the present study, the structural changes were treated as a random process with selected importing countries. The average export to a particular country was considered to be a random variable which depended only on the past export to that country. The algebraically form of equation is given below:

$$E_{jt} = \sum_{i=1}^r E_{it-1} P_{ij} + e_{jt} \dots \dots \dots (1)$$

Where, E_{jt} denotes exports from India to the i^{th} country during the year t ; E_{jt-1} denotes export from India to the i^{th} country during the period $t-1$; P_{ij} denotes probability that exports will shift from the i^{th} country to j^{th} country; e_{jt} is the error-term which is statistically independent of e_{jt-1} ; t is the number of years considered for analysis and r is the number of importing countries.

The transitional probabilities P_{ij} , which can be arranged in a $(c \times r)$ matrix, had following properties.

$$0 \leq P_{ij} \leq 1$$

$$\sum_{i=1}^r P_{ij} = 1 \text{ for all } i$$

The minimum absolute deviations (MAD) estimation procedure was employed to estimate the transitional probability, which minimizes the sum of absolute deviations. The conventional Linear Programming (LP) technique was used, as this satisfies the properties of transitional probabilities of non-negativity restrictions and row sum constraints in estimation [8]. The Linear Programming formulation on analysis was stated as per expression given below:

$$\text{Min } 0 P^* + I_e$$

Subject to, $XP^* + V = Y$, $GP^* = 1$, $P^* \geq 0$

Where, P^* is a vector of the probabilities P_{ij} is arranged; 0 is vector of zeroes; I is an appropriately dimensional vector of area; e is the vector of absolute errors ($|U|$); Y is the vector of exports to each country; X is a block diagonal matrix of lagged value of Y ; V is the vector of errors; and G is a grouping matrix to add the row elements of P arranged in P^* to unity.

After calculating the transitional probability matrix, the expected share of export was calculated by using following equation:

$$Y_{jt} = \sum_{j=1}^r Y_{it-1} * P_{ij} \quad (j = 1, 2, 3, \dots, r) \dots \dots \dots (2)$$

Where, Y_{jt} is the predicted proportions of the j^{th} country's share at time t , Y_{t-1} is the observed proportion of the i^{th} country's share at time $t-1$, and P_{ij} is the estimated transitional probability matrix.

The expected export shares of each country during period t were obtained by multiplying the export to these countries in the previous period ($t-1$) with the transitional probability matrix. Multiple regression analysis was carried out, using ordinary least square (OLS) estimation procedure in the statistical software E-views.

RESULTS AND DISCUSSION

Trade balance of agricultural commodities

In 1990-91, agricultural commodities exported from India was Rs 60.13 billion and it was increased to the level of Rs 2529.76 billion by the year 2019-20. The growth trend analysis for agricultural commodities exported from India was growing with a compound growth rate of 13.29 percent per annum during same period of time (Fig 1). The agricultural commodities

imported from different parts of the world in India was Rs 12.06 billion in 1990-91 and it was augmented to the level of Rs 1474.46 billion by the year 2019-20. The growth trend analysis for agricultural import suggests that it was growing with a

compound growth rate of 15.88 percent per annum during same period of time. The trade balance for agricultural commodities was Rs 48.07 billion in 1990-91 and it was increased to the level of Rs 1055.30 billion by the year 2019-20.

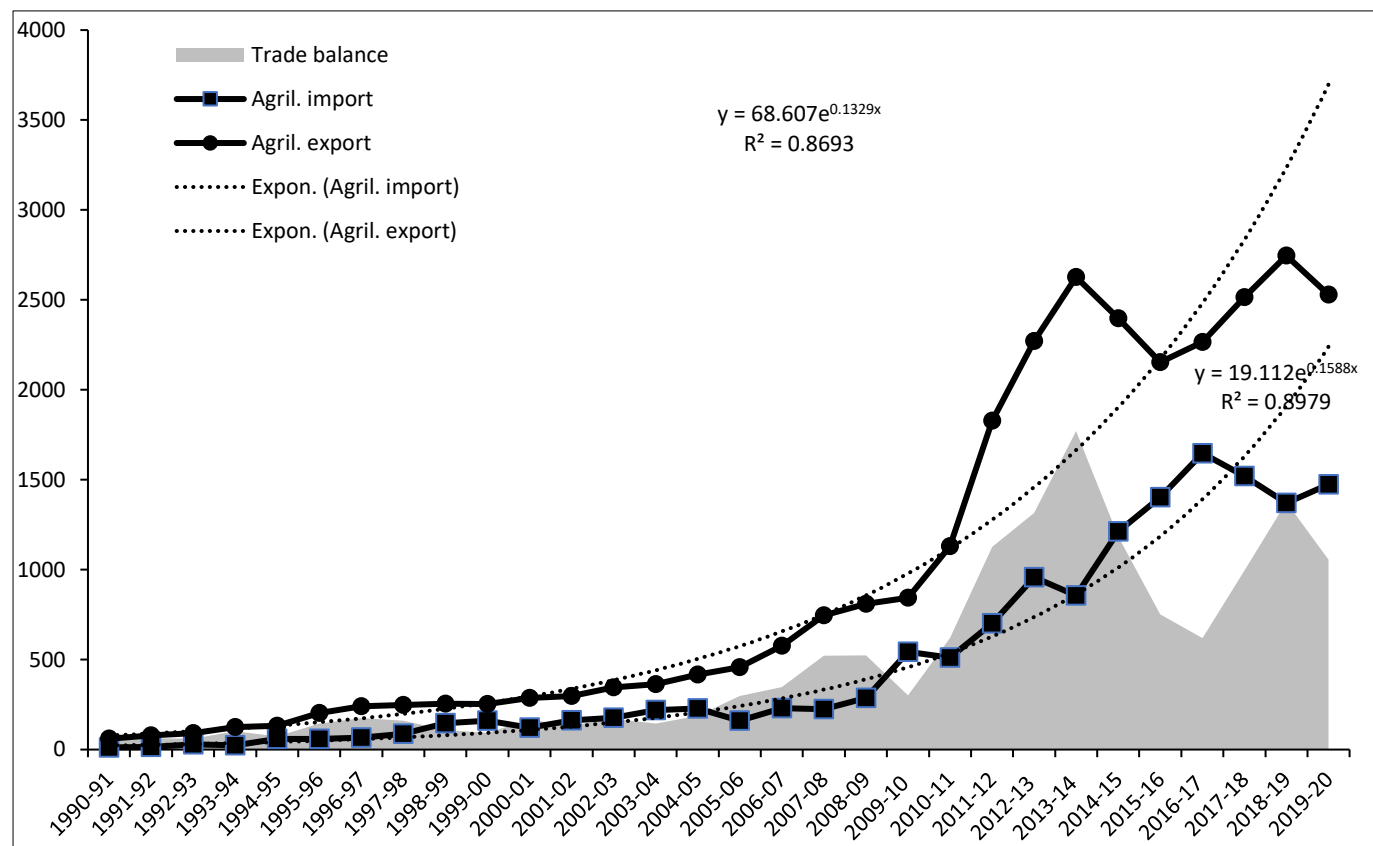


Fig 1 Agricultural export, import and trade balance (Rs Billion)

Contribution of western region to total production

The western region of the country is playing an important role in production and export of agricultural commodities. During 2018-19, total groundnut production in India was 6730 thousand tonnes (Table 1). Out of total groundnut production, the share of western region was about 62.85 percent. Out of total

groundnut production in India, the contribution of Gujarat, Rajasthan, Maharashtra and Madhya Pradesh was 32.69, 20.51, 3.57 and 6.09 percent respectively. The share of other Indian states to India's total groundnut production was 37.15 percent. Total guar-gum production in the country was 1312.10 thousand tonnes during 2018-19.

Table 1 Contribution of western region in total production, 2018-19

Name of the State	Production (*000 Tonnes)			Percentage to total production		
	Groundnut	Guar-gum	Onion	Groundnut	Guar-gum	Onion
a. Western region total	4230	972.66	13827.35	62.85	74.13	60.59
1. Gujarat	2200	122.42	1111.09	32.69	9.33	4.87
2. Rajasthan	1380	850.24	997.26	20.51	64.80	4.37
3. Maharashtra	240	-	8047	3.57	-	35.26
4. Madhya Pradesh	410	-	3672.00	6.09	-	16.09
b. Other States	2500	339.44	8992.08	37.15	25.87	39.41
India	6730	1312.10	22819.43	100.00	100.00	100.00

Out of this, share of western region was 74.13 percent and remaining 25.87 percent was from other Indian states. Out of total guar-gum production in India, share of Gujarat and Rajasthan state was 9.33 and 64.80 percent respectively. Total onion production in India was 22819.43 thousand tonnes and share of western region was about 60.59 percent to total onion production during 2018-19 and remaining share (39.41 percent) was from other Indian states. Out of total onion production in the country, Gujarat, Rajasthan, Maharashtra and Madhya Pradesh contributed 4.87, 4.37, 35.26 and 16.09 percent respectively.

Growth trend for export

Total quantity of processed groundnut export from India was 137.07 thousand tonnes in 2000-01 and it was increased to the level of 638.58 thousand tonnes by the year 2020-21. The growth trend analysis suggests that it was growing with a compound growth rate of 9.91 percent per annum during same period of time. Total value of processed groundnut export from India was Rs 3.16 billion in 2000-01 and it was augmented to Rs 53.82 billion by the year 2020-21. The growth trend analysis for value of processed groundnut export from India was growing

with a compound growth rate of 16.86 percent per annum during same period of time (Table 2).

In 2000-01, total quantity of guar-gum export from India was 129.53 thousand tonnes and it was growing with a compound growth rate of 5.61 percent per annum and total export was increased to 234.87 thousand tonnes by the year 2020-21. In 2000-01, total value of guar-gum export from India was Rs 6.03 billion and it was augmented to Rs 19.49 billion by the year 2020-21. The value of guar-gum export from India was growing with a compound growth rate of 13.23 percent per annum during same period of time (Table 2).

Total export quantity of onion was 342.25 thousand tonnes in 2000-01 and it was reached to the level of 1578.02 thousand tonnes by the year 2020-21. The growth trend analysis for onion export from India was growing with a compound growth rate of 6.11 percent per annum during same period of time. The export value of onion export from India to different destinations was Rs 2.76 billion in 2000-01 and it was further augmented to the level of Rs 28.27 billion by the year 2020-21. The export value of onion was augmenting with a compound growth rate of 11.92 percent per annum during study period (Table 2).

Table 2 Performance of Indian export, 2001-02 to 2020-21

Name of the processed products	Export (Quantity)				Export (Value)			
	CGR (%)	R ² value (%)	F-value	b ₀	CGR (%)	R ² value (%)	F-value	b ₀
1. Processed groundnut	9.91*	78.10	67.63	113.359	16.86*	85.80	115.14	2476.38
2. Guar-gum	5.61*	59.70	28.11	119.453	13.23*	47.90	17.49	5071.05
3. Fresh Onion	6.11*	60.40	28.93	594.602	11.92*	83.60	97.10	3832.78

CGR: Compound growth rate percent per year;

*Significant at 5.0 percent level of significance

Direction of trade

The transition probability matrix was estimated using Markov chain analysis for the export value of processed groundnut, guar-gum and fresh onion from India. Transition probability matrix indicates the changes in the direction of export from India. The row elements for a particular country indicate the probability of losing the market share by the country to their competitive importers. The column elements for a country indicate the probability of gains to that country from other importers in terms of market share. The main diagonal elements shows the retention of market share by the corresponding country and an indicator of loyalty of that country to Indian export of particular commodity.

Processed groundnut

The main diagonal elements shows the retention of market share by the corresponding country and an indicator of loyalty of the particular country to Indian export of processed groundnut. The export value of processed groundnut from India was Rs 53816.13 million in 2020-21. Out of this, 80.33 percent export

value of processed groundnut was contributed by the top nine importing countries, whereas 19.67 percent export value was contributed by remaining importing countries in 2020-21. Therefore, all remaining countries were clubbed into 'others' categories. The result indicates that Indonesia was the most reliable importer of processed groundnut from India indicated by retention probability of 72.21 percent of its market share from one period to next period followed by Nepal with a retention probability of 59.78 percent, Vietnam Soc. Rep. with 59.48 percent and Malaysia with retention of 59.09 percent (Table 3). The most unstable importers were Ukraine and Russia, which tend to loose their entire share to other countries in the subsequent period. The medium stable importers were Philippines with a retention probability of 23.50 percent followed by UAE (18.14 percent) and Thailand (16.94 percent). Interestingly 'others' group showed a good loyalty to Indian processed groundnut with a retention probability of 47.54 percent. Therefore, India can improve its export of processed groundnut by strategically improving the trade with Indonesia and Nepal.

Table 3 Transition probability matrix for export of processed groundnut from India during 2000-01 to 2020-21

Countries	Indonesia	Vietnam Soc Rep	Philippines	Malaysia	Thailand	UAE	Russia	Ukraine	Nepal	Other
1. Indonesia	0.722	0.000	0.118	0.012	0.000	0.024	0.000	0.014	0.000	0.110
2. Vietnam Soc Rep	0.026	0.595	0.147	0.017	0.051	0.000	0.035	0.028	0.007	0.095
3. Philippines	0.054	0.000	0.235	0.088	0.184	0.072	0.007	0.097	0.010	0.253
4. Malaysia	0.409	0.000	0.000	0.591	0.000	0.000	0.000	0.000	0.000	0.000
5. Thailand	0.000	0.619	0.000	0.000	0.169	0.000	0.209	0.000	0.003	0.000
6. UAE	0.000	0.000	0.819	0.000	0.000	0.181	0.000	0.000	0.000	0.000
7. Russia	0.000	0.175	0.000	0.000	0.768	0.000	0.025	0.000	0.032	0.000
8. Ukraine	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9. Nepal	0.000	0.402	0.000	0.000	0.000	0.000	0.000	0.000	0.598	0.000
10. Others	0.242	0.000	0.000	0.242	0.000	0.001	0.004	0.030	0.007	0.475

The row elements for a particular country indicate the probability of losing the market share by that country due to its competitive countries. The probability of losing import market share by Ukraine for import of Indian processed groundnut due to its competitive countries were 100 percent followed by Russia (97.50 percent), Thailand (83.10 percent), UAE (81.90 percent), Philippines (75.50 percent), 'other' countries (52.60 percent), Malaysia (40.90 percent), Vietnam Soc Rep (40.60 percent), Nepal (40.20 percent) and lowest for Indonesia with 27.80 percent (Table 3). The column elements for a country indicate

the probability of gains to that country from other importing countries in terms of market share. The highest probability of gaining import market share by Indonesia for Indian processed groundnut due to importing countries was 173.10 percent followed by Vietnam Soc Rep (119.60 percent), Philippines (108.40 percent), Thailand (100.30 percent), 'other' countries (45.80 percent), Malaysia (35.90 percent), Russia (25.50 percent), Ukraine (16.90 percent), UAE (9.70 percent) and lowest market gain due to other importing countries was found for Nepal with 5.90 percent (Table 3).

Guar-gum

The main diagonal elements shows the retention of market share by the corresponding country and an indicator of loyalty of that country to Indian export of guar-gum. During 2020-21, total value of guar-gum export from India was Rs 19490.71 million. The top nine guar-gum importing countries have contributed about 67.57 percent to total guar-gum export from India and remaining 32.43 percent contribution was from the other countries in 2020-21. Therefore, rest of the countries were clubbed into 'others' categories. Out of nine countries and 'other' countries group, Russia was the most reliable importer of Indian guar-gum indicated by retention probability of 98.10 percent of

its market share from one period to next period followed by USA with a retention probability of 86.10 percent, 'other' country group with retention probability of 74.58 percent and UK with retention probability of 72.69 percent (Table 4). The most unstable importer of Indian guar-gum was Italy which tend to loose their entire share to other countries in the subsequent period. The medium stable importers were Germany with a retention probability of 49.50 percent followed by Australia (30.57 percent), Canada (20.01 percent) and China P Rp (7.29 percent). Therefore, India can improve its exports of guar-gum by strategically improving the trade with Russia and United States of America (USA).

Table 4 Transition probability matrix for export of guar-gum from India during 2000-01 to 2020-21

Countries	USA	Russia	Germany	China P Rp	UK	Canada	Italy	Australia	Brazil	Other
1. USA	0.861	0.000	0.000	0.086	0.004	0.018	0.012	0.003	0.004	0.012
2. Russia	0.000	0.981	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019
3. Germany	0.000	0.000	0.495	0.477	0.000	0.000	0.026	0.002	0.000	0.000
4. China P Rp	0.423	0.000	0.000	0.073	0.000	0.000	0.000	0.043	0.054	0.407
5. UK	0.000	0.000	0.000	0.000	0.727	0.224	0.000	0.000	0.000	0.049
6. Canada	0.000	0.000	0.000	0.000	0.000	0.200	0.000	0.000	0.000	0.800
7. Italy	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
8. Australia	0.000	0.000	0.611	0.000	0.000	0.000	0.083	0.306	0.000	0.000
9. Brazil	0.590	0.410	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10. Other	0.000	0.000	0.155	0.000	0.013	0.000	0.055	0.014	0.018	0.746

The row elements for a particular country indicate the probability of losing the market share by that country due to its competitive countries. The probability of losing import market share by Italy for import of guar-gum due to its competitive countries was 100 percent followed by Brazil (100.00 percent), China P Rp (92.70 percent), Canada (80.00 percent), Australia (69.40 percent), Germany (50.50 percent), UK (27.30 percent), 'other' countries (25.50 percent), USA (13.90 percent) and lowest for Russia with 1.90 percent (Table 4). The column elements for a country indicate the probability of gains to that country from other importing countries in terms of market share. The highest probability of gaining import market share by USA for Indian guar-gum due to importing countries was 201.30 percent followed by 'other countries' (128.70 percent), Germany (76.60 percent), China P Rp (56.30 percent), Russia (41.00 percent), Canada (24.20 percent), Italy (17.60 percent), Brazil (7.60 percent), Australia (6.20 percent) and lowest market gain due to other importing countries was found for UK with 1.70 percent (Table 4).

Fresh onion

The main diagonal elements shows the retention of market share by the corresponding country and it is an also indicator of loyalty of that country for Indian export of fresh onion. Total export value of fresh onion from India was Rs 28365.35 million during 2020-21. The top eight fresh onion importing countries contributed about 82.50 percent to total fresh onion export from India and remaining 17.50 percent contribution was from the other countries in 2020-21. Therefore, rest of the countries were clubbed into 'others' categories. Out of eight countries and 'other' countries group, Nepal was the most reliable importer of Indian fresh onion indicated by retention probability of 77.60 percent of its market share from one period to next period followed by Saudi Arab with a retention probability of 56.80 percent. (Table 5). The most unstable importer of Indian fresh onion was Sri Lanka, Indonesia and 'other countries' which tend to loose their entire share to other countries in the subsequent period. The medium stable importers was Malaysia with a retention probability of 47.50 percent followed by Qatar (47.30 percent), Bangladesh Pr (40.70 percent) and UAE (24.08 percent). Therefore, India can improve its exports of fresh onion by strategically improving the trade with Nepal and Saudi Arab.

Table 5 Transition probability matrix for export of fresh onion from India during 2008-09 to 2020-21

Countries	Bangladesh Pr	Malaysia	UAE	Sri Lanka Dsr	Nepal	Saudi Arab	Qatar	Indonesia	Other countries
1. Bangladesh Pr	0.407	0.367	0.054	0.077	0.005	0.000	0.005	0.085	0.000
2. Malaysia	0.000	0.475	0.169	0.000	0.000	0.000	0.000	0.058	0.298
3. UAE	0.000	0.000	0.248	0.000	0.000	0.000	0.000	0.000	0.752
4. Sri Lanka Dsr	0.851	0.000	0.000	0.000	0.000	0.022	0.000	0.000	0.126
5. Nepal	0.000	0.000	0.102	0.000	0.776	0.000	0.122	0.000	0.000
6. Saudi Arab	0.000	0.000	0.238	0.011	0.000	0.568	0.183	0.000	0.000
7. Qatar	0.000	0.000	0.000	0.180	0.000	0.288	0.473	0.000	0.059
8. Indonesia	0.000	0.000	0.055	0.334	0.242	0.000	0.139	0.000	0.231
9. Other countries	0.433	0.000	0.140	0.426	0.000	0.000	0.000	0.000	0.000

The row elements for a particular country indicate the probability of losing the market share by that country due to its competitive countries. The probability of losing import market share by Sri Lanka Dsr for import of fresh onion due to its

competitive countries was 100 percent followed by Indonesia (100.00 percent), 'other countries' (100 percent), UAE (75.00 percent), Bangladesh Pr (59.30 percent), Qatar (52.70 percent), Malaysia (52.50 percent), Saudi Arab (43.20 percent) and Nepal

(22.40 percent) (Table 5). The column elements for a country indicate the probability of gains to that country from other importing countries in terms of market share. The highest probability of gaining import market share by 'other countries' for Indian fresh onion due to importing countries was 146.60 percent followed by Bangladesh Pr (128.40 percent), Sri Lanka Dsr (102.80 percent), UAE (75.80 percent), Qatar (44.90 percent), Malaysia (36.70 percent), Saudi Arab (31.00 percent), Nepal (24.70 percent) and lowest market gain due to other importing countries was found for Indonesia with 14.30 percent (Table 5).

CONCLUSION

India's agricultural sector has gone a remarkable transformation from food-deficit to food exportable surplus country. After introduction of Liberalisation-Privatisation-Globalisation phase in the country in 1991, more focus was given

towards export promotion through enhancing both domestic and export competitiveness of agricultural commodities. Total agricultural export and import was Rs 2529.76 and Rs 1474.46 billion respectively with net trade balance of Rs 1055.30 billion during 2019-20. During 2000-01 to 2020-21, the growth trend analysis for export quantity of processed groundnut, guar-gum and onion were growing with a compound growth rate of 9.91, 5.61 and 6.11 percent per annum respectively, whereas export value of processed groundnut, guar-gum and onion was augmenting with a compound growth rate of 16.86, 13.23 and 11.92 percent per annum respectively. The Markov chain analysis suggests that most reliable importer of processed groundnut, guar-gum and fresh onion were Indonesia, Russia and Nepal respectively. Further augment the exports of other process products to Indonesia, Russia and Nepal through strategic agreements, aggressive campaigning and participating and organizing trade fares and exhibitions. It is also recommended to explore the trade opportunities in non-traditional importing countries as they have good signs of being loyal importers.

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