

Instability Indices And Export Share Performance Of Paddy In India

J. S. Atla¹ and J. R. Rahane²

College of Agriculture Konghara - 445 302 (India)

Email : jyotiatla@gmail.com

(Received : 25.09.2024 Accepted : 30.10.2024)

Abstract

The present study was conducted to the study of instability indices and export share performance of paddy in India by the way of studying the changes and instability in area, production, productivity and export performance of paddy during period (1970-71 to 2017-18). The area, production and productivity of paddy in India are increased to 42.95 m.ha, 111.01m.tons and 2584.63 kg ha⁻¹ in 2017-18, respectively. At overall period, the area of paddy is most consistent and stable with 5.47 per cent C.V. in India and was followed by productivity (25.61% C.V.) and production (29.61% C.V.). India's paddy export share in paddy production has continuously increased from 1990-91. The World paddy export-import shows negative trade balance over a study period but in case of India's paddy export-import was negative balance of trade during initial two years but after that it was positive from 1980-81 to 2017-18.

Key words : Area, production, productivity, instability, export performance of paddy and trade balance.

Paddy is the most widely grown cereal in the World and is staple food for more than 60 per cent of World's population. World paddy production has increased steadily but at a slow pace from about 400 million tonnes to 477 million tonnes in the past 15 years.

Paddy is believed to be the first cultivated crop in the World. Asia dominates in paddy production accounting for over 90 per cent of the total World's production. It is the second largest cereal produced in the World after corn.

India is the second largest producer as well as consumer of paddy in the World. Similar to the trends in world production, paddy production in India has also increased at a slow pace 109,000 thousand tonnes in the year 2018-19 primarily due to rise in yields.

Export estimates of paddy have also gone up steadily from about 13000 thousand tonnes in

2017-18. India maintains buffer stocks as per the norms specified to meet the domestic requirements. In view of the comfortable domestic stock position and surplus production, export of non-basmati rice was liberalised and exports have gone up to 10 million tonnes during the past few years. West Bengal has been the largest producing state accounting for about 14 per cent of total paddy output in the country followed by Uttar Pradesh and Andhra Pradesh competing for the second position with about 12-13 per cent share in production. Tamil Nadu, Bihar and Orissa are the other major paddy producing states contributing together for 20 per cent of country's rice output.

International trade plays an important role in the economic development of a country. The participation of India in international trade is largely confined to primary products, especially of the agricultural sector. Indian trade policy for agricultural commodities is guided by the twin objectives of ensuring national food 2012-13.

The major markets for export of Indian paddy were: United Arab Emirates, Saudi Arabia, Iran, Kuwait and Iraq (for basmati rice).

Improving productivity and quality are the key challenges facing farmers today, in an effort to increase their income from limited land under cultivation. Selection of the right type of seed, growth of weeds, onset of insect pests & diseases in the crop, inefficient water management and unpredictable weather conditions are the main factors which affect yield of the paddy crop and it immediately affected on export of paddy. It is very important to use good quality seed and protect the crop from weeds, insect pests and diseases therefore it increased crop production. The export of paddy is also related with the buffer stock of paddy held by the government. Because of comfortable buffer stock, India became a major exporter of paddy in 2018. There is a strong demand for Indian paddy in the international markets. The increasing consumer demand for paddy and India's strength for production of basmati as well as non-basmati paddy, coupled with liberal export policy, and large public stock have created ample scope for paddy export.

Objectives of the study:

1. To analyse the changes in APY of paddy in the World, India and Maharashtra.
2. To estimate the instability of area, production and productivity of paddy in India.
3. To estimate the share performance of paddy export from India.

Methodology

This chapter explains the characteristics of the study area, the sampling procedure, nature and sources of data, the statistical tools and techniques employed for analysing the data are presented under the following headings.

1. Description of the study area

2. Nature and sources of data

3. The study period

4. Analytical tools and techniques

1. Description of the study area : In India the area is suitable for cultivation of paddy and scattered in all over India. West Bengal state ranks first in area and production, and it contributes about 14 per cent of the total production of the country. The total area of paddy in India was about 42949.8 '000 ha and the production was 111007' thousand tonnes during the year 2017-18 and this production depends on the climate, soil condition and management aspects in different states. Hence the export performance and competitiveness of paddy was examined at National level.

2. Nature and sources of data : The study is completely based on secondary data, Therefore required data for the present study was collected from various reports viz., APEDA, Agricultural statistics at a glance 2015, Maharashtra at A Glance, Food Corporation of India (FCI), Food and Agricultural Organization (FAO), World Trade Organization (WTO), International Food and Policy Research Institute (IFPRI), International Rice Research Institute (IRRI), Rice Board of India, and studies on different government sector reports etc. was used for the study. The data collected from secondary sources was subjected to appropriate analytical technique in order to arrive at a meaningful conclusion. The data on area, production, and productivity of paddy and export etc. was collected for the period 1970-71 to 2017-18.

3. The study period : The study period was divided into two periods based on the policy of the government on WTO of trade at different periods. However, for better understanding of growth rates in area, production and producti-

vity were compared for the period from 1970-71 to 2017-18 which was further divided into two sub periods.

Period-I : Pre-WTO Period
(1970-71 to 1994-95)

Period-II : Post-WTO Period
(1995-96 to 2017-18)

Overall Period : (1970-71 to 2017-18)

4. Analytical Techniques

Instability analysis : The extent of variability in area, production, productivity and export of paddy were analyzed through coefficient of variation and Cuddy and Della Index.

a. Coefficient of variation

$$C.V.= [S.D./(X)] * 100$$

Where, C.V.= Coefficient of variation, S.D.= Standard deviation and X = prices (Domestic/International)

b. Cuddy and Della instability index (CVt)

$$CVt = CV \sqrt{1 - R^2}$$

Where, CV = Coefficient of variation, R^2 = Coefficient of multiple determination

Results and Discussion

1. Changes in area, production and productivity of paddy in the World, India and Maharashtra : The changes in area, production and productivity of paddy in absolute figures for the year 1970-71 to 2017-18 is depicted in Table 1.

Table 1 reveals that area, production and

Table 1. Changes in Area, Production and Productivity of Paddy in the World, India and Maharashtra

Year	Area million ha	%	Production Million tons	%	Productivity kg ha-1	%
World						
1970-71	132.66	100	316.40	100	2384.67	100
1980-81	144.40	8.85	397	25.49	2749.17	15.29
1990-91	146.98	10.79	519.5	64.20	3534.22	48.21
2000-01	152.76	15.15	594	87.76	3888.39	63.06
2010-11	158.31	19.34	672.40	112.54	4247.17	78.10
2017-18	160.76	21.18	729.10	130.47	4535.33	90.19
India						
1970-71	37.59	100	42.22	100	1123.17	100
1980-81	40.15	6.81	53.63	27.03	1335.74	18.93
1990-91	42.69	13.57	74.29	75.96	1740.22	54.94
2000-01	44.72	18.97	84.98	101.28	1900.27	69.19
2010-11	42.86	14.02	95.97	127.31	2239.15	99.36
2017-18	42.95	14.26	111.01	162.93	2584.63	130.12
Maharashtra						
1970-71	1.36	100	1.66	100	1220.59	100
1980-81	1.50	10.29	2.36	42.17	1573.33	28.90
1990-91	1.58	16.18	2.31	39.16	1462.03	19.78
2000-01	1.51	11.03	1.93	16.27	1278.15	4.72
2010-11	1.52	11.76	2.70	62.65	1776.32	45.53
2017-18	1.45	6.62	2.66	60.24	1834.48	50.29

productivity of paddy in the World during study period were increased gradually from 132.66 m.ha in 1970-71 to 160.76 m.ha in 2017-18. The per cent change recorded over the base period was 21.18 per cent. The production increased to 729.10 m.tons in 2017-18 from

316.40 m.tons in 1970-71. The per cent change recorded over the base period was 130.47 per cent. The productivity of paddy was also increased to 4535 kg ha⁻¹ in 2017-18 from 2385 kg ha⁻¹ in 1970-71. The per cent change recorded over the base year was 90.19 per cent.

Table 2. Instability indices of area, production and yield of paddy

State	Particular	Pre-WTO Period (1970-71 to 1994-95)		Post-WTO Period (1995-96 to 2017-18)		Overall Period (1970-71 to 2017-18)	
		C.V.	Cuddy & Della Index	C.V.	Cuddy & Della Index	C.V.	Cuddy & Della Index
Uttar Pradesh	A	8.14	4.70	21.52	20.87	17.75	16.68
	P	39.02	16.41	18.71	17.84	39.86	21.51
	Y	33.01	15.49	8.46	7.42	32.77	15.06
West Bengal	A	6.35	4.52	17.26	16.18	14.03	13.10
	P	28.51	14.31	7.39	5.14	32.47	12.20
	Y	22.76	11.16	13.31	9.92	30.00	11.02
Andhra Pradesh	A	9.30	8.50	24.89	15.59	18.37	16.19
	P	25.06	11.64	23.15	20.16	27.71	22.75
	Y	19.90	6.84	11.36	6.66	25.35	7.76
Karnataka	A	22.34	19.87	12.95	11.92	18.44	17.52
	P	18.30	12.36	21.29	21.02	28.23	19.53
	Y	130.41	129.5	12.57	11.85	93.93	89.34
Madhya Pradesh	A	5.19	1.69	59.89	47.89	41.82	27.21
	P	26.46	18.99	59.87	59.57	43.93	41.29
	Y	22.50	18.09	34.05	24.89	33.46	25.58
Tamil Nadu	A	23.14	18.39	14.10	11.60	23.22	16.21
	P	17.34	14.85	25.79	25.05	21.91	21.83
	Y	25.88	17.02	21.54	21.53	26.19	21.78
Assam	A	12.26	11.94	18.66	18.50	17.55	15.96
	P	17.96	8.76	17.75	10.63	30.81	9.52
	Y	20.61	15.00	20.38	13.65	27.52	14.53
Kerala	A	18.89	5.17	35.63	13.76	49.16	11.02
	P	10.64	4.85	20.64	7.59	34.13	8.65
	Y	10.25	3.50	16.92	13.27	22.07	11.45
Punjab	A	91.00	32.87	8.63	3.48	55.9	30.05
	P	57.16	16.63	15.27	5.16	51.77	21.72
	Y	17.63	8.37	8.01	4.11	18.49	8.20
Maharashtra	A	5.93	3.76	2.35	2.26	4.74	3.89
	P	21.79	17.54	13.45	11.94	21.22	15.49
	Y	18.33	15.77	12.31	11.03	18.73	13.9
India	A	4.62	2.37	2.52	2.52	5.47	3.08
	P	23.72	8.20	11.68	5.77	29.61	8.21
	Y	19.51	6.74	11.2	4.05	25.61	6.26

In case of India, the production and productivity of paddy during study period were increased. However, the area was fluctuating over the base year 1970-71. The area of paddy in India during 1970-71 was 37.59 m.ha which increased to 42.95 m.ha in 2017-18. The production increased to 111.01m.tons in 2017-18 from 42.22 m.tons in 1970-71. The productivity of paddy also increased to 2584.63 kg ha⁻¹ in 2017-18 from 1123.17 kg ha⁻¹ in 1970-71. The per cent change recorded over the base period was 130.12 per cent. There was a sudden increase in production and yield of paddy after 1990-91 and this could be attributed to introduction of high yielding varieties of paddy and adoption of modern technologies.

From the foregoing discussion, it is noted that, the area, production and productivity of paddy was gradually increased in the World and India during different decades. However, the area, production and productivity of paddy were fluctuating over different decades in Maharashtra. The similarly observations were reported by Satish Kumar (2016) and Ananthi, (2000).

2. Instability indices of area, production and yield of paddy : The coefficient of variation and cuddy and della index were used to measure the stability and instability in area, production and yield of paddy.

The study period was divided into three periods, the pre-WTO period (1970-71 to 1994-95), post-WTO period (1995-96 to 2017-18) and overall period (1970-71 to 2017-18). The major paddy cultivating states in India considered for the analysis of instability in area, production and yield of paddy were Uttar Pradesh, West Bengal, Andhra Pradesh, Karnataka, Madhya Pradesh, Tamil Nadu, Assam, Kerala, Maharashtra and Punjab.

The results in Table2 shows that, the area of paddy is most consistent and stable with 5.47

per cent C.V. for overall period (1970-71 to 2017-18) in India and was followed by productivity (25.61% C.V.) and production (29.61% C.V.). In post-WTO period (1995-96 to 2017-18) the area, production and productivity of paddy with 2.52, 11.68 and 11.2 per cent C.V. was more stable and consistent than in pre-WTO period (1970-71 to 1994-95) with 4.62, 23.72 and 19.51 per cent C.V. of area, production and productivity of paddy in India. During the per-WTO period (1970-71 to 1994-95) the area under paddy cultivation have shown more stability in states *viz.*, Uttar Pradesh, West Bengal, Andhra Pradesh, Madhya Pradesh, Assam, Kerala and Maharashtra with 8.14, 6.35, 9.30, 5.19, 12.26, 18.89 and 5.93 per cent variability respectively, whereas area under paddy in Karnataka, Tamil Nadu and Punjab was fluctuated and it was observed by coefficient of variation.

During post-WTO period (1995-96 to 2017-18), the area under paddy cultivation have shown more consistency in states *viz.*, West Bengal, Karnataka, Tamil Nadu, Assam, Maharashtra and Punjab analysed by both coefficient of variation and Cuddy and Della Wella Index, but in case of Uttar Pradesh, Andhra Pradesh, Madhya Pradesh and Kerala, there were inconsistency in area under paddy as shown by Cuddy and Della Wella Index.

At overall period (1970-71 to 2017-18), the area under paddy cultivation have shown more consistency in states *viz.*, Uttar Pradesh, West Bengal, Andhra Pradesh, Karnataka, Assam, and Maharashtra with 17.75, 14.03, 18.37, 18.44, 17.55, 4.74 per cent variability respectively, whereas Madhya Pradesh, Tamil Nadu, Kerala and Punjab have shown fluctuated area under paddy cultivation.

The production of paddy was stable and consistent in states *viz.*, Karnataka, Tamil Nadu,

Assam and Kerala with 18.30, 17.34, 17.96 and 10.64 per cent in coefficient of variation whereas in remaining states *viz.*, Uttar Pradesh, West Bengal, Andhra Pradesh, Madhya Pradesh, Maharashtra and Punjab the paddy production were fluctuated during pre-WTO period.

During post-WTO period (1995-96 to 2017-18), the production of paddy was more consistent in states *viz.*, Uttar Pradesh, West Bengal, Assam, Maharashtra and Punjab with 18.71, 7.39, 17.75, 13.45 and 15.27 per cent respectively, whereas in remaining states *viz.*, Andhra Pradesh, Karnataka, Madhya Pradesh, Tamil Nadu and Kerala the paddy production were fluctuated.

At overall period (1970-71 to 2017-18), the production of paddy was not consistent in all selected states as shown by coefficient of variation.

The yield of paddy have been shown consistent in states *viz.*, Andhra Pradesh, Kerala, Maharashtra and Punjab with 19.90, 10.25, 18.33 and 17.63 per cent respectively, whereas in remaining states yield of paddy were fluctuated during pre-WTO period measured by coefficient of variation.

During post-WTO period (1995-96 to 2017-19), the yield of paddy have been shown consistency in states *viz.*, Uttar Pradesh, West Bengal, Andhra Pradesh, Karnataka, Kerala, Maharashtra and Punjab with 8.46, 13.31, 11.36, 12.57, 16.92, 12.31 and 8.01 per cent, respectively measured by coefficient of variation.

At overall period (1970-71 to 2017-18), the paddy yield was not stable in all selected states except two states *viz.*, Maharashtra and Punjab with 18.73 and 18.49 per cent respectively, measured by coefficient of variation.

The results indicates that there was considerably increase in paddy production

Table 3. India's total export share in the World total export (Rs. '000 Crore)

Year	World total export	India's total export	India's share in World total export (%)
1960-61	61.92 (-)	0.64 (-)	1.03
1970-71	238.52 (285.21)	1.52 (137.5)	0.64
1980-81	1610.84 (575.35)	6.71 (341.45)	0.42
1990-91	6117.46 (279.77)	32.53 (384.80)	0.53
2000-01	28998.07 (374.02)	201.36 (519.00)	0.69
2010-11	69976.50 (141.31)	1142.92 (467.60)	1.63
2017-18	156027.63 (122.97)	2022.72 (76.98)	1.30

Figures in the bracket indicates the per cent change over consequent decade.

Source : www.statista.com; www.indiaagristat.com

Table 4. India's agricultural export share in World agricultural export (Rs. '000 Crore)

Year	World agricultural export	India's agricultural export	India's share in World agricultural export (%)
1960-61	16.86 (-)	0.28 (-)	1.66
1970-71	15.82 (-6.17)	0.37 (32.14)	2.31
1980-81	92.32 (483.57)	2.38 (543.24)	2.57
1990-91	725.77 (686.15)	6.01 (152.52)	0.83
2000-01	2481.81 (241.96)	28.66 (376.87)	1.15
2010-11	6248.87 (151.79)	117.48 (309.91)	1.88
2017-18	10168.50 (62.73)	380.66 (224.02)	3.74

Figures in the parentheses indicates the per cent change over consequent decade

Source : The State Food And Agriculture 1962, 1970, 1980; Changing Pattern in India's Agricultural Exports under WTO By Shabana Anjum and Arifa Khan; www.indiaagristat.com

followed by paddy yield and paddy area during the study period. The similar findings were reported by Satishkumar *et al.* (2016) and Patil *et al.* (2016).

3. Export Share Performance of Indian paddy

1 India's total export share in the World total export : Analysis of the Table 3 reveals that, India's total export share in the World total export trade has been registered during the study period at 1.03 per cent in 1960-61 ranging up to 1.30 per cent in 2017-18.

2. India's agricultural export share in World agricultural export : It is seen from Table 4. that India's agricultural export share in the World agricultural export was increased up to year 1980-81 but decline in 1990-91 at 0.8 per cent, then it continuously increased up to 3.7 per cent during 2017-18. The average share of India's agricultural export was less than 4 per cent in the World agricultural export during the year 1960-61 to 2017-18.

3. India's paddy export share in World agricultural export : Table 5 reveals that India's paddy export share in World agricultural export was 0.02 per cent during 1960-61 then it continuously increases up to 1980-81. But it declined from 1990-91 onwards. It is noted that India's paddy share in World total agricultural export was less than one per cent.

4. India's agricultural export share in India's total export : It is noted from the Table 6. that India's agricultural export share in the India's total export trade was 43.69 per cent in the year 1960-61 and it was 18.82 per cent in the year 2017-18.

5. India's paddy export share in India's agricultural export : It is noted from the Table 7. that India's paddy export share in the India's

agricultural export trade was gradually increased from 1.43 per cent in 1960-61 to 12.60 per cent in 2017-18.

Table 5. India's paddy export share in World agricultural export (Rs. '000 Crore)

Year	World agricultural export	India's paddy export	India's share of paddy in World agricultural export (%)
1960-61	16.86 (-)	0.004 (-)	0.02
1970-71	15.82 (-6.17)	0.004 (0.00)	0.03
1980-81	92.32 (483.57)	0.136 (3300.00)	0.15
1990-91	725.77 (686.15)	0.452 (232.35)	0.06
2000-01	2481.81 (241.96)	2.946 (551.77)	0.12
2010-11	6248.87 (151.79)	10.496 (256.28)	0.17
2017-18	10168.50 (62.73)	47.968 (357.01)	0.47

Figures in the bracket indicates the per cent change over consequent decade

Source : The State Food And Agriculture 1962, 1970, 1980; Changing Pattern in India's Agricultural Exports under WTO By Shabana Anjum and Arifa Khan; www.ricestat.com

Table 6. India's agricultural export share in India's total export (Rs. '000 Crore)

Year	India's total export	India's agricultural export	Agricultural export share in total export (%)
1960-61	0.64	0.28	43.69
1970-71	1.52	0.37	24.03
1980-81	6.71	2.38	35.41
1990-91	32.53	6.01	18.48
2000-01	201.36	28.66	14.23
2010-11	1142.92	117.48	10.28
2017-18	2022.72	380.66	18.82

Source : Export Potential of Indian Agriculture, Editor- Dr. Gurshan Singh Kainth; www.Indiaagristat.com

India exported paddy worth Rs. 4.00 crores in 1960-61 which is 1.43 per cent of India's agricultural export. India's paddy export increased up to Rs. 47968 crores which is 12.60 per cent of India's agricultural export. Hence, the share of paddy export in agricultural export is quite satisfactory. It was drastically increased in post-WTO period i.e. after 1990-91.

6. India's paddy export share in India's paddy production : It is seen from Table 8. that, the share of paddy export in total paddy

Table 7. India's paddy export share in India's agricultural export (Rs. '000 Crore)

Year	India's agricultural export	India's paddy export	India's paddy share in agricultural export (%)
1960-61	0.28	0.004	1.43
1970-71	0.37	0.004	1.15
1980-81	2.38	0.136	5.74
1990-91	6.01	0.452	7.52
2000-01	28.66	2.946	10.28
2010-11	117.48	10.496	8.93
2017-18	380.66	47.968	12.60

Source : www.indiaagristat.com; www.ricestat.com Export Potential of Indian Agriculture, Editor- Dr. Gurshan Singh Kainth

Table 8. India's paddy export share in India's paddy production (Qty: '000 tonnes)

Year	India's paddy production	India's paddy export	India's paddy export share in paddy production (%)
1960-61	34574.00	214.36	0.62
1970-71	42225.00	16.00	0.04
1980-81	53631.00	919.00	1.71
1990-91	74291.00	712.00	0.96
2000-01	84976.00	1936.00	2.28
2010-11	95970.00	4637.00	4.83
2017-18	109000.00	13000.00	11.93

Source : www.ricestat.com; Constraints and potential of Indian rice export-shodhganga

production during 1960-61 was 0.62 per cent while it increases 11.93 per cent in 2017-18. The per cent share of paddy export in India's total paddy production was increases from 1990-91 to 2017-18. Domestic paddy production is the main determinant of paddy export. Paddy production was continuously increased from the year 1960-61. Whereas, the India's paddy export share in paddy production has continuously increased from post-WTO period i.e. after 1990-91.

7. Direction of trade-World total export and World total import : It reports total bilateral and multilateral exports and imports aggregates at national or regional level. Negative values denote countries in deficit while positive values denote countries with a surplus.

It is seen from Table 9. that, in 1960-61, the World total export was worth Rs. 61.92 thousand crores and World total import was worth Rs. 75.53 thousand crores. There was a continuously negative balance of trade up to 2010-11 then it was changed in the year 2017-18. The World total export was worth Rs. 156027.63 thousand Crores and World total import was worth Rs. 152215.67 thousand crores during 2017-18 and it shows positive trade balance.

8. Direction of trade-India's total export and India's total import : Analysis of

Table 9. Direction of trade-World total export and World total import (Rs. '000 Crores)

Year	World total export	World total import	Trade balance
1960-61	61.92	75.53	-13.61
1970-71	238.52	287.85	-49.33
1980-81	1610.84	1851.03	-240.19
1990-91	6117.46	7635.25	-1517.79
2000-01	28998.07	35502.60	-6504.53
2010-11	69976.50	84134.05	-14157.55
2017-18	156027.63	152215.67	3811.96

the Table 10 reveals that in 1960-61, the India's total export was worth Rs. 0.64 thousand crores and India's total import was worth Rs. 1.12 thousand crores. The negative balance of trade in India did not change over the last 57 years, in spite of all government policies regarding export promotions. It is important to note that India's total export- import trade balance was drastically increased after post-WTO period.

9. Direction of trade-India's agricultural export and import : Table 11 reveals that in 1960-61, the India's agricultural export was worth Rs. 0.28 thousand Crores and India's total import was worth Rs. 0.30 thousand

Table 10. Direction of trade-India's total export and India's total import (Rs. '000 Crores)

Year	India's total export	India's total import	Trade balance
1960-61	0.64	1.12	-0.48
1970-71	1.52	1.62	-0.10
1980-81	6.71	12.47	-5.76
1990-91	31.75	43.17	-11.42
2000-01	203.57	228.31	-24.74
2010-11	1142.92	1683.47	-540.55
2017-18	2022.72	2684.60	-661.88

Source : Export Potential of Indian Agriculture, Editor- Dr. Gurshan Singh Kainth

Table 11. Direction of trade-India's agricultural export and import (Rs. '000 Crores)

Year	India's agriculture export	India's agriculture import	Trade balance
1960-61	0.28	0.30	-0.02
1970-71	0.37	0.33	0.04
1980-81	2.38	1.02	1.36
1990-91	6.01	1.21	4.81
2000-01	28.66	12.09	16.57
2010-11	117.48	57.33	60.15
2017-18	380.66	240.43	140.23

Source : Export Potential of Indian Agriculture, Editor- Dr. Gurshan Singh Kainth www.Indiaagristat.com

Crores, It denotes negative trade balance. It means that India was deficit during 1960-61. India's agriculture export trade balance were positive from 1970-71 to 2017-18. It means that India with a surplus from 1970-71 to 2017-18, in agricultural export.

10. Direction of trade-World paddy export and World paddy import : Table 12. shows that in 1960-61, the World paddy export was worth 0.27 thousand Crores and World paddy import was worth Rs. 0.36 thousand Crores. It indicates the negative trade balance of World paddy export-import. It continuously remain negative trade balance up to year 2017-18. It reveals that there was a continuous demand for paddy in the World.

11. Direction of trade-India's paddy export and paddy import : Table 13 noted that in 1960-61, the India's paddy export was worth Rs. 0.004 thousand Crores and India's paddy import was worth Rs. 0.039 thousand Crores. The negative balance of trade was in the year 1960-61 and 1970-71. Then it was positive trade balance for remaining period. It means that India was deficit in paddy export during the period 1960-61 to 1970-71 but from the period 1980-81 to 2017-18 India with a surplus in trade balance of paddy export-import.

Table12. Direction of trade-World paddy export and World paddy import (Rs. '000 Crores)

Year	World paddy export	World paddy import	Trade balance
1960-61	0.27	0.36	-0.09
1970-71	0.89	0.99	-0.10
1980-81	3.94	4.22	-0.28
1990-91	7.25	8.15	-0.90
2000-01	29.23	32.74	-3.51
2010-11	92.12	94.81	-2.69
2017-18	140.33	145.75	-5.42

Source : www.ricestat.com; The State Food And Agriculture 1962

Table 13. Direction of trade-India's paddy export and paddy import (Rs. '000 Crores)

Year	India's paddy export	India's paddy import	Trade balance
1960-61	0.004	0.039	-0.035
1970-71	0.004	0.060	-0.056
1980-81	0.136	0.001	0.135
1990-91	0.452	0.038	0.414
2000-01	2.946	0.018	2.928
2010-11	10.496	0.0005	10.496
2017-18	47.968	0.012	47.956

Source : www.ricestat.com; Trends in India's Agriculture Trade, Foreign Agricultural Economic Report No.15

Conclusions

1. India stand 1st in area, but 2nd in production and 5th Productivity of paddy in the World.
2. In India the area of paddy was decline during study period except in 1990-91 whereas, production and productivity were continuously increased.
3. In MS the area, production and productivity of paddy were fluctuating during entire study period.
4. At overall period, the area of paddy is most consistent and stable with 5.47 per cent C.V. in India and was followed by productivity (25.61% C.V.) and production (29.61% C.V.) whereas, the production of paddy was not consistent in all selected states as shown by coefficient of variation and yield of paddy was not stable in all selected states except two states viz., Maharashtra and Punjab with 18.73 and 18.49 per cent respectively, measured by coefficient of variation.
5. India's total export share in World's total export has been increased from 1960-61 to 2017-18. But, still the share could not be retained to a considerable level.
6. India's agricultural export share in World agricultural export did not show a promising picture which is less than 3 per cent.
7. India's paddy export share in World agricultural export has not been marginally increased. It lies between 0.02 to 0.47 per cent.
8. India's agricultural export share in India's total export has declined.
9. India's paddy export share in India's agricultural export trade 1.43 per cent in the year 1960-61, and increased up to 12.60 per cent in the year 2017-18.
10. India's paddy export share ion total paddy production during 1960-61 was 0.62 per cent while it increases 11.93 per cent in the year 2017-18.
11. The balance of trade of World total export -import shows negative trade balance during study period except in the year 2017-18, it shows positive balance trade.
12. The balance trade of India's total export-import shows that negative balance trade during overall study period.
13. Direction of trade in India's agricultural export-import shows positive balance trade during study period except in the year 1960-61, it shows negative balance trade.
14. Trade balance of World paddy export-import was negative balance trade during overall study period.
15. Trade balance of India's paddy export-import shows negative balance trade during initial period i.e. 1960-61 to 1970-71 and then it shows positive balance trade from the year 1990-91 to 2017-18.

References

- Adhikari, Anup, Sekhon, M. K. and Manjeet Kaur. 2016. Export of rice from India: Performance and determinants. *Agricultural Economics Research Review*, 29(1): 135-150.
- Guledgudda, S. S., Patil, B. L. and Rajur, B. C. 2014. Export performance of Indian cashewnut - An analysis. *Economic Affairs*, 59(4): 669-674.
- Guledgudda, S. S., Patil, B. L., Hosamani, S. B., Hiremath, G. K. and Olekar, J. N. 2002. Production and export performance of tea industry in India. *Journal of Plantation Crops*. 30(3): 27-32.
- Jain, Ankur. 2018. Analysis of growth and instability in area, production, yield and price of rice in India. *Social Change and Development*, 15(2): 47-66
- Jayesh, T. 2001. Production and export performance of selected spices in South India: An Economic Analysis. M.Sc. thesis, University of Agricultural Sciences, Dharwad, Karnataka, India.
- Kusuma, D. K. and Basavaraja, H. 2014. Stability analysis of mango export markets of India : Markov Chain Approach. *Karnataka J. Agric. Sci.*, 27(1) : 36-39.
- Mahadevaiah, G. S., Ravi, P. C. and Chengappa, P. G. 2005. Stability analysis of raw cotton export markets of India- Markov Chain Approach. *Agricultural Research Review*, 18 : 235-259.
- Patil, N. A. and Yeledhalli, R. A. 2016. Growth and instability in area, production and productivity of different crops in Bengaluru division. *IJAEB*, 9(4): 599-611.
-