

Overview of Indian Fertiliser and SWOT Analysis of Fertiliser Industry

Prof. Prakash Ramdas Tambe, Assistant Professor, MBA(Agri), Post Graduate College of Agri Business Management, Talegaon Dabhade, Pune 05. E-mail : prakash.tambe21@gmail.com

Abstract

Agriculture is the back bone of the Indian Economy. The development of Agriculture is necessary for next generation. In India's success in agriculture sector, not only in terms of meeting total requirement of food grains but also generating exportable surpluses, the significant role played by chemical fertilizers is well recognized and established. By taking today's population scenario, the rate of the population is increasing and land holding capacity is decreasing. In India number of marginal, small and medium land holding farmers is very high. To meet the demand of the market, Chemical fertiliser is use which help in to increase the production of the food-grains. Keeping in view the vital role played by chemical fertilisers in the success of India's green revolution and consequent self-reliance in food-grain production, the Government of India has been consistently pursuing policies conducive to increased availability and consumption of fertilisers in the country.

Key words : World Demand and Supply, India's Demand, Production and Consumption of fertiliser, growth of the sales, use of fertiliser season wise, SWOT Analysis etc.

1. Introduction

The fertiliser industry especially, the ammonia urea plants are highly energy intensive in their operation. There are wide variations in the vintage of fertiliser plants in the country in terms of feedstock. Major feedstock presently being used in the fertiliser plants are natural gas, naphtha and fuel oil. Over the years, the majority of industry has improved its performance significantly in terms of specific energy consumption and capacity utilization. There are several fertiliser plants operating in India. Of which, around 27 fertiliser plants in the country are engaged in the manufacture of urea fertiliser.

Initially only a small quantity of indigenously produced super phosphate and some imported ammonium sulphate were essentially used by the plantation industry. The fertiliser use on food crops started picking up with the free distribution of ammonium sulphate to farmers under the "Grow More Food Campaign".

Although agriculture occupied an important place in the country's first two five-year plans, the importance given to the use of fertilisers was not significant. During this period, the production of fertilisers was from the two plants set up at Alwar and Sindri. The country's requirements were fulfilled from these two plants and through imports. There was a bulk import of ammonium

sulphate and less import of urea and ammonium sulphate nitrate. The total consumption during 1960-61 was 0.212 million tonnes of phosphate and 0.029 million tonnes of potash which worked out to 2.43 kg of nutrients per hectare of gross area. Agriculture which accounts for one fifth of GDP, provides sustenance to two thirds of our population. Besides, it provides crucial backward and forward linkages to the rest of the economy. Successive five-year plan have laid stress on self-sufficiency and self-reliance in food-grain production and concerted efforts in this direction have resulted in substantial increase in agriculture production and productivity. This is clear from the fact that from a very modest level of 52 million MT in 1951-52, food-grain production rose to about 259.32 million MT in 2011-12. As a result, the annual consumption of chemical fertilisers in nutrient terms (N, P & K), has increased from 700 Thousand Tonne in 1951-52 to 25536 Thousand Tonne 2012-13, while per hectare consumption of chemical fertilisers, which was less than 1 Kg in 1951-52 has risen to a level of 128.34 Kg (estimated) in 2012-13. As of now, the country has achieved 75% self-sufficiency in production capacity of urea with the result that India could substantially manage its requirement of nitrogenous fertilisers through the indigenous industry and imports. Similarly, 50% indigenous capacity has developed in respect of phosphatic fertilisers to meet domestic requirements. However, the raw materials and intermediates for the same are largely imported. As for potash (K) since there are no viable sources/reserves in the country, its entire requirement is met through imports.

2. Global Fertiliser Scenario

2.1 Demand

The world economy has been recovering from 2010 after the spike in commodity prices followed by deep recession experienced in the preceding two years. The recovery is driven by improvement in financial conditions, buoyant activity in many emerging and developing economies, and growing confidence in advanced economies. World production of major crops was expected to increase in 2011 which may ease the prevailing tight market situation. World food prices have been strongly on the rise surpassing the earlier peak of 2008. Consumption of fertiliser nutrients increased significantly in 2010 and was expected to grow in a stabilized way during the following years of the forecast period. World demand for total fertiliser nutrients is estimated to grow at 2.0 per cent per annum from 2011 to 2015. The demand for nitrogen, phosphate, and potash is forecast to grow annually by 1.7, 1.9, and 3.1 per cent, respectively, during the period. Global total nutrient production keeping pace with world consumption. Over the next five years, the global capacity of fertiliser products, intermediates and raw materials would further increase.

The world potential nitrogen balance as a percentage of global total demand was expected to remain between 3 to 5 per cent between 2011 and 2013 and is likely to increase to 7 per cent in

2014 and 10 per cent in 2015. The potential phosphate balance is likely to increase from 3 per cent in 2011 to 6 per cent in 2015. The potential potash balance as a percentage of global total demand was expected to rise from 24 per cent in 2011 to a high level of 44 per cent in 2015.

Table No. 2.1.1 World demand for fertiliser nutrients, 2011-2015 (“000”tonnes)

Year	2011	2012	2013	2014	2015	CGR
Nitrogen (N)	105348	107374	109299	111109	112909	1.7
Phosphate (P₂O₅)	41679	42562	43435	44245	45015	1.9
Potash (K₂O)	28679	29682	30683	31594	32453	3.1
Total	175706	179618	183417	186948	190377	6.7

(Source:www.faidelhi.org/FAI Seminar2013)

From above table the world demand for nitrogen, phosphate and potash is forecast to increase annually by 1.7, 1.9 and 3.1 per cent, respectively, between 2011 and 2015.

2.2 Supply

Table no. 2.2.1 World supply of Nitrogen, phosphate and potash, 2011-2015 (“000”tonnes)

Year	2011	2012	2013	2014	2015	CGR
Nitrogen (N)	134546	140197	143751	149910	156346	2.5
Phosphate (P₂O₅)	42094	43966	45011	46439	47788	3.1
Potash (K₂O)	39835	42539	45033	48304	52345	7.05
Total	216475	226702	233795	244653	256479	12.65

(Source:www.faidelhi.org/FAI Seminar2013)

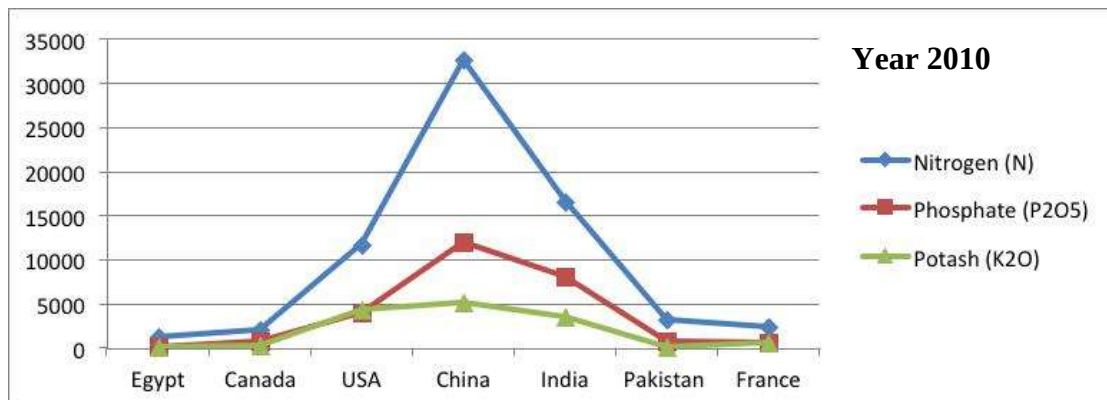
From above table the world supply for nitrogen, phosphate and potash is forecast to increase average annually by 2.5, 3.1 and 7.05 per cent, respectively, between 2011 and 2015.

Table No. 2.2.2 Consumption of Fertilisers in selected countries in 2009-10 (000 Tonnes)

Country	Nitrogen (N)		Phosphate (P ₂ O ₅)		Potash (K ₂ O)		Total (N+P ₂ O ₅ +K ₂ O)	
	2009	2010	2009	2010	2009	2010	2009	2010
Egypt	1193.2	1158.7	150.0	150.3	50.0	51.0	1393.2	1360.0
Canada	1901.0	1990.0	630.0	723.0	271.0	312.0	2802.0	3025.0
USA	11145.1	11725.0	3718.8	3946.0	4044.3	4377.3	18908.2	20048.3
China	33600.0	32600.3	11000.0	11970.0	4300.0	5200.0	48900.0	49700.3
India	15580.0	16558.2	7274.0	8049.7	3632.4	3514.3	26486.4	28122.2
Pakistan	3475.3	3131.6	860.4	761.0	23.9	37.0	4360.6	3929.6
France	2068.8	2331.4	405.7	499.9	416.2	598.1	2890.7	3429.4

(Source: Fertiliser Association of India (FAI))

From the above table, it is clear that the china ranks 1st for consumption of fertiliser i.e. 49700.3 thousand tonnes in 2010 , followed by India is rank 2nd for consumption of fertiliser i.e. 28122.2 thousand tonnes and USA is 3rd i.e. 20048.3 thousand tonnes in 2010.



3. Demand, Production and consumption of fertiliser in India

India is primarily an agriculture based economy. The agricultural sector and its other associated spheres provide employment to a large section of the country's population and contribute about 25% to the GDP. Fertiliser sector is a very crucial for Indian economy because it provides a very important input to agriculture. The fertiliser industry in India has played a pivotal role in achieving self sufficiency in food grains as well as in rapid and sustained agriculture growth. India is the third largest producer and consumer of fertilisers in the world after China and the United States. The growth of the Indian fertiliser industry has been largely determined by the policies pursued by the government. The government exercised extensive controls on the pricing, distribution and movement of fertilisers. The industry is capital intensive and the production process energy intensive with the combined cost of feedstock and fuel accounting for anywhere between 55 and 80 per cent of cost of production, depending on the type of fertilisers.

3.1 Demand

The department of fertiliser showed that the total installed capacity of fertiliser production in 2012-13 to be 215.97 LMT of Urea, 83.32 LMT for DAP, 64.53 LMT for Complexes and 77.13 LMT for SSP. There are 30 units produce Urea, 12 units produce DAP, 19 units produces Complexes fertiliser and 85 units produce SSP fertiliser.

Indian fertiliser manufacturing companies has joined hands with companies in Senegal, Oman, Jordan, Morocco, Egypt, Tunisia and other countries. It is, therefore, evident that the Indian fertiliser industry has witnessed extensive growth and development in a short span of time. With such extensive growth, it is not surprising that the India ranks among the leading fertiliser manufacturing countries of the world.

Currently, India produces a large number of grades of NP / NPK complex fertiliser and SSP fertiliser. These include 16:20:20, 20:20:0, and 28:28:0, 15:15:15, 17:17:17, 19:19:19, 10:26:26, 12:32:16, 14:28:14, 14:35:14 and 19:19:19. In addition, India produces various grades of simple and granulated mixtures.

Table No. 3.1.1

All India Demand Forecast of major fertiliser product (2013-14 to 2017-18)(000 Tonnes)

Year	Urea	DAP	NP/NPKs	SSP	MOP
2013-14	31192	11784	10577	4682	4343
2014-15	32029	12002	10861	5091	4492
2015-16	32858	12212	11142	5513	4643
2016-17	33677	12413	11420	5948	4793
2017-18	33754	12764	11841	6476	4934

(Source: Working Group Report on Fertiliser for Twelfth five year plan)

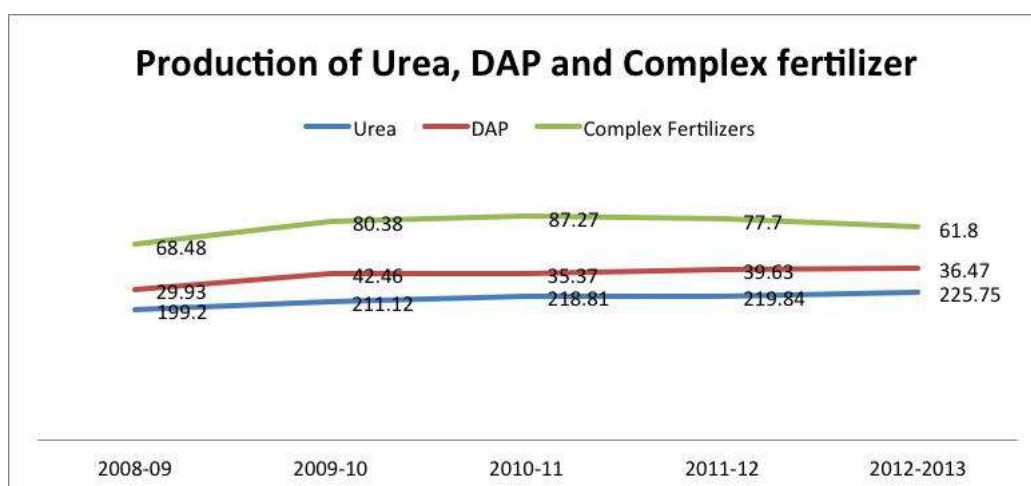
From the table it is clear that next five years the demand of the fertiliser is constantly increasing as compared to today's requirement, so it is need to increase the installed capacity of the fertiliser to meet the demand of the fertilisers in India.

3.2 Production

Table No 3.2.1 Production of Urea, DAP and Complex Fertiliser in India: (In Lakh MT)

Year	2008-09	2009-10	2010-11	2011-12	2012-2013
Urea	199.2	211.12	218.81	219.84	225.75
DAP	29.93	42.46	35.37	39.63	36.47
Complex Fertilisers	68.48	80.38	87.27	77.70	61.80

From the above table it is clear that the production of Urea, DAP and Complex fertiliser is increases to fulfill the demand of the market. In 2008-09 the production of the Urea, DAP and Complex fertiliser was 199.2, 29.93 and 68.48 lakh metric tonnes respectively. Whereas in 2012-13 the production of the Urea and DAP is increase i.e. 224.75, 36.47 and the production of complex fertiliser is decrease i.e. 61.80 Lakh metric tonnes.



From the above graph we can see the constant growth rate of the Urea and DAP, whereas the growth of the Complex fertiliser is increase from 2008-09 to 2010-11 but after that the production of the Complex fertiliser is decrease for next two year. In the year 2010-11 the production of the Complex fertiliser is maximum i.e. 87.27 lakh metric tonnes.

3.2.1 Sectorwise production of Urea, DAP and Complex fertiliser :

The fertiliser industries are divided in the three sectors i.e. Public, Co-operative and Private. Each sector has product wise annual installed capacity of the production. As compare with the private sector, the public sector and co-operative sector has low annual installed capacity for each product. The production of Urea, DAP and Complex fertiliser is higher in the private sector as compared with Public and Co-operative sectors.

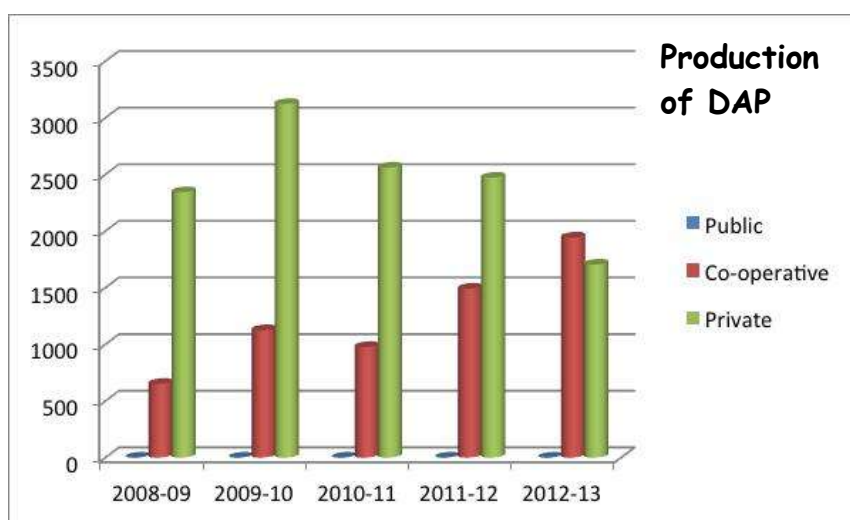
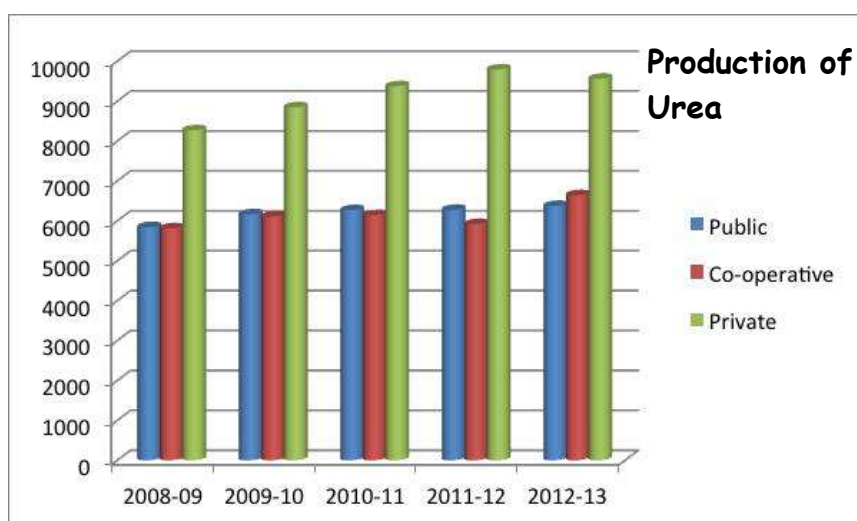
As compare to other fertiliser the production and annual installed capacity of the Urea is high, because as compared to other products Urea is easily dissolved and easily absorb by the plants roots and having fast results on the plant growth, so demand of the Urea is increases every year.

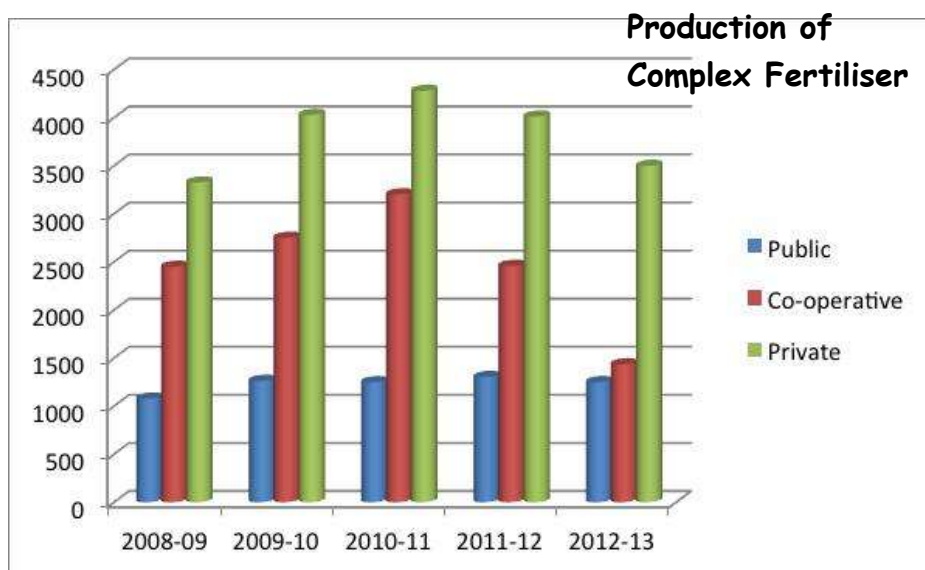
Table No. 3.2.1.1 Sectorwise production of Urea, DAP and Complex Fertiliser:

Production of Urea (000 MT)						
Sector	Annual Installed Capacity	2008-09	2009-10	2010-11	2011-12	2012-13
Public	5979.3	5842.3	6164.5	6267.0	6274.4	6373.3
Co-operative	5418.6	5810.9	6104.4	6142.8	5919.2	6642.1
Private	8302.5	8268.6	8843.3	9370.7	9790.8	9559.3
Total	19700.4	19921.8	21112.2	21780.5	21984.4	22574.7

Production of DAP (000 MT)						
Public	-	-	-	-	-	-
Co-operative	2700.0	651.2	1125.1	976.6	1491.7	1942.6
Private	4599.0	2342.1	3121.7	2560.3	2471.0	1704.4
Total	7299	2993.3	4246.8	3536.9	3962.7	3647.0
Production of Complex Fertiliser (000 MT)						
Public	2134.5	1076.3	1261.5	1247.7	1302.1	1248.4
Co-operative	1635.4	2448.6	2749.7	3201.6	2457.6	1433.8
Private	1452.5	3323.5	4027.1	4277.7	4010.5	3498.0
Total	5222.4	6848.4	8038.3	8727.0	7770.2	6180.2

Source : Department of Fertiliser





From the Above graphs it is clear that the production of Urea, DAP and Complex fertiliser is high in the private sector, followed that co-operative sector has 2nd rank in the production. As shown in the graph the production of Urea, DAP and Complex fertiliser is higher in the year 2010-11 as compared to 2012-13. The production of the DAP is done by Private and Co-operative sector, while Public sector are not participate in the production of the DAP.

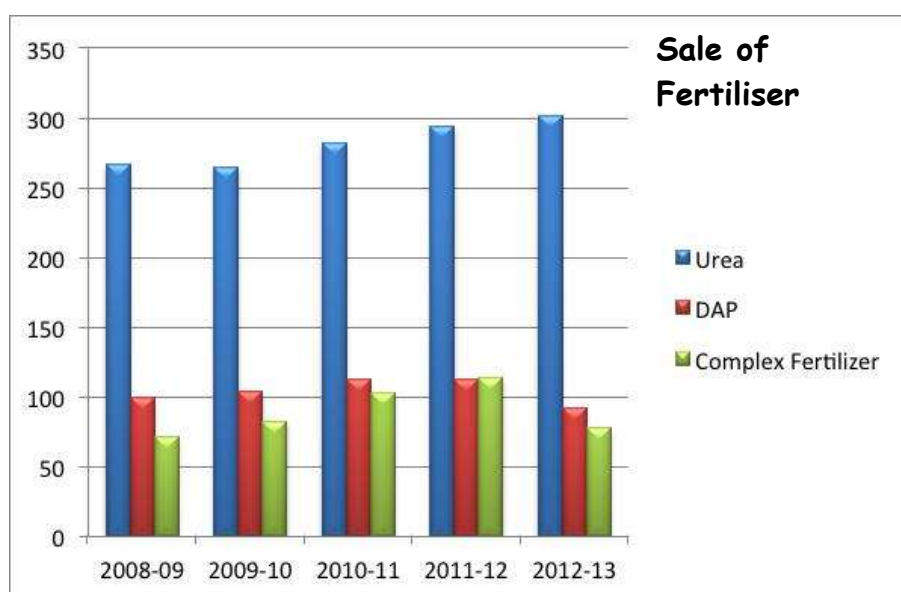
3.3 Sale or Consumption

Table No. 3.3.1 Availability and sales of Urea, DAP and Complex fertiliser (Lakh MT)

Year	Season	Urea		DAP		Complex Fertiliser	
		Availability	Sale	Availability	Sale	Availability	Sale
2008-09	Kharif	137.64	127.92	54.44	52.85	36.50	36.31
	Rabi	141.60	138.55	49.19	46.19	35.95	34.91
	Total		266.47		99.04		71.22
2009-10	Kharif	130.83	122.78	65.19	61.34	36.96	34.81
	Rabi	142.83	141.69	42.71	42.57	47.92	47.21
	Total		264.47		103.91		82.02
2010-11	Kharif	132.16	126.02	79.07	65.05	51.50	50.85
	Rabi	165.77	156.08	46.64	47.63	50.43	52.13
	Total		282.10		112.68		102.98
2011-12	Kharif	140.50	139.20	49.27	48.75	55.34	54.16
	Rabi	158.64	154.76	67.24	63.13	69.99	59.64
	Total		293.96		111.88		113.80
2012-13	Kharif	137.46	135.79	49.84	40.78	44.59	39.45
	Rabi	171.31	165.81	56.02	51.51	40.26	37.88
	Total		301.60		92.29		77.33

Source: Department of fertiliser

Above table shows availability and sales of the Urea, DAP, and Complex Fertiliser from the year 2008-09 to 2012-13. As shown in the below graph the sale of Urea is higher than DAP and Complex fertiliser. In the year 2008-09 the sale of the Urea was 266.47 Lakh MT which was increase up to 301.60 Lakh MT in the year 2012-13. While the sale of DAP is Decreases as compared to 2008-09 and 2012-13 sale i.e. 99.04 Lakh MT to 92.29 Lakh MT respectively. The sale of Complex fertiliser is increases from 2008-09 to 2011-12 i.e. 71.22 Lakh MT to 113.80 Lakh MT and after that 2012-13 suddenly decreases to 77.33 Lakh MT. The fluctuation in the demand is due to the conversion of the farmers to Urea and Biological fertiliser i.e. FYM, Compost manure, Green Manure etc.



4. SWOT Analysis of an Indian Fertiliser Industry

In current financial year FY 2013-14 the subsidy bill would reach to Rs 67,971 crore. The government had increased the total fertiliser subsidy in the July budget at Rs 72,970.30 crore for the entire 2014-15 fiscal from Rs 67,970 crore proposed in the Interim Budget. Fertiliser subsidy paid to the companies has declined by about 41 per cent to Rs 21,300 crore as against Rs 36,000 crore paid in the corresponding period the previous financial year.

While the subsidy is fixed by the government in case of phosphate and potassic (P&K) fertilisers like Muriate of Potash (MoP) and Di-ammonia phosphate (DAP), companies are free to decide prices for others. In case of urea, a controlled commodity, the retail price is fixed at Rs 5,360 per tonne, and the difference between the cost of production/imported price is paid as subsidy to the companies.

The growth trajectory of the Indian fertiliser industry has camouflaged the impending challenges with which it is faced. Growth and development of agriculture in India derives a significant

stimulus from the fertiliser industry. Agricultural milieu in India could be jeopardized by the uncertainties in the fertiliser industry. The government is faced with the piquant situation, which demands a balance between the needs of the farmers and the fertiliser manufacturers. The challenges before the Indian fertiliser industry relate to the incertitude in the supply of fertilisers. There has been a surge in the demand for fertilisers in the past few years. Good monsoonal showers have led to the growth in agriculture, inadvertently increasing the consumption rate of fertilisers. However, the robust growth in consumption propensity has not been met with the required surge in fertiliser production. This has widened the gap between the demand and supply of fertilisers, which has led to an increase in the dependence of the country on imports. This also reflects on the lack of realizing of the domestic capacity utilization of the reserves in the country. Another important factor that has led to the stunted growth of the fertiliser industry is the rise in prices of the feedstock. The fertiliser industry is dependent on gas for the production of urea and phosphoric acid for the production of phosphatic fertilisers and DAP. The country imports its inputs from other countries. The overseas suppliers of raw materials realize the predicament of the Indian fertiliser industry and have started exploiting the shortage through clever pricing. In recent years, some of the private companies, dedicated to the production of fertilisers have affectively taken stakes in the overseas sources of raw materials. Although this has aided the industry, it has however been unable to reduce the government's burden of subsidizing the rates. The fertiliser industry is remained protected under the umbrella of the Retention pricing scheme of the Indian government. The government has introduced policies to decontrol the prices but delayed the implementation of the parameters that have not augured in favor of the industry. The pricing of the fertilisers are also dependent on the freight charges that are Baltic dry index. The small size of the older plants and the low efficiency of the public sectors also pose as drawbacks of the industry. Recent policies of the government are directed towards revamping of these industries and restoring them to health. The fertiliser industry is faced with other challenges inter alia infrastructural bottlenecks and the uncertainties in government policies. The delay in decision making and obscurity in setting parameters are among some of the major drawbacks of the government policies directed towards the industry. To retrieve the health and growth of the fertiliser industry, the government of India is in need of long term realistic policies that would enable the industry to overcome the challenges and survive the present impasse.

4.1 Recent Aspects in fertiliser Industry

- There is a lot of development going on to meet the demand of fertilisers in the country through indigenous production, self-reliance in design engineering and execution of fertiliser projects is very crucial. There are consultancies which organize themselves to undertake execution of fertiliser projects starting from concept/designing to commissioning of fertiliser plants in India and abroad.

- Many concepts have been developed to carry out research and development / basic research work by mutual understanding between industry and academic institutions, and even there is support from the Department of Fertilisers to sponsor research and development projects through the Indian Institutes of Technology, Delhi and Kharagpur under the Science and even other major institutions in the country
- The fertiliser plant operators are now in the position to absorb and assimilate the latest technological developments, incorporating environmental friendly process technologies, and are in a position to operate and maintain the plants at their optimum levels without any foreign assistance and on international standards in terms of capacity utilization, specific energy consumption & pollution standards.
- Indian fertiliser industry is carrying out de-bottlenecking and energy saving schemes for the existing plants to enhance the capacity and reduce the specific energy consumption per ton of product.
- Today India has developed expertise for fabrication and supply of major and critical equipment such as high-pressure vessels, static and rotating equipment, Distributed Control System (DCS), heat exchangers and hydrolyser for fertiliser projects.
- The most significant development/advancement made by the Industry is in the field of manufacturing of catalysts of various ranges by catalyst-manufacturing Organisations like PDIL. PDIL helps in implementing the schemes for enhancement of capacity and technological upgradation in their existing catalyst plant and other utilities at Sindri to compete in the International market.

5. RESEARCH METHODOLOGY

5.1 Primary Data :

The primary data are those which are collected afresh and for the first time, and thus happen to be original in character.

During the project work following will be the methods of primary data collection:

- Observation Method
- Interview Method
- Questionnaires Method
- Data Collection through Schedules

5.2 Secondary Data :

Secondary data means data that are available i.e., they refer to the data which have already been collected and analyzed by someone else.

During the Research work following will be the methods of secondary data collection:

Various Publications of the central, State and District Government and Universities.

Various publications of foreign governments or of international bodies and their subsidiary organizations. Technical and Trade Journals, Books, Magazines and News Papers Reports and Publications of various associations connected with business and industry, banks, stock exchange, etc. Reports prepared by research scholars, universities, economists etc. in different fields Public Records and Statistics, historical documents and other sources of published information and Data from direct companies in the field of Fertiliser Industries in Maharashtra.

5.3 Sample Size :

In this field studies are undertaken in practical life, considerations of time and cost almost invariably lead to a selection of respondents i.e., selection of only a few items. The respondents selected should be as representative of the total population as possible in order to produce a miniature cross-section. The selected respondents constitute what is technically called a „sample size“ and the selection process is called „sampling technique“. The survey so conducted is known as „sample survey“. Therefore population is selected according to some rules for studying some characteristics of the population, the group consisting of units is known as „sample“.

5.4 Objectives :

To study the global Demand, Supply and Consumption of fertilisers .

To study the demand, production and consumption of fertiliser in India.

To study the SWOT Analysis and Recent Aspect of Fertiliser Industries in India

6. Conclusion:

Growth of agriculture and allied activities is mainly dependent on advances in farming technologies and efficient use of available resources. Chemical fertilisers have played a significant role as one of the major inputs in the cultivation of the crops. Government of India has been consistently pursuing policies conducive to increase the availability and consumption of fertilisers in the country. As of now, the country has achieved near self-sufficiency in production capacity of urea and DAP, with the result, India could manage its requirement of these fertilisers from indigenous industry. Hence, fertiliser industry is very crucial for Indian economy because it provides a very important input to agriculture.

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