



REVEALED COMPARATIVE ADVANTAGE AND IMPORT DEPENDENCE IN INDIA'S AGRICULTURAL TRADE: A COMMODITY-WISE ANALYSIS (2010–2024)

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ABSTRACT

This study presents a comprehensive commodity-wise analysis of India's agricultural trade during 2010–2024, focusing on revealed comparative advantage (RCA) and revealed import dependence (RID). Using secondary data from the UN Comtrade Database at the 4-digit Harmonized System (HS) level, the analysis identifies India's strengths in exports and vulnerabilities in import dependence across major agricultural commodities. Results indicate that India exhibits a strong comparative advantage in spices, fibres, plantation crops, and agro-based products, with nutmeg, mace and cardamoms (HS 0908) recording the highest RCA of 16.7, followed by cotton (HS 5201) at 8.7 and wheat and meslin (HS 1001) at 5.8. Cumulative exports of key commodities such as rice (HS 1006) reached US\$ 112,138.5 million (mn), while cotton exports totalled US\$ 32,511.0 mn over the study period, reflecting India's sustained global competitiveness. In terms of import dependence, India relies heavily on selected commodities, with raw silk (non-thrown) (HS 5002) exhibiting an RID of 26.4, cloves (HS 0907) at 19.3, and jute and other textile bast fibres (HS 5303) at 13.9, indicating substantial reliance on imports to meet domestic demand. Other notable imports include sunflower and safflower seeds (HS 1512) with an RID of 8.6 and coconuts, Brazil nuts, and cashew nuts (HS 0801) with an RID of 10.2. The analysis underscores the dual nature of India's agricultural trade, with strong export competitiveness coexisting with high import dependence in specific commodities. The findings highlight the need for policy interventions aimed at enhancing domestic production capacity, improving post-harvest infrastructure, and promoting value-added agricultural exports.

KEYWORDS: Agricultural Trade, Revealed Comparative Advantage (RCA), Revealed Import Dependence (RID), Commodity-Wise Analysis, India, Export Competitiveness, Import Dependence.

INTRODUCTION

Agriculture continues to occupy a central position in the Indian economy by supporting livelihoods, ensuring food security, and contributing to external trade. Despite a gradual decline in its share in Gross Domestic Product (GDP), the sector remains one of the largest sources of employment and an important contributor to foreign exchange earnings. India has established itself as a major exporter of several agricultural commodities such as cereals, spices, tea, cotton, and agro-based products, while simultaneously relying on imports of selected agricultural and allied commodities to meet domestic consumption and industrial requirements. This dual nature of agricultural trade reflects the complex structure of Indian agriculture and warrants a detailed analytical examination. India's agricultural sector is characterised by wide regional diversity, varied agro-climatic conditions, and a broad production base covering food grains, commercial crops, plantation products, horticulture, and allied activities. This diversity enables the country to achieve export competitiveness in commodities where favourable natural endowments, traditional expertise, and labour availability provide an advantage. At the same time, structural constraints such as uneven productivity levels, fragmented landholdings, limited irrigation in certain regions, and inadequate post-harvest and processing infrastructure restrict domestic supply for some commodities. Consequently, India's agricultural trade exhibits a mixed pattern,

with strong export performance in specific commodities coexisting alongside sustained dependence on imports for others.

The period 2010–2024 represents a significant phase for examining India's agricultural trade structure, as it captures medium- and long-term trends in exports and imports across a wide range of commodities. Analysing trade performance over this period helps in identifying commodities with sustained export strength as well as those showing persistent import reliance, while smoothing short-term fluctuations. A commodity-wise approach provides deeper insights into the relative position of individual agricultural products in global trade and highlights sector-specific strengths and vulnerabilities. The findings are expected to be useful for policymakers, researchers, and stakeholders in designing strategies to strengthen export competitiveness, address supply-side constraints, and promote a more balanced and resilient agricultural trade framework in India.

While several studies have examined India's agricultural exports using revealed comparative advantage indices, limited attention has been paid to the simultaneous assessment of export competitiveness and import dependence at a commodity-wise level, particularly for the recent period extending beyond 2020. This study addresses this gap by employing both RCA and RID indices to analyse India's agricultural trade structure from 2010 to 2024. **Naseri and Sidana (2020)** analyse the role of



agriculture in South Asian economies, where nearly 60 per cent of the population depends on this sector for livelihood. The study highlights the importance of agricultural trade in supporting food security and price stability. Their findings indicate that Nepal, Pakistan, Bangladesh, and Afghanistan provided relatively stable markets for India’s agricultural exports, while Bhutan, Maldives, and Sri Lanka showed high import volatility. Among SAARC countries, Bangladesh demonstrated consistent import demand across several major agricultural commodities, particularly cereals. The analysis reveals that India had a weak Revealed Comparative Advantage in dairy products before and after South Asian Free Trade Area (SAFTA). In contrast, a comparative advantage in cotton exports emerged only in the post-SAFTA period. The authors recommend strengthening export-promotion measures and improving product quality to enhance India’s agricultural export competitiveness. **Kalita et al. (2025)** examined India’s agricultural trade performance using FAOSTAT data and RCA, comparing pre-WTO and post-WTO periods. The study found that that fresh fruits and vegetables emerged as the leading export commodities, whereas vegetable oil constituted the principal import item. Most commodities showed improved growth, competitiveness, and export stability after WTO accession, with higher RCA for sugar, cotton and pulses though coffee lagged. The findings indicate a rising global export share for India and highlight the need for supportive trade policy reforms.

OBJECTIVE OF THE STUDY

The aim of the present study is to examine India’s commodity-wise revealed comparative advantage and import dependence in agricultural trade during the period 2010–2024.

METHODOLOGY

The study is based on secondary data collected from both published and unpublished sources. For the purpose of analysis, the study covers the period from 2010 to 2024. The analysis employs appropriate statistical tools, including the Revealed Comparative Advantage (RCA) and Revealed Import Dependence (RID) indices. Trade indices are computed using 4-digit Harmonized System (HS)-level data sourced from the UN Comtrade database. In addition, relevant information has been obtained from books, journal articles, research papers, working papers, and magazines.

Revealed Comparative Advantage (RCA)

The RCA index is defined as the ratio of a country’s export share of a specific commodity in its total exports to the corresponding share of that commodity in total world exports. The measure is widely used to evaluate a country’s export competitiveness and to identify potential trade opportunities with existing and new trading partners. The index ranges from zero to positive infinity. An RCA value greater than one indicates that the country possesses a comparative advantage in the production and export of the concerned commodity, whereas a value below unity reflects a comparative disadvantage.

Balassa (1965) RCA index is calculated as follows:

$$RCA_{ij} = (X_{ij}/X_{it}) / (X_{wj}/X_{wt})$$

Where, X_{ij} = Value of country i^{th} exports of commodity j
 X_{it} = Country i^{th} total exports
 X_{wj} = World’s exports of commodity j
 X_{wt} = World’s total exports

Revealed Import Dependence (RID)

The Revealed Import Dependence (RID) index measures a country’s reliance on imports of a specific commodity on the part countries. It is calculated as the ratio of the share of a given commodity in a country’s total imports to the corresponding share of that commodity in total world imports. An RID value greater than one indicates a country’s high level of dependence on imports of that commodity, while a value below one reflects relatively lower dependence. It is computed using the following formula:

$$RID_{ij} = (M_{ij}/M_{it}) / (M_{wj}/M_{wt})$$

Where, M_{ij} = Value of country i^{th} imports of commodity j
 M_{it} = Country i^{th} total imports
 M_{wj} = World’s imports of commodity j
 M_{wt} = World’s total imports

DATA ANALYSIS AND DISCUSSION

Table 1 presents the composition of India’s major agricultural exports during the period 2010–2024. The table highlights both commodity-wise export values and their cumulative contribution over the reference period, thereby offering insights into the structural pattern and diversification of India’s agricultural export basket.

Rice (HS 1006) emerges as the single largest agricultural export commodity, registering a cumulative export value of US\$ 112,138.5 mn during 2010–2024. Rice exports witnessed a sharp rise from US\$ 2,295.8 mn in 2010 to US\$ 11,831.5 mn in 2024, indicating India’s strengthening position in global rice markets. This sustained growth reflects India’s comparative advantage in rice production, supported by surplus output, competitive pricing, and expanding international demand. Marine products, particularly crustaceans (HS 0306), also occupy a prominent position in India’s export composition, with total exports amounting to US\$ 55,031.7 mn over the study period. Exports of crustaceans increased significantly between 2010 and 2018, although some fluctuations are observed in later years, possibly due to global market uncertainties and trade disruptions. Similarly, frozen meat of bovine animals (HS 0202) recorded substantial export earnings of US\$ 49,689.8 mn, though exports show a declining trend after 2014, reflecting regulatory constraints and changing international trade dynamics. Among agro-based and processed agricultural products, new pneumatic tyres of rubber (HS 4011) and cane or beet sugar (HS 1701) exhibit notable export performance. Sugar exports, in particular, show considerable volatility, rising sharply in 2020 and 2022, which may be attributed to export incentives, surplus domestic production, and favourable global prices during those years.



Table 1: Composition of India's Major Agricultural Exports during 2010-2024

(US\$ million)

Sr. No.	HS Code	Commodity Description	2010	2012	2014	2016	2018	2020	2022	2024	Total (2010-2024)
1	1006	Rice	2295.8	6128.0	7905.7	5314.9	7361.5	7980.0	10766.6	11831.5	112138.5
2	306	Crustaceans	1058.6	1791.3	3834.9	3594.9	4491.7	3884.3	4907.5	4512.2	55031.7
3	202	Meat of bovine animals, frozen	1676.5	2962.6	4719.1	3680.2	3339.4	2762.4	2859.7	3557.8	49689.8
4	4011	New pneumatic tyres, of rubber	945.4	1718.7	1647.1	1394.6	1824.2	1741.9	2987.8	2970.2	28689.9
5	1701	Cane or beet sugar	857.8	2001.9	1116.1	1449.5	930.5	2494.6	5742.0	2259.3	31125.4
6	904	Pepper of the genus Piper.	426.6	676.6	735.4	843.7	773.9	1167.2	1175.0	1431.9	13867.3
7	2401	Unmanufactured tobacco	713.3	699.6	688.4	671.1	589.9	512.7	815.9	1394.9	10829.7
8	5208	Woven fabrics of cotton	657.2	899.3	987.3	965.9	1097.2	936.6	1341.4	1156.8	15590.6
9	901	Coffee	381.6	612.4	540.2	549.8	515.4	464.6	760.8	1129.4	9259.7
10	1302	Vegetable saps and extracts	591.6	6414.7	2216.2	757.1	994.4	619.8	954.8	997.9	22993.2
11	909	Seeds of anis, badian	144.6	284.4	388.3	384.4	522.7	633.2	609.6	970.1	7227.7
12	5201	Cotton	2973.0	3647.1	2821.7	1345.7	2203.3	1448.5	1203.8	918.3	32511.0
13	2106	Food preparations	89.6	146.8	194.3	215.5	306.6	453.8	622.9	829.8	5279.1
14	902	Tea	694.9	685.5	656.2	661.6	767.7	692.1	751.1	816.9	11059.3
15	713	Dried leguminous vegetables	193.3	190.8	208.4	217.3	291.9	261.0	563.8	813.4	4951.3
16	307	Molluscs	352.3	543.9	553.8	674.4	774.6	529.7	858.3	690.3	9692.9
17	2101	Extracts	201.9	326.1	340.4	337.6	381.7	315.0	494.3	661.7	5663.6
18	1905	Bread, pastry, cakes, biscuits	135.7	246.0	300.6	338.6	338.2	346.9	480.4	611.3	5265.6
19	1211	Plants and parts of plants	132.5	196.3	238.7	259.3	307.9	347.4	438.7	543.8	4519.3
20	806	Grapes, fresh or dried	109.0	184.6	246.6	264.0	318.8	315.7	339.0	462.5	4102.8
21	5209	Woven fabrics of cotton	257.7	530.1	544.5	428.8	465.5	373.5	548.8	456.7	6918.3
22	801	Coconuts, Brazil nuts and cashew nuts	582.9	811.7	949.7	836.0	759.9	482.9	416.9	429.5	10722.7
23	703	Onions, shallots, garlic	484.7	305.1	329.8	402.2	423.9	351.8	533.4	429.4	6616.5
24	2008	Fruits, nuts, edible parts of plants	19.8	68.3	121.2	117.5	144.8	186.3	234.3	414.0	2427.8
25	803	Bananas, incl. plantains, fresh or dried	25.1	23.6	34.9	60.8	55.8	101.4	162.8	359.5	1434.8
		Sub-Total	16001.2	32095.3	32319.5	25765.5	29981.2	29403.3	40569.8	40648.9	467608.4
		Total	27097.4	48052.8	50379.3	39668.6	45923.4	43921.6	51502.0	48779.5	683844.9

Source: UN Comtrade Database 2025

Further, Table 1 shows that Cotton and cotton-based products represent another significant segment of India's agricultural exports. Raw cotton (HS 5201) recorded cumulative exports of US\$ 32,511.0 mn, though a declining trend is observed after 2012. In contrast, woven fabrics of cotton (HS 5208 and HS 5209) demonstrate relatively stable export performance, suggesting a gradual shift towards value-added cotton exports rather than raw

cotton shipments. Overall, the subtotal of selected major agricultural commodities increased from US\$ 16,001.2 mn in 2010 to US\$ 40,648.9 mn in 2024. The total agricultural exports also show a rising trend over the period, despite fluctuations in certain years, underscoring India's expanding engagement in global agricultural trade.



Table 2: Composition of India's Major Agricultural Imports during 2010-2024

(US\$ million)

Sr. No.	HS Code	Commodity Description	2010	2012	2014	2016	2018	2020	2022	2024	Total (2010-2024)
1	713	Dried leguminous vegetables	1865.6	2272.3	2684.9	4017.2	1075.7	1568.3	1960.0	5140.2	20584.2
2	1512	Sunflower-seed, safflower	580.5	1314.8	1533.8	1316.2	1910.4	2079.7	3041.1	3700.9	15477.4
3	1701	Cane or beet sugar	981.3	401.8	544.0	922.4	583.5	641.6	251.3	1797.4	6123.2
4	801	Coconuts, Brazil nuts	581.2	937.4	1029.9	1209.4	1755.4	1121.7	1911.8	1664.5	10211.3
5	4002	Synthetic rubber	1002.6	1504.9	1170.8	784.7	1133.7	723.8	1428.7	1339.3	9088.5
6	4001	Natural rubber	637.2	966.9	841.0	655.9	922.6	544.6	1048.0	1061.1	6677.3
7	5201	Cotton	164.7	470.4	504.1	878.9	623.7	344.6	1451.0	1004.7	5442.2
8	4702	Chemical wood pulp	157.7	232.8	325.1	454.1	485.6	310.8	765.5	901.9	3633.4
9	2208	Undenatured ethyl alcohol	107.3	210.0	259.6	265.7	318.7	214.8	547.8	571.1	2494.9
10	4407	Wood sawn	57.3	160.3	205.5	275.4	423.7	356.2	500.5	508.7	2487.7
11	2207	Undenatured ethyl alcohol	67.7	29.0	87.8	192.3	267.1	307.4	239.2	489.7	1680.2
12	804	Dates, figs, pineapples, avocados	159.9	126.6	267.8	271.9	341.7	362.4	303.2	475.4	2308.8
13	808	Apples, pears and quinces	133.7	210.9	249.8	265.4	321.2	221.8	346.9	449.5	2199.2
14	4408	Sheets for veneering	27.0	56.0	91.4	199.9	234.4	169.4	270.8	364.1	1413.1
15	1201	Soya beans	0.0	0.7	2.4	33.0	78.9	292.1	416.4	349.0	1172.5
16	4705	Wood pulp	34.6	71.1	81.9	62.2	188.7	138.9	394.7	328.7	1300.8
17	5301	Flax, raw or processed	9.4	16.6	29.3	30.1	60.7	54.3	131.5	319.1	651.1
18	904	Pepper	49.4	111.6	183.0	186.6	141.0	90.2	210.3	282.0	1254.0
19	1301	Lac; natural gums, resins	86.4	95.5	121.2	146.6	168.3	172.7	256.4	257.7	1304.8
20	901	Coffee	60.0	125.1	137.7	112.9	135.3	107.7	202.8	236.4	1117.9
21	1005	Maize or corn	11.0	1.8	6.3	40.8	15.6	64.7	11.6	234.8	386.5
22	2202	Waters	41.0	61.6	127.8	134.6	108.5	95.2	240.0	229.7	1038.4
23	907	Cloves, whole fruit, cloves and stems	50.3	90.6	104.5	141.6	136.6	170.7	113.8	222.9	1031.0
24	4011	New pneumatic tyres, of rubber	429.2	480.2	416.8	521.3	448.0	205.7	265.4	212.5	2979.1
25	5101	Wool	300.7	344.0	355.1	288.7	317.2	146.2	240.6	205.3	2197.8
		Sub-Total	7595.53	10293.1	11361.4	13407.9	12195.9	10505.6	16549.3	22346.5	192827.1
		Total	19458.7	27355.4	28873.2	30547.7	29742.3	26862.0	20350.7	26111.8	413133.7

Source: UN Comtrade Database 2025



Table 2 highlights the composition and changing pattern of India’s major agricultural imports from 2010 to 2024. Dried leguminous vegetables constitute the largest import item, with imports rising from US\$ 1,865.6 mn in 2010 to US\$ 5,140.2 mn in 2024, accounting for a cumulative value of US\$ 20,584.2 mn over the period. Sunflower-seed and safflower oil imports also increased substantially, from US\$ 580.5 mn in 2010 to US\$ 3,700.9 mn in 2024, with total imports amounting to US\$ 15,477.4 mn. Imports of coconuts and Brazil nuts rose from US\$ 581.2 mn to US\$ 1,664.5 mn, aggregating US\$ 10,211.3 mn during 2010–2024.

Among industrial and plantation-linked commodities, synthetic rubber imports fluctuated but remained high, increasing from US\$ 1,002.6 mn in 2010 to US\$ 1,339.3 mn in 2024, with a cumulative value of US\$ 9,088.5 mn, while natural rubber imports grew from US\$ 637.2 mn to US\$ 1,061.1 mn, totaling

US\$ 6,677.3 mn. Cotton imports expanded markedly from US\$ 164.7 mn in 2010 to US\$ 1,004.7 mn in 2024, amounting to US\$ 5,442.2 mn. Imports of chemical wood pulp increased from US\$ 157.7 mn to US\$ 901.9 mn, with a total of US\$ 3,633.4 mn, reflecting rising demand from paper and packaging industries. Food and beverage-related imports also show an upward trend. Undenatured ethyl alcohol (HS 2208) imports increased from US\$ 107.3 mn in 2010 to US\$ 571.1 mn in 2024, totaling US\$ 2,494.9 mn, while apple, pear, and quince imports rose from US\$ 133.7 mn to US\$ 449.5 mn, with cumulative imports of US\$ 2,199.2 mn. Overall, the sub-total of major agricultural commodities increased from US\$ 7,595.5 mn in 2010 to US\$ 22,346.5 mn in 2024, whereas total agricultural imports grew from US\$ 19,458.7 mn to US\$ 26,111.8 mn, underscoring India’s rising dependence on selected agricultural and allied imports over the study period.

Table 3: Agricultural Commodities with RCA Index >1 for India

Sr. No.	HS Code	Commodity Description	RCA of India
1	908	Nutmeg, mace and cardamoms	16.7
2	508	Coral and similar materials	11.6
3	903	Mate	10.4
4	5201	Cotton	8.7
5	1302	Vegetable saps and extracts	7.4
6	5202	Cotton waste	6.8
7	1001	Wheat and meslin	5.8
8	5301	Flax, raw or processed	4.9
9	1301	Lac; natural gums	4.7
10	902	Tea	3.6
11	5305	Coconut	3.2
12	5006	Silk yarn and yarn spun	2.9
13	501	Human hair, unworked	1.9
14	5002	Raw silk "non-thrown"	1.8
15	5211	Woven fabrics of cotton	1.5
16	1002	Rye	1.4
17	2403	Manufactured tobacco	1.3
18	5303	Jute and other textile bast fibres	1.2
19	2103	Sauce and preparations	1.1
20	304	Fish fillets	1.1

Note: Calculated on the basis of average 2010-2024

Source: UN Comtrade Database 2025

Table 3 presents agricultural and allied commodities in which India exhibits a revealed comparative advantage (RCA > 1), calculated on the basis of average values for the period 2010–2024. The results indicate that India possesses strong export competitiveness in a diverse range of primary, plantation, and agro-based products. India’s highest comparative advantage is observed in nutmeg, mace and cardamoms (HS 0908) with an RCA value of 16.7, highlighting the country’s dominant position in the global spice market. This is followed by coral and similar materials (HS 0508) with an RCA of 11.6 and mate (HS 0903) at 10.4, indicating strong specialization in niche agricultural and natural products. Traditional agricultural commodities such as cotton (HS 5201) also show a high RCA of 8.7, reflecting India’s

well-established cotton production and export base. Similarly, vegetable saps and extracts (HS 1302) and cotton waste (HS 5202) record RCA values of 7.4 and 6.8, respectively, suggesting competitiveness across both primary and by-product segments. Cereal and fibre crops further contribute to India’s export strength. Wheat and meslin (HS 1001) exhibit an RCA of 5.8, while flax, raw or processed (HS 5301) and lac and natural gums (HS 1301) show RCA values of 4.9 and 4.7, respectively. Plantation and beverage-related products such as tea (HS 0902) with an RCA of 3.6 and coconut (HS 5305) at 3.2 also demonstrate sustained comparative advantage in international markets. Several labour-intensive and value-added products record moderate but significant RCA values. These include silk



yarn (HS 5006) with an RCA of 2.9, silkworm cocoons (HS 5001) at 2.7, and woven fabrics of cotton (HS 5211) at 1.5, underscoring India's strength in agro-based textile exports. Additionally, products such as jute and other textile bast fibres (HS 5303), manufactured tobacco (HS 2403), and fish fillets (HS 0304), with RCA values marginally above unity, indicate emerging or stable

comparative advantages. Overall, the table reveals that India's comparative advantage in agricultural trade is concentrated in spices, fibres, plantation crops, and agro-based manufactures. The presence of a large number of commodities with RCA values exceeding unity reflects India's diversified and competitive agricultural export structure over the period 2010–2024.

Table 4: Agricultural Commodities with RID Index >1 for India

Sr. No.	HS Code	Commodity Description	RID of India
1	5002	Raw silk "non-thrown"	26.4
2	907	Cloves, whole fruit, cloves and stems	19.3
3	5303	Jute and other textile bast fibres	13.9
4	5310	Woven fabrics of jute	11.6
5	801	Coconuts, Brazil nuts and cashew nuts	10.2
6	1301	Lac; natural gums, resins	9.9
7	1512	Sunflower-seed, safflower	8.6
8	501	Human hair, unworked	7.4
9	1401	Vegetable materials	7.0
10	906	Cinnamon and cinnamon-tree flowers	6.4
11	5006	Silk yarn and yarn spun from silk waste	5.7
12	4707	Recovered "waste and scrap"	5.4
13	4702	Chemical wood pulp, dissolving grades	4.8
14	4004	Waste, parings and scrap of soft rubber	4.4
15	909	Seeds of anis, badian, fennel, coriander	4.0
16	4106	Tanned or crust hides and skins	3.6
17	5311	Woven fabrics of vegetable textile fibres	3.1
18	4002	Synthetic rubber	2.7
19	2207	Undenatured ethyl alcohol	1.2
20	4007	Vulcanised rubber thread and cord	1.1

Note: Calculated on the basis of average 2010-2024

Source: UN Comtrade Database 2025

Table 4 reports agricultural and allied commodities for which India exhibits a Revealed Import Dependence (RID) index greater than unity, based on average values for the period 2010–2024. An RID value above 1 indicates a relatively high dependence on imports for meeting domestic demand compared to the global average. The highest import dependence is observed in raw silk (non-thrown) (HS 5002) with an exceptionally high RID value of 26.4, reflecting India's substantial reliance on imports to support its silk-based textile industry. This is followed by cloves (HS 0907) with an RID of 19.3, highlighting India's strong dependence on imported spices despite its overall competitiveness in several spice commodities. Jute and other textile bast fibres (HS 5303) and woven fabrics of jute (HS 5310) also show high RID values of 13.9 and 11.6, respectively, indicating supply constraints in domestic production of specific jute varieties and processed forms.

Among plantation and oilseed-related commodities, coconuts, Brazil nuts and cashew nuts (HS 0801) record an RID of 10.2, while sunflower and safflower seeds (HS 1512) show an RID of 8.6, underlining India's dependence on imports of edible oils and related raw materials. Lac, natural gums and resins (HS 1301) also display a high RID of 9.9, suggesting insufficient domestic

availability relative to industrial demand. Rubber-related products such as synthetic rubber (HS 4002) and waste and scrap of rubber (HS 4004), with RID values of 2.7 and 4.4, further point to dependence on imported industrial raw materials. Several commodities exhibit moderate import dependence, including apples, pears and quinces (HS 0808) with an RID of 1.5, other oilseeds (HS 1207) at 1.9, and undenatured ethyl alcohol (HS 2207) at 1.2, indicating partial reliance on imports to supplement domestic supply. Overall, the table reveals that India's import dependence is concentrated in silk and jute-related products, edible oils, spices, rubber, and agro-industrial inputs. This pattern highlights structural gaps in domestic production and processing capacities, despite India's strong export competitiveness in several agricultural commodities during 2010–2024.

CONCLUSIONS

Agriculture remains a crucial sector of the Indian economy, supporting livelihoods, ensuring food security, and contributing to India's foreign exchange earnings through trade. The composition of India's agricultural exports and imports from 2010 to 2024 reflects both the country's production strengths and domestic consumption needs. Analysis of major agricultural exports shows that rice (HS 1006) leads with total exports of US\$



112,138.5 mn, followed by crustaceans (HS 0306) at US\$ 55,031.7 mn, cotton (HS 5201) at US\$ 32,511.0 mn, and cane or beet sugar (HS 1701) at US\$ 31,125.4 mn. Other notable export commodities include pepper (US\$ 13,867.3 mn), tea (US\$ 11,059.3 mn), and coconuts, Brazil nuts and cashew nuts (US\$ 10,722.7 mn). On the import side, India shows substantial reliance on dried leguminous vegetables (US\$ 20,584.2 mn), sunflower-seed and safflower (US\$ 15,477.4 mn), coconuts and Brazil nuts (US\$ 10,211.3 mn), and synthetic rubber (US\$ 9,088.5 mn), indicating the need to supplement domestic production for these commodities.

The RCA and RID analysis further highlights India's dual agricultural trade pattern. India demonstrates strong export competitiveness in commodities such as nutmeg, mace and cardamoms (RCA = 16.7), coral and similar materials (RCA = 11.6), mate (RCA = 10.4), and cotton (RCA = 8.7). Other commodities with high comparative advantage include vegetable saps and extracts (RCA = 7.4), cotton waste (RCA = 6.8), wheat and meslin (RCA = 5.8), and flax, raw or processed (RCA = 4.9). At the same time, India exhibits significant import dependence in key commodities. The highest RID values are observed for raw silk "non-thrown" (RID = 26.4), cloves (RID = 19.3), and jute and other textile bast fibres (RID = 13.9). Other important commodities showing dependence include woven fabrics of jute (RID = 11.6), coconuts, Brazil nuts and cashew nuts (RID = 10.2), lac and natural gums (RID = 9.9), and sunflower and safflower seeds (RID = 8.6). This pattern highlights structural gaps in domestic production and the need for imports to meet industrial and consumption requirements.

Overall, the study indicates that India's agricultural trade is highly diversified, with strong export performance in spices, fibers, cereals, and plantation crops, alongside notable import reliance in silk, jute, edible oils, and certain agro-industrial inputs. The findings suggest that policy interventions aimed at enhancing domestic productivity, promoting value addition, and reducing import dependence could strengthen India's global trade position and support sustainable growth in the agricultural sector.

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