



Indian Agrochemical Industry

6 September 2019

INDUSTRY OUTLOOK

Agrochemicals can be broadly classified in the following types:

Insecticides: Insecticides provide protection to the crops from the insects by either killing them or by preventing their attack. They can be further classified into the following:

Contact insecticides: These kill insects on direct contact and leave no residual activity, hence causing minimal environmental damage.

Systemic insecticides: These are absorbed by the plant tissues and destroy insects when they feed on the plant.

Fungicides: Fungi are the most widespread cause of crop loss. Fungicides are used to control disease attacks on crops and are used to protect the crops from the attack of fungi.

Herbicides: Herbicides also called as weedicides are used to kill undesirable plants. Their main competition is cheap labour which is employed to manually pull out weeds.

Bio-pesticides: Bio-pesticides are the new age crop protection product manufactured from natural substances like plants, animals, bacteria and certain minerals.

Fumigants and rodenticides are the chemicals which protect the crops from pest attacks during crop storage.



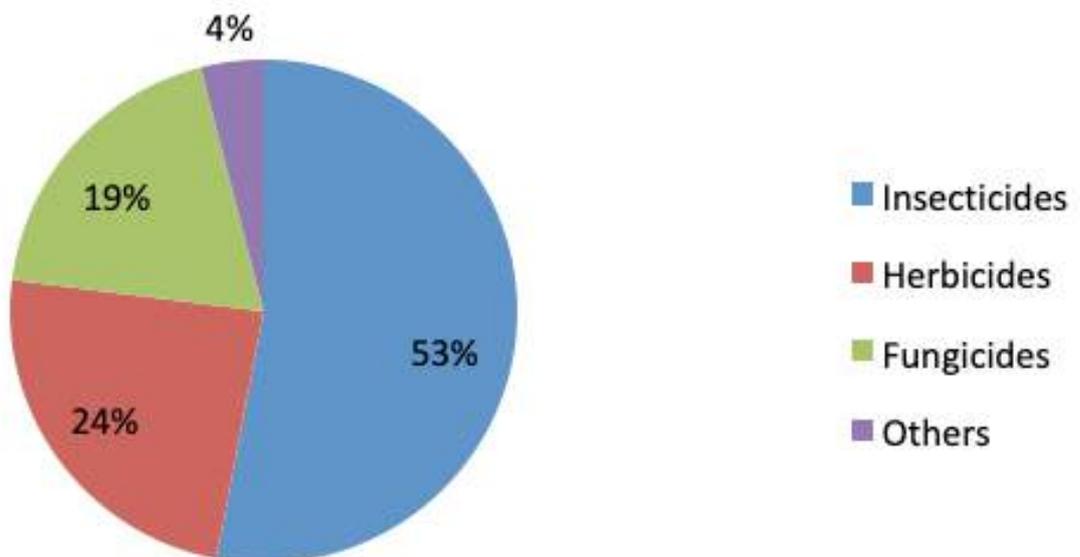
INTERNATIONAL AGROCHEMICAL MARKET

China, France, Germany, India, Japan, and the United States represent the largest agrochemicals markets. Markets in Western Europe and North America are the established consumption points for agrochemicals and are expected to show below-average growth, due to market maturity and regulatory constraints. Currently, China is leading the market with its developing agricultural sector, along with the need for its ever-growing population. Globally, China is not only the largest producer but also the largest consumer of fertilizers. South America, particularly Brazil, is the world leader in pesticide consumption. Africa also registers a good potential in the agrochemicals market¹.

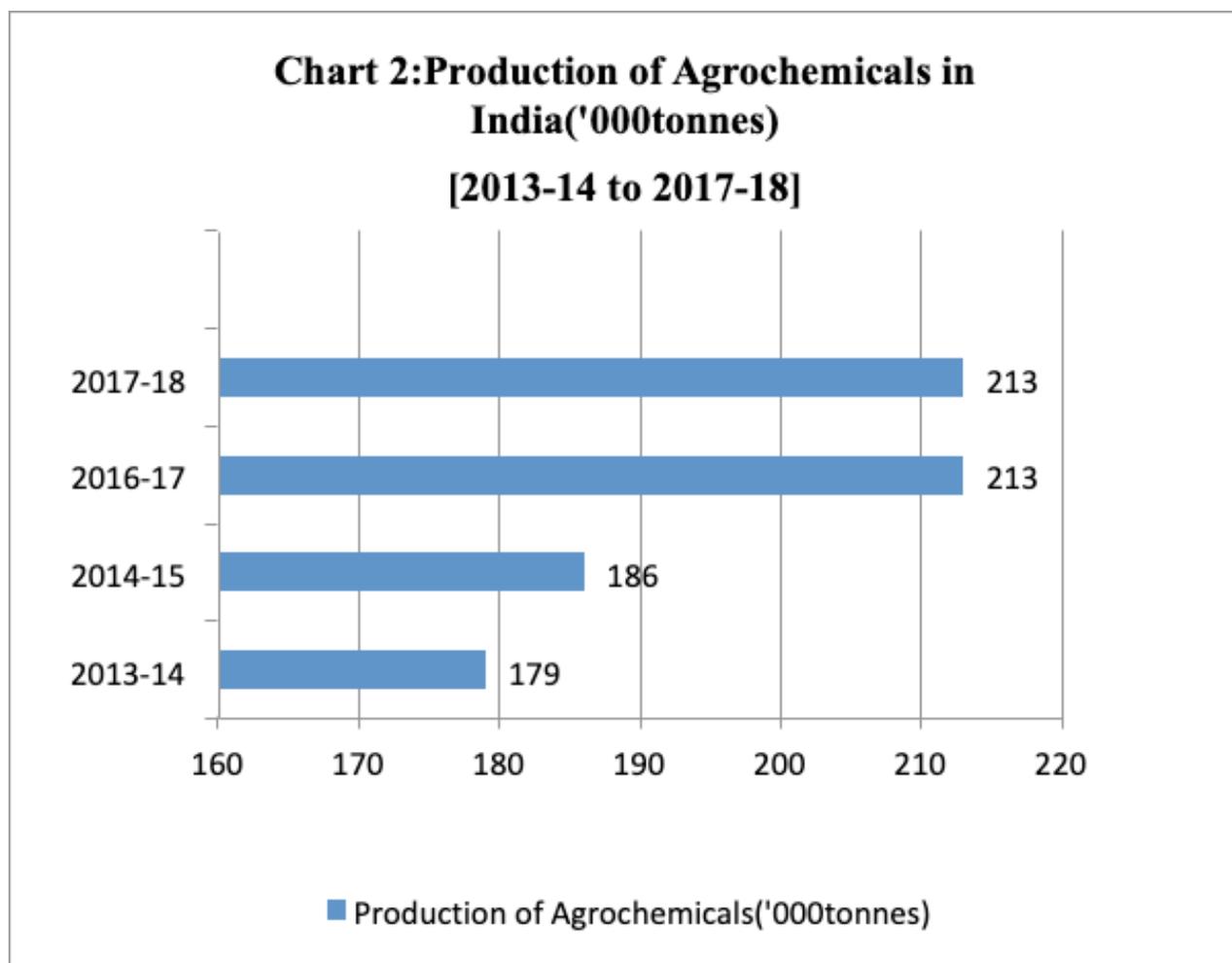
Domestic Market Segmentation by types of Pesticides in India

At present, India is the world's 4th largest producer of agrochemicals after United States, Japan and China². Insecticides dominate the Indian crop protection market and form almost 53% of the domestic agrochemicals market. Herbicides are, however, emerging as the fastest growing segment amongst the agrochemicals.

Chart 1: Domestic Market segmentation by type of pesticides(%)



Andhra Pradesh, Maharashtra, Punjab, Madhya Pradesh, Chhattisgarh, Gujarat, Tamil Nadu and Haryana use more than 70 per cent of the agrochemicals used in India. Andhra Pradesh is a leading consumer of crop protection chemicals with a market share of 24 per cent.



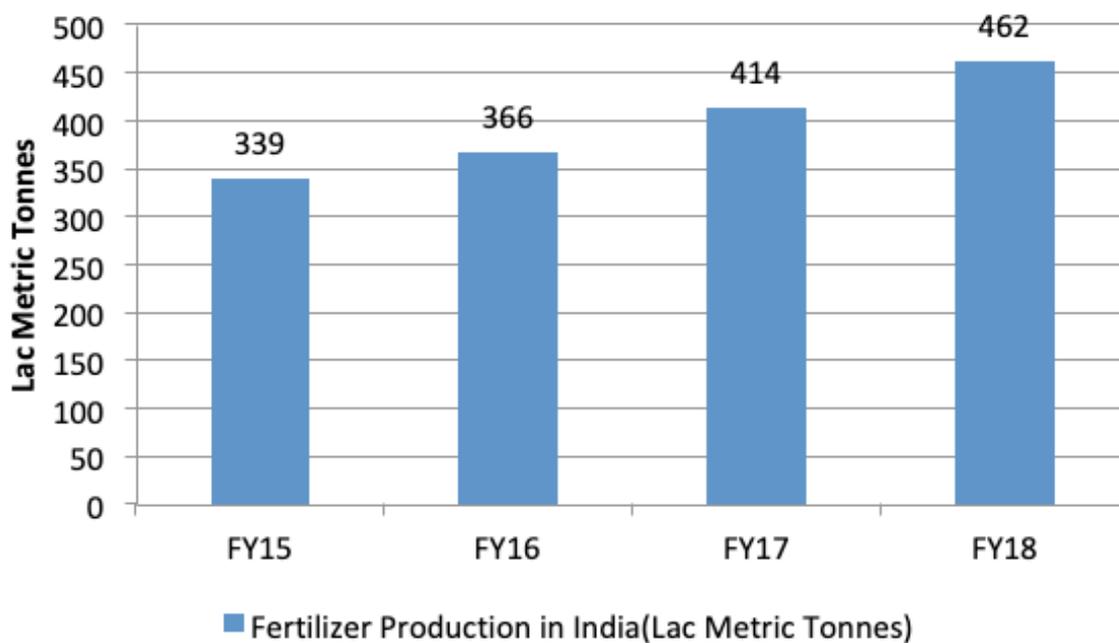
Source: Compiled from AgNews, 'A Report on Agrochemical Industry' (July 2019) FICCI and 'Indian Agrimarket Scenario and Opportunities' <http://www.indiachem.in/brochure/Presentation%20by%20Mr.%20Harsh%20Dhanuka-%20Dhanuka%20Agritech.pdf>

To feed a rising population, food production needs to be increased, creating a case for the need for more agro-inputs for better production and yield of crops. Production of agrochemical has also increased in-lieu of the new product additions which are formulated to combat the pest attacks.

FERTILIZER PRODUCTION IN INDIA

Production of fertilizer has increase at CAGR 11% from FY15-18 due to increased consumption of fertilizers per hectare currently 165 kg/ha.

**Chart3:Fertilizer Production in India
(Lac Metric Tonnes)**



Source: 'Role of Agrochemicals in Sustainable Farming' (July 2019) FICCI.

**Chart4:Per Capita Consumption of Pesticides in
India(Kg/Ha)**

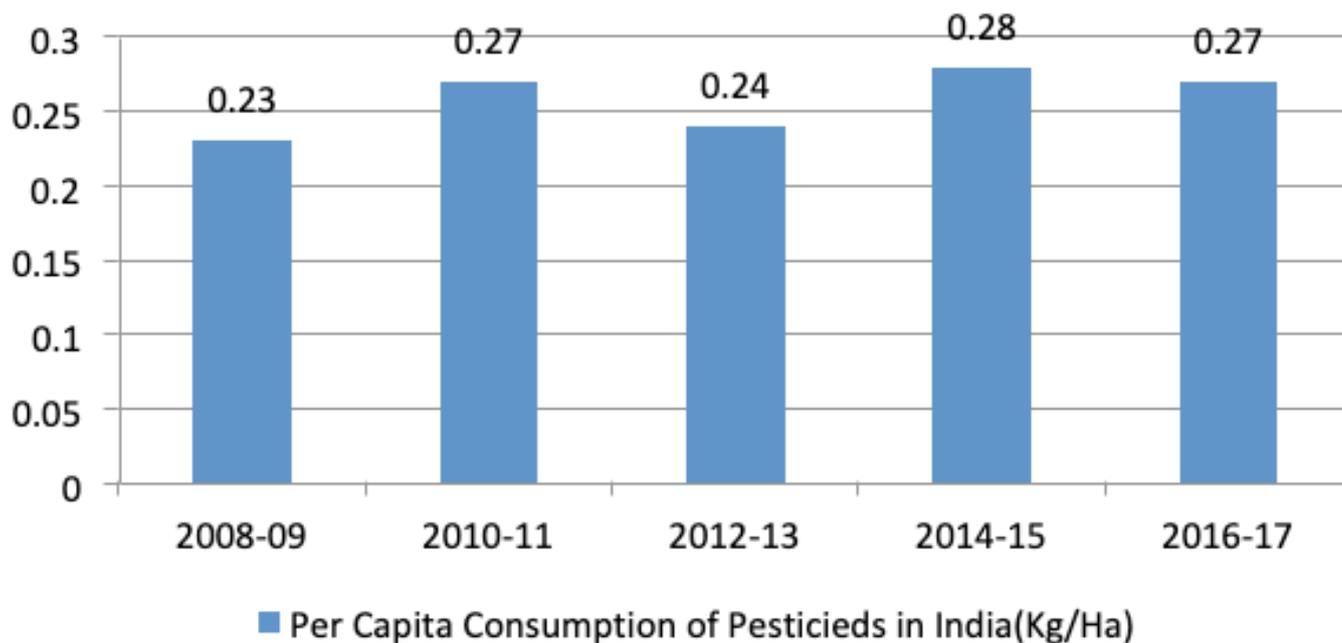
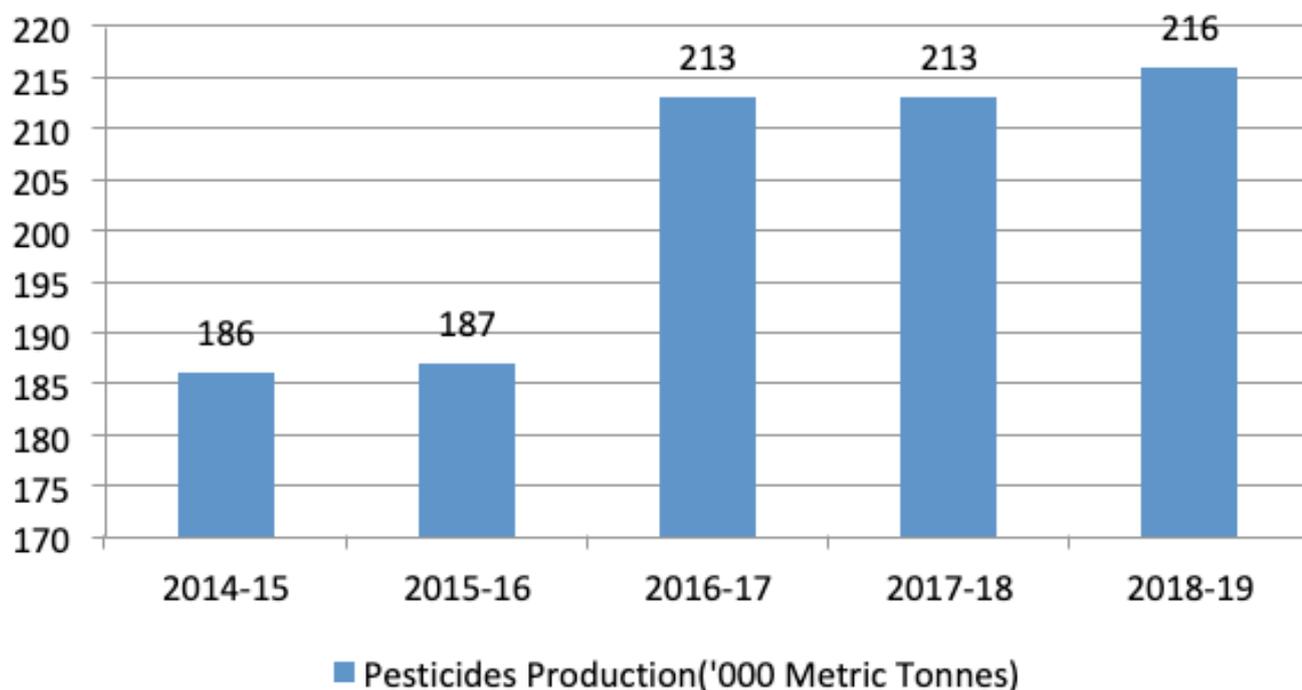


Chart5:Pesticides Production('000 Metric Tonnes)

Source: 'A Report on Agrochemical Industry' (July 2019) FICCI.

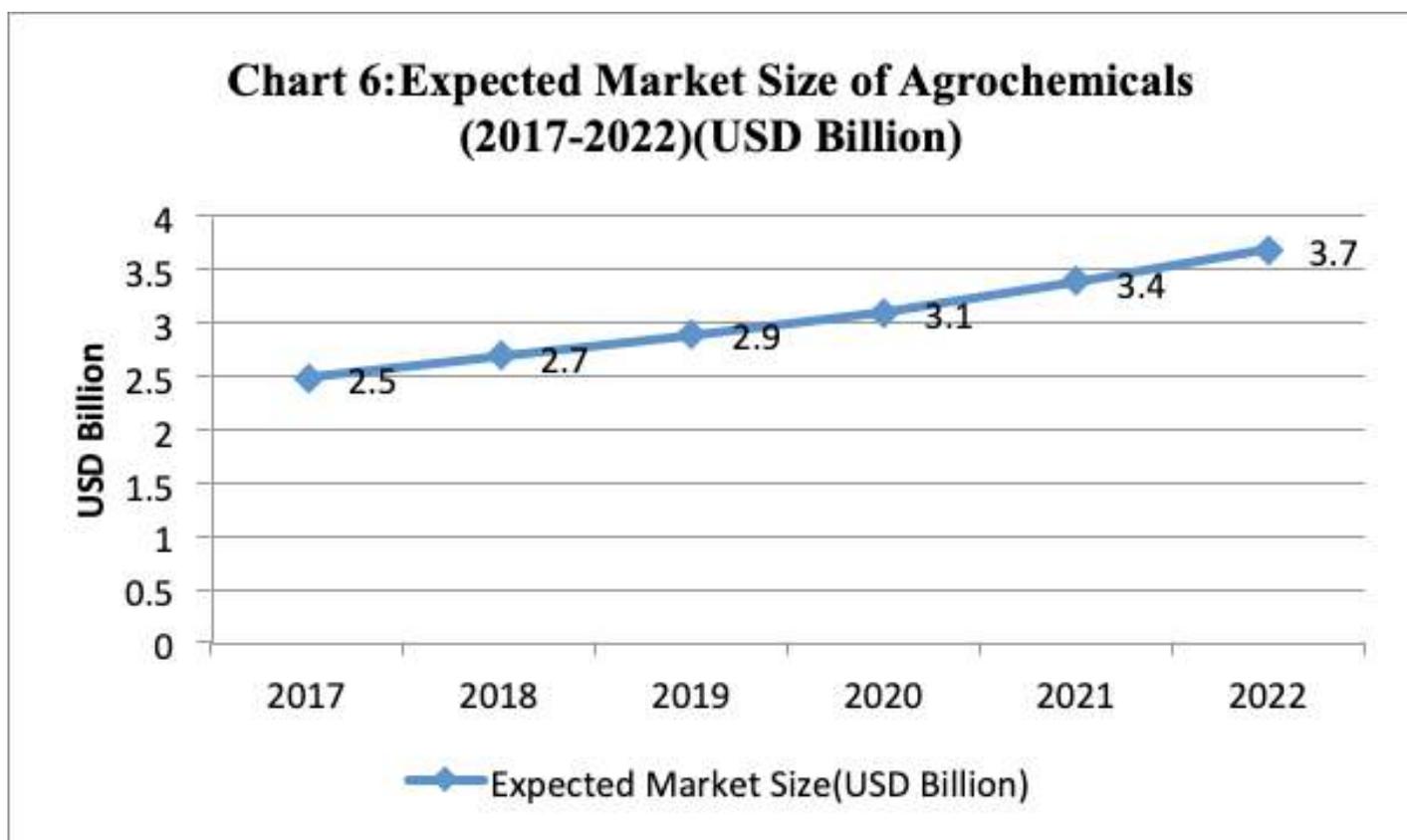
Table 1: Investment Trends in Pesticides Industry (INR Million)

Year	Project Announced (INR Million)	Project Completed (INR Million)	Total Investment (INR Million)
2011-12	4626	7600	36010
2012-13	2750	1250	37735
2013-14	1914	5572	34062
2014-15	5351	1960	13371
2015-16	15166	500	28077
2016-17	10796	–	61255
2017-18	10386	350	69497
2018-19	7218	1520	73335

Source: 'Role of Agrochemicals in Sustainable Farming'(July 2019) FICCI

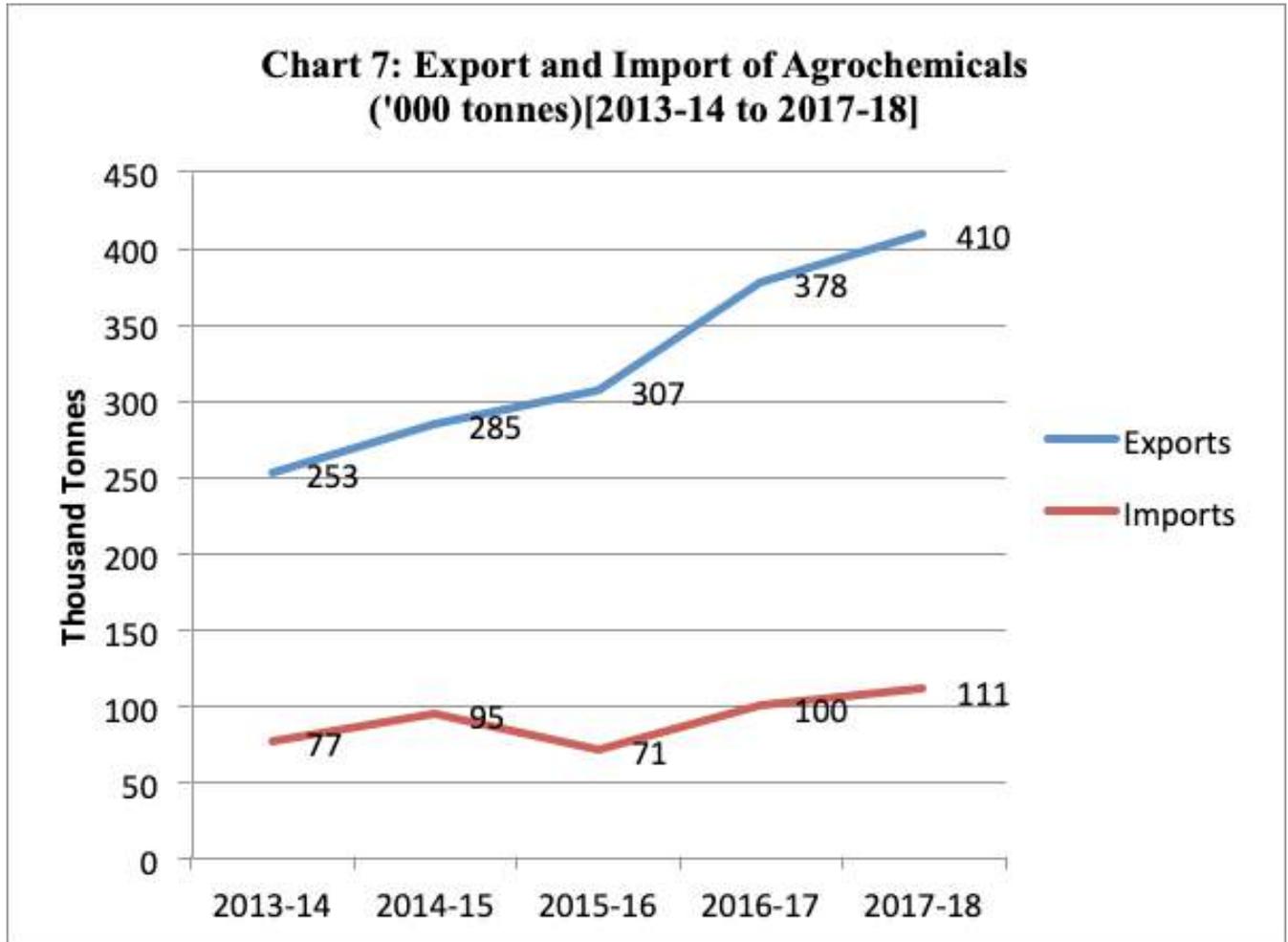
GROWTH DRIVERS

- Increasing food and horticulture demand.
- Indian agro-chemical firms are preparing products for near future that could significantly boost their sales as molecules worth over INR 26,000 crore are going off-patent by 2020. Industry experts feel the agrochemical sector may witness an annual growth of 15-20 per cent following patent expiry from currently around 8-9 per cent.
- Export of agrochemicals is very high compared to Import. Net Export of agrochemicals is increasing and acting as an export driver.
- Strict enforcement and inspections of environmental clampdown of chemical industry in China would lead to shutdown of Chinese agrochemicals companies unable to comply with such guidelines. This might provide a competitive edge to the Indian agrochemicals companies.
- In the past, the availability of cheap labor for manual weed picking has limited growth for herbicides. But today's labor shortages, rising labor costs and new genetically modified crops have increased use of herbicides. Growth in fungicides has grown by 7.5 percent over the last five years, and this growth is expected to continue.
- Pest attacks across various stages of crop life-cycles are affecting farmers. Use of agrochemicals can help mitigate the pest problem and is expected to increase with the rising incidences of pest attacks.



Source: Indian Agrochemical Market Scenario and opportunities(2018) Dhanuka Agritech Ltd. <http://www.indiachem.in/brochure/Presentation%20by%20Mr.%20Harsh%20Dhanuka-%20Dhanuka%20Agritech.pdf>

THE EXPORT-IMPORT SCENARIO

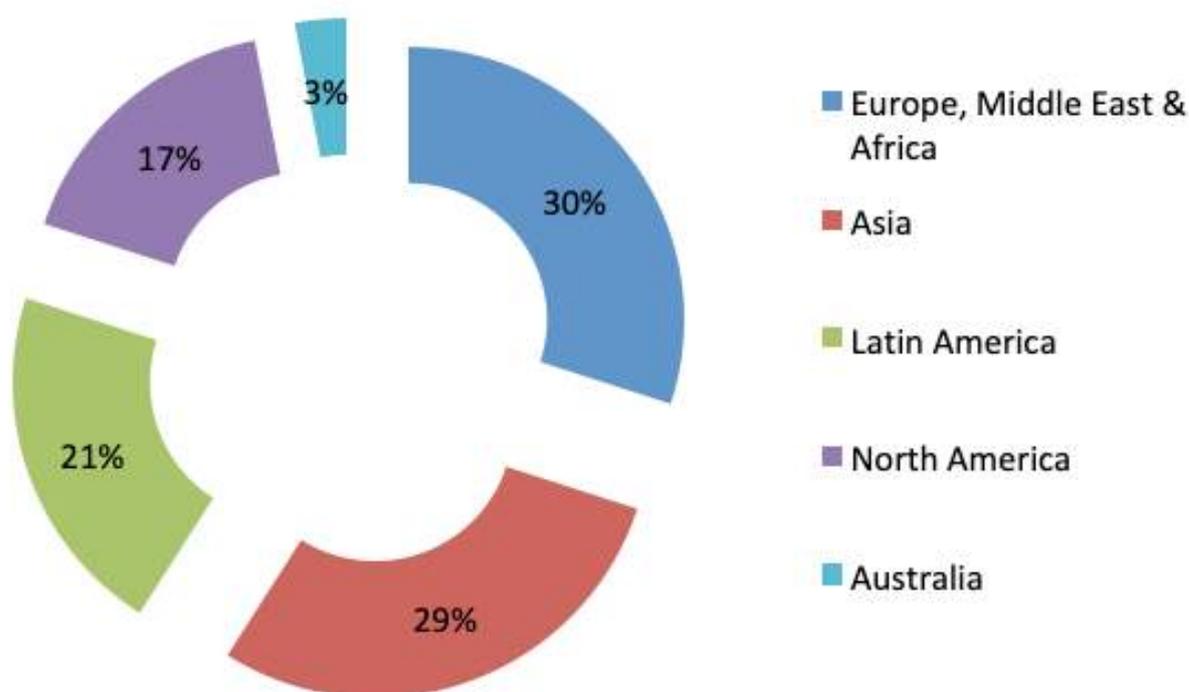


Source: Ministry of Commerce, Government of India

Export of agrochemicals is very high compared to Import. Net Export of agrochemicals is increasing and acting as an export driver. The Export of agrochemicals is playing a significant role to counter trade deficit in Chemicals Sector⁶.



Chart 8: Regionwise Share of Exports of India in 2017-18 (in Per Cent)



Source: Ministry of Commerce, Government of India

Over the years there has been a steady increase of fungicide and herbicide exports which has led to the overall increase in agrochemical exports. Fungicide and herbicide exports have grown at a CAGR of 25.5% and 27.5% during FY14-18 respectively. Insecticide exports have fallen by 0.4% during the same time period.

Latin America, North America, Europe and Asia have emerged to be important markets for the Indian agrochemical industry. Share of exports towards North America have increased significantly from it being 13% during FY14 to 17% during FY18.

On the import side, Fungicide and herbicide imports have grown at a CAGR of 15.5% and 28.4% during FY14-18 respectively. Insecticide imports have fallen by 3.7% during the same time period.

GOVERNMENT INITIATIVES

Government of India has proposed new 'Pesticides Management Bill, 2017' that aims to regulate manufacturing, storage, import, export, sale, transport, distribution, quality and use of pesticides. It aims to replace the current act governing the agrochemicals industry namely 'Insecticide Act, 1968' which is administered through Ministry of Agriculture, Department of Agriculture and Cooperation. The new law is likely to be in line with the international norms being followed by global leaders. As per the proposed law, pesticide companies will have to pay hefty

penalty of INR 25,000 to INR 50 lakh compared to the existing provision of INR 500 to INR 75,000 for the violation of any rules and regulations. The new bill also proposes imprisonment of up to five years of jail from the current three years. The proposed bill also provides for paying of compensation to the affected farmers or users under the provisions of Consumer Protection Act, 1986. The draft bill also aims to expand the scope of regulating farm chemicals, right from manufacturing to disposal. On the other hand, usage of agrochemicals are expected to increase due to various measures for rural sector undertaken by the Government of India (GoI) like Doubling of farmers income by 2022, e-NAM, PM KISAN among other rural initiatives.

MAJOR PLAYERS

Globally, Bayer AG (a Germany based Life Science Company) is a dominant player in the world. Its division Bayer Crop Science focuses on crop protection and use of relevant agrochemicals. Some of the other key players include Yara International ASA; a Norway-based company that produces, distributes and sells nitrogen-based mineral fertilizers and related industrial products. BASF SE is a German chemical company and the largest chemical producer in the world. The BASF Group comprises subsidiaries and joint ventures in more than 80 countries. ADAMA, an Israel based company (Makhteshim and Agan, that were established in 1952 and 1945 respectively, and then merged in 1997 to form Makhteshim Agan. In 2014, they become 'ADAMA' by introducing new global brand)⁸. Dow Agro Sciences (Dow AgroSciences LLC is a wholly owned subsidiary of the Dow Chemical Company specializing in not only agricultural chemicals such as pesticides, but also seeds and biotechnology solutions. The company is based in Indianapolis, Indiana, in the United States). Monsanto⁹, Syngenta (Syngenta AG is a global company that produces agrochemicals and seeds and is based in Basel, Switzerland. As a biotechnology company, it conducts genomic research. It was formed in 2000 by the merger of Novartis Agribusiness and Zeneca Agrochemicals), Agrium (Agrium Inc. is a major global producer and distributor of agricultural products, services and solutions. Agrium produces nitrogen, potash and phosphate fertilizers, with a combined wholesale nutrient capacity of over nine million tonnes. Agrium also supplies key products and services directly to growers, including crop nutrients, crop protection, seed, as well as agronomic and application services. Agrium's retail-distribution has over 1,500 facilities and over 3,800 crop consultants who provide advice and products to growers) etc¹⁰.

INDIAN PLAYERS

Incorporated in 1954, HIL (India) Limited, formerly Hindustan Insecticides Limited), a Government of India Enterprise was initially set up with the objective of supplying DDT for National Malaria Eradication Programme launched by the Government of India. The company gradually diversified into agrochemicals followed by Seeds and Fertilisers businesses. The company diversified into agrochemicals in the late 1970s to ensure supply of quality pesticides at reasonable prices to the agricultural sector. Today it has a range of technical and formulation grade pesticides to meet the varied requirements of the farming community. After the successful commissioning of water soluble fertilizer plant of 1800 MTPA at Bathinda in 2016-17 under brand name 'HILGOLD', the company has started commercial production of HILGOLD at the other two units (Rasayani and Kochi) also with capacity



of 3000 MTPA each. The company is in the process of setting up a Long Lasting Insecticidal Nets (LLIN) manufacturing facility at its Rasayani Unit with an initial capacity of 50 lakh nets per annum under the UNIDO's project "Development and Promotion of Non-POP alternative to DDT". The facility is expected to become operational in the second quarter of current FY 2019-20. HIL earned income of Rs.29.80 crore from export of around 438 MT of DDT to Zimbabwe, Botswana, South Africa & Namibia in 2017-18. HIL also exported agro-chemicals to countries like Peru, Myanmar and Philippines earning about Rs.2.02 crore. The total exports in 2017-18 was Rs.31.82 crores as against Rs.3.43 crore in the preceding FY 2016-17. The export was around Rs.1.90 crore up to December, 2018¹¹.

BASF India Limited (a subsidiary of BASF in India) is a leading multinational chemical company caters to several sectors including agriculture, automotive, pharmaceuticals, construction, consumer durables, consumer care, paper, and paints. In agrichemicals, it has many crop protection products and brands¹².

Bayer India (an Indian subsidiary of Bayer) also produces many crop protection products like Herbicides, Insecticides, Fungicides etc¹³.

Table 2: Sales of Top Twenty Agrochemical Companies in 2016-17 and 2017-18 (in INR Crore)

SI No.	Company	2017-18 Sales (INR Crore)	2016-17 Sales (INR Crore)	Per Cent Growth (%)
1	UPL Ltd.	15006.0	13792.0	8.80
2	Gharda Group	2336.3	1965.0	18.90
3	Indofil Industries	1749.0	1668.3	4.84
4	Bharat Group	1567.8	1420.0	10.41
5	Coromandel International	1506.0	1398.0	7.73
6	Sharda Cropchem Ltd.	1488.1	1198.8	24.13
7	Crystal Crop Protection	1364.9	1285.6	6.17
8	Krishi Rasayan Group	1278.0	1117.0	14.41

9	Rallis India	1211.7	1230.2	-1.50
10	PI Industry	1205.0	1140.0	5.70
11	Sulphur Mills Ltd.	1200.0	800.0	50.00
12	Excel Crop Care	1188.0	1067.0	11.34
13	Willowood Chemicals	1124.1	1090.6	3.07
14	Insecticides India	1106.4	1076.2	2.81
15	Meghmani Group	969.8	809.4	19.82
16	Dhanuka Agritech	962.6	873.2	10.24
17	NACL Industries Ltd.	884.2	849.7	4.06
18	GSP	820.0	810.0	1.23
19	Best Agrochem	746.0	—	—
20	Heranba Industries Ltd.	740.0	625.0	18.40

Source: 'Top 20 Indian Agrochemical Companies in FY2017-18: backward Integration to secure the future'(28 September 2018) AgNews, <http://news.agropages.com/News/NewsDetail--27639.htm>

INDUSTRY RISK

While the benefits of agrochemicals are commendable, the toxicity of synthetic products acts as a major challenge for the industry. A complex competitive landscape of rising materials, labour and environmental compliance costs, is gradually forcing global agrochemical producers to rethink top-line growth strategies currently focused on internal manufacturing and intellectual property protection. More producers are now considering profitable growth strategies that rely on external contract manufacturing partnerships to manage costs for lower-end product lines while entering new markets with a broader set of products¹⁴.

Government of India has proposed new 'Pesticides Management Bill, 2017' to replace the 'Insecticide Act 1968.' As per the proposed law, pesticide companies will have to pay hefty penalty of INR 25,000 to INR 50 lakh compared to the existing provision of INR 500 to INR 75,000 for the violation of any rules and regulations. The new bill also proposes imprisonment of up to five years of jail from the current three years.

Over the years Indian Crop protection Industry has witnessed the proliferation of non-genuine / spurious pesticides. Illegal imports of technical grade chemicals having no Central Insecticides Board (C.I.B.) certificate has led to the formulation of non-genuine / illegal pesticides locally. Apart from the counterfeit products of leading companies, a new practice has emerged by which counterfeiters are selling insecticides in the name of 'bio products' to avoid rigorous registration procedure. Further, low capacity utilization, high inventory (owing to seasonal & irregular demand on account of monsoons) and long credit periods to farmers remain key concerns.

Apart from compliance norms, and international competition from countries like USA, China, Brazil etc; there are other concerns too. For instance, Brazilian farmers use pesticides in growing all of the country's major export crops — soyabeans, corn, sugarcane, coffee, rice, beans, and cotton. Among these, soyabeans is a major crop that is laden with pesticides. While pesticide use in Brazil has risen three-times faster than production per hectare, each one per cent increase in soyabeans production has been accompanied by a 13 per cent increase in pesticide use. It may be noted that glyphosate is used on around 95 per cent of soyabeans, corn and cotton harvested in Brazil and there is no readily available substitute. Recently, registration of new glyphosate-based products in Brazil got a go-ahead. This is of concern since the widely-used herbicide has been linked to numerous health problems. India imported 34 million beans from Brazil and the Brazilian Bean Institute (Ibrafe) aims to double Brazilian exports by 2020¹⁶.

THE WAY FORWARD

Every year pests and diseases destroys on an average 15%-25% of food produced by the farmers. Due to the continuous increase in population, the demand for food grains is increasing at a faster pace as compared to its production. This therefore necessitates putting more thrust on the use of crop protection methods. Indian agrochemicals market will be driven by the growth in herbicides and fungicide. Contrary to global trends where herbicides form the largest share in use, the Indian agrochemicals industry is dominated by the growing use of insecticides given India is a tropical country marked by insect and fungi attacks. However, the use of herbicides has been increasing due to shortages of farm labour and concerns about the affordability of labour costs. India's exportables of agrichemicals are far outweighs the importables, hence greater attention and incentives to this sector would enhance its export potential further. Further, between 2017 to 2022, patents of 26 pesticides are expected to expire. This provides significant export opportunities for Indian companies. Growth in horticulture and floriculture industries would also be conducive for the growth of the agrochemical industry.

FOOTNOTES

1. <https://www.mordorintelligence.com/industry-reports/agrochemicals-market>
2. India Brand Equity Foundation <https://www.ibef.org/download/Agriculture-and-Allied-Industries-February-2018.pdf>
3. <https://economictimes.indiatimes.com/industry/indl-goods/svs/chem-/fertilisers/patents-expiry-to-boost-agrochemical-firms-sales-profits/articleshow/57186993.cms?from=mdr>
4. <https://www.chemanager-online.com/en/topics/strategy/china-s-anti-pollution-clampdown>
5. <https://home.kpmg/xx/en/home/insights/2016/11/indian-agrochemical-industry-prepares-high-growth.html>
6. Indian Agrochemical Market Scenario and opportunities(2018) Dhanuka Agritech Ltd. <http://www.indiachem.in/brochure/Presentation%20by%20Mr.%20Harsh%20Dhanuka-%20Dhanuka%20Agritech.pdf>



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