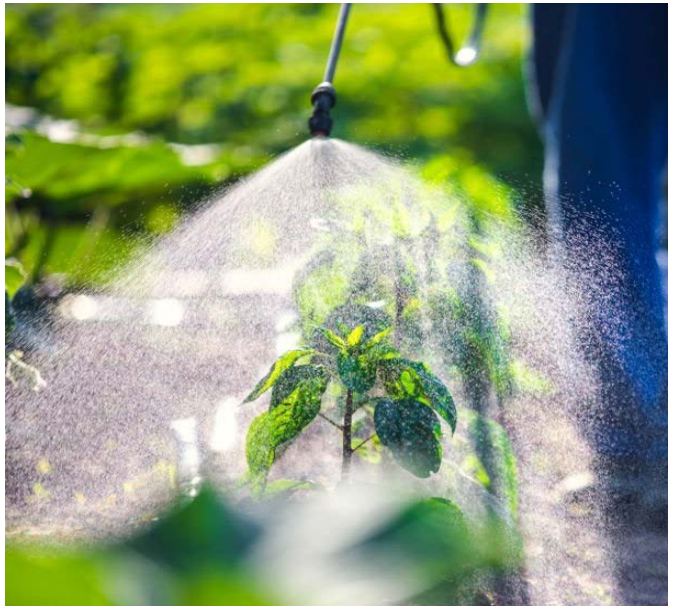
SECTOR STUDY . FEBURARY 2024

Together. Creating Value.

Pesticides



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Pesticides

Pesticides

Introduction

Pesticides are the chemical substances which are used for the prevention of plant diseases, weeds and are being used widely for increasing the quantity as well as the quality of food products. Following are the major types of pesticides.

Herbicides

Commonly known as weedkillers, used to control unwanted plants in the crop field.

Insecticides

Pesticides that are formulated to kill, harm, repel or mitigate one or more species of insects damaging crop.

Fungicides

Pesticides that kill or prevent the growth of fungi and their spores in the crop field.

Pesticides

Supply chain

Step 1: Raw Materials

An active component and inert materials are combined to form a pesticide. While the inert chemicals make it easier to spray and cover the target plant, the active ingredient kills the pests. They can also provide additional benefits that the active ingredient alone cannot provide.

Active compounds are now mostly manufactured in a lab. The kind and quantity of additional ingredients found in most pesticides vary depending on the targeted insecticide. The most prevalent elements are nitrogen, sulfur, phosphorus, oxygen, bromine, and chlorine.

Step 2: Manufacturing Process

A minimum of three distinct steps are involved in the manufacturing of a pesticide. The active component is initially created at a chemical plant, where it is also formed or delivered to a formulator who creates the liquid or powder form.

Step 3: Synthesizing the Pesticide

This involves intricate chemistry and calls for a sizable, advanced laboratory as well as skilled chemists. To create a pesticide, the basic process involves altering an organic molecule. The active component is packed and sent to a formulator.

Step 4: Formulating the Pesticide

When making a liquid pesticide, a formulator measures out the appropriate amount of the active ingredient and combines it with a solvent. Finally, they bottle or package the mixture. Pesticides in liquid form are packed in jugs or drums. Plastic or plastic-lined bags can be used to package dry mixtures. Granulated and dry pesticides are then ready to use.

Step 5: Diluting the Pesticide

When ready for transportation, the farmers, through dealers, receive the expected quantity of insecticides, which they use to dilute the emulsified concentrate and make the required amount of pesticide.

The pesticides sector in Pakistan usually sees steps 2 to 5.

Most of the Raw Materials are imported in Pakistan, mainly from China.

The raw materials are then sent to formulation and packing plants where they go through steps 2 to 5.

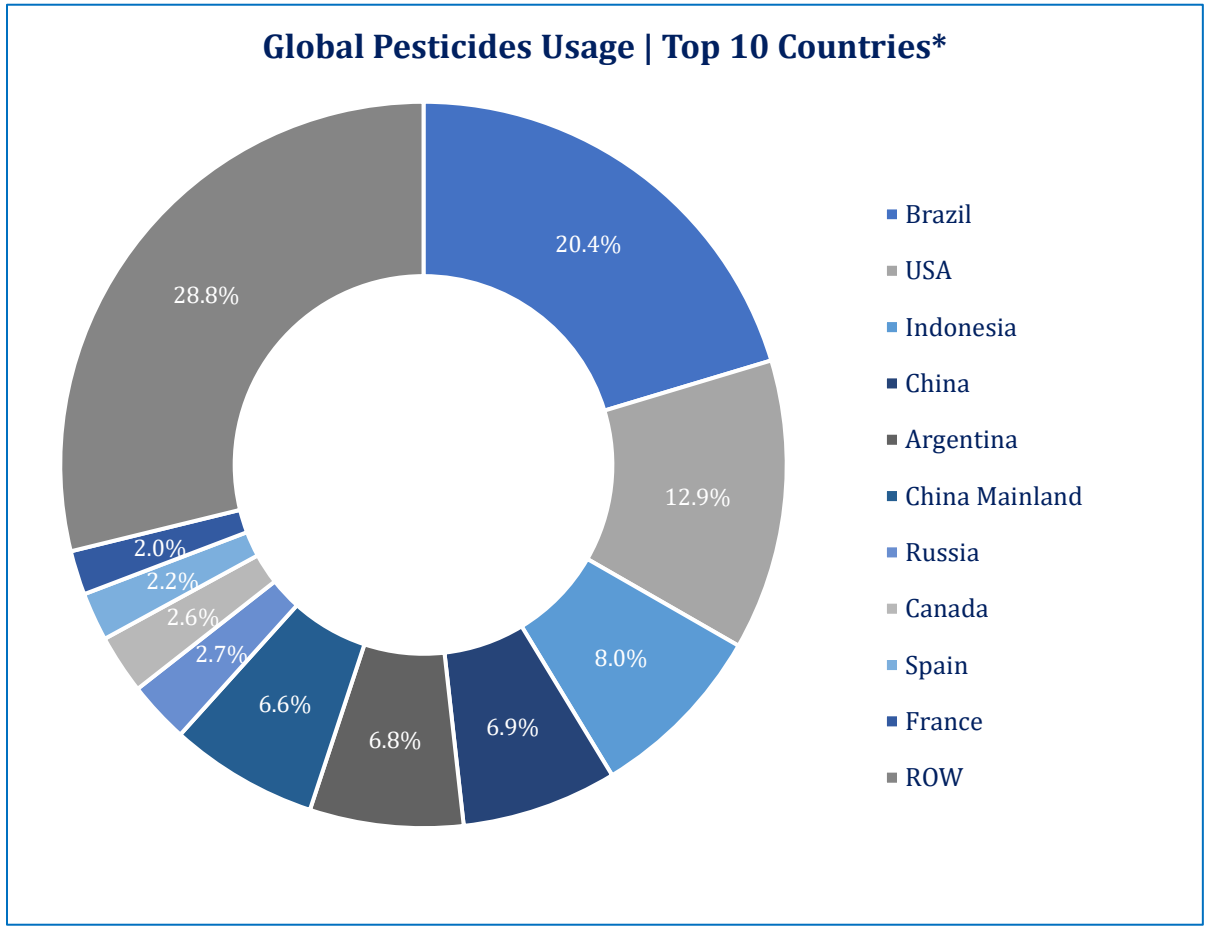
They are then marketed to farmers across Pakistan, via a network of dealers.

Source: Madehow, PACRA Internal Database

Pesticides

Global | Overview

- Global pesticide consumption stood at ~3.5mln MT in CY21, a YoY increase of ~4% and is projected to reach ~4.3mln MT by CY24.
- In terms of the overall amount of pesticides used, Asia accounted for the biggest proportion of ~38% whereas Europe had the lowest share of ~13%.
- The top ten countries accounted for ~71.2% of the global pesticides usage. Brazil remained the highest user of pesticides at ~0.7mln MT used (~20.4% of global pesticides usage), while registering a YoY increase of ~5.0%.



**Latest available data as of CY21*

Source: FAO Stat, EPA

Pesticides

Global | Trade

- Global pesticides trade amounted to USD~48.5bln in CY22, marking a ~12.5% increase YoY. The top five exporting countries in CY22 were China, India, USA, France and Germany with respective export shares of ~22.9%, ~11.4%, ~11.2%, ~8.4% and ~8.1%. The 6MCY23 exports data revealed that China exported USD~3,857mln of pesticides whereas India and USA exported USD~2,248mln and USD~2,677mln respectively.
- The top five importing countries during CY22 were Brazil, France, Canada, USA and Germany with respective import shares of ~14.6%, ~4.8%, ~4.6%, ~4.3% and ~3.8%. In 6MCY23, imports for Brazil stood at USD~1,734mln, meanwhile in Canada, these registered at USD~1,280mln.

Global | Pesticides Exports (USD mln)

Countries	CY18	CY19	CY20	CY21	CY22
China	5,227	4,857	7,620	8,009	11,111
India	2,974	3,444	3,422	4,499	5,550
USA	4,211	4,134	4,449	4,770	5,415
France	3,658	4,019	4,284	4,566	4,063
Germany	4,349	4,071	3,995	3,953	3,938
Spain	1,315	1,309	1,405	1,437	1,651
United Kingdom	1,351	1,474	1,567	1,302	1,365
Israel	1,261	1,247	1,195	1,080	1,255
Belgium	875	826	854	907	1,045
Hungary	637	648	812	853	1,029
ROW	9,603	9,513	11,572	11,699	12,047
Total	**35,460**	**35,543**	**41,176**	**43,077**	**48,469**

Global | Pesticides Imports (USD mln)

Countries	CY18	CY19	CY20	CY21	CY22
Brazil	2,994	3,656	3,732	4,241	7,096
France	2,103	2,004	2,140	2,047	2,316
Canada	1,636	1,429	1,920	1,837	2,236
USA	1,372	1,091	1,876	1,848	2,108
Germany	1,665	1,632	1,774	1,730	1,825
India	1,340	1,331	1,507	1,853	1,794
Australia	757	566	1,115	1,265	1,626
Italy	941	1,018	999	1,035	1,063
Spain	1,018	875	999	1,054	1,054
Poland	857	856	953	984	1,048
ROW	20,778	21,085	24,162	25,182	26,301
Total	**35,460**	**35,543**	**41,176**	**43,077**	**48,469**

***Note**: Data includes the HS Code: 3808*

Source: UN Comtrade,

Pesticides

Local | Overview

- Pakistan's pesticides sector recorded a revenue of PKR~103.7bln, up ~5.4% YoY.
- Pakistan largely depends upon imports of pesticides to meet local demand. During FY23, total insecticides imports clocked in at ~37,000MT (FY22: ~36,000MT), amounting to USD~204mln (FY22: USD~202mln).
- In 6MFY24, imports fell by ~5.7% and ~8.5% YoY, in terms of value and volume, respectively.
- Local companies sell their products through dealers to end-consumers. Considering the similar nature of the products, competition amongst the sector players is high. As of FY23, the total number of registered/permitted pesticides stands at ~747.

Industry Snapshot	FY22	FY23
Revenue* (PKR mln)	98,335	103,711
Imports | Active Ingredients (USD mln)	202	204
Imports | Active Ingredients (000 MT)	36	37
Imports | Base Ingredients (PKR mln)	30,400	36,193
Imports | Base Ingredients (000 MT)	18.6	18.3
Avg. USD/PKR	177.9	247.6
Structure	Unorganized	
Association	Pakistan Crop Protection Association	

**Revenue figures are estimated, based on PACRA-rated clients with ~16% share in the pesticides' market.*
***Note**: Final product includes insecticides, HS Code: 3808.*

Source: PBS, WB, DPP, PACRA Database, MNFSR

Pesticides

Supply | Raw Material

- Pakistan largely depends on the imports of raw materials (or chemicals, as depicted) to meet the local supply of the pesticides sector. Insecticides form the largest share of pesticides imports, followed by herbicides and fungicides.
- During FY23, total imports of raw material was up ~19.1% YoY in PKR terms while in volumetric terms, imports were recorded at ~18.3mln MT, recording ~1.5% decrease YoY.
- In FY23, Nitrile F.C formed the largest chunk of imports, accounting for ~50.0% of the import bill (FY22: ~51.3%). In volumetric terms, the country imported ~7.2mln MT as against ~8.1mln MT the preceding year.
- Diamino Toluene formed ~28% of total raw materials imported in value terms (FY22: ~24.2%), whereas the volume imported increased to ~6.3mln MT, as against ~6.5mln MT the preceding year.

Imports (PKR mln)	HS Code	FY22	FY23	China's Share FY23 (%)	ROW Share FY23 (%)
Nitrile F.C	2926	15,584	18,079	98%	2%
Diamino toluene	2921	7,357	10,142	90%	10%
Pyrimidin Ring	2933	3,094	4,413	89%	11%
Thiocarbamates	2930	3,000	2,084	100%	-
Oth. Nitrosated Base	2909	907	778	44%	56%
Others*	-	458	697	79%	21%
Total	**-**	**30,400**	**36,193**	**93%**	**7%**

**Includes HS Codes: 2919,2909,2921.4390, 2934 and 2938 (these accounted for ~1% of import bill for chemicals import in FY23).*

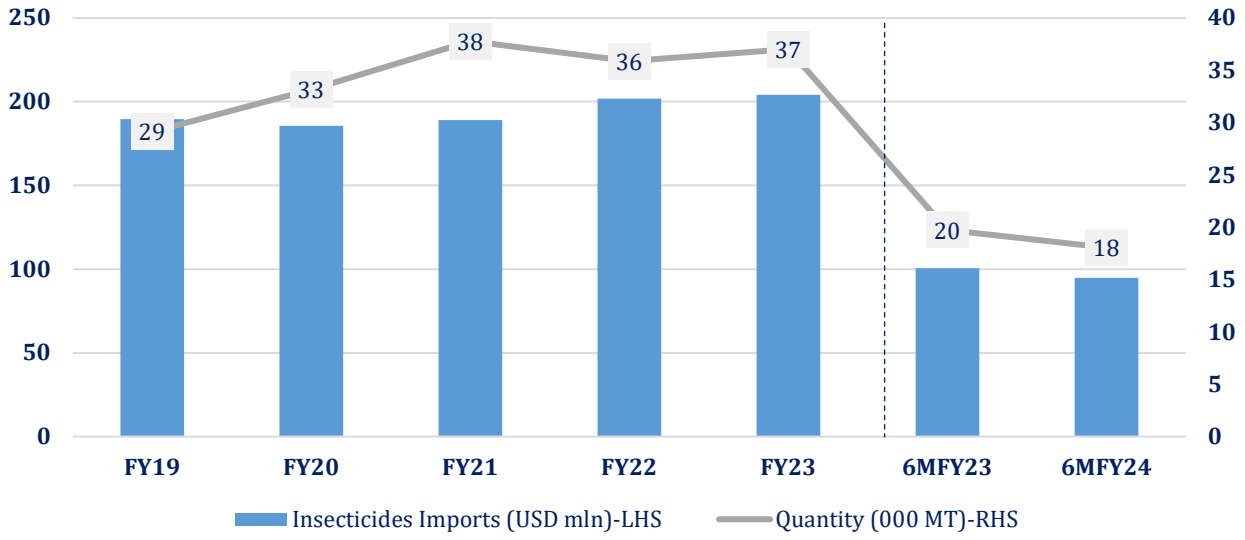
Source: PBS, OEHHA

Pesticides

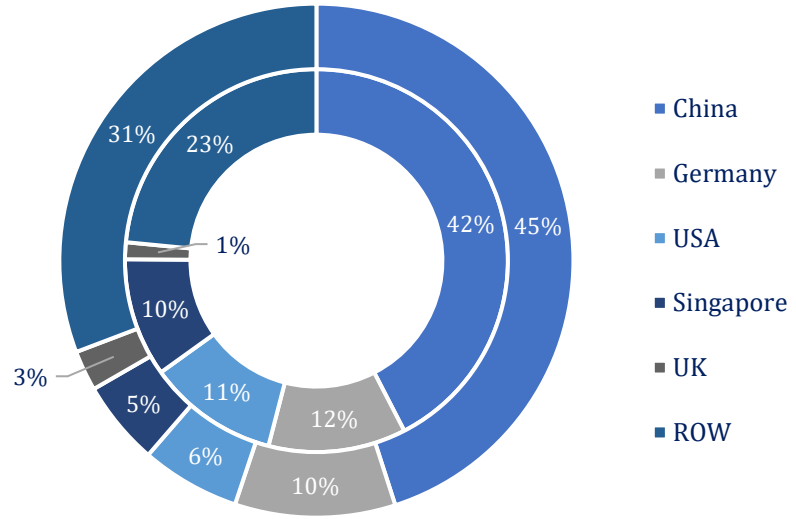
Supply | Active Ingredients

- In terms of the final product, average active ingredients imports have stood at USD~191.5mln over the past four years (FY19-22) with YoY increase of ~6.5% in FY23 in terms of USD.
- During FY23, active ingredients imports increased by ~1.1% in USD terms, while there was a volumetric increase of ~3.2% YoY to ~37,000 MT. During 6MFY23, imports decreased both in value and volume terms by ~5.7% and ~8.5%, respectively.
- Country-wise, in FY23, Pakistan imported ~45.0% of the active ingredients from China, ~10.1% from Germany and ~6.2% from USA.

Active Ingredients | Imports



Country-wise Imports | FY22 (Inner), FY23 (Outer)



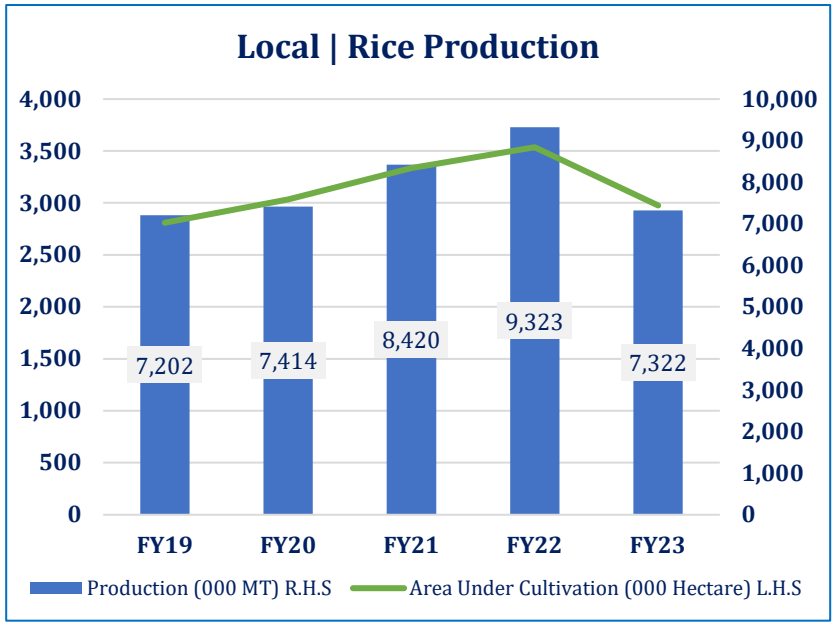
**Includes HS Codes: 3808.*

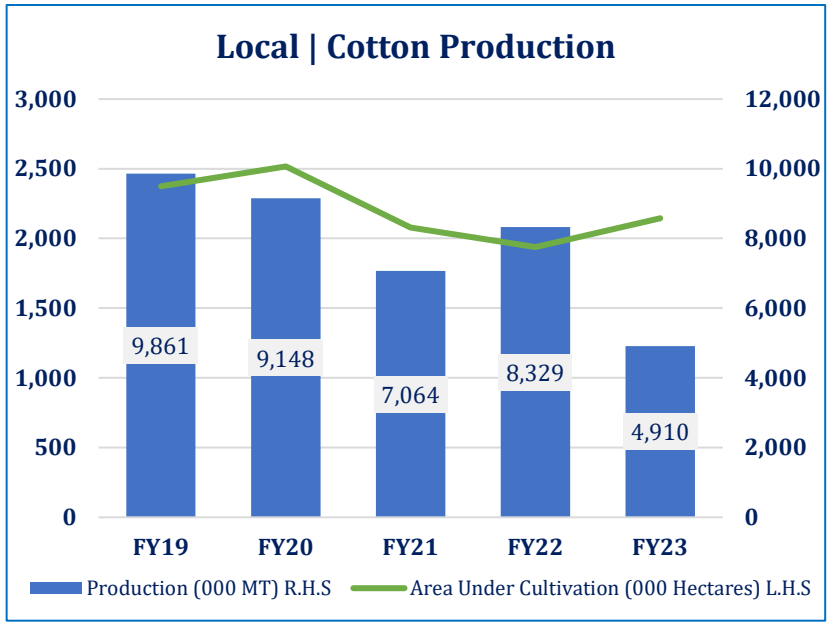
Source: PBS, SBP

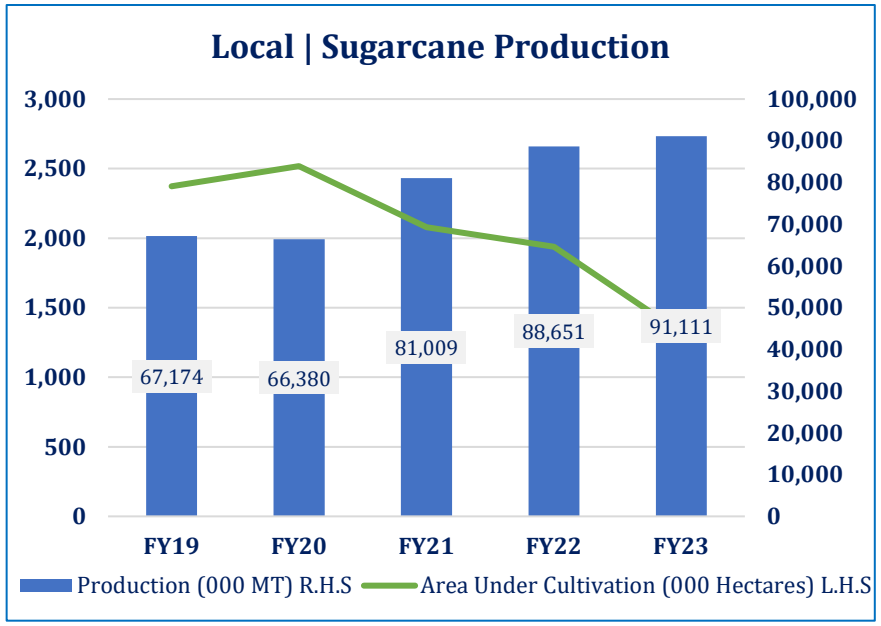
Pesticides

Local | Demand

- In FY23, a production target of ~11mln cotton bales had been set. However, only ~4.9mln bales were produced, registering ~55.5% decline YoY, owing to Aug'22 floods. For FY24, the target has been set at ~12.8-mln bales, of which ~69.5% has been achieved as of Feb'24.
- With respect to rice production, in FY23, it fell by ~21.5% YoY, while area under cultivation reduced by 15.9% YoY. This was again attributed to the floods. For FY24, rice production target has been set at ~9.0mln MT.
- Meanwhile, in terms of sugarcane, production increased by ~2.8% YoY in FY23 and area under cultivation fell ~31.9%YoY. The target for FY24 sugarcane production remains at ~78.6mln MT.







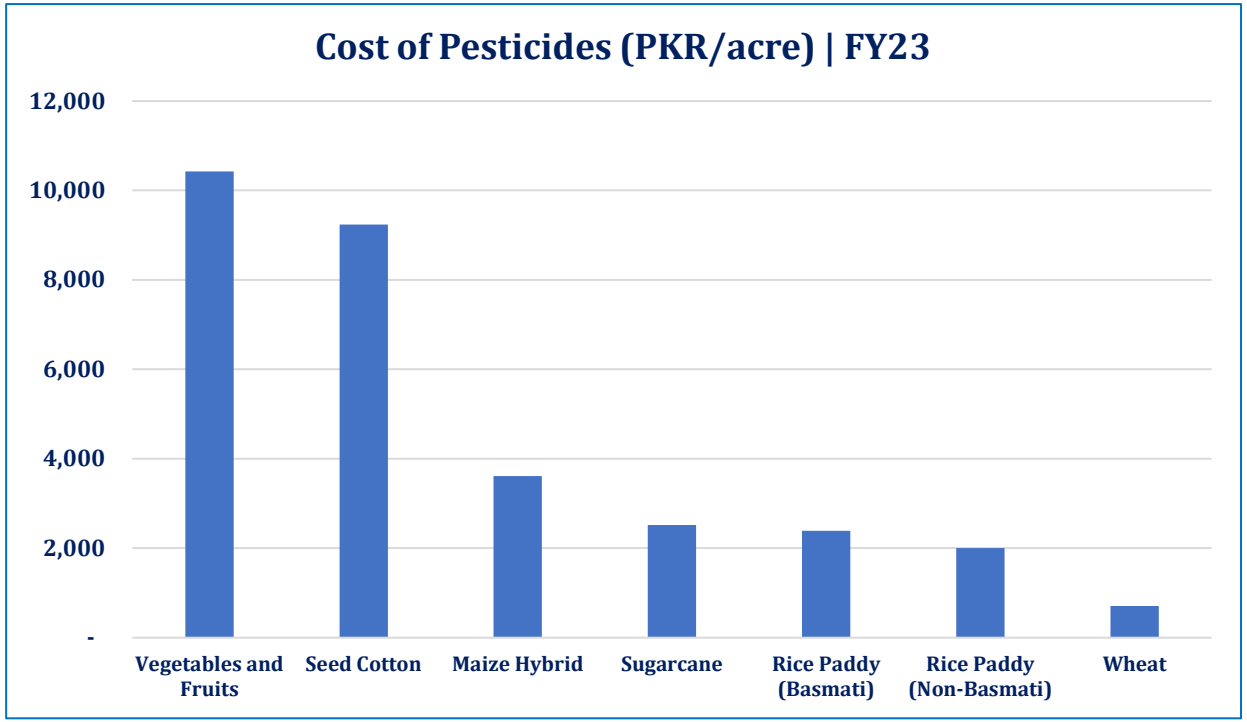
***Note**: Latest available data for Potatoes production.*

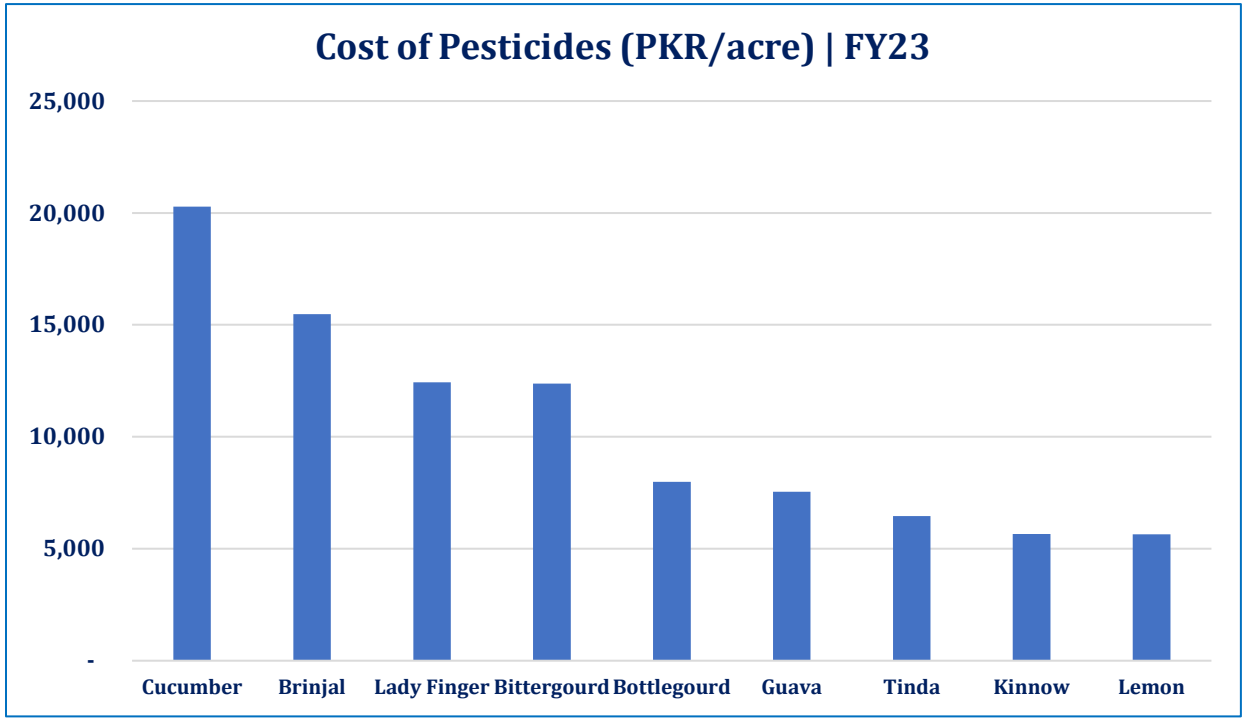
Source: PES, PCGA, PBS, SUPARCO, AMIS

Pesticides

Local | Demand

- Falling under the agricultural segment of the economy, major crops (Cotton, Rice, Maize, Wheat and Sugarcane) contributed ~4.2% to GDP and ~18.2% of value addition in the agriculture sector FY23. Of the major crops, the cost of pesticide usage for seed cotton was the highest at PKR~9,235/acre in FY23 (SPLY: PKR~8,527/acre).
- In terms of other crops, including vegetables and fruits, on average, registered the cost of pesticides at PKR~10,428/Acre. Cucumbers had the highest cost of PKR~20,286/acre in FY23 (SPLY: PKR~9,731/acre).





Source: AMIS

Pesticides

Local | Business Risk

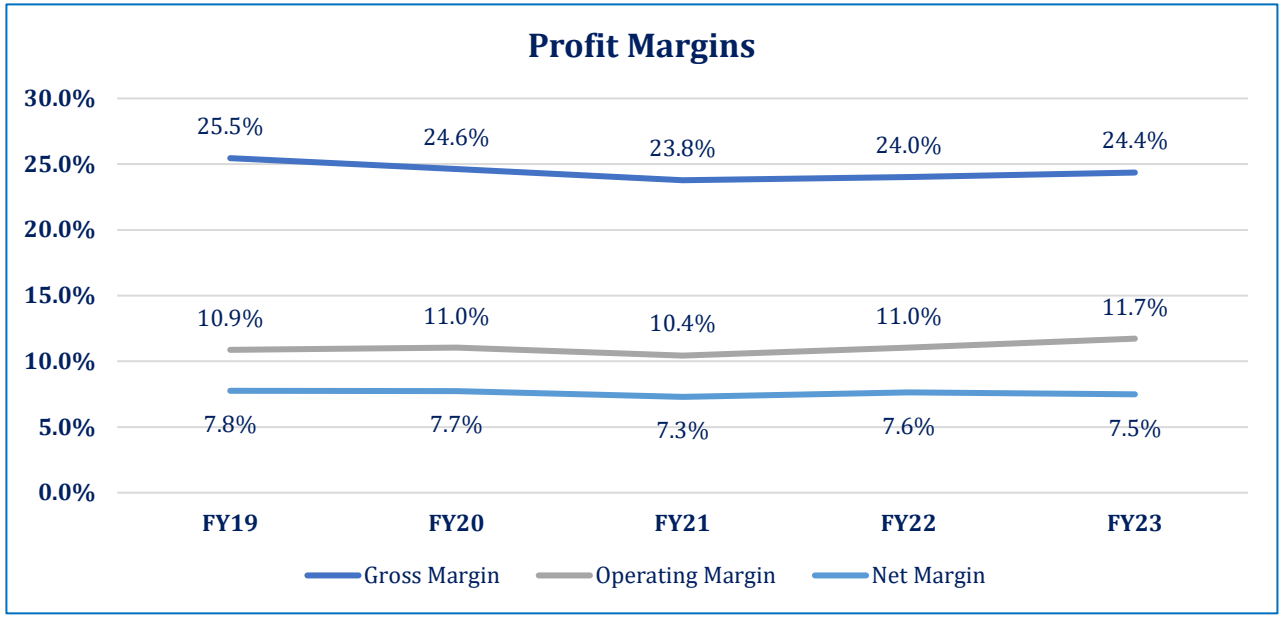
- This risk refers particularly to the difficulties relating to operations of the pesticide players which can hamper the profitability and performance of the sector.
- The sector is highly dependent on imported chemical compounds to meet the local demand. Being highly dependent on imports, the inherent 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 constituted ~93% of raw materials imports in FY23 (FY22: ~85%). High dependence on a single country for the important crop protection ingredients further increases the supply chain risk.
- In Pakistan, biopesticides have a 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.

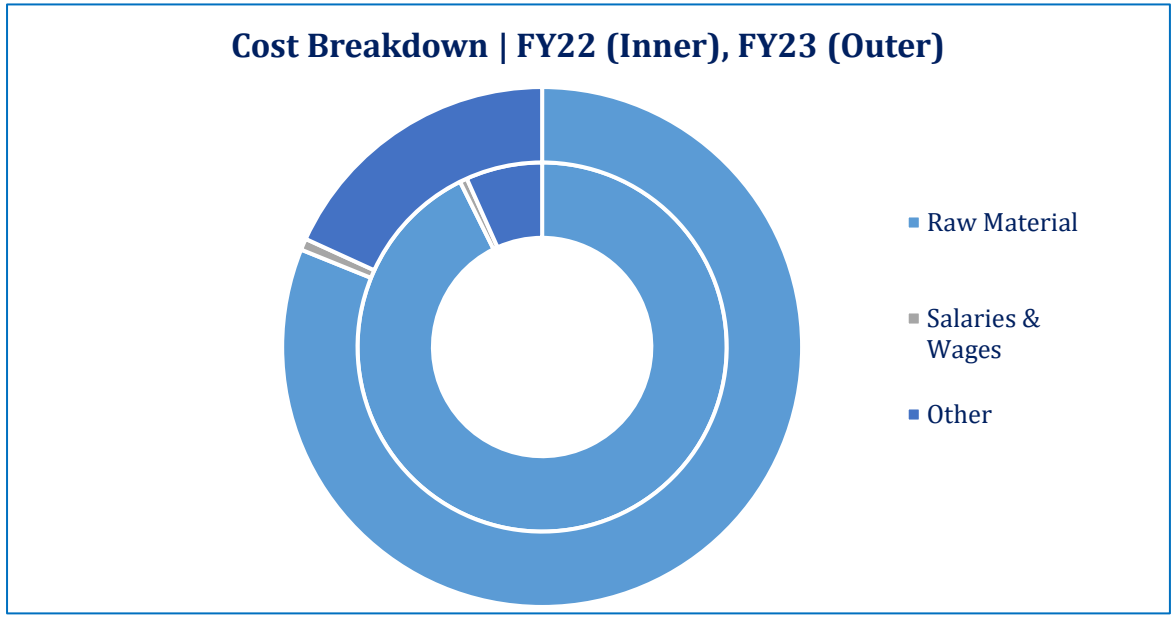
Source: PBS, Fortune Business Insights, MDPI

Pesticides

Business Risk | Margins

- The sector is characterized by moderate margins. Since there is reliance on imports for raw material procurement and active ingredients to meet local demand, margins are dependent on global prices and exchange rate fluctuations. Any price revisions are also passed on to end-consumers.
- During FY23, the sector's average gross margins remained intact at ~24%, registering at ~24.4% in FY23, while operating margins increased to ~11.7% from ~11% in FY22. These reflect stable sales and controlled operating expenses. The average net margins (FY19-23) of the sector recorded at ~8%. In FY23, the sector's net margins remained at ~7.5%, a fall of ~0.01%, likely on the back of ~61.5% YoY increase in average finance costs.
- The sector's direct costs are majorly dominated by raw material costs, which make up ~81% of the total cost mix.





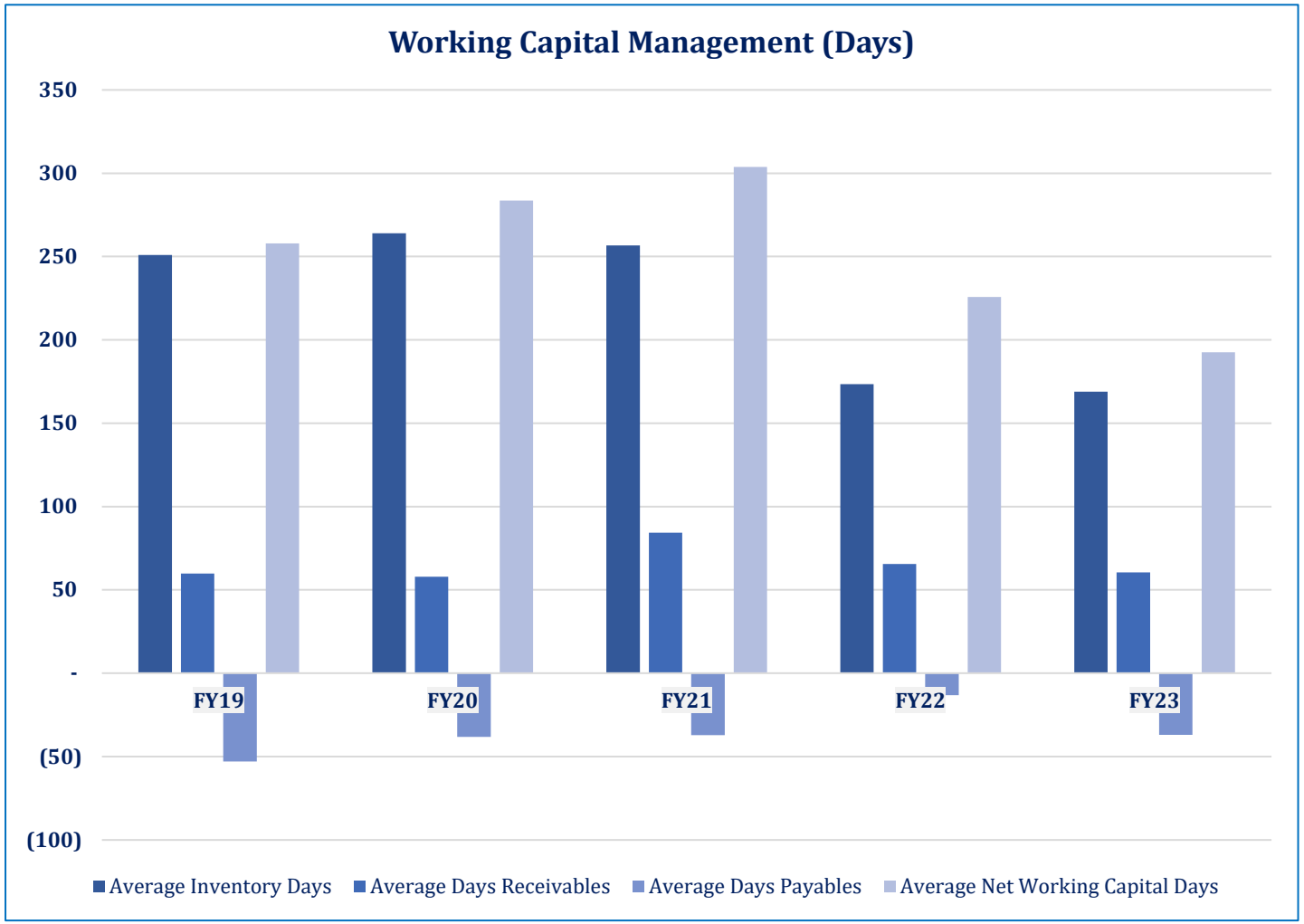
***Note**: Calculations are based on ~4 PACRA-rated clients.*

Source: PACRA Internal Database

Pesticides

Financial Risk | Working Capital Management

- Average inventory days of the sector over the past five years (FY19-23) have recorded at ~223 days.
- The number of inventory days in FY23 declined to ~169 days from ~173 days, reflecting well-planned inventory management by the sectors' players.
- Average days receivables also decreased to ~61 days in FY23 (FY22: ~65 days). However, average days payables increased to ~37 days from ~13 days, indicating lower repayment capacity of the sector players.
- Overall, average net working capital cycle improved from ~226 days in FY22 to ~193 days in FY23, majorly on account of greater payable days.



***Note**: Calculations are based on ~4 PACRA-rated clients.*

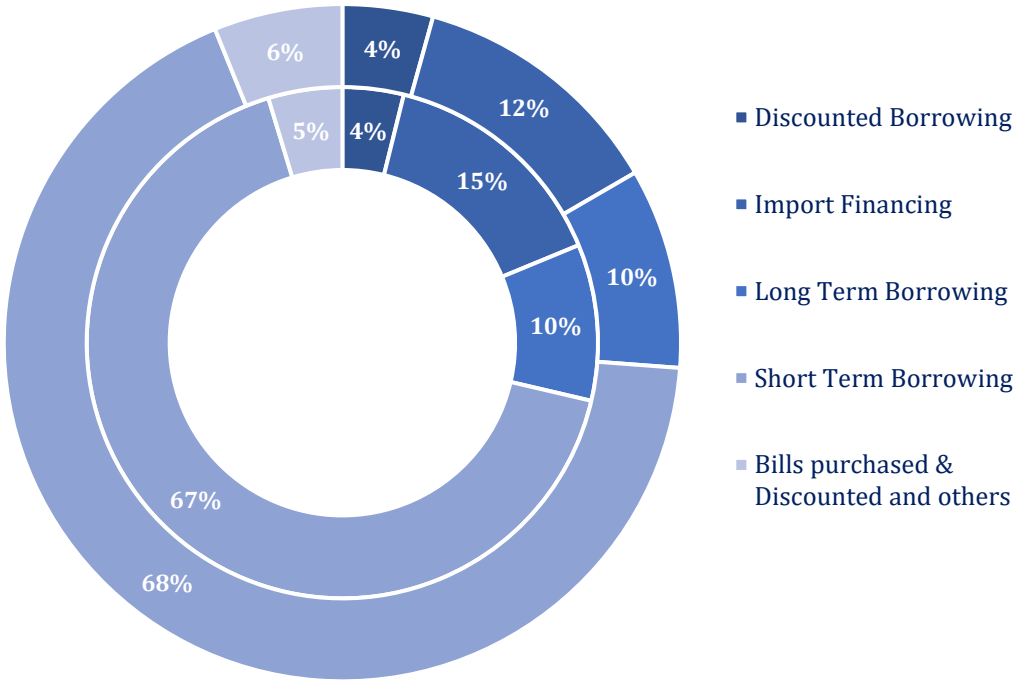
Source: PACRA Database

Pesticides

Financial Risk | Borrowing Mix

- The sector's total borrowings, as at Dec'23, were recorded at PKR~28.6bln, a marginal YoY decline of ~9.7%.
- The sector's borrowing is dominated by short-term borrowings, which comprise ~68% of the total borrowing mix (SPLY: ~67%).
- Import financing made up ~12% of total borrowings (~15% as at End-Dec'22). This is likely due to reliance on running finance lines to fuel imports/ purchases.
- Other long-term borrowings, on the other hand, made up a meager ~10% of the total borrowings mix, staying the same as in the preceding year.
- The sector is moderately leveraged, with average leverage ratio staying at ~27.5% in FY23 (SPLY: ~35.5%).

Borrowing Mix | End-Dec'22 (Inner), End-Dec'23 (Outer)



***Note**: Calculation for leverage is based on ~4 PACRA-rated clients. Borrowings are reflective of SBP Classification: "Manufacture of pesticides and other Agrochemical Products"*

Source: SBP

Pesticides

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 18th Constitutional Amendment.
- 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.
- Most recently, a project titled "Mitigating the Emerging Issues of Pesticide Residues in Vegetables and Rice through Capacity Building of Farmers and Extension Agents" is in effect with a gestation period from CY22-26. It aims to have a thorough approach to pesticide residue control and Integrated Pest Management (IPM) is included in the yearly agricultural projects.
- The project encompasses ~25,000 farmers, ~1,000 pesticide dealers and ~500 departmental staff members which are to participate in training initiatives as Extension Agents in Training of Trainers (TOTs). To further highlight effective methods, ~50 IPM Demonstrational Farms are developed annually.

Source: MNFSR, EPA

Pesticides

Local | Duty Structure

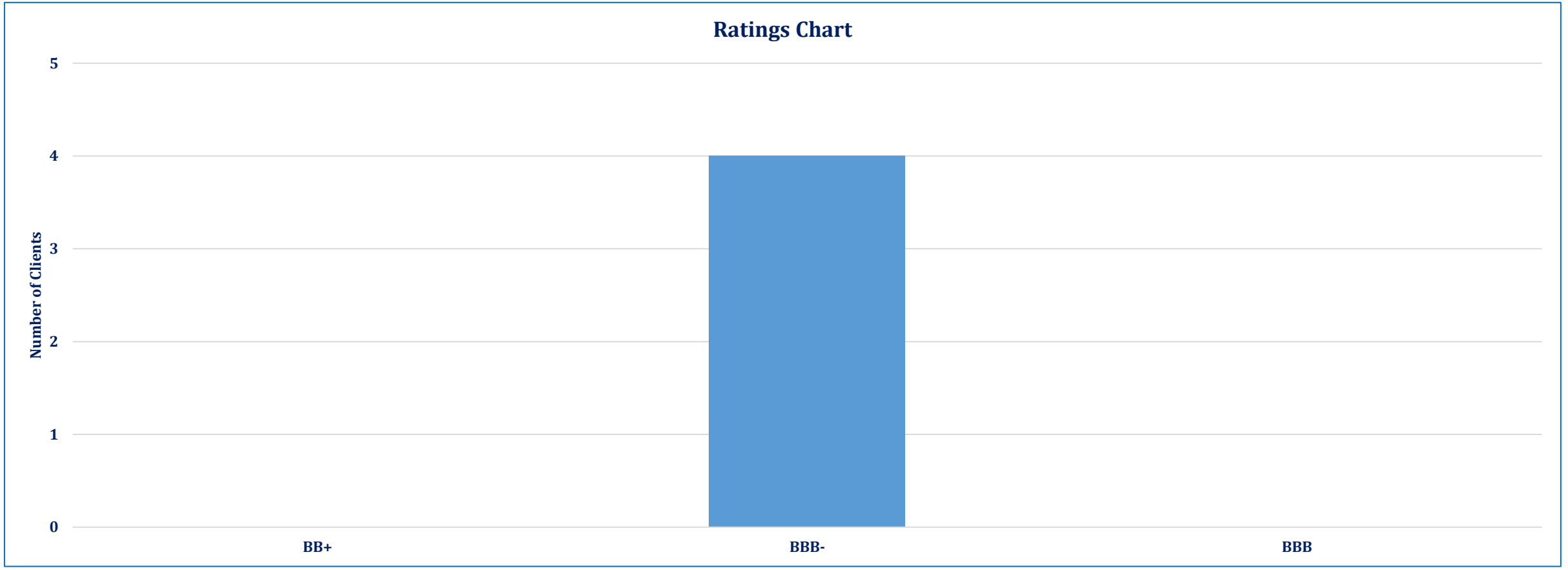
PCT Code	Description	Custom Duty		Additional Custom Duty		Sales Tax		Income Tax	
	Ingredients for Pesticides	FY23	FY24	FY23	FY24	FY23	FY24	FY23	FY24
2921.5110	Diaminotoluene Base	0%	0%	2%	2%	18%	18%	11%	12%
2926.9050	Nitrile F.C Base	0%	0%	2%	2%	18%	18%	11%	12%
2933.5950	Pyrimidin Ring Base	0%	0%	2%	2%	18%	18%	11%	12%
2930.9070	Thiocarbamates Base	0%	0%	2%	2%	18%	18%	11%	12%
	Finished Goods	**FY23**	**FY24**	**FY23**	**FY24**	**FY23**	**FY24**	**FY23**	**FY24**
3808.5210	Pesticides Products	3%	3%	2%	2%	18%	18%	11%	12%

Source: FBR

Pesticides

Rating Curve

PACRA rates 4 entities in the pesticides sector. The sector's entity ratings fall in the 'BBB-' category.



Source: PACRA Database

Pesticides

SWOT Analysis

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

- Unorganized sector lacking corporate culture
- High competition
- Complete dependence on imported chemical compounds
- Exposure to exchange rate movement
- Lack of investment in research and development

- Supply chain disruptions
- Reduced crop production
- Reduction in area under cultivation
- Low barriers to entry
- Rising health concern due to excessive use of pesticides
- Increasing usage of alternates like biopesticides

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

Pesticides

Outlook: Stable

- Pakistan's GDP recorded a decline of ~0.17% in FY23 (~6.1% YoY growth in FY22), while the LSM shrank by ~10.3% YoY (FY22: ~11.8% YoY growth), mostly due to supply-chain disruptions brought on by import restrictions enforced by SBP, the Aug'22 flash floods, and the resulting weak demand exhibited across country's key industrial sectors. Pesticides serve as a vital component of the local agriculture segment. In FY23, major crops (Cotton, Rice, Maize, Wheat and Sugarcane) contributed ~4.2% to the GDP and ~18.2% of the value added to the agriculture sector.
- To fulfill local demand, Pakistan's pesticide sector is nearly entirely dependent on imported raw ingredients. In FY23, overall raw material imports increased ~19.1% YoY in PKR terms, while volumetric imports registered ~1.5% YoY decline, amounting to ~18.3mln MT.
- In terms of active ingredients, imports during the last four years (FY19–22) have recorded at USD~191.5mln, with YoY rise of ~7.0% in FY23. In FY23, the average cost of pesticides was PKR~10,428/acre for fruits and vegetables, PKR~9,235/acre for seed cotton, and PKR~3,612/acre for hybrid maize.
- The sector is characterized by low to medium business risk. During FY23, the sector's average gross margins remained intact at ~24%, only increasing by ~0.04% and operating margins increased to ~11.7% from ~11% in FY22. The net margins remained at ~7.5%, a fall of ~0.01%.
- The number of inventory days in FY23 declined to ~169 days from ~173. Average days receivables also decreased to ~61 days. Average days payables fell to ~37 days from ~13 days. On average net working capital cycle improved from ~226 days in FY22 to ~193 days in FY23.
- The sector's total borrowings, as at Dec'23, were recorded at PKR~28.6bln (Dec'22: PKR~31.1bln), a marginal YoY decline of ~9.7%. The sector's borrowing is dominated by short-term borrowings, which comprise ~68% of the total borrowing mix (SPLY: ~67%). Import financing made up ~12% of total borrowings.
- For FY24, crop targets for cotton, rice and sugarcane have been set at~12.8mln bales, ~9.0mln MT and~78.6mln MT, with YoY increase of ~161.2%, ~23.3% and ~(13.7)%, respectively. The uptick in cotton and rice crop output signals stable demand for pesticides, therefore, performance of the sector is expected to remain rangebound.
- Moreover, with the USD/PKR clocking in at USD~279.5/PKR in 7MFY24, compared with USD~285.99/PKR in FY23, exchange rate risk is expected to remain on the downside, resulting in lower cost of production for sector players. However, the sector remains dependent on imports, with low levels of R&D, therefore exposure to prices and exchange rate movement remain the major risk factors.

Pesticides

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- Food & Agriculture Organization (FAO)
- PACRA Database

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