A STUDY ON EXPORT PERFORMANCE OF FERTILISERS IN INDIA

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ABSTRACT

Fertilizer industry forms the backbone of India's agricultural sector in ensuring sufficient food grain production. He use of fertilizers facilitates faster food grain production as compared to organic means. Instead of getting into a scholarly argument on whether organic farming or fertilizer-based farming is good, what is important to note is that for a large proportion of the population, food in itself is very scarce and hence, fertilizer production is very important for more than 50 percent of our population in need of food. This indicates that India's fertilizer sector is less labour and capital intensive in relation to energy and materials. main objective of the study is To find out the export performance of Fertilizer products of India during the period of 2005-2019. The study makes use of statistical techniques such as Percentage analysis, Growth analysis, Standard Deviation, CAGR and CV in analyzing the data for finding the result.

Keywords: Fertilizer, Production, Export and India

INTRODUCTION

Fertilizers are widely used in agriculture to maintain soil fertility and to increase crop yields. Fertilizer is any organic or inorganic material of natural or synthetic origin that is applied through soil or leaves to the plants to supply nutrients essential to the growth and productivity. Before the Green Revolution, natural and traditional farming methods were adopted for

cultivation, which involved natural methods of maintaining soil fertility and controlling crop pests. Consequently, upon Green Revolution commendable agricultural production has been achieved mainly due to increased use of chemical fertilizers, pesticides and farm machinery. Fertilizers facilitated higher yields on less crop area than without the use of fertilizers; therefore, they are considered important elements in worldwide food production. Fertilizer industry forms the backbone of India's agricultural sector in ensuring sufficient food grain production. We need to have a well-fed nation so that people are able to use their time and potential productively with a healthy life. Unfortunately, a very large proportion of population (out of 1.2 billion) goes without food for social, economic or other reasons. The use of fertilizers facilitates faster food grain production as compared to organic means. Instead of getting into a scholarly argument on whether organic farming or fertilizer-based farming is good, what is important to note is that for a large proportion of the population, food in itself is very scarce and hence, fertilizer production is very important for more than 50 percent of our population in need of food. Thus, fertilizer assumes great significance in feeding the nation with a population of 1.2 billion. So, given the significance of fertilizers in food grain production, achieving efficiency in this sector becomes an important issue since improved efficiency in fertilizer production can help reduce the magnitude of hunger among the populace to a large extent. Like any other manufacturing industry, proper usage of inputs may have a significant impact on output growth or efficiency. Going by the Fertilizer Association of India (FAI), 2011-12 report, the Indian fertilizer sector has witnessed consistent growth over time, especially post 2000. A study by Mongia (1998) on India's fertilizer industry shows that there is an upward trend for all inputs related to labour and capital productivities while an opposite trend is seen in respect of material and energy inputs. This indicates that India's fertilizer sector is less labour and capital intensive in relation to energy and materials.

Regarding the domestic scenario, the production of fertilizers is carried out through a combination of public and private sector enterprises. According to the Centre for Monitoring of Indian Economy (CMIE) Report 2012-13, there are about 68 large and 72 medium and small fertilizer units in India. Among the large units, 47 plants are under private entrepreneurs, 18 under public entrepreneurs and 3 under co-operative entrepreneurs. Although the number of public enterprises is less at 18, they control the major share of production in this industry. Each and every firm also differs in terms of their share in production, consumption, savings, market

allocation and other attributes. Thus, to understand the best possible outcome it is important to compare all fertilizer firm categories and from them, identify the most efficient fertilizer firms. If we are able to identify the most efficient firm/s, other firms may get enthused to follow the best practices so that the sector as a whole will benefit. Also, more efficient production of fertilizers can help reduce the overall subsidy bill (assuming that less subsidy will be needed if the sector becomes more efficient). Right now, about 0.5 percent of the overall GDP of our country is spent on fertilizer subsidy (from the Report of Government on subsidies, IOSR, 2015) and an improved efficiency in this sector can certainly reduce this subsidy burden for the country.

However, technology itself can bring about performance differentials among fertilizer firms; with a proper technology in place, firms can produce more output by utilization of their currently available inputs. Besides, India's fertilizer industry has kept pace with technological developments at the global level through up-gradation and utilization of better feedstock. As mentioned before, subsidy is an important component that substantially influences the fertilizer sector. Of the inputs, 'material' and 'energy' continue to be highly subsidized. Within manufacturing, the fertilizer sector specially enjoys a lot of subsidy benefit. But, economic theory tells us that state supports like subsidies often tend to make producers less competitive and more lax. Thus, subsidization may be increasing inefficiencies among fertilizer firms

STATEMENT OF THE PROBLEM

India is a leading exporter of many products. Export and import in India develops day by day. In this case export of Fertilizer products plays an important role in the development of economy of our country. Indian agriculture has made rapid strides since independence. Peasant proprietor dominance of the agrarian structure, early completion of consolidation of land holdings, extension of irrigation facilities and a hard working peasantry are some of the factors, which contributed towards its early progress. After reorganization 1966, which incidentally also coincided with the advent of new high yielding varieties of wheat, rice, maize and bajra, the pace of development has further accelerated. Adoption of new agricultural technology consisting of hybrid seeds, chemical fertilizers, insecticides, pesticides, herbicides and modern agricultural practices set India agriculture on to a new growth trajectory. Within a few years, India emerged as a heartland of India's successful green revolution strategy. This led to far reaching changes in the state's agrarian structure. However, it is also recognized that India's agrarian structure would

not have been what it is today if the country had not opted in favor of technological solutions to solve the chronic food shortages with which it was faced in late 1950s and early 1960s.

OBJECTIVES OF THE STUDY

The research aims at enriching the knowledge understanding role of export performance of handicrafts. The following are the objective of the study.

- To find out the export performance of Fertilizer products of India.
- To know about the different types of Fertilizer products and its value of exports to different countries.
- To analyze the direction of trade of Fertilizer export from India.

SCOPE OF THE STUDY

The scope of this project is involved the export performance of Fertilizer products in Indian industry. The export performance of Indian Fertilizer products is affected by the high competition. This study also gives growth rate and trend percentage of the Fertilizer products for the forth coming years in year wise and also country wise. The study gives information about the size of the Fertilizer export network. The study provides suggestions to the organization to improve their functions.

RESEARCH METHODOLOGY

Sample Design

The study is made for the purpose of an in depth analysis of various indicators and its effect on export performance of Indian Fertilizer industry. The major fifteen products are selected by using convenient sampling method.

METHOD OF DATA COLLECTION

The present study based on secondary data. The secondary data were collected from Cereals statistics and other web based sources.

- Secondary Data

Secondary Data

The secondary data is collected to supplement the primary data. The annual reports of sample units, Publications of Fertilizer, Economic Survey of India, Publications of Ministry of Commerce and Agriculture, Bulletins Working and Occasional Papers of EXIM Bank, Occasional Papers and Statistics on Indian Economy of RBI, Periodicals and Journals of Foreign Trade of Fertilizer produce, Publications of IIFT etc., were used as important sources of secondary data for the study.

TOOLS AND TECHNIQUES

- Percentage Analysis
- Trend Analysis
- Growth Rate
- Standard Deviation
- CAGR
- CV

LIMITATIONS OF THE STUDY

- The analysis is made only by considering 15 Fertilizer products and 10 major countries.
- Time constraint is one of the limitation

REVIEW OF LITERATURE

Pant and Tewari (1987) studied effect of foliar application of Agromin (Borax, ZnSO4, MnSO4, FeSO4 and CuSO4) on quality of apple cv. Red delicious. They observed that application of Agromin at 0.2 per cent recorded higher fruit yield and fruit weight and also recorded maximum fruit TSS, anthocyanin pigment and ascorbic acid in apple. Similarly Ahmed et al. (1997) conducted an experiment to study the effect of foliar spray of a composite fertilizer containing N, P, K, Mg, Zn, Fe, Mn, Cu and B with glycerol (0.05%) or active dry yeast (0.1%) on grapes cv. Red Roumy in Egypt. All the treatments improved growth, yield, fruit quality and nutritional status of vines.

Sourour (2000) conducted an experiment to study the effect of iron nutrition on quality of orange trees. Results revealed that, foliar application of 2 per cent FeSO4 significantly increased

juice percentage and vitamin-C compared to control. It also significantly increased reducing, non-reducing and total sugars over control. At the same time, El-Shazly et al. (2000) studied the effect of chelated form of iron (FeEDDHA) as foliar sprays on physiological and biochemical indices on Norel orange grown on clay sodic soils. The results indicated that increased rates of chelated iron and number of sprays markedly increased vegetative growth parameters and yield compared to control. Foliar spray of chelated form of iron significantly increased leaf K and Fe content but, decreased leaf Mn, Zn and Cu contents. The results also indicated that, with increase in Fe-EDDHA rates, quality parameters particularly TSS and Vitamin C content significantly increased over control.

Singh et al. (2002) reported that, foliar application macronutrients like Fe, Cu, Mn, Zn, B sulfates at 0.2 % concentration recorded maximum higher fruit weight per bunch and number of berries per bunch in grape (cv. Perlette). They also reported increase in juice, TSS, acidity, and tannin in grapes due to application of micronutrients. Similarly, Sharma and Upadhyay (2003) conducted a field experiment on alkaline black soil of Pune to know the effect of ferrous sulphate and cow dung slurry on yield of one-year-old Thompson seedless grape vine. Application of 37.5 kg FeSO4 per ha with cow dung slurry resulted in higher yield over FeSO4 applied alone. Mishra et al. (2003) reported that, foliar application of Fe (0.4%) along with Zn (0.5%) and B (0.2%) significantly increased the fruit yield and fruit weight as well as the juice, acidity, TSS, ascorbic acid content in kinnow orange over control.

Jana and Jahangir (1987) studied the effect of foliar application of micronutrients like Fe, Cu, Mn, Zn, Mo and boron on yield of French bean under polyhouse condition. They observed that, application of micronutrients at 0.1 ppm recorded maximum number of pods per plant, length of pod and pod yield. A field experiment was carried out by Rashid and Din (1992) to investigate the cause for chlorosis in some varieties of chickpea grown on calcareous soils of Pakistan. Results indicated that total Fe content of leaf tissue was not related with chlorosis, but orthrophenanthroline extractable ferrous (Fe2+) content of fresh leaves was more related to the severity of chlorosis. Singh et al. (2004) conducted a field experiment to study the effect of iron application on content and uptake of nutrients by chickpea (Cicer arietinum l.). The results indicated that soil application of 50 kg FeSO4 per ha significantly increased content and uptake of Fe, P and N by chickpea over control.

Jadhao et al. (2002) studied the effect of FeSO4 at the rate of 30 kg per ha in turmeric and reported that this concentration of Fe significantly increased the height of plant and number of leaves per plant followed by 15 kg iron per ha over control. The soil application of FeSO4 also showed significant increase in the number of mother rhizomes , number of fingers, weight of fresh fingers , dry yield of fingers followed by 15 kg of Fe per ha over control. Singh and Dixit (1994) reported that, in a pot culture study soil application of 10 mg Fe per kg of soil along with 0.5 mg B per kg of soil caused significantly higher uptake of iron (6.11 mg/kg) over control in cauliflower (cv. Snow ball). Samui et al. (1981) reported that application of iron 10 kg/ha in the form of FeSO4 recorded highest nitrogen (67.40 kg/ha), phosphorus (20.04 kg/ha), potassium (45.58 kg/ha) and iron (180.00 ppm) uptake by mustard. Kumar et al. (2006) reported that, soil application of Fe in the form of FeSO4 (40 kg/ha) caused significant higher uptake of iron (524.1 g/ha) over control and soil application of iron 20 kg per ha resulted in maximum uptake of sulphur (15.5 kg/ha) in mustard, but was not significant

Wang et al. (2006) in an experiment found that soil microbial biomass to carbon added with organic fertilizers increased faster than added with inorganic fertilizer. Also Yangchun et al. (2007) observed that the application of organic manures with a reduced amount of commercial chemical fertilizer increased the content of soil organic C, microbial biomass carbon compared to the treatment with inorganic fertilizer alone. Masto (2006) reported that application of farmyard manure plus NPK fertilizer significantly increased soil organic carbon and microbial biomass compared to the treatment with NPK fertilizer alone.

Tolanur and Badanur (2003) reported that available N, P and K contents increased significantly with the application of various organic sources of nutrients in combination with fertilizers over the fertilizers alone. Increase in organic carbon, available N, P and K contents in soil by the application of FYM or green manure has also been reported by various workers (Yaduvanshi, 2001; Bastia, 2002; Bisht et al., 2002; Bajpai et al., 2002; Singh and Singh, 2003; Dutta and Bandopadhyaya, 2003).

Gupta et al. (2006) reported that application of NPK through fertilizers upto 75% of recommended levels in both the crops markedly reduced P, K, S and Zn contents of sol from their initial status upto completion of 17 crop-cycle of the rice-wheat sequence. However,

EXPORT OF FERTILISERS PRODUCTS FROM INDIA (Values Rs in Lakhs)

Year	Fertilisers	Anml/Vgtbl Frtlsrs,W/N Mixed Together Or Chmcly Trtd	Ammonium Nitrate W/N In Aqueous Solution	Mineral Or Chemical Fertilisers, Phosphatic	Othr Mnrl/Chmcl Frtlsrs,Ntrogns Incl Mxtrsforegoing Sub-Heading	Double Slt/Mxtr Of Calcm Nitrte/Amonm Ntrt	Guano	Other Anml/Vgtbl Frtlsrs,W/N Mixed Togeth
2005	5,895.60	645.38	319.29	359.04	42.32	24.67	80.57	311.31
2006	5,070.19	680.55	527.52	319.85	82.09	31.21	159.91	271.56
2007	4,928.68	376.35	1,175.87	513.73	25.03	100.51	22.39	212.53
2008	10,437.32	454.33	538.28	1,452.08	28.67	0.11	51.93	330.94
2009	33,725.92	880.76	1,946.50	1,468.22	140.07	511.27	37.06	707.97
2010	51,216.35	533.59	1,903.94	3,299.64	339.49	0.05	22.89	425.91
2011	23,648.01	1,376.89	1,504.63	33.80	188.74	24.59	270.90	981.52
2012	39,736.76	2,275.21	4,832.50	101.17	209.26	137.35	1.55	2,131.68
2013	47,961.83	1,973.36	4,197.38	178.19	730.40	440.72	6.49	1,846.31
2014	49,214.53	3,784.04	3,041.41	385.52	107.45	297.03	23.99	3,709.87
2015	55,480.95	4,682.30	3,211.37	238.63	107.09	1.17	1.90	4,582.42
2016	67,336.73	7,031.92	5,800.16	3,901.44	164.15	0.06	3.80	6,877.18
2017	46,554.06	5,998.96	5,955.10	1,296.86	121.83	1.08	18.63	5,849.12
2018	68,515.82	8,080.91	6,294.68	2,850.78	84.97	4.80	82.78	7,813.78
2019	103,816.01	7,805.16	8,383.27	2,925.38	100.11	5.48	144.77	7,530.27
AVERAGE	**40902.584**	**3105.314**	**3308.793333**	**1288.288667**	**164.778**	**105.34**	**61.97066667**	**2905.491333**
CAGR	**-0.931243658**	**-0.902365169**	**-0.952642685**	**-0.858844921**	**-0.552289805**	**3.072202363**	**-0.421288912**	**-0.948876134**
SD	**27994.1379**	**2884.813029**	**2493.564744**	**1325.255271**	**175.7666058**	**170.8425478**	**76.40847639**	**2894.893478**
CV	**68.44100095**	**92.89923752**	**75.36175556**	**102.8694349**	**106.6687336**	**162.1820275**	**123.2978125**	**99.63524739**

(Source: Exim data bank)

EXPORT OF FERTILISERS PRODUCTS FROM INDIA (Values Rs in Lakhs)

Year	Ammonium Sulphate	Ammonium Nitrate W/N In Aqueous Solutio	Sodium Nitrate	Other Minrl/Chemcl Fertlsrs	Other fertilisers n.e.s.	Other Calcium Nitrate And Magnesium Nitrate	Diamonm Hydrgnorthphospht
2005	1,888.15	319.29	18.12	207.72	35.19	23.11	0.19
2006	497.22	527.52	21.77	1,165.38	79.15	10.49	0.13
2007	408.40	1,175.87	0.87	311.72	25.03	5.86	1.34
2008	2,000.45	538.28	29.26	352.13	28.67	7.57	62.28
2009	2,880.62	1,946.50	80.60	1,726.66	140.02	0.79	396.34
2010	909.89	1,903.94	49.34	2,601.98	339.49	0.74	1,962.86
2011	697.44	1,504.63	30.94	2,494.02	188.74	14.49	1,693.04
2012	150.82	4,832.50	48.00	4,469.09	208.70	64.98	2,053.72
2013	584.90	4,197.38	26.87	5,836.29	729.95	368.22	2,021.80
2014	426.73	3,041.41	40.05	8,157.23	103.74	1,947.91	7,207.59
2015	640.57	3,211.37	33.55	6,578.17	107.09	1,046.29	13,448.01
2016	980.69	5,800.16	26.40	8,085.45	164.15	1,408.87	10,853.39
2017	135.60	5,955.10	59.00	7,885.78	121.83	1,404.84	4,885.10
2018	1,185.71	6,294.68	5.48	5,285.17	84.92	93.90	4,505.74
2019	863.97	8,383.27	12.20	6,574.15	99.88	75.66	18,602.75
AVERAGE	**950.0773333**	**3308.793333**	**32.16333333**	**4115.396**	**163.77**	**431.58**	**4512.95**
CAGR	**1.07444524**	**-0.952642685**	**0.446588934**	**-0.960220182**	**-0.622302001**	**-0.67**	**-1.00**
SD	**762.6689263**	**2493.564744**	**20.94633131**	**3001.276112**	**176.2125996**	**665.95**	**5672.66**
CV	**80.27440499**	**75.36175556**	**65.12487711**	**72.92800284**	**107.5976061**	**154.31**	**125.70**

(Source: Exim data bank

INTERPRETATIONS

The total exports of Fertilisers product which ranges from Rs. 5,895.60 lakhs and Rs. 103,816.01 lakhs during the period of 2005 to 2019. Among ten years the average export among the period of study is Rs. 40902.584 lakhs. The overall compound annual growth rate of Fertilisers export stood at -0.931243658.Growth of Anml/Vgtbl Frtlsrs,W/N Mixed Together Or Chmcly Trtd product which ranges from Rs. 645.38 lakhs and Rs. 7,805.16 lakhs. Among ten years the average export among the period of study is Rs. 3105.314 lakhs. The overall compound annual growth rate of Anml/Vgtbl Frtlsrs,W/N Mixed Together Or Chmcly Trtd export stood at -0.902365169.Growth of Ammonium Nitrate W/N In Aqueous Solution product which ranges from Rs. 319.29 lakhs and Rs. 8,383.27 lakhs. Among ten years the average export among the period of study is Rs. 3308.793333 lakhs. The overall compound annual growth rate of Ammonium Nitrate W/N In Aqueous Solution export stood at -0.952642685.Growth of Mineral Or Chemical Fertilisers, Phosphatic product which ranges from Rs. 359.04 lakhs and Rs. 2,925.38 lakhs. Among ten years the average export among the period of study is Rs. 1288.288667 lakhs. The overall compound annual growth rate of Mineral Or Chemical Fertilisers, Phosphatic export stood at -0.858844921.

The total exports of Othr Mnrl/Chmcl Frtlsrs,Ntrogns Incl Mxtrsforegoing Sub-Heading product which ranges from Rs. 42.32 lakhs and Rs. 100.11 lakhs during the period of 2005 to 2019. Among ten years the average export among the period of study is Rs. 164.778 lakhs. The overall compound annual growth rate of Othr Mnrl/Chmcl Frtlsrs,Ntrogns Incl Mxtrsforegoing Sub-Heading export stood at -0.552289805.Growth of Double Slt/Mxtr Of Calcm Nitrte/Amonm Ntrt product which ranges from Rs.24.67lakhs and Rs. 5.48 lakhs. Among ten years the average export among the period of study is Rs. 105.34 lakhs. The overall compound annual growth rate of Double Slt/Mxtr Of Calcm Nitrte/Amonm Ntrt export stood at 3.072202363.Growth of Guano product which ranges from Rs. 80.57 lakhs and Rs. 144.77 lakhs. Among ten years the average export among the period of study is Rs. 61.97066667 lakhs. The overall compound annual growth rate of Guano export stood at -0.421288912. Growth of Other Anml/Vgtbl Frtlsrs,W/N Mixed Togeth product which ranges from Rs. 311.31 lakhs and Rs. 7,530.27 lakhs. Among ten years the average export among the period of study is Rs. 2905.491333 lakhs. The overall compound annual growth rate of Other Anml/Vgtbl Frtlsrs,W/N Mixed Togeth export stood at -0.948876134.

The total exports of Ammonium Sulphate product which ranges from Rs. 1,888.15 lakhs and Rs. 863.97 lakhs during the period of 2005 to 2019. Among ten years the average export among the period of study is Rs. 3308.793333 lakhs. The overall compound annual growth rate of Ammonium Sulphate export stood at 1.07444524.Growth of Ammonium Nitrate W/N In Aqueous Solutio product which ranges from Rs. 319.29 lakhs and Rs. 8,383.27 lakhs. Among ten years the average export among the period of study is Rs. 14.71 lakhs. The overall compound annual growth rate of Ammonium Nitrate W/N In Aqueous Solutio export stood at -0.952642685.Growth of Sodium Nitrate product which ranges from Rs. 18.12 lakhs and Rs. 12.20 lakhs. Among ten years the average export among the period of study is Rs. 32.16333333 lakhs. The overall compound annual growth rate of Sodium Nitrate export stood at 0.446588934.

The total exports of Other Minrl/Chemcl Fertlsrs product which ranges from Rs. 207.72 lakhs and Rs. 6,574.15 lakhs during the period of 2005 to 2019. Among ten years the average export among the period of study is Rs. 4115.396 lakhs. The overall compound annual growth rate of Other Minrl/Chemcl Fertlsrs export stood at -0.960220182.Growth of Other fertilisers n.e.s. product which ranges from Rs. 35.19 lakhs and Rs. 99.88 lakhs. Among ten years the average export among the period of study is Rs. 163.77 lakhs. The overall compound annual growth rate of Other fertilisers n.e.s. export stood at -0.622302001.Growth of Other Calcium Nitrate And Magnesium Nitrate product which ranges from Rs. 23.11 lakhs and Rs. 75.66 lakhs. Among ten years the average export among the period of study is Rs. 431.58 lakhs. The overall compound annual growth rate of Other Calcium Nitrate And Magnesium Nitrate export stood at -0.67.Growth of Diamonm Hydrgnorthphospht product which ranges from Rs. 0.19 lakhs and Rs. 18,602.75 lakhs. Among ten years the average export among the period of study is Rs. 4512.95 lakhs. The overall compound annual growth rate of Diamonm Hydrgnorthphospht export stood at -1.00.

FINDINGS

COMMODITY WISE EXPORT

- Export of Fertilisers exported from our country. Its clearly indicates that the total Exports of Fertilisers which ranges from 5,895.60 lakhs and 103,816.01 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is

40,902.58 lakhs, The Standard deviation of and articles of Fertilisers is 27994.1379 The overall compound annual growth rate for fifteen years is in negative value of -0.931243658

- Export of anml/vgtbl frtlsrs,w/n mixed together or chmcly trtd;fertilisers prdcd by the mxng/chmcl treatmnt of anml/vegtbl prdcts Exported from our country. Its clearly indicates that the total Exports of anml/vgtbl frtlsrs,w/n mixed together or chmcly trtd;fertilisers prdcd by the mxng/chmcl treatmnt of anml/vegtbl prdcts which ranges from 645.38 lakhs and 7,805.16 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 3105.314 lakhs, The Standard deviation of and articles of anml/vgtbl frtlsrs,w/n mixed together or chmcly trtd;fertilisers prdcd by the mxng/chmcl treatmnt of anml/vegtbl prdcts is 2884.813029 The overall compound annual growth rate for fifteen years is in negative value of -0.902365169
- Export of Ammonium Nitrate W/N In Aqueous Solution Exported from our country. Its clearly indicates that the total Exports of Ammonium Nitrate W/N In Aqueous Solution which ranges from 319.29 lakhs and 8,383.27 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 3308.793 lakhs, The Standard deviation of and articles of Ammonium Nitrate W/N In Aqueous Solution is 2493.564744The overall compound annual growth rate for fifteen years is in negative value of -0.952642685.
- Exports of Mineral Or Chemical Fertilisers, Phosphatic which ranges from 359.04 lakhs and 103, 2,925.38 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 1288.289 lakhs, The Standard deviation of and articles of Mineral Or Chemical Fertilisers, Phosphatic is 1325.255271 The overall compound annual growth rate for fifteen years is in negative value of -0.858844921
- Exports of Othr Mnrl/Chmcl Frtlsrs,Ntrogns Incl Mxtrsforegoing Sub-Heading which ranges from 42.32 lakhs and 100.11 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 164.778 lakhs, . The Standard deviation of and articles of Othr Mnrl/Chmcl Frtlsrs,Ntrogns Incl Mxtrsforegoing Sub-Heading is 175.7666058 The overall compound annual growth rate for fifteen years is in negative value of -0.552289805

- Exports of Double Slt/Mxtr Of Calcm Nitrte/Amonm Ntrt which ranges from 24.67 lakhs and 5.48 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 105.34lakhs, The Standard deviation of and articles of Double Slt/Mxtr Of Calcm Nitrte/Amonm Ntrt is 170.8425478 The overall compound annual growth rate for fifteen years is in positive value of 3.072202363
- Exports of Guano which ranges from 80.57 lakhs and 144.77 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 61.97067 lakhs, The Standard deviation of and articles of Guano is 76.40847639 The overall compound annual growth rate for fifteen years is in negative value of --0.421288912
- Exports of Other Anml/Vgtbl Frtlsrs,W/N Mixed Togeth.Chmcly Trtd;Fertilisers Prdcd By The Mxng/Chmcl Treatmnt Of Anml/Vegtbl Prdcts which ranges from 311.31 lakhs and 7,530.27 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 2905.491 lakhs,The Standard deviation of and articles of Other Anml/Vgtbl Frtlsrs,W/N Mixed Togeth.Chmcly Trtd;Fertilisers Prdcd By The Mxng/Chmcl Treatmnt Of Anml/Vegtbl Prdcts is 2894.893478 The overall compound annual growth rate for fifteen years is in negative value of -0.948876134
- Exports of Ammonium Sulphate which ranges from 1,888.15 lakhs and 863.97 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 950.08 lakhs, The Standard deviation of and articles of Ammonium Sulphate is 762.6689263 The overall compound annual growth rate for fifteen years is in positive value of 1.07444524
- Exports of Ammonium Nitrate W/N In Aqueous Solutio which ranges from 319.29 lakhs and 8,383.27 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 3308.793 lakhs,The Standard deviation of and articles of Ammonium Nitrate W/N In Aqueous Solutio is 2493.564744 The overall compound annual growth rate for fifteen years is in negative value of -0.952642685
- Exports of Sodium Nitrate which ranges from 18.12 lakhs and 12.20 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 32.16333 lakhs, The Standard deviation of and articles of Sodium Nitrate is

20.94633131 The overall compound annual growth rate for fifteen years is in negative value of 0.446588934

- Exports of Other Minrl/Chemcl Fertlsrs which ranges from 24.67 lakhs and 5.48 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 105.472 lakhs, The Standard deviation of and articles of Other Minrl/Chemcl Fertlsrs is 170.7569817 The overall compound annual growth rate for fifteen years is in negative value of 3.072202363
- Exports of Other Fertilisers N.E.S. which ranges from 35.19 lakhs and 99.88 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 163.77 lakhs, The Standard deviation of and articles of Other Fertilisers N.E.S. is 176.2125996 The overall compound annual growth rate for fifteen years is in negative value of -0.622302001
- Exports of Fertilisers which ranges from 23.11 lakhs and 75.66 lakhs during the period of 2005 - 2019. Among fifteen years the average Export among the period of study is 431.5813 lakhs,The Standard deviation of and articles of Fertilisers is 665.95 The overall compound annual growth rate for fifteen years is in negative value of -0.67
- Exports of Diamonm Hydrgnorthphospht(Diamonm Phospht) which ranges from 0.19 lakhs and 18,602.75 lakhs The Standard deviation of and articles of Diamonm Hydrgnorthphospht (Diamonm Phospht) is 5672.66 The overall compound annual growth rate for fifteen years is in negative value of -1.00

SUGGESTIONS

- Exports have played an important role in India's economic growth in the post independent period. The contribution of food based agro products and allied products to total exports have been increased gradually to make a concrete share to the GDP of the nation. India needs to produce its commodities more competitive at the global level.
- There is concern that agricultural production in developing countries will cause environmental threats in the future, as production will have to increase to satisfy the growing demand for food. Intensification leads to high inputs of nutrients in the form of mineral fertilizers and animal feed.

- Important parts of these inputs leak from the system in the form of nutrient leaching to groundwater and gaseous losses to the atmosphere. Pressure on the existing agricultural land may increase by growing demand for productive land and degradation of the existing agricultural land base. Expansion of agriculture generally leads to massive deforestation.

Conclusion

The study presented in this report concentrated on the interactions between livestock production, crop production and land use. The link between livestock and crop production is through the demand for animal feedstuffs. This report presents long-term scenarios describing these interactions and the possible consequences for crop production and animal waste production. As the world population is expected to stabilize in the second half of the twenty-first century, the scenarios must cover a period of 50-100 years to include the impacts of human population numbers.

The Policy aims at addressing a whole range of issues which could potentially propel India into the top bracket of agricultural exports. It has often been recognized that integration in the global value chain is one of the most certain methods of adopting the best agricultural practices along with attaining productivity gains and cost competitiveness. The objective of doubling the farmer's income will invariably require high levels of income as well as improving in the food value chain.