India's International Trade of Four Specific Commodities in the Recent Past Some Insights

Preface

The study uses trade indicators to analyse merchandise export and import data in a way that should be useful for the purpose of policy. The indicators provide a glimpse of the trade patterns of the world and the performance of India in comparison to various other countries. They have been used in the case of India's exports of **Starches; Inulin & Babies' Garments and Clothing Accessories** and imports of **Potassic Fertilizer & Nitrile Function Compounds** to indicate the possible directions policy may take.

The data used in this study has been sourced from the Export Import Data Bank of the DGCI&S, Department of Commerce, and Government of India and from the United Nations Comtrade Database. Introduction notes of each commodities has been sourced from the various sights –viz Wikipedia, Britannica, The Economic Times etc.

Computations are based on data at ITC-HS four-digit level (ITC-HS Code-1108 & 6111for export and 3104 & 2926 for import) and the latest finalized data available on the UN Comtrade Database up to year 2020 and on the DGCI&S Database up to June'2022. So, trends from 2017 to 2020 have been shown when we extract the data from UN Comtrade and from 2018 to 2021 have been shown when we extract the data from DGCIS Data base.

In this report, we will see various analysis and aspects of India's Precious as well as International export trade of Starches ; Inulin & Babies' Garments and Clothing Accessories and imports of Potassic Fertilizer & Nitrile Function Compounds. We will use both the 4 digit Commodity codes, for our analysis, as appropriate.

Trends in India's as well as International Trade i.e. Exports and Imports of above four Commodities are given below in different tables :

- Table1: India's top 10 Export destination of Starches ; Inulin with their shares in percentage.
- Table 2 : World's top 10 Exporters of Starches ; Inulin with their shares in percentage.
- Table 3 : World's top 10 Importers of Starches ; Inulin with their shares in percentage.
- Annex- I : Top 3 sources of Starches ; Inulin of World's top 3 Importers.
- Table 4: India's top 10 Export destination of Babies' Garments with their shares in percentage.
- Table 5: World's top 10 Exporters of Babies' Garments with their shares in percentage.
- Table 6 : World's top 10 Importers of Babies' Garments with their shares in percentage.
- Annex-II : Top 3 sources of Babies' Garments of World's top 3 Importers.
- Table 7 : India's top10 Sources of Potassic Fertilizer with their shares in percentage.
- Table 8 :World's top 10 Importers of Potassic Fertilizer Oils with their shares in percentage.
- Table 9 : India's top 10 Sources of Nitrile Function Compounds with their shares in percentage.
- Table 10 : World's top 10 Importers of Nitrile Function Compounds with their shares in percentage.

EXPORT

Starches; Inulin

Starch or **amylum** is a polymeric carbohydrate consisting of numerous glucose units joined by glyosidic bonds. This polysaccharide is produced by most green plants for energy storage. Worldwide, it is the most common carbohydrate in human diets, and is contained in large amounts in staple foods such as wheat, potatoes, maize (corn), rice, and cassava (manioc).

Pure starch is a white, tasteless and odourless powder that is insoluble in cold water or alcohol. It consists of two types of molecules: the linear and helical amylose and the branched amylopectin. Depending on the plant, starch generally contains 20 to 25% amylose and 75 to 80% amylopectin by weight. Glycogen, the energy reserve of animals, is a more highly branched version of amylopectin. In industry, starch is converted into sugars, for example by malting, and fermented to produce ethanol in the manufacture of beer, whisky and biofuel. It is processed to produce many of the sugars used in processed foods. Mixing most starches in warm water produces a paste, such as wheat paste, which can be used as a thickening, stiffening or gluing agent. The greatest industrial non-food use of starch is as an adhesive in the papermaking process. § Clothing starch can be applied to certain textile goods before ironing, to stiffen them.

Starch grains from the rhizomes of *Typha* as flour have been identified from grinding stones in Europe dating back to 30,000 years ago. Starch grains from sorghum were found on grind stones in caves in Ngalue, Mozambique dating up to 100,000 years ago.

The starch industry extracts and refines starches from seeds, roots and tubers, by wet grinding, washing, sieving and drying. Today, the main commercial refined starches are corn-starch, tapioca, arrowroot, and wheat, rice, and potato starches. To a lesser extent, sources of refined starch are sweet potato, sago and mung bean. To this day, starch is extracted from more than 50 types of plants.

Untreated starch requires heat to thicken or gelatinize. When a starch is pre-cooked, it can then be used to thicken instantly in cold water. This is referred to as a pregelatinized starch.

Inulin is a type of prebiotic. It's not digested or absorbed in the stomach. It stays in the bowel and helps certain beneficial bacteria to grow. Inulin is a starchy substance found in a wide variety of fruits, vegetables, and herbs, including wheat, onions, bananas, leeks, artichokes, and asparagus. The inulin that is used in supplements most commonly comes from soaking chicory roots in hot water.

People commonly use inulin by mouth for weight loss, constipation, and diabetes. It's also used for high blood fats, including cholesterol and triglycerides, and many other conditions, but there is no good scientific evidence to support most of these uses.

Inulin is a natural storage carbohydrate present in more than 36,000 species of plants, including agave, wheat, onion, bananas, garlic, asparagus, Jerusalem artichoke, and chicory. For these plants, inulin is used as an energy reserve and for regulating cold resistance. Because it is soluble in water, it is osmotically active. Certain plants can change the osmotic potential of their cells by changing the degree of polymerization of inulin molecules by hydrolysis. Chicory root is the main source of extraction for commercial production of inulin. The extraction process for inulin is similar to obtaining sugar from sugar beets. After harvest, the chicory roots are sliced and washed, then soaked in a solvent; the inulin is then isolated, purified, and spray dried. Inulin may also be synthesized from sucrose. Inulin received no-objection status as generally recognized as safe (GRAS) from the US Food and Drug Administration (FDA), including long-chain inulin as GRAS. Inulin and its analogue sinistrin are used to help measure kidney function by determining the glomerular filtration rate which is the volume of fluid filtered from the renal (kidney) glomerular capillaries into the Bowman's capsule per unit time.

Nonhydrolyzed inulin can also be directly converted to ethanol in a simultaneous scarification and fermentation process, which may have potential for converting crops high in inulin into ethanol for fuel.

These are broadly classified under H.S. Code-1108.

	india 5 10p 10 destination of startenes : india (115 Code 1100)								
Rank	Countries	2018	8	2019)	2020)	2021	
		Value	Share	Value	Share	Value	Share	Value	Share
		(million\$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	Malaysia	22.65	23.28	5.13	10.37	8.19	20.73	70.54	36.12
2.	Indonesia	25.43	26.13	17.66	35.69	9.89	25.03	54.04	27.67
3.	Vietnam	7.41	7.61	1.09	2.20	1.66	4.20	21.76	11.14
4.	UAE	8.25	8.48	5.03	10.17	4.88	12.35	9.09	4.65
5.	Thailand	0.28	0.29	0.76	1.54	0.25	0.63	6.18	3.16
6.	Sri Lanka	3.12	3.21	3.03	6.12	1.61	4.07	4.55	2.33
7.	Nepal	1.26	1.29	2.95	5.96	1.50	3.80	3.79	1.94
8.	Bangladesh	5.63	5.79	1.23	2.49	2.34	5.92	3.24	1.66
9.	Nigeria	2.21	2.27	0.64	1.29	0.68	1.72	3.03	1.55
10.	U S A	0.92	0.95	1.25	2.53	0.61	1.54	2.68	1.37
	Others	20.15	20.71	10.71	21.65	7.89	19.97	16.40	8.40
	Total	97.31	100	49.48	100	39.51	100	195.28	100

 Table – 1

 India's Top 10 destination of Starches : Inulin (H.S Code-1108)

Source: DGCI&S.

Note : India's Export including re-export

Leading importers of Starches : Inulin from India from 2018-2021(Values in million USD) Data label given on the basis of 2021



India's top 5 destinations of Starches : Inulin (H.S Code-1108)by percentage India in 2021:



In the year 2021, India has exported Starches : Inulin worth of US \$ 195.28 Million, showing the rise of almost 5 times compared to the year 2020. Malaysia is the largest market for Starches : Inulin export from India, in 2021 Malaysia imported US \$ 70.54 Million worth of Starches : Inulin from India which was 36.12% share of India's total export. It was followed by Indonesia and Viet Nam with 27.67% and 11.14% share. The top 10 countries in total shared the share of 91.60% of the Starches : Inulin export value from India.

Ran	Countries	2017		201	8	2019)	2020	0
k		Value	Share	Value	Share	Value	Share	Value	Share
		(million \$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	Thailand	1030.75	28.46	1366.43	31.30	1236.38	28.35	1158.95	26.45
2.	Viet Nam	746.73	20.62	798.48	18.29	872.47	20.01	867.73	19.80
3.	Germany	364.71	10.07	378.75	8.68	365.97	8.39	397.10	9.06
4.	China	129.98	3.59	239.35	5.48	302.32	6.93	264.01	6.02
5.	Belgium	169.84	4.69	189.95	4.35	194.49	4.46	217.04	4.95
6.	Denmark	125.38	3.46	144.53	3.31	144.86	3.32	185.61	4.24
7.	USA	95.97	2.65	92.83	2.13	112.35	2.58	128.52	2.93
8.	Netherlands	75.76	2.09	87.05	1.99	78.50	1.80	92.67	2.11
9.	India	43.00	1.19	98.03	2.25	49.33	1.13	91.94	2.10
10.	Poland	98.74	2.73	123.55	2.83	109.33	2.51	83.01	1.89
	Others	741.27	20.47	846.33	19.39	894.66	20.52	895.62	20.44
	Total	3622.11	100	4365.27	100	4360.65	100	4382.20	100

 Table-2

 World's Top 10 exporter of Starches : Inulin (H.S Code-1108)

Source: UN Comtrade

Leading Starches : Inulin of world during the period from 2017 to 2020 (Values in million USD) Data label given on the basis of 2020



Country wise world's leading exporter of Starches : Inulin by percentage in 2020 :



In value terms, Global export of Starches : Inulin amounted to US \$ 4.38 Billion in 2020, increased by US \$ 22 Million over the last year. Thailand was the main global supplier of Starches : Inulin with a worth value of US \$1.16 Billion which was accounted by 26.45% share of global exports in that year. It was followed by Viet Nam (19.80%), Germany (9.06%). Though, the India is one of the largest producer of Starches : Inulin. However, India was far behind from Thailand in the global export of Starches : Inulin and stood at 9th position in ranking in the world with 2.10% share of world export in 2020.

Rank	Countries	2017	1	2018		2019		2020	
		Value	Share	Value	Share	Value	Share	Value	Share
		(million\$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	China	835.25	21.89	993.76	21.97	1083.67	23.39	1199.18	25.73
2.	USA	288.54	7.56	335.34	7.41	353.71	7.63	342.79	7.35
3.	Germany	199.74	5.23	241.95	5.35	248.71	5.37	253.20	5.43
4.	Indonesia	221.62	5.81	390.49	8.63	348.58	7.52	236.38	5.07
5.	Netherlands	149.15	3.91	166.43	3.68	176.00	3.80	194.01	4.16
6.	Other Asia nes	165.15	4.33	202.15	4.47	199.44	4.30	193.09	4.14
7.	UK	151.87	3.98	164.63	3.64	178.35	3.85	181.86	3.90
8.	Malaysia	145.05	3.80	199.10	4.40	162.35	3.50	163.74	3.51
9.	France	124.62	3.27	134.59	2.97	129.80	2.80	136.92	2.94
10.	Rep. of Korea	115.80	3.03	117.45	2.60	113.26	2.44	117.68	2.52
41.	India	24.87	0.65	12.87	0.28	14.12	0.30	14.07	0.30
	Others	1393.83	36.53	1565.44	34.60	1625.84	35.09	1628.28	34.93
	Total	3815.49	100	4524.20	100	4633.82	100	4661.21	100

 Table-3

 World's top 10 Importers of Starches : Inulin (H.S Code-1108)

Source : UN Comtrade

Leading Starches : Inulin importers of world from 2017 to 2020(Values in million USD)

Data label given on the basis of 2020



Country wise world's leading importers of Starches : Inulin by percentage in 2020



The volume of global imports of Starches : Inulin totaled US \$ 4.66 Billion in 2020. The China Remains the Largest Global Importer of Starches : Inulin, comprising 25.73% of global imports in 2020. It was followed by USA (7.35%), Germany (5.43%) of global import. In that year India imported only 0.30% share of global import and stood at 41st rank in the world.



China imports most of its requirements of Starches; Inulin from Thailand with 59.10 % share of China's total import of Starches:Inulin. Viet Nam (32.42%) & Netherland (2.11%) were the 2nd and 3rd major source of the commodity to China in the same year.(**Source: UN Comtrade**)

ii) Top 3 Sources of Starches : Inulin_to USA in 2020 by percentage:



23.09% of Starches ; Inulin imports of USA came from Thailand in 2020, followed by Netherland (11.59%) and Belgium (10.42%). USA imports of Starches ; Inulin only 0.24% from India in that year.(Source: UN Comtrade)



iii) Top 3 Sources of Starches : Inulin to Germany in 2020 by percentage:

Austria was the largest source of Starches ; Inulin to Germany in 2020, 24.38% of total Starches ; Inulin import by Germany from Austria in 2020. France(21.63%) and Netherlands(18.88%) were other important sources of Starches ; Inulin to Germany in that year. In the same year there is very little amount of Starches ; Inulin exported from India to Germany (**Source : UN Comtrade**)

Babies' Garments and Clothing Accessories

Babies' Garments is clothing made for infants. Baby fashion is a social-cultural consumerist practice that encodes in children's fashion the representation of many social features and depicts a system characterized by differences in social class, richness, gender, or ethnicity.

Babies' Garments clothing size is typically based on age. These are usually preemie for a preterm birth baby, 0 to 3 months, 3 to 6 months, 6 to 9 months, 9 to 12 months, 12 months, 18 months, and 24 months, though there is no industry standard definition for those sizes. Most retailers provide sizing charts based on a child's weight, height, or both, and the child's weight and height percentile may also be used for properly sizing clothing for the infant.

Clothing and bedding "interfere with normal exercise and growth and keep the baby from taking comfortable postures or changing posture during sleep". An infant may stretch, necessitating clothing that is sufficiently loose to allow movement.

Comfort, mobility and ease of access are major aspects of modern baby clothes. In Western countries babies typically wear bodysuits and baby grows. If it is warm enough, these might be sufficient for both daytime and nightwear, supplemented by bibs for feeding time. For cooler weather and more formal occasions, they might become underwear beneath outfits more comparable to those worn by adults. While these outer clothes often feature child-friendly images such as cartoons, for especially formal occasions such as weddings infants might wear scaled down adult styles such as mini-tuxedos.

During warmer summer months rompers and 2-in-1 dresses (a dress top half with a romper under section) are very popular choices. These styles of clothing allow young babies to move around with ease and comfort. In cold weather, outerwear such as snowsuits can keep babies warm.

For young babies garments will often have full leg and back openings to allow for easy nappy changing. Other helpful features also include fold over scratch mitts to the sleeves, to help prevent very young babies from accidentally scratching themselves.

Snaps (also known as poppers) or zip fastenings have become more popular because they are easier to use than traditional buttons. Due to babies' soft skin, one of the more important attributes to look for in infant and baby clothing is that the clothes are soft and not rough. Soft baby clothes made from organic cotton or eco-friendly materials are becoming more popular. There are even infant clothes now made with bamboo rayon fibres which are marketed as being breathable and soft to the touch.

Babies' Garments comes in a variety of materials, such as bamboo or cotton. Bamboo is a popular style and is well liked because of its very soft feel, however it tends to pill easily with wear. In addition

to regular cotton, infant cotton clothing comes in different varieties. Brushed cotton feels luxuriously smooth and cool thanks to a unique finishing technique called brushing. Pima cotton is a high-end type of cotton with longer fibers than conventional cotton. It has a reputation for producing a smooth fabric that's soft to the touch, wrinkle-resistant, and ultra-durable.

Infants may have allergic reactions to certain materials, especially synthetic fibres such as polyester, rayon, and nylon, and natural fibres such as wool.

Excessive thermal insulation has been associated with an increased incidence of sudden infant death syndrome (SIDS). The primary causes are an excess of bedding or clothing, soft sleep surfaces, and stuffed animals. The odds ratio of SIDS associated with thermal insulation at least two togs above the lower critical value (after adjusting for the season and confounding factors) was 1.35 in a New Zealand study, which also found that SIDS had some correlation with too little thermal insulation. A 1984 study of 34 infant cot deaths found that for 2/3 excessive clothing and over-wrapping was a contributing cause.

These are broadly classified under H.S. Code-6111.

 Table – 4

 India's Top 10 destination of Babies' Garments and Clothing Accessories(H.S Code-6111)

Rank	Countries	2018	3	2019)	2020)	2021	
		Value	Share	Value	Share	Value	Share	Value	Share
		(million\$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	U S A	185.65	21.94	255.88	27.59	142.00	30.58	367.26	36.37
2.	UK	173.92	20.56	170.57	18.39	76.79	16.54	153.58	15.21
3.	UAE	109.55	12.95	92.23	9.94	39.38	8.48	82.02	8.12
4.	Germany	54.91	6.49	55.92	6.03	27.84	5.99	46.10	4.56
5.	Saudi Arab	31.84	3.76	41.81	4.51	23.43	5.05	41.37	4.10
6.	Netherland	29.15	3.45	31.26	3.37	19.38	4.17	40.75	4.04
7.	France	53.08	6.27	49.62	5.35	19.73	4.25	39.73	3.93
8.	Spain	24.25	2.87	26.11	2.81	12.65	2.72	28.17	2.79
9.	Poland	15.90	1.88	23.62	2.55	11.20	2.41	20.43	2.02
10.	Canada	15.52	1.83	14.97	1.61	7.04	1.52	20.28	2.01
	Others	152.29	18.00	165.62	17.85	84.96	18.29	170.23	16.86
	Total	846.06	100	927.61	100	464.40	100	1009.91	100

Source: DGCI&S

Note : India's Export including re-export

India's major destination Babies' Garments from 2018-2021(Values in million USD) Data label given on the basis of 2021





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In 2021, India's export of Babies' Garments and Clothing Accessories amounted to US \$ 1.10Billion, going up by more than 100% against the previous year figure. Over the period under review, Babies' Garments export from India reached its maximum volume in 2021. USA represented the major importer of Babies' Garments and Clothing Accessories from India in 2020, recording US \$ 367.26 Million which was 36.37% of total export of India, followed by UK and UAE with 15.21% and 8.12% share of India's total export value of Babies' Garments and Clothing Accessories 2021.

 Table - 5

 World's Top 10 exporter of Babies' Garments and Clothing Accessories (H.S Code-6111)

	a	2017		0.01	0	0.01/	2	2020	
Rank	Countries	2017		201	8	2019	J	2020	0
		Value	Share	Value	Share	Value	Share	Value	Share
		(million \$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	China	2371.51	36.33	2358.30	36.45	2130.57	32.54	1704.83	28.95
2.	India	899.33	13.78	846.48	13.08	927.86	14.17	800.97	13.60
3.	Cambodia	280.15	4.29	290.94	4.50	415.19	6.34	350.96	5.96
4.	Viet Nam	250.65	3.84	272.79	4.22	301.34	4.60	317.36	5.39
5.	Poland	143.90	2.20	174.26	2.69	166.12	2.54	260.27	4.42
6.	Spain	192.22	2.94	219.64	3.40	247.62	3.78	242.04	4.11
7.	Germany	182.20	2.79	208.82	3.23	203.27	3.10	228.29	3.88
8.	Turkey	183.30	2.81	182.00	2.81	204.37	3.12	215.82	3.66
9.	Sri Lanka	192.38	2.95	0.00	0.00	183.47	2.80	197.20	3.35
10.	France	207.84	3.18	215.82	3.34	217.48	3.32	182.47	3.10
	Others	1623.85	24.88	1700.31	26.28	1550.54	23.68	1389.40	23.59
	Total	6527.35	100	6469.37	100	6547.83	100	5889.61	100

Source: UN Comtrade

Top world exporters of Babies' Garments from 2017 to 2020 (Values in million USD) Data label given on the basis of 2020



Export trends in world's leading Babies' Garments exporters by percentage in 2020:



Global export of Babies' Garments and Clothing Accessories was totaled US \$ 5.89 Billion in 2020. In that year the total export value decreased at an rate of -10.06% from 2019. The trend pattern indicated some almost constant over the period under review except 2020. China represented the major exporter of Babies' Garments and Clothing Accessories in the world, exported 28.95% share of world export. India constitutes the 2nd largest exporter of the Commodity in the same year with 13.60% share of world export, which was followed by Cambodia with 5.96% share.

Rank	Countries	2017		2018		2019		2020	
		Value	Share	Value	Share	Value	Share	Value	Share
		(million \$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	USA	1889.10	25.16	1949.03	25.60	1892.07	26.02	1587.97	24.19
2.	Germany	497.02	6.62	536.83	7.05	475.50	6.54	517.08	7.88
3.	UK	550.77	7.34	555.93	7.30	559.93	7.70	489.95	7.46
4.	France	513.28	6.84	529.68	6.96	515.50	7.09	468.32	7.13
5.	Spain	364.77	4.86	380.65	5.00	410.32	5.64	432.72	6.59
6.	Poland	215.08	2.86	212.94	2.80	181.64	2.50	257.88	3.93
7.	Italy	284.60	3.79	305.86	4.02	266.23	3.66	219.20	3.34
8.	Japan	236.73	3.15	234.82	3.08	215.71	2.97	191.50	2.92
9.	Netherlands	153.85	2.05	164.92	2.17	149.08	2.05	150.75	2.30
10.	Canada	177.14	2.36	178.50	2.34	174.57	2.40	147.36	2.24
35.	India	19.49	0.26	34.75	0.46	39.48	0.54	26.24	0.40
	Others	2605.50	34.71	2529.62	33.23	2390.95	32.88	2075.73	31.62
	Total	7507.33	100	7613.55	100	7270.99	100	6564.71	100

 Table - 6

 World's top 10 Importers of Babies' Garments and Clothing Accessories (H.S Code-6111)

Source :UNComtrade

Top world importers of Babies' Garments from 2017 to 2020 (Values in million USD) Data label given on the basis of 2020



The USA imported around US \$ 1.58 Billion worth of Babies' Garments and Clothing Accessories in 2020, making it the leading importer of Babies' Garments worldwide that year. Germany followed in second place, importing around US \$ 517.08 million worth of the commodity. It was followed by UK, imported US \$ 489.95 million of Babies' Garments in the same year. India's share was only 0.40% share of world import. The top 10 importing countries imported 68.38% share of world import of Babies' Garments in that year.



i) Top 3 Sources of Babies Garments' to USA in 2020 by percentage:



In the year 2020 USA, imports largest worth value of Babies' Garments and Clothing Accessories 25.61% share from China, which was followed by Cambodia (19.25%) and Viet Nam (14.61%). **India** has exported 14.07% of USA's total import in 2020.(**Source: UN Comtrade**)



Top 3 Sources of Babies' Garments to Germany in 2020 by percentage:

Bangladesh was the number one source of Babies' Garments and Clothing Accessories to Germany, imports 30.24% from Bangladesh, 19.07% from China in 2020. In the same year **India** has exported 12.83% share of Germany's Total import of Babies' Garments and Clothing Accessories and stood at 3rd largest source country of Babies' Garments and Clothing Accessories. (**Source: UN Comtrade**)



iii) Top 3 Sources of Babies Garments to UK in 2020 by percentage:

India was the largest source country of Babies' Garments and Clothing Accessories to UK in 2020, UK imports, 20.65% share of its total import of Babies' Garments and Clothing Accessories from India in 2020. 18.27% from China and 15.09% Babies' Garments and Clothing Accessories came from Bangladesh. (Source : UN Comtrade)

IMPORT Mineral or Chemical Fertilisers, Pottassic

A fertilizer or fertiliser is any material of natural or synthetic origin that is applied to soil or to plant tissues to supply plant nutrients. Fertilizers may be distinct from liming materials or other nonnutrient soil amendments. Many sources of fertilizer exist, both natural and industrially produced.^[1] For most modern agricultural practices, fertilization focuses on three main macro nutrients: Nitrogen (N), Phosphorus (P), and Potassium (K) with occasional addition of supplements like rock dust for micronutrients. Farmers applying these fertilizers in a variety of ways: through dry or pelletized or liquid application processes, using large agricultural equipment or hand-tool methods.

Potash is the third most important primary nutrient element required by the plants. Although crop-harvest removes more potash than nitrogen and phosphorus, the soil replenishes it faster than the other two. The deficiency of potash in soils is, therefore, not so marked as of nitrogen and phosphorus. Deficiency of potash in the field is symptomized by scorching of leaf tips advancing towards leaf margins and premature death of leaves even though enough nitrogen and phosphorus are supplied. Increased incidence of insects and pests attack and subsequent lodging of crop plants as the plants loose their mechanical strength are also caused by potash deficiency. Fertilizers supplying potash, the chief commercial ones are the potassium sulphate (50% K20) and the muriate of potash (60% K20). The others are relatively of very little importance.

ii)

On the basis of the percentage nutrient content, it is better to choose muriate of potash than potassium sulphate. Muriate of potash is also more suitable than potassium sulphate for acidic soils. Potassium sulphate should be preferred to muriate of potash for well aerated, calcareous (too much presence of calcium) and alkaline soils. In highly leached acid soils, where sulphur deficiency is suspected, the use of potassium sulphate can be justified. In both the fertilizers, potassium is utilised by the plants and the remaining portions are left in the soil. If muriate of potash is added to alkaline soil, accumulation of chloride may prove toxic to crops. Therefore, for alkaline soils, potassium sulphate should be preferred. Some crops are also sensitive to chloride damage (e.g., potato, tobacco etc). In such crops, potassium sulphate should be used.

The potassium content of potassic fertilizers is usually expressed as potassium oxide. K_2O , referred to as potash. These fertilizers are manufactured form minerals and ores. The commercial fertilizers are salts of potassium usually chlorides and sulphates which are soluble hence readily available to the plants.

The K fertilizers are usually applied before the crop is planted or sown, that is the basal dressing. Since the applied K is not lost from the soil either by leaching or by fixation, K fertilizers can be applied well in advance but it is preferable to apply only just before planting. Top dressing with K fertilizers can also be done for vegetables and other crop.

In 2020, Potassic Fertilizers were the world's 222nd most traded product, with a total import trade of \$15.1B. Between 2019 and 2020 the imports of Potassic Fertilizers decreased by -12.14%, from US \$17.18B to US \$15.1B. Trade in Potassic Fertilizers represent 0.09% of total world trade.

These are broadly classified under H. S. Code 3104.

Table - 7

Rank	Countries	2018		2019)	2020)	2021	l
		Value	Share	Value	Share	Value	Share	Value	Share
		(million \$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	Belarus	193.75	15.72	189.99	14.91	120.87	14.48	306.97	33.01
2.	Canada	380.14	30.84	345.58	27.12	254.45	30.49	206.09	22.16
3.	Jordan	153.47	12.45	144.08	11.31	103.14	12.36	125.90	13.54
4.	Israel	165.94	13.46	161.29	12.66	97.43	11.67	104.13	11.20
5.	Lithuania	109.10	8.85	217.30	17.05	83.13	9.96	94.34	10.14
6.	Russia	172.66	14.01	129.03	10.12	117.24	14.05	33.45	3.60
7.	Germany	30.65	2.49	42.02	3.30	39.06	4.68	21.00	2.26
8.	Taiwan	3.90	0.32	4.27	0.34	4.40	0.53	9.34	1.00
9.	UK	1.52	0.12	1.70	0.13	5.06	0.61	7.72	0.83
10.	Belgium	2.41	0.20	2.39	0.19	1.44	0.17	7.56	0.81
	Others	18.88	1.53	36.83	2.89	8.33	1.00	13.44	1.45
	Total	1232.43	100	1274.47	100	834.55	100	929.93	100

India's Top 10 Sources of Mineral or Chemical Fertilisers, Pottassic (HS Code : 3104)

Source: DGCI&S

Note : India's Import including re-import

India is completely dependent on imports. Imports of Potassic Fertilisers in India increased to US \$ 929.93 Million in 2021 from US \$ 834.55 Million in 2020. Over the period under review, global nitrile-function compounds imports attained its maximum worth value of US \$ 1.27 Billion in 2018. In 2021 India imported the highest dollar worth of Potassic Fertilizers from Belarus with valued at US \$ 307 Million. In Second and Third source countries were Canada and Jordan , from where India imported around US \$ 206.09 Million and US \$ 125.90 Million worth of Potassic Fertilizes respectively. In the same year. The top 10 countries shared 98.55% of the Nitrile Function Compounds import to India.

Table - 8

Rank	Countries	2017		2018		2019		2020	
		Value	Share	Value	Share	Value	Share	Value	Share
		(million \$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)
1.	Brazil	2636.56	18.31	3375.93	20.96	3714.62	21.62	2856.20	18.90
2.	USA	2611.55	18.14	2835.95	17.61	2951.78	17.18	2644.79	17.50
3.	China	1763.89	12.25	1900.34	11.80	2730.60	15.89	2171.25	14.37
4.	India	1079.52	7.50	1190.91	7.40	1269.19	7.39	1310.91	8.68
5.	Indonesia	804.72	5.59	985.45	6.12	871.92	5.07	742.91	4.92
6.	Belgium	365.15	2.54	467.08	2.90	436.99	2.54	387.01	2.56
7.	Malaysia	449.72	3.12	560.71	3.48	378.84	2.20	366.88	2.43
8.	Poland	244.22	1.70	283.57	1.76	298.25	1.74	283.41	1.88
9.	Viet Nam	340.34	2.36	300.62	1.87	266.05	1.55	281.87	1.87
10.	France	282.35	1.96	282.49	1.75	244.48	1.42	230.74	1.53
	Others	3820.62	26.53	3920.45	24.35	4021.48	23.40	3832.86	25.37
	Total	14398.63	100	16103.51	100	17184.20	100	15108.83	100

World Top 10 Importer of Mineral or Chemical Fertilisers, Pottassic (HS Code : 3104)

Source: UN Comtrade

In 2020 Global import of Potassic Fertilizer totalled were US \$ 15.10 Billion, which was decreased by 12.08% from the year of 2019. Global Potassic Fertilizer import peaked of US \$17.18 Billion in 2019, however, in the year 2020, it failed to regain its strength. In value terms, Brazil constitutes the largest market for imported Potassic Fertilizers worldwide with worth value of US \$ 2.85 Billion, making up 18.90% of global imports. The second position in the ranking was occupied by USA (US \$ 2.64 B), with the share of 17.50% of global imports. It was followed by the China with the share of 14.37%.In the same year **India** constitutes the 4th largest importer of Potassic Fertilizer in the world with worth value of US \$ 1.31 Billion, making up 8.68% share of world import.

Nitrile Function Compounds

A **nitrile** is any organic compound that has a $-C\equiv$ Nfunctional group. The prefix cyano- is used interchangeably with the term nitrile in industrial literature. Nitriles are found in many useful compounds, including methyl cyanoacrylate, used in super glue, and nitrile rubber, a nitrile-containing polymer used in latex-free laboratory and medical gloves. Nitrile rubber is also widely used as automotive and other seals since it is resistant to fuels and oils. Organic compounds containing multiple nitrile groups are known as cyan carbons.

Inorganic compounds containing the -C=N group are not called nitriles, but cyanides instead. Though both nitriles and cyanides can be derived from cyanide salts, most nitriles are not nearly as toxic.

The first compound of the homolog row of nitriles, the nitrile of formic acid, hydrogen cyanide was first synthesized by C. W. Scheele in 1782. In 1811 J. L. Gay-Lussac was able to prepare the very toxic and volatile pure acid. Around 1832 benzo nitrile, the nitrile of benzoic acid, was prepared by Friedrich Wohler and Justus von Liebig, but due to minimal yield of the synthesis neither physical nor chemical properties were determined nor a structure suggested. In 1834 Théophile-Jules Pelouze synthesized propionitrile, suggesting it to be an ether of propionic alcohol and hydrocyanic acid. The synthesis of benzonitrile by Hermann Fehling in 1844 by heating ammonium benzoate was the first method yielding enough of the substance for chemical research. Fehling determined the structure by comparing his results to the already known synthesis of hydrogen cyanide by heating ammonium format. He coined the name "nitrile" for the newfound substance, which became the name for this group of compounds.

Nitriles occur naturally in a diverse set of plant and animal sources. Over 120 naturally occurring nitriles have been isolated from terrestrial and marine sources. Nitriles are commonly encountered in fruit pits, especially almonds, and during cooking of Brassica crops (such as cabbage, Brussels sprouts, and cauliflower), which release nitriles through hydrolysis. Mandelonitrile, a cyanohydrin produced by ingesting almonds or some fruit pits, releases hydrogen cyanide and is responsible for the toxicity of cyanogenic glycosides.

Industrially, the main methods for producing nitriles are ammoxidation and hydrocyanation. Both routes are green in the sense that they do not generate stoichiometric amounts of salts.

Some nitriles are manufactured by heating carboxylic acids with ammonia in the presence of catalysts. This process is used to make nitriles from natural fats and oils, the products being used as softening agents in synthetic rubbers, plastics, and textiles and for making amines. Nitriles are also formed by heating amides with phosphorous pentoxide. They can be reduced to primary amines through the action of lithium aluminium hydride or hydrolysed to carboxylic acids in the presence of either an acid or a base.

Over 30 nitrile-containing pharmaceuticals are currently marketed for a diverse variety of medicinal indications with more than 20 additional nitrile-containing leads in clinical development. The nitrile group is quite robust and, in most cases, is not readily metabolized but passes through the body unchanged. The types of pharmaceuticals containing nitriles are diverse, from vildagliptin, an antidiabetic drug, to anastrozole, which is the gold standard in treating breast cancer. In many instances the nitrile mimics functionality present in substrates for enzymes, whereas in other cases the nitrile increases water solubility or decreases susceptibility to oxidative metabolism in the liver. The nitrile functional group is found in several drugs.

These are broadly classified under H. S. Code 2926.

		Source Coun		i dei ne i un						
Rank	Countries	2018		2019)	2020)	2021	l	
		Value	Share	Value	Share	Value	Share	Value	Share	
		(million \$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)	
1.	China	192.85	31.59	262.89	45.09	183.30	54.16	421.55	57.46	
2.	Korea RP	72.90	11.94	75.86	13.01	30.55	9.03	82.34	11.22	
3.	Taiwan	27.56	4.51	22.02	3.78	18.79	5.55	46.40	6.32	
4.	Belgium	1.57	0.26	10.67	1.83	7.63	2.25	39.82	5.43	
5.	U S A	75.35	12.34	63.15	10.83	25.78	7.62	39.78	5.42	
6.	Brazil	67.05	10.98	19.32	3.31	7.48	2.21	27.16	3.70	
7.	Netherland	61.39	10.06	29.22	5.01	15.79	4.67	23.61	3.22	
8.	Germany	10.44	1.71	11.44	1.96	9.42	2.78	22.99	3.13	
9.	Japan	0.86	0.14	1.12	0.19	2.06	0.61	7.02	0.96	
10.	Russia	21.85	3.58	7.45	1.28	3.15	0.93	4.76	0.65	
	Others	78.67	12.89	79.93	13.71	34.49	10.19	18.21	2.48	
	Total	610.49	100	583.07	100	338.44	100	733.65	100	

 Table - 9

 India's Top 10 Source Countries of Nitrile Function Compounds (HS Code : 2926)

Source: DGCI&S

Note: India's Import including Re-import

There is a total of 51 countries India imports Nitrile Function Compounds, from. The dollar value of Nitrile Function Compounds import in 2021 stood at US \$ 733.65 Million and US \$ 610.49 Million in 2018, which shows a growth of almost 17% from 2018, grew by 20.53% from 2019 and more 2 times from the year 2020.In 2021 India imported the highest dollar worth of Nitrile Function Compounds from China with valued at US \$ 421.55 Million. In Second and Third place were Korea RP, from which India imported around US \$ 82.34 Million and US \$ 46.40 Million worth of Nitrile Function Compounds respectively. In the same year the top 10 countries shared 97.52% of the Nitrile Function Compounds import to India.

	World Top 10 I	mporter of	Nitrile	Function C	unction Compounds (HS Code :2926)					
Rank	Countries	2017	2017			2019	1	2020		
		Value	Share	Value	Share	Value	Share	Value	Share	
		(million\$)	(%)	(million\$)	(%)	(million\$)	(%)	(million\$)	(%)	
1.	China	975.18	20.95	1393.91	22.68	1264.16	22.09	991.57	19.23	
2.	India	372.62	8.00	612.82	9.97	583.55	10.19	504.00	9.78	
3.	Brazil	175.46	3.77	212.73	3.46	281.28	4.91	350.38	6.80	
4.	USA	303.69	6.52	353.22	5.75	366.21	6.40	345.60	6.70	
5.	Italy	54.83	1.18	66.25	1.08	61.92	1.08	327.43	6.35	
6.	France	255.75	5.49	316.21	5.14	355.40	6.21	289.06	5.61	
7.	Rep. of Korea	257.91	5.54	382.00	6.22	316.09	5.52	258.12	5.01	
8.	Malaysia	198.23	4.26	290.70	4.73	248.43	4.34	211.58	4.10	
9.	Germany	261.87	5.63	281.31	4.58	252.61	4.41	208.81	4.05	

159.98

2077.15

6146.28

2.60

33.80

100

168.96

1825.41

5724.02

2.95

31.89

100

180.56

1488.33

5155.46

3.50

28.87

100

Table - 10World Top 10 Importer of Nitrile Function Compounds (HS Code :2926)

Source: UNComtrade

10.

Netherlands

Others

Total

165.89

1633.71

4655.14

3.56

35.09

100

Global nitrile-function compounds imports amounted to US \$ 5.15 Billion in 2020, approximately equating the previous year level. In general, nitrile-function compounds imports continue to indicate a relatively flat trend pattern. The most prominent rate of growth was recorded in 2018, when import increased by 25.27% from the previous year level. Over the period under review, global nitrile-function compounds imports attained its maximum worth value of US \$ 6.14 Billion in 2018, however, from 2019 to 2020, it failed to regain its strength. In 2020 China (US \$ 991.57 M) constitutes the largest market for imported nitrile-function compounds worldwide, making up 19.23% of global imports. The second position in the ranking was occupied by **India** (US \$ 504 M), with the share of 9.78% of global imports. It was followed by the Brazil, with the share of 6.80%.