



# Pesticides

## Sector Study

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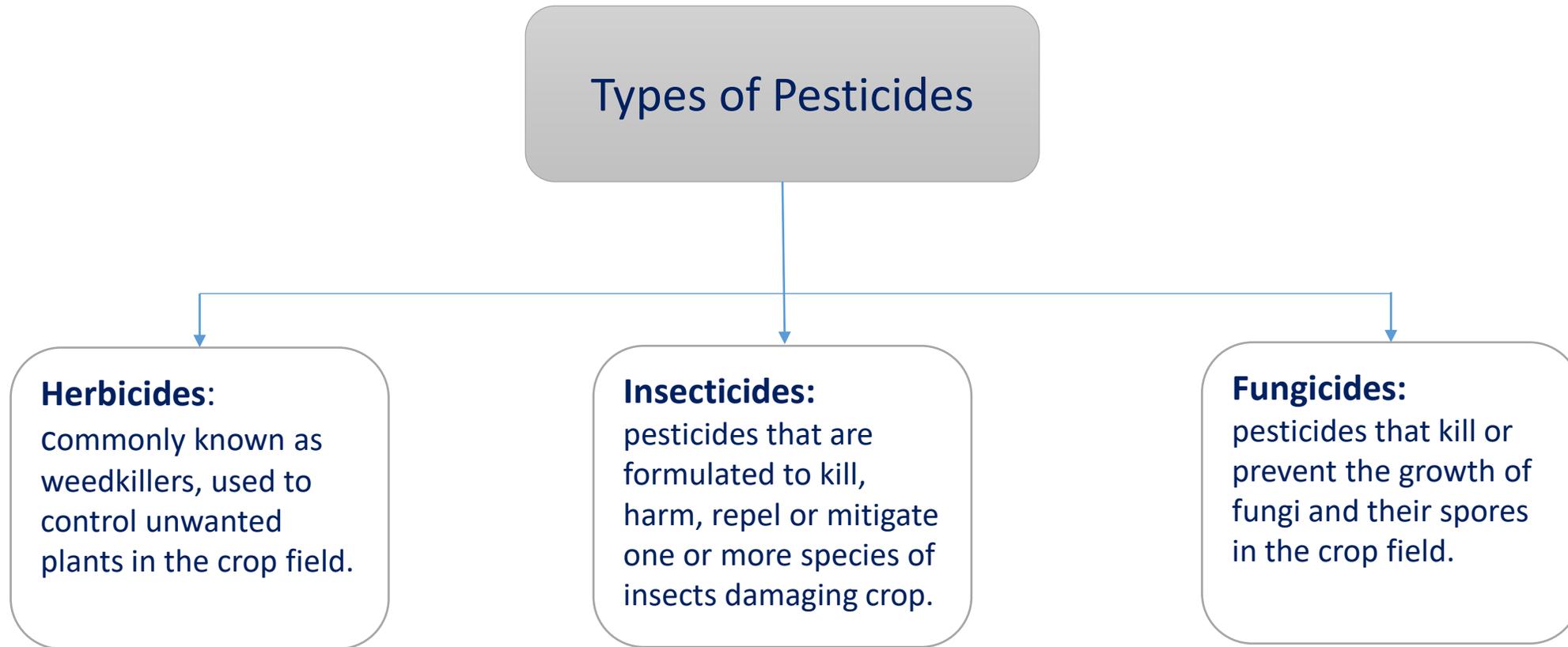
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## Overview

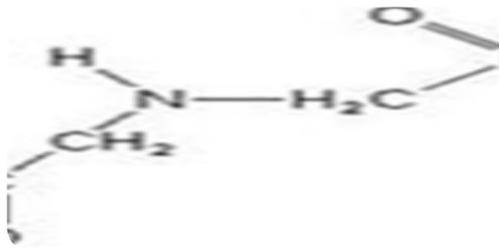
- **Pesticide:** A mixture of chemical/other components used for preventing, destroying, repelling or mitigating pests mainly from crops.





# Pesticides

## Overview | Production Process



Manufacturing of Pesticides Active Ingredients (PAIs) by chemical reaction of two or more chemical components.



Formulation of PAIs with solvents to produce different types of pesticides.



Granular Form of Pesticides.



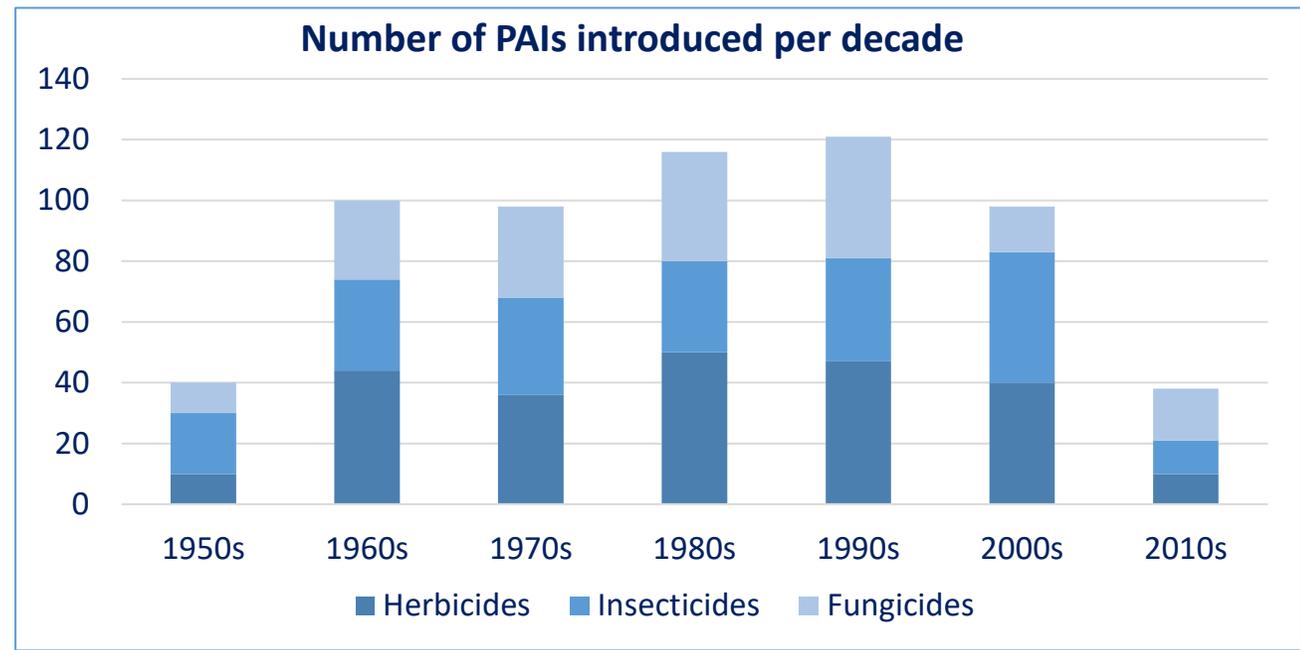
Liquid Form of Pesticides.



Powder Form of Pesticides.

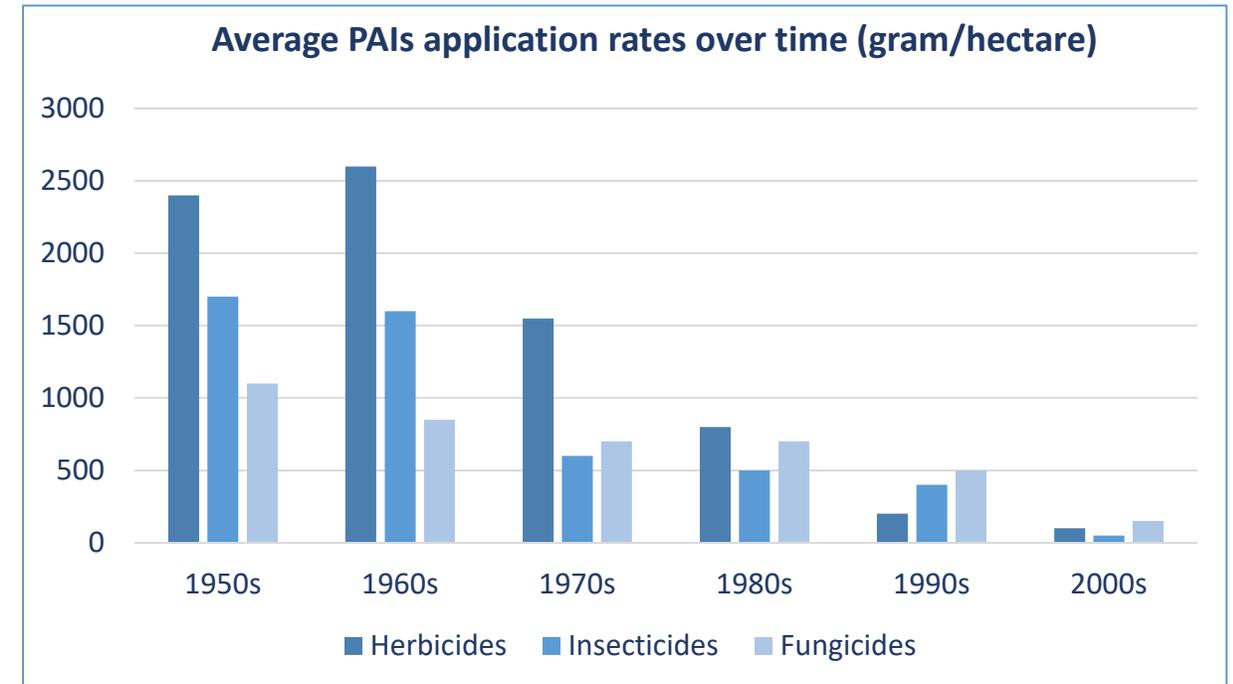
## Global Industry | Overview

- The pesticides industry has been long evolving. In 1960s, around 100 PAIs were available to the farmers whereas, now more than 600 PAIs are available globally.
- Global pesticides industry is valued over USD~77bln with more than 40 different groups operating in the Industry. New entrants bring new modes/techniques. This is important for addressing resistant or mutating virus, weeds, and pests etc.
- The pesticides industry is R&D intensive. Major companies across the globe invest around 7%-10% of their sales annually in research and development area. However, despite the high investment in innovation and development, the rate of new PAIs being introduced has remained sluggish due to stringent approval procedures.
- To keep up with new safety regulations, many products have been withdrawn from the market over the years, either as a result of being banned due to impact on environment and health, or because they were not supported during re-registration process.
- It is also important to note that while the pesticides have dramatically improved the efficacy and safety profile of new products, the capacity of regulatory systems in low income countries to protect confidential business information related to a new product is often insufficient, jeopardizing the industry's investment, stifling innovation and sometimes leaving farmers without access to new technology



## Global Industry | Overview

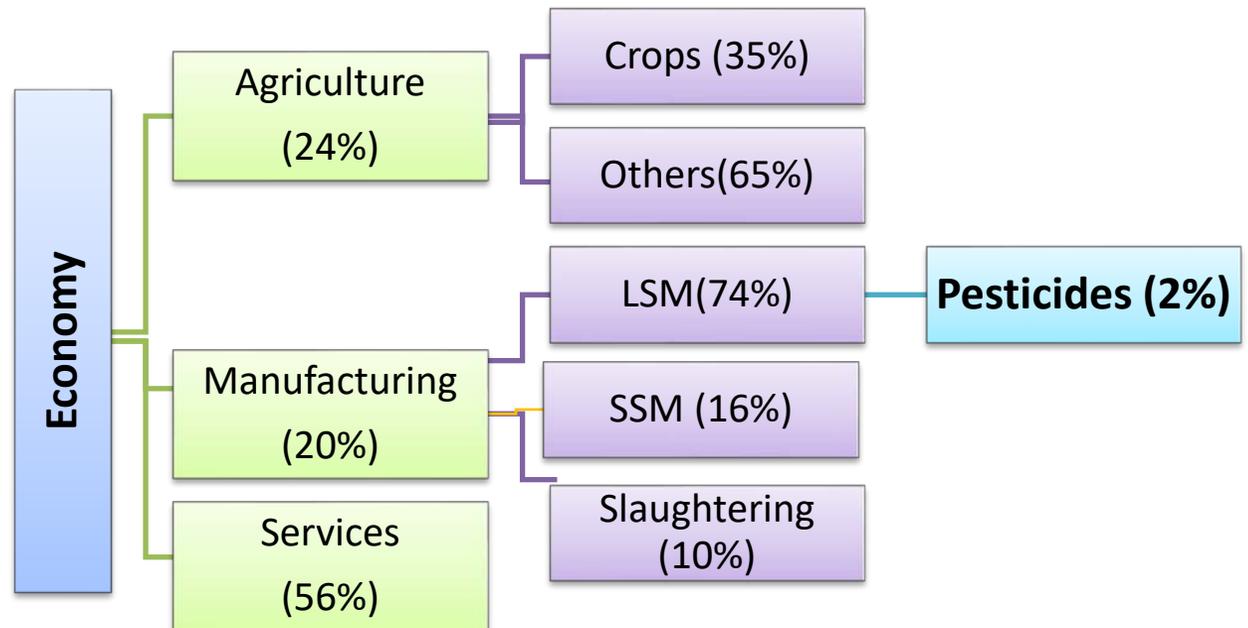
- As pesticides Industry has gradually evolved over the years, there has been a significant reduction in the application rate of a pesticide per hectare. Farmers, therefore need to apply a lower dosage of pesticide products to achieve the same efficacy.
- Average application rates in the 1950s were 1,200, 1,700, and 2,400 grams of PAIs used per hectare for fungicides, insecticides and herbicides, respectively. By the 2000s, the average use rates were reduced to 100, 40, and 75 g/ha. This technology evolution means the amount of PAIs used by a farmer today is around 95% lower than the rate used in the 1950s.
- Increased efficiency of new PAIs along with the improvement in seeds resistance led to reduction in quantity of PAIs use per hectare.
- In recent years, the interest of both the larger R&D based companies including off patent manufacturers, as well as many smaller enterprises and start-ups has been increasing in biopesticides.
- Over the last 20 years, the rate of new biological product introduction has frequently exceeded that of conventional products and the trend looks set to continue as more people look for environmental friendly and organic products.
- In terms of patent activity, CY17 was the first year in which there were more patents for biological pesticides than conventional crop protection products - 173 compared to 117.



# Pesticides

## Overview

- Pakistan’s economy is divided into three segments: Agriculture, Industry and Services. During FY21, the agricultural sector declined by ~0.01%. Agricultural growth rate has been constrained by shrinking arable land, climatic changes, water shortages, and large-scale population and labor shift from rural to urban areas.
- The important crops contributed ~22.5% to value addition in agriculture sector and ~4.3% to GDP. Other crops account for ~11.7% in value addition of agriculture sector and ~2.2% in GDP.



## Local Industry | Overview

- Pakistan’s pesticides Industry is estimated at USD~484mln in FY22 (USD~422mln) in FY21, with a YoY increase of ~15%, owing to the overall growth in crops sector. The growth is also led by rising prices of pesticide products.
- **Imports:** Pakistan largely depends upon imports to meet the local demand of the pesticides industry. During 7MFY22, the Imports (in terms of value) were recorded at USD~103mln (FY21: USD~95mln), with a YoY increase of 8%. In PKR terms, the imports were recorded at PKR~17,587mln (7MFY21: PKR~15,498mln) a YoY increase of 13%. However, the quantity of imported products has reduced by 9% in 7MFY22, i.e., ~19mln MT during 7MFY22 (7MFY21: ~21mln MT) implying that the overall increase has come from rising international prices of pesticide products.
- The sector is composed of many small players. As per the latest list of Department of Plant Protection, around 272 pesticides importers are registered in Pakistan.
- Local companies sell their products through dealers to end consumers. Considering the similar nature of the products, competition amongst the players is high.

Industry Snapshot	FY21	FY22
*Imports (in USD mln)	95	103
*Imports (in PKR mln)	15,498	17,587
*Import Quantity (in mln MT)	21	19
Revenue (in USD mln)	422	484
Revenue (in PKR mln)	67,528	85,184
Growth**	14%	15%
Registered Importers	272	
Registered Products	170	
Structure	Unorganized	
Association	Pakistan Crop Protection Association	

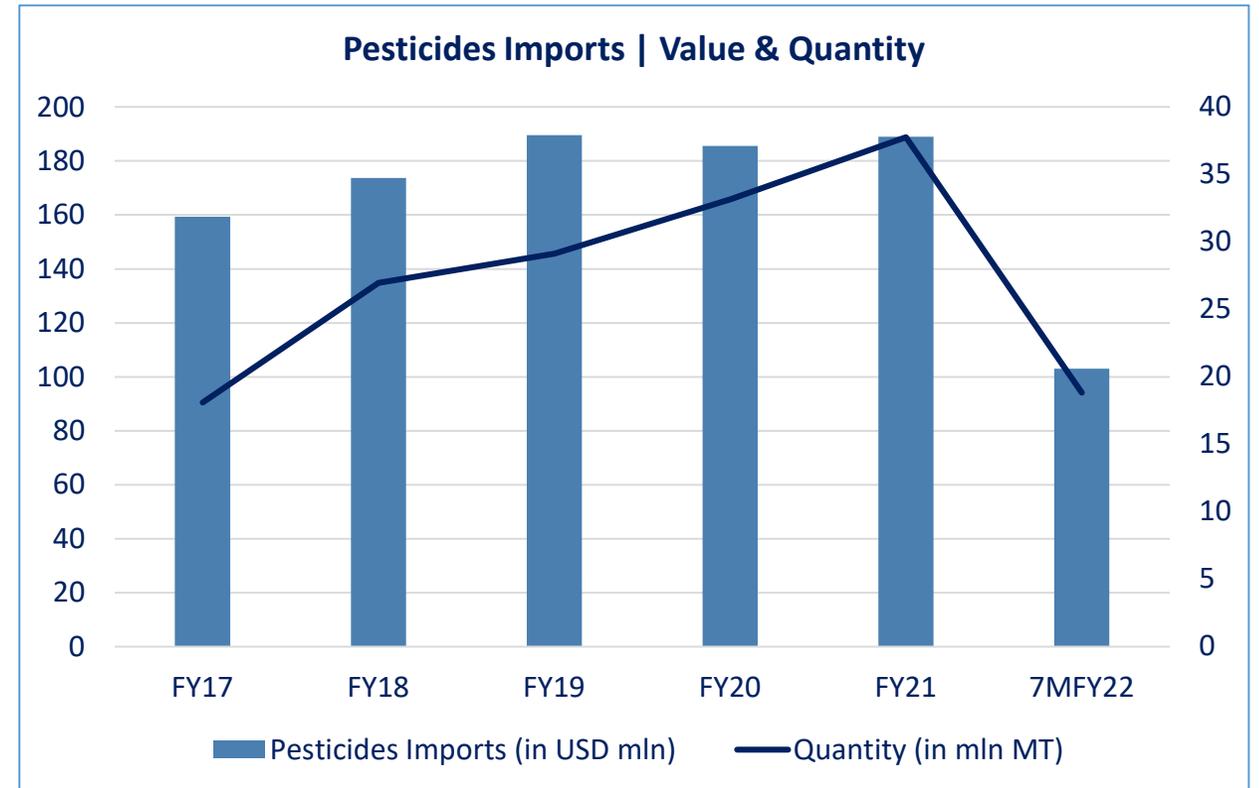
\*Imports data is based upon 7MFY22 data.

\*\*Growth rate is based upon PACRA rated clients

# Pesticides

## Supply | Raw Materials

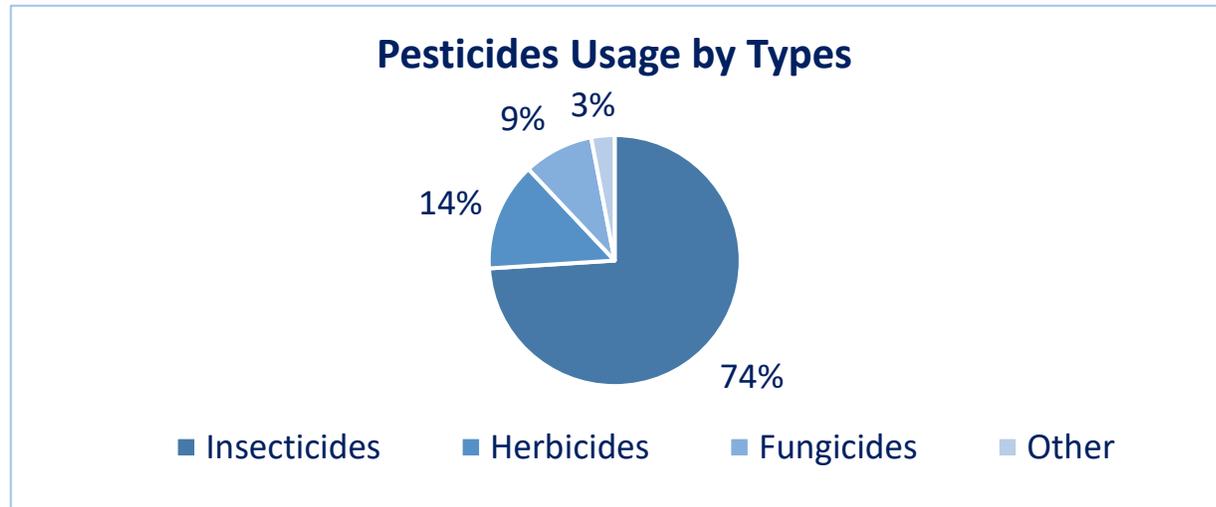
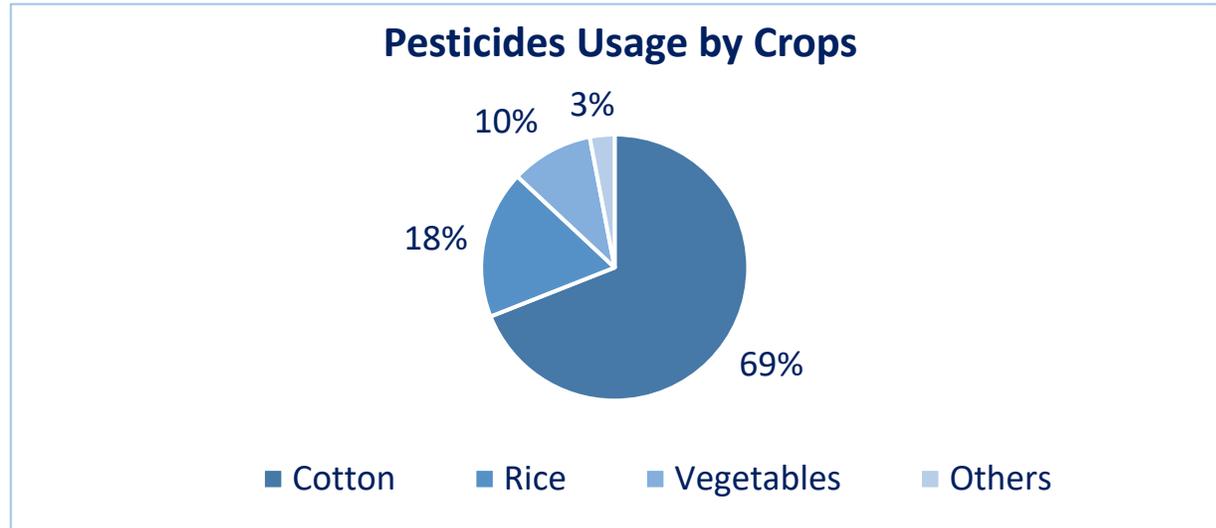
- Pakistan largely depends upon imports to meet the local demand of the pesticides industry. Pesticides import can be divided into two categories, (a) pesticides products/manufactured pesticides and (b) Pesticide Active Ingredients (PAIs).
- Currently, China is the single largest exporter of pesticides to Pakistan as it accounts for more than ~90% of the total pesticides products and PAIs imports. Significant reliance on a single country increases the risk of supply chain disruptions. The risk is further amplified by the nature of the products, as prior registration and approval is required for the import of each pesticides product.
- In terms of chemical types, insecticides constitute a major portion of pesticides imports in Pakistan followed by herbicides and fungicides.



# Pesticides

## Demand

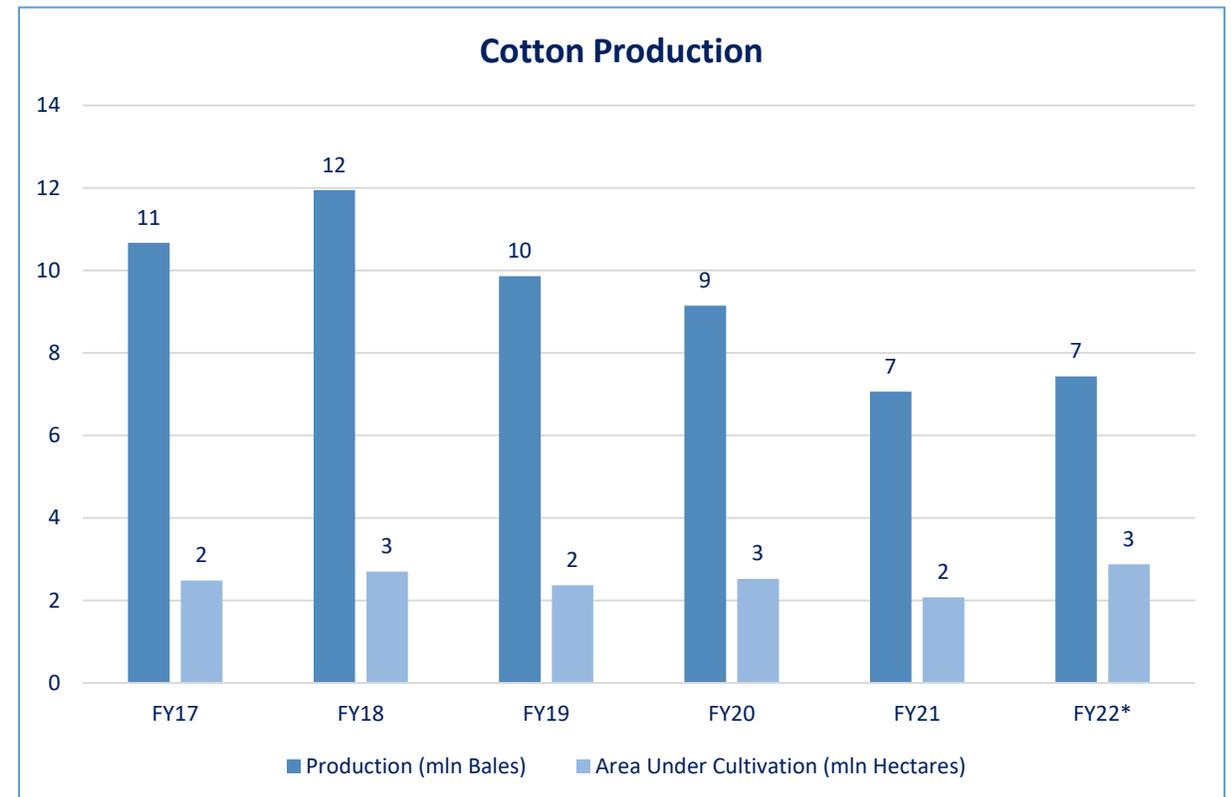
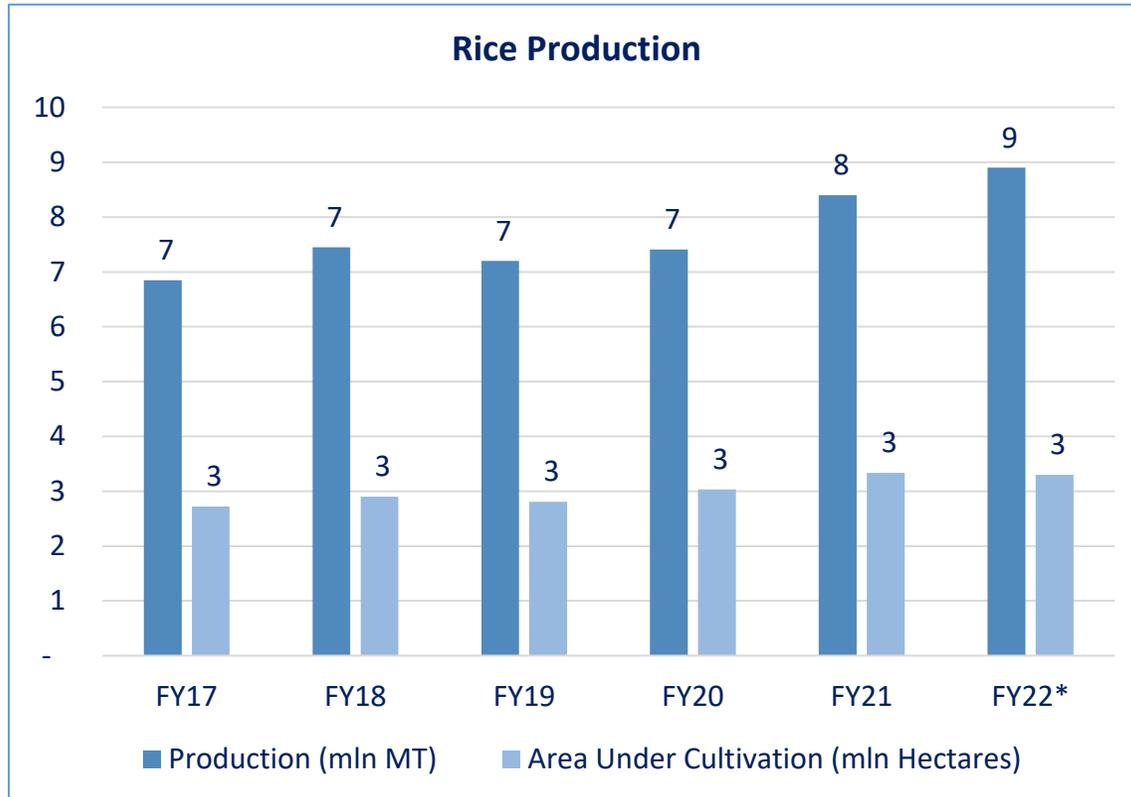
- Agriculture is one of the significant sectors of Pakistan as it contributed ~24% to the country's GDP in FY21 (*based on re-based data*).
- Crops make up more than ~35% of the agriculture sector. Pesticides are an important ingredient for the crop sector along with fertilizers and seeds.
- As per estimates, over ~69% of the pesticides are consumed by cotton crop only and the remaining ~31% are used for other crops such as sugarcane, rice, tobacco, paddy, maize, fruits and vegetables.
- All three major types of pesticides are commonly used in Pakistan. However, insecticide makes up ~74% of the total market followed by herbicides and fungicides having market shares of ~14% and ~9%, respectively.
- The pesticide companies sell their products to end consumers through dealers. Dealers usually buy in bulk from the companies and sell products in their respective markets.



# Pesticides

## Demand

- The demand of Pesticides is mostly generated from cotton and rice crop, being major pesticide consuming crops. The government has set a cotton production target of ~10.5mln bales for FY22 season. However, market sources estimate size of cotton crop to stand at ~8-9mln bales. As per PCGA figures, arrivals for current season up till mid-October stood at ~5.2mln bales as compared to ~2.7mln bales at the same time last year. The increase has come on the back of favorable weather conditions and earlier sowing/harvest period.



## Business Risk | Operating Risk

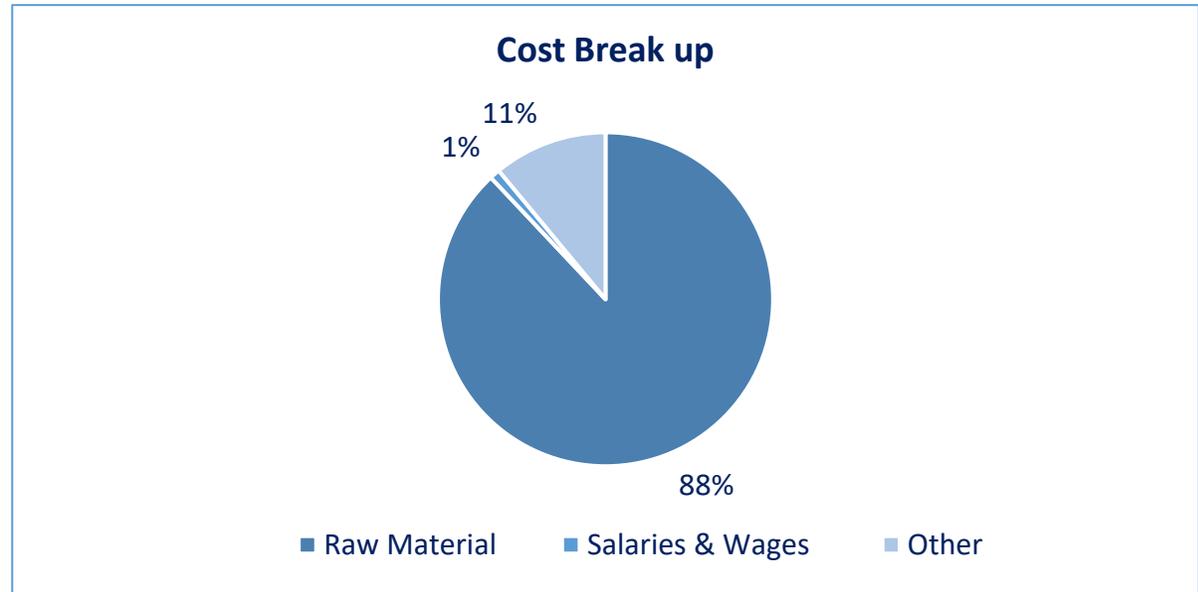
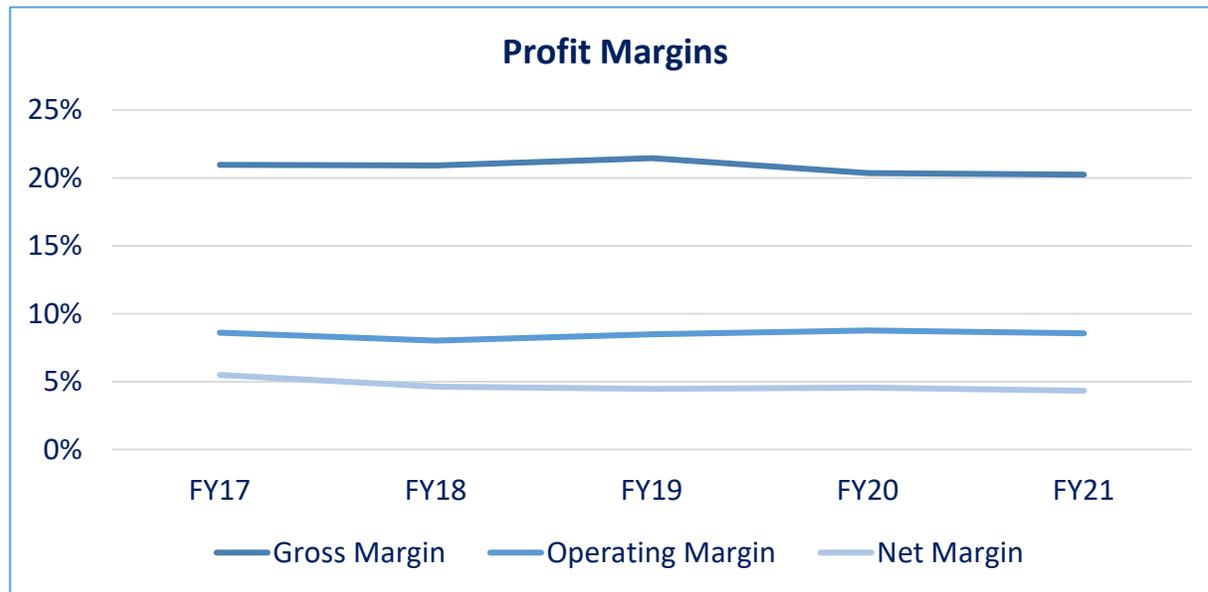
- Operating Risk:** This risk particularly refers to the difficulties relating to the operations of the pesticide players which can hamper the profitability and performance of the sector. The sector is highly dependent on imported chemical compounds to meet the local demand. Being highly dependent on imports, the inherent risk of supply chain disruption is high. The sector's costs are therefore subject to exchange rate volatility as well.
- China is the single largest exporter of the chemical compounds to Pakistan, as it constitute more than ~91% of total pesticides imports. High dependence on single country for the important crop protection ingredients further increases the supply chain risk.
- Globally, the demand of biopesticides is growing, as the sector is expected to grow with a CAGR of ~14.7% to reach USD~8.5 billion by CY25 from an estimated value of USD~4.9bln CY21 (CY20: USD~4.3bln). In Pakistan, biopesticides have very low market share and considering the lack of local expertise for the product, the application of biopesticides is expected to remain low in the coming periods as well.

Imports of Major Chemical Compounds <i>(in PKR mln)</i>	FY20	FY21	China's Share (%)	Others %
Nitrile F.C	13,562	13,273	94%	6%
Diamino toluene	5,700	4,185	97%	3%
Pyrimidin Ring	2,488	1,881	89%	11%
Thiocarbamates	2,018	2,124	100%	-
Others	5,590	8,656	80%	20%
<b>Total/Average</b>	<b>29,572</b>	<b>30,119</b>	<b>92%</b>	<b>8%</b>

# Pesticides

## Business Risk

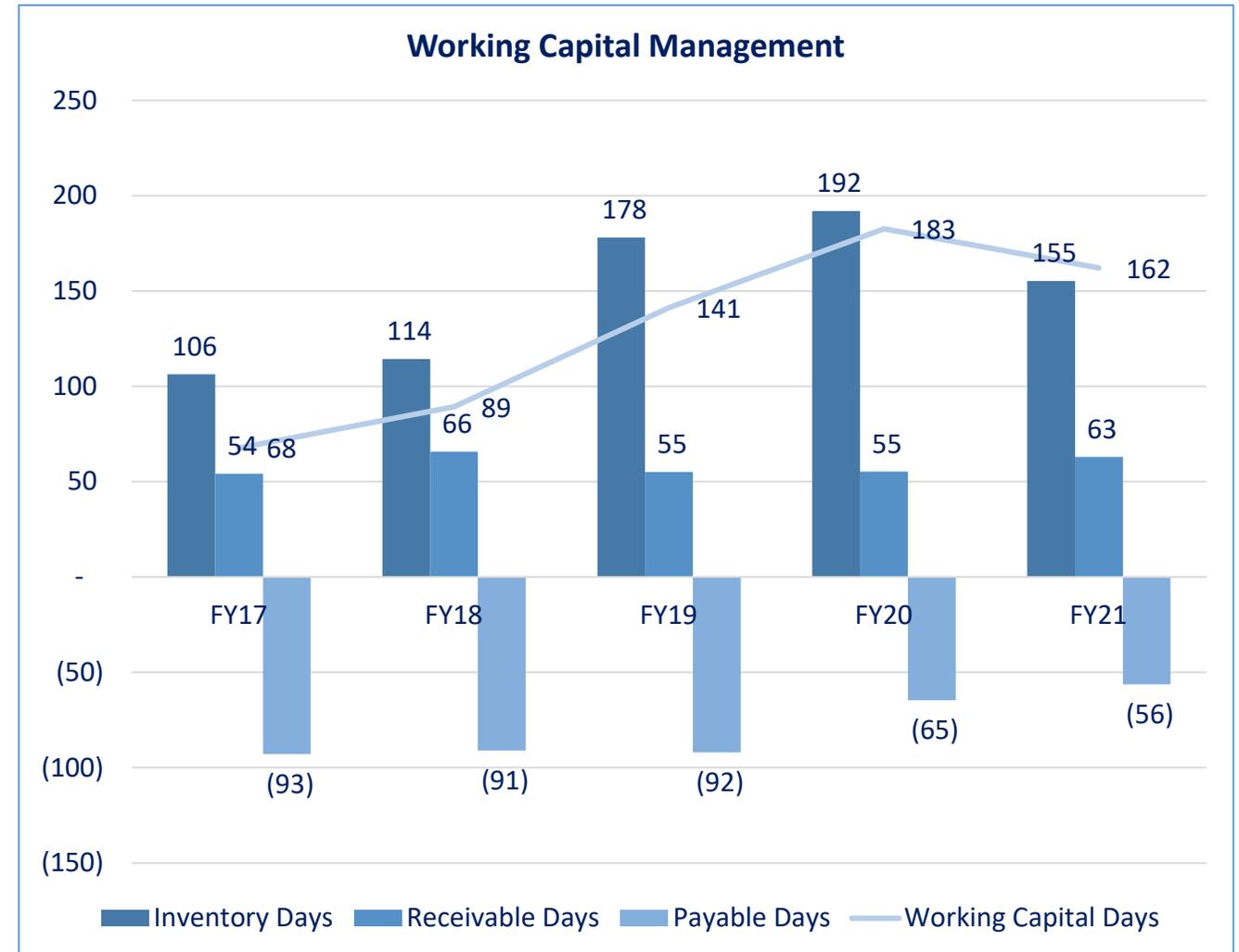
- The sector is characterized by moderate margins. Companies with strong brand names enjoy healthier margins than the small players. The Industry’s direct costs are majorly dominated by raw material costs (PAIs) (~88%). This reflects that margins are significantly dependent on the International prices and exchange rate fluctuations since the sector is highly dependent on imported raw material.
- During FY21, the sector’s gross and operating margins remained intact at ~20% (FY20: ~20%) and ~9% (FY20:~9%) respectively.
- The average net margins (FY17 – FY21) of the sector are recorded around ~5%. In FY21, the sector’s net margins marginally reduced to ~4% (FY20: ~5%).
- Moreover, as all local companies are dependent on imports to meet local demand, the impact of increase in international prices of pesticide products and exchange rate movements is borne by both local companies and end consumers.



Note: Calculations are based on PACRA rated clients.

## Financial Risk | Working Capital Management

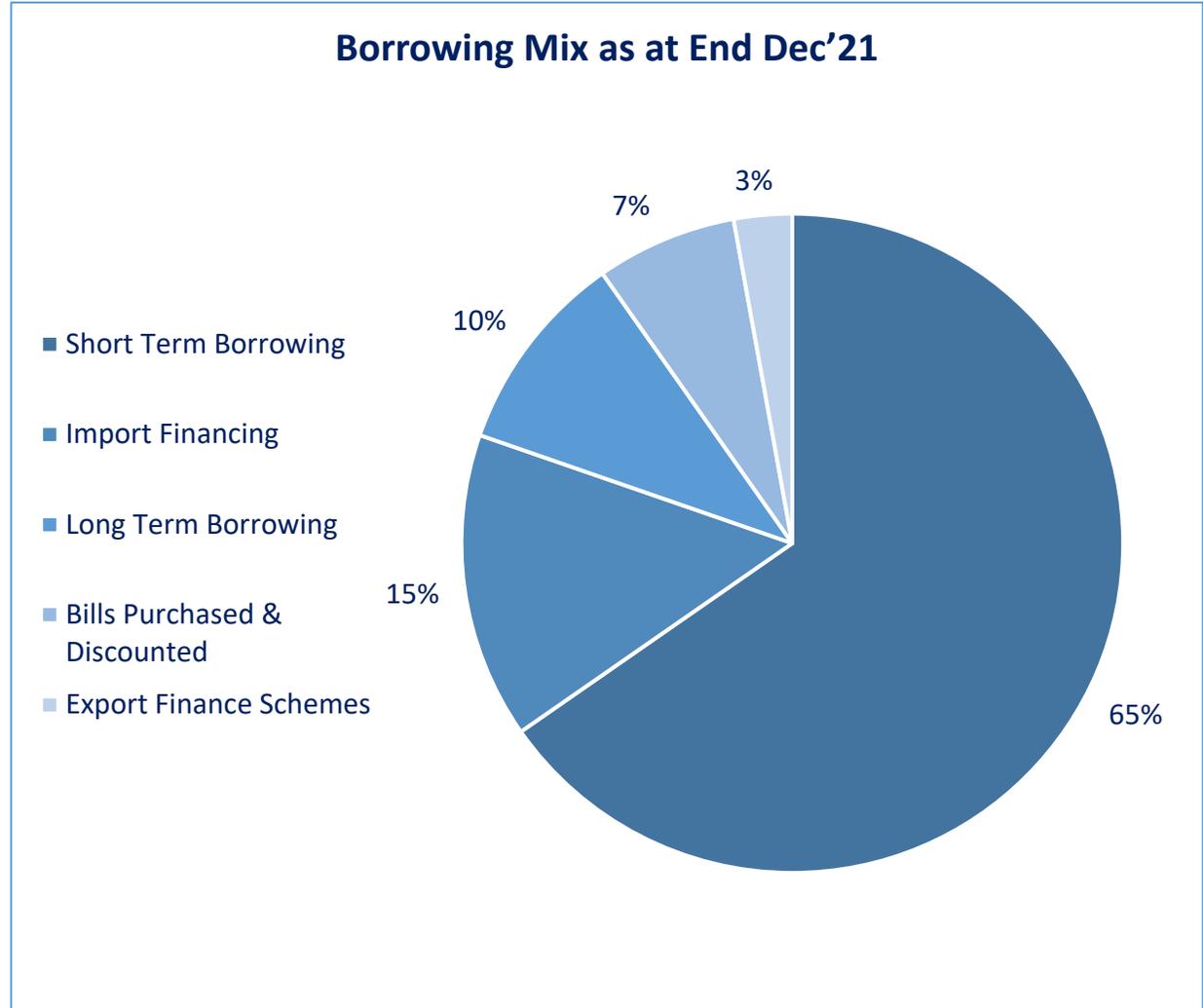
- The sector’s working capital cycle links to the crop seasons of the country during which pesticides are majorly consumed.
- Average inventory days of the sector are recorded around ~150 days (equivalent to 5 months), which increased to ~155 days in FY21 (FY20: ~192 days). This is generally because some of the unused pesticide chemicals in a particular crop season are utilized in the next season, leading to increased inventory period.
- The receivable days of the sector have been growing from ~55 days in FY20 to ~63 days in FY21. Despite, overall average net working capital cycle improved from ~183 days in FY20 to ~162 days in FY21, majorly on account of better offtakes and inventory flow.



*Note: Calculations are based on PACRA rated clients.*

## Financial Risk | Borrowing Mix

- The Sector’s total borrowing was recorded at PKR~31bln as at End-Dec’21 (PKR~29bln as at End-Dec’20) a YoY increase of ~10%.
- The increase in the sector borrowing stemmed from a rise in Short-term Borrowing (STB) lines, due to increased sales and rising working capital needs. Long-term borrowings comprise only ~10% of the borrowing pie due to lower CAPEX needs of the sector.
- The Sector’s debt book is dominated by STBs (~65% as at End-Dec’21) due to reliance on running finance lines to fuel imports/purchases and lower need for capital investment in the Industry.



## Regulatory Framework

- Agricultural Pesticides Ordinance 1971 (APO) and Agricultural Pesticides Rules 1973 (APR) were enacted by the Government of Pakistan (GoP) to regulate the import, manufacturer, formulation, sale, distribution and use of pesticides. According to APO, the registration of the pesticides product is required before import, manufacture, formulation and sale in the country.
- The Department of Plant Protection, (DPP) is an attached Department of Ministry of National Food Security and Research. The Department is responsible for import, manufacturing, formulation of Pesticides in Pakistan besides quarantine functions whereas, function to regulate inspection, testing, distribution, use, sale and storage has been shifted to the Provincial Agriculture Departments after 18<sup>th</sup> Constitutional Amendment.
- According to the DPP list, more than ~170 registered products are valid for use as of today. Further according to APO, the registration of the manufacturer, formulator, importer and seller of pesticide product is required as well. According to the list of DPP, there are around ~272 importers registered in the country.
- Development of new products is technical as well as capital intensive in nature. Promulgation of stringent laws related to patent registration and their enforcement promotes companies to invest more in research and development.
- Promulgation and enforcement of environment protection law in line with international best practices would encourage local players to invest more in research and development that would ultimately enhance the sector's value addition.

# Pesticides

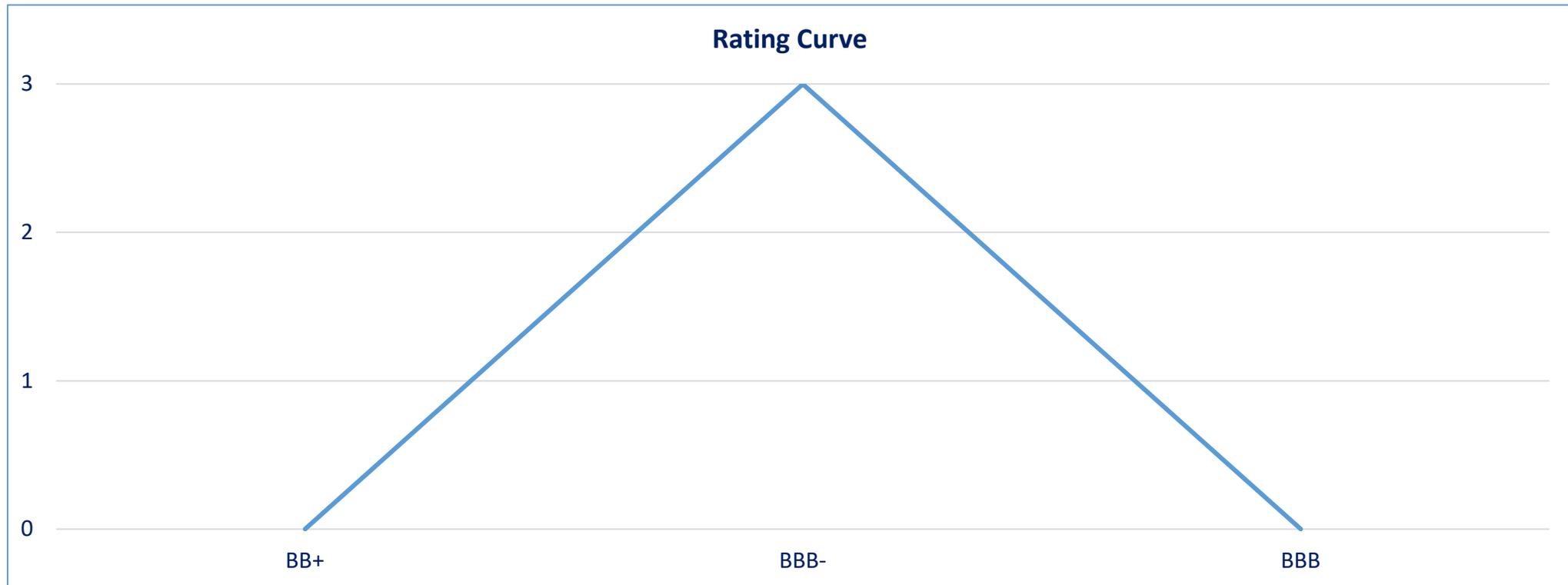
## Duties & Taxes

- Custom duty structure is designed to ease the import of ingredients of the products to ensure better crops.
- The custom duty of 3% on ingredient for the pesticides was removed in FY19 to increase the local formulation of chemical compounds.

PCT Code	Description	Custom Duty		Additional Custom Duty		Sales Tax		Income Tax	
		Ingredients for Pesticides	FY21	FY22	FY21	FY22	FY21	FY22	FY21
2921.5110	Diaminotoluene Base	0%	0%	2%	2%	17%	17%	11%	11%
2926.9050	Nitrile F.C Base	0%	0%	2%	2%	17%	17%	11%	11%
2933.5950	Pyrimidin Ring Base	0%	0%	2%	2%	17%	17%	11%	11%
2930.9070	Thiocarbamates Base	0%	0%	2%	2%	17%	17%	11%	11%
	<b>Finished Goods</b>	<b>FY21</b>	<b>FY22</b>	<b>FY21</b>	<b>FY22</b>	<b>FY21</b>	<b>FY22</b>	<b>FY21</b>	<b>FY22</b>
3808.5210	Pesticides Products	3%	3%	2%	2%	17%	17%	11%	11%

## Rating Curve

- PACRA rates 3 entities in the pesticides sector.
- The sector's entity ratings are in the 'BBB' category.





# Pesticides

## SWOT Analysis

- Vital role in crop protection and yields
- Stable Demand
- Healthy margins
- Low import duties

Strengths

- Unorganized sector lacking corporate culture
- High Competition
- Complete dependence on imported chemical compounds
- Exposure to exchange rate movement
- No investment in research and development

Weaknesses

- Supply chain disruptions
- Reduced crop production
- Reduction in area under cultivation
- Low barrier to entry
- Rising health concern due to excessive use of pesticides

Threats

- Foster investment in research and development through supportive legislation.
- Increase efficiency and improve quality through technological upgrade
- Low interest rates
- Introduction of biopesticides

Opportunities

## Outlook: Stable

- Pesticides are an essential input for the crops sector of the country. The essentiality of the sector increases its economic significance despite its low contribution to the GDP.
- Ever since its inception, Pakistan's pesticide industry has been relying almost fully on imported raw materials to meet local demand. While this practice is expected to continue, it increases the industry's exposure to exchange rate movements coupled with increased risk of supply chain disruptions. Since the users of pesticides are farmers already having low purchasing powers, increasing product prices in line with currency and International price movements remains a challenge for the sector players when input costs rise.
- Demand of the pesticides products usually remains stable considering its importance in the crop protection market. However, pesticide application has been strongly associated with the production of cotton crop in the country. With the decline in cotton output and introduction of BT crops, most of the pesticides manufacturers are now diversifying into bio-pesticides business, in order to keep their revenues from declining.
- The sector is characterized with low to medium business risk. The financing needs of the sector are largely reflective of working capital/short term lines in order to open LCs for pesticides imports.
- The working capital requirement of the sector is high. To manage their working capital needs, the sector usually prefers short term borrowing that constitute considerable portion of total borrowing of the sector.
- One of the key risks persisting in the sector is the low value addition due to negligible investment in research and development by both local and multinational companies.

- Pakistan Bureau of Statistics (PBS)
- State Bank of Pakistan (SBP)
- Federal Board of Revenue (FBR)
- PACRA Database
- Environmental Protection Agency
- Phillip-McDougall
- World Bank
- Department of Plant Protection
- Pakistan Economic and Social Review
- Pakistan Journal of Agricultural Sciences
- Ministry of Finance
- Ministry of National Food & Security
- FAO

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