SECTOR STUDY . MARCH 2025

Together. Creating Value.

Pesticides

Research Team

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Pesticides

Pesticides

Introduction

- **Pesticides** are a key agricultural input needed to protect seeds and safeguard crops from unwanted plants, insects, bacteria, fungi and rodents.
- At the same time, pesticides can have negative health and environmental impacts through contamination of soil, water and non-target plants and animals, which can decrease biodiversity and harm living organisms including humans. The figure below depicts the various kinds of pesticides, defined across their usage.

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.

Rodenticides

Rodenticides are pesticides that kill rodents, including not only rats and mice, but also squirrels, woodchucks, chipmunks, porcupines, nutria, and beavers.

Source: EPA, FAO, PACRA Database

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.

***Note**: Steps 2-4 comprise manufacturing.*

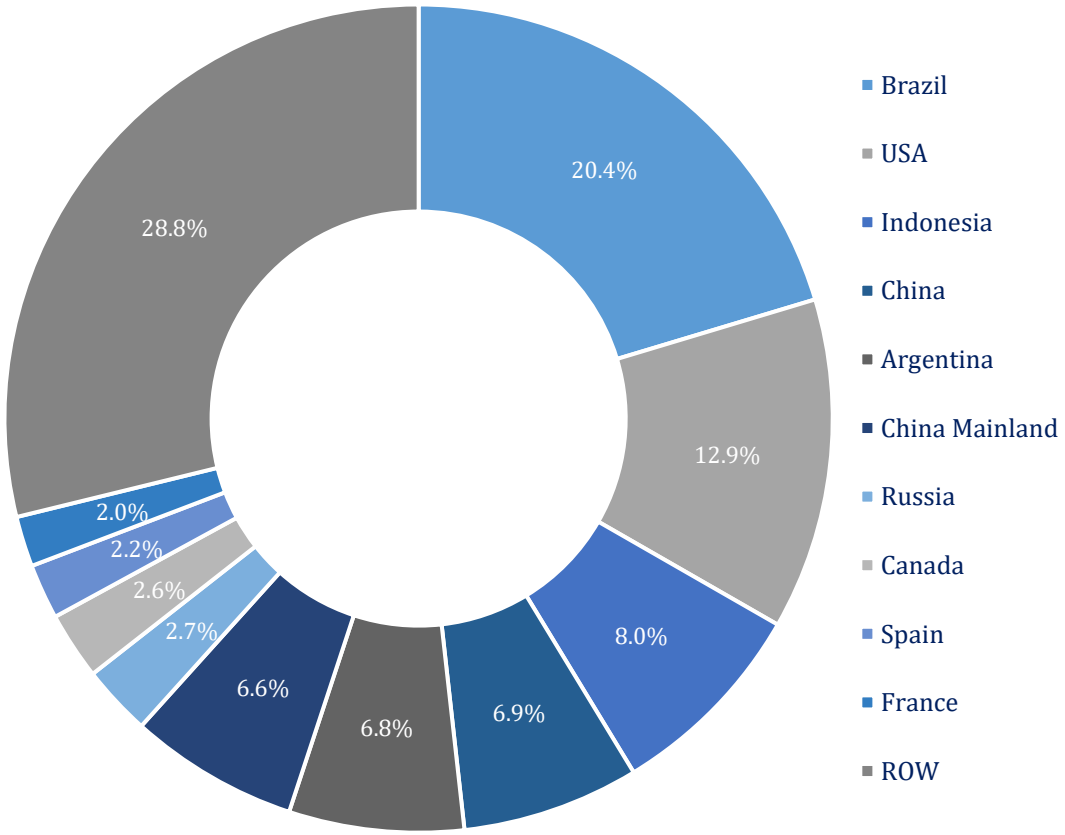
Source: PACRA Database

Pesticides

Global | Overview

- During CY22* global pesticide consumption stood at ~3.7mln MT (CY21: ~3.5mln MT), a YoY increase of ~5.7% and is estimated to reach ~4.4mln MT by CY25.
- During the year, the Americas (North and South America region) accounted for ~33.3% of the total pesticide consumption, followed by Asia (~20.9%). The top ten countries cumulatively accounted for ~71.2% of the global pesticide usage CY22. Brazil remained the highest user of pesticides at ~0.7mln MT (~20.4% of global pesticides usage) while registering a YoY increase of ~5.0%.
- Cotton, while cultivated on ~2.3% of the world's arable land, accounted for only ~4.0% of global pesticide use and ~10.5% of total insecticides used in agriculture worldwide during CY18-22. With respect to global herbicides consumed, cotton formed ~3.1% during the same period, trailing behind several other crops such as soybeans (~20.9%), maize (~20.0%), wheat (~7.3%), rice (~5.3%), and sugar cane (~4.2%).
- Of the total pesticides consumed in CY22, ~5.1% were Highly Hazardous Pesticides (HPPs). The average share of HHPs for bananas, wheat, citrus, vegetables/ flowers and cotton stood at ~26.7%, ~12.1%, ~11.0%, ~10.7% and ~13.0%, respectively, during CY18-22.

Global Pesticides Usage | Top 10 Countries*



*Latest data available CY22. **Note:** HHPs are defined as pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or environment, or appear to cause severe or irreversible harm to health or the environment under conditions of use in a country*

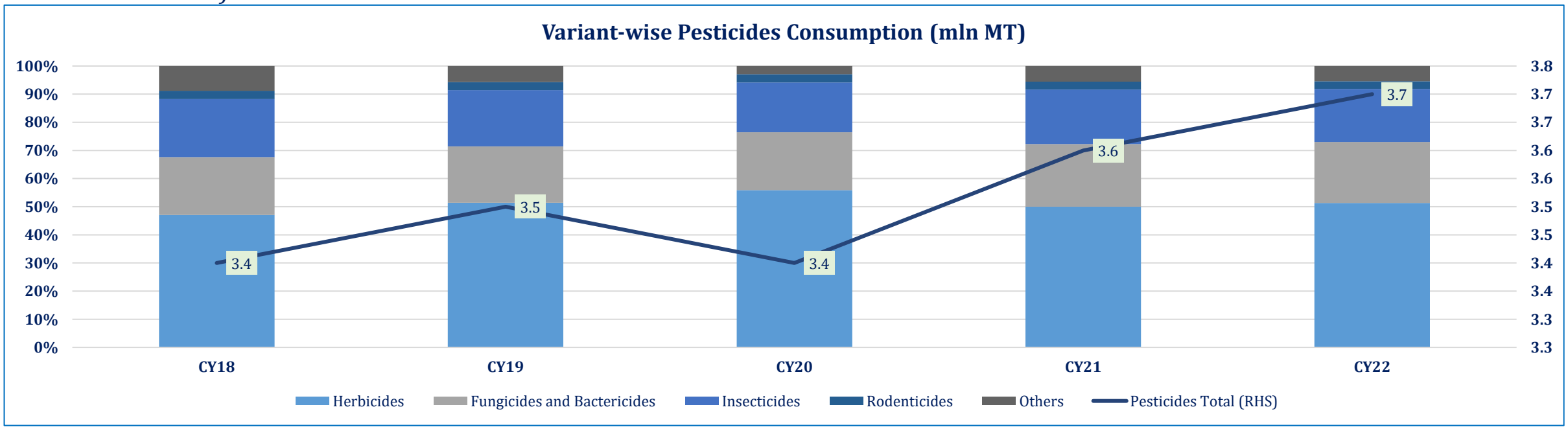
Source: FAO, EPA, ICAC

Pesticides

Global | Variant-wise Consumption

- During CY18-22, insecticides, on average, formed ~19.3% of the total pesticides consumed globally while herbicides and fungicides accounted for ~51.1% and ~21.0%, respectively. In CY22, global insecticides and fungicides consumption recorded ~3.3% and ~2.9% YoY decline, respectively, while herbicides usage increased ~6.5% YoY. Other pesticides, such as rodenticides and mineral oils formed ~8.6% of average global consumption during the period under review, while in CY22, these registered ~3.1% and ~0.1% YoY increase, respectively.

- With respect to HHPs, the top five crops (HHPs consumption) globally consumed ~55.7% of total HHPs, on average, during CY18-22. These included vegetables and flowers, soybeans, wheat, rice and cotton. The total HHPs consumed worldwide recorded ~9.7% YoY increase to record at ~197,496MT. In contrast, crops such as cereals and beets exhibit very low HHP usage (e.g. cereals had the lowest usage of ~620MT in CY22).



Source: FAO, EPA, ICAC

Pesticides

Global | Trade

- Global pesticides trade amounted to USD~43.7bln in CY23, up ~12.7% YoY (SPLY: ~12.5% YoY growth). The top five exporting countries in CY23 were China, India, USA, France and Germany with respective export shares of ~18.5%, ~9.8%, ~10.8%, ~9.4% and ~8.5%. In 6MCY24, global trade amounted to USD~22,579mln, whereas China, US, Germany and the UK cumulatively formed ~42.8 of the total exports during the year.

- The top five importing countries during CY23 were Brazil, France, Canada, USA and Germany with respective import shares of ~11.0%, ~5.3%, ~4.6%, ~4.3% and ~3.8%. In 6MCY24, Brazil, France and Canada cumulatively accounted for ~20.1% of the global imports.

Global | Pesticide Exports (USD mln)

Countries	CY19	CY20	CY21	CY22	CY23
China	4,857	7,619	8,009	11,111	8,087
USA	4,134	4,436	4,761	5,415	4,738
India	3,444	3,422	4,499	5,549	4,324
France	4,019	4,334	4,581	4,234	4,120
Germany	4,071	3,935	3,935	3,939	3,748
Belgium	826	1,813	1,972	2,309	2,061
Spain	1,309	1,404	1,437	1,650	1,737
United Kingdom	1,474	1,562	1,302	1,369	1,241
Israel	1,247	1,195	1,080	1,255	1,110
Hungary	648	812	3,935	1,028	1,073
ROW	9,514	11,513	8,735	12,212	11,449
Total	**35,543**	**42,045**	**44,246**	**50,071**	**43,688**

Global | Pesticide Imports (USD mln)

Countries	CY19	CY20	CY21	CY22	CY23
Brazil	3,618	3,693	4,120	6,863	4,848
France	2,004	2,140	2,047	2,316	2,317
Canada	1,428	1,921	1,838	2,238	2,053
Germany	1,625	1,733	1,732	1,833	1,742
USA	1,076	1,857	1,844	2,108	1,668
India	1,331	1,507	1,853	1,794	1,476
Australia	550	1,068	1,212	1,548	1,185
Italy	874	998	1,034	1,062	1,094
Poland	855	953	983	1,048	1,025
Spain	1,017	1,034	1,054	1,054	979
ROW	22,093	25,141	26,529	28,207	25,301
Total	**36,471**	**42,045**	**44,246**	**50,071**	**43,688**

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

Source: ITC

Pesticides

Local | Overview

- Pakistan's pesticides sector recorded a revenue of PKR~124.6bln, up ~20.1% YoY (SPLY: ~5.4% YoY).
- Pakistan largely depends on imports of pesticides (raw ingredients as well as final products) to meet local demand. During FY24, total pesticide imports, in volumetric terms, clocked in at ~37,253MT, up ~0.2% YoY, while raw ingredient imports (covered subsequently) during the year clocked in at ~19,460MT, down ~1.3% YoY.
- In terms of total pesticide volumetric imports in FY24, insecticides formed ~37.2%, while the share of herbicides stood at ~30.7% (SPLY: ~47.6% and ~29.2%, respectively). Meanwhile, fungicides and other disinfectants formed ~32.1% during the year (SPLY: ~23.2%).
- 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 FY24, the total number of registered players in Pakistan stands at ~304.

Sector Snapshot	Units	FY23	FY24
Revenue*	**PKR bln**	103.7	124.6
YoY Growth	**%**	5.4%	20.1%
Imports | Pesticides	**USD mln**	204.6	196.2
	000 MT	37.2	37.3
Imports | Base Ingredients	**PKR mln**	36,112	47,669
	000 MT	19.7	19.5
Average Exchange Rate	**USD/PKR**	247.6	283.2
Structure	Competitive		
Association	Pakistan Crop Protection Association		

**Revenue figures are estimated, based on PACRA-rated clients with ~16% market share.*
***Note**: Pesticides include insecticides, fungicides, rodenticides, herbicides, etc. as defined under HS Code: 3808.*

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

Pesticides

Supply | Raw Material

- Pakistan depends on imported raw ingredients to meet the local supply of the pesticides sector thus making the sector susceptible to exchange rate fluctuations.
- During FY24, total imports of raw ingredients increased ~32.0% YoY in value terms while in volumetric terms, these were recorded at ~19,460MT, down ~1.3% YoY.
- In FY24, Nitrile F.C formed ~69.4% of the total raw material imports (FY23: ~50.1%). In volumetric terms, the country imported ~13,533MT Nitrile F.C during FY24 as against ~7,212MT in SPLY. Nitrile is mainly used in preparing insecticides and the uptick in volumetric imports could likely be in-line with ~28.2% YoY lower insecticide imports in FY24,
- Diamino Toluene formed ~16.5% of total raw ingredients imported during the period under review (FY23: ~28.0%), whereas the volume imported declined to ~1,705MT, as against ~6,333MT in SPLY. These are used mainly in production of fungicides.
- Other raw ingredients, including pyrimidine ring and thiocarbamates and nitro-sated bases have respective uses in production of insecticides/fungicides and herbicides/insecticides/fungicides.

Raw Ingredients | Import (PKR mln)	HS Code	FY23	FY24	China's Share FY24 (%)	ROW Share FY24 (%)
Nitrile F.C	2926.9050	18,079	33,109	99.7%	0.3%
Diamino Toluene	2921.5110	10,142	7,882	99.7%	0.3%
Pyrimidine Ring	2933.5950	4,413	2,839	75.0%	15.0%
Thiocarbamates	2930.2020	2,084	2,349	100%	0%
Nitro-sated Base	2909.4910, 90	785	934	33.1%	66.9%
Others	2906.2990 2909.4410 2933.9910	609	556	77.8%	22.2%
Total		**36,112**	**47,669**	**80.8%**	**19.2%**

***Note**: Raw Ingredients are used as Base for Pesticides.*

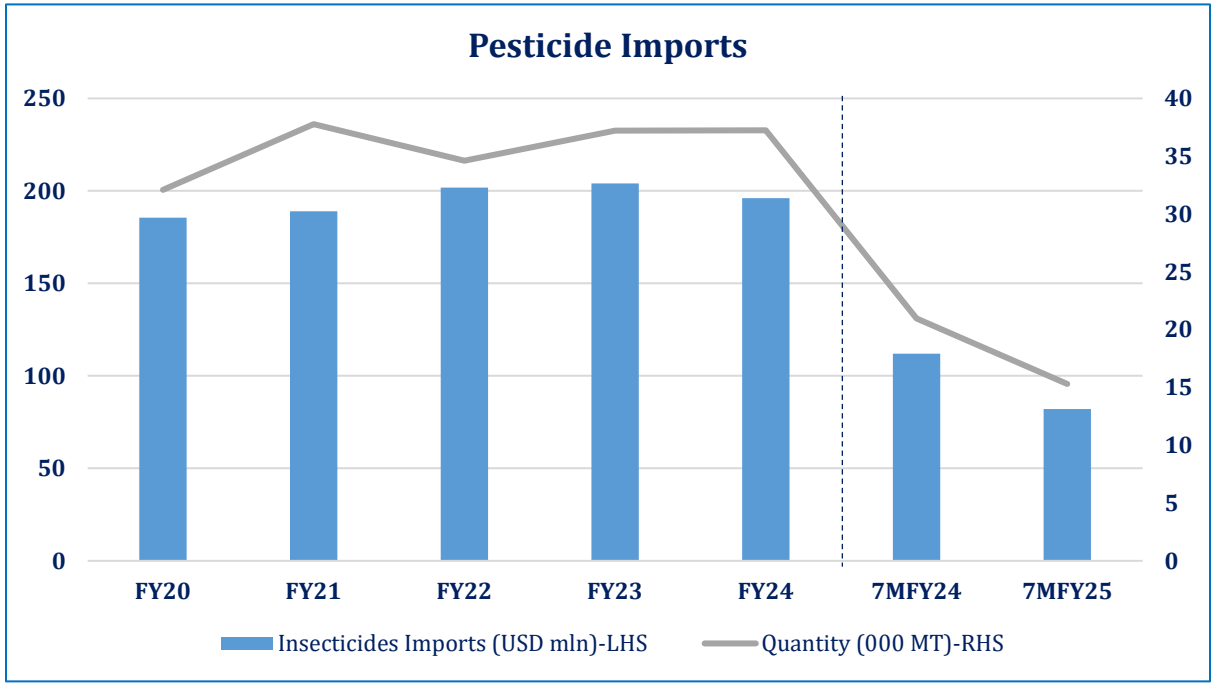
Source: PBS

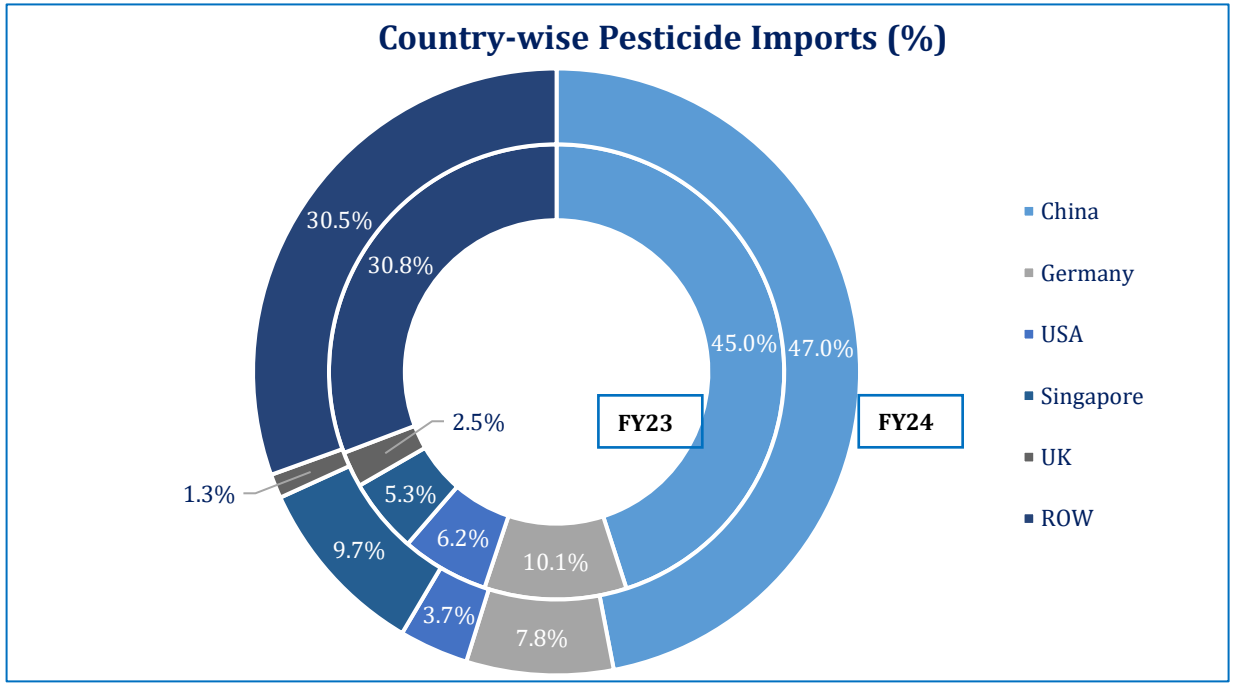
Pesticides

Supply | Pesticide Imports

- In terms of pesticide imports, these averaged at USD~195.3mln during FY20-24, and recorded ~3.9% YoY decline in FY24 to USD~196.0mln. Volumetrically, these stood at ~37,253MT, up ~0.2% YoY. During 7MFY25, imports declined both in value and volume terms by ~26.7% and ~28.5% YoY, respectively.

- Country-wise, in FY24, Pakistan imported ~47.0% of total pesticides from China, ~7.8% from Germany and ~3.7% from the USA, with these cumulatively forming ~58.5% of total pesticide imports during the year (SPLY: ~61.3%). In 7MFY25, ~35.9% of pesticides were imported from China, ~9.9% from USA and ~7.5% from Germany, while these recorded at USD~82.1mln, down ~26.7% YoY.





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

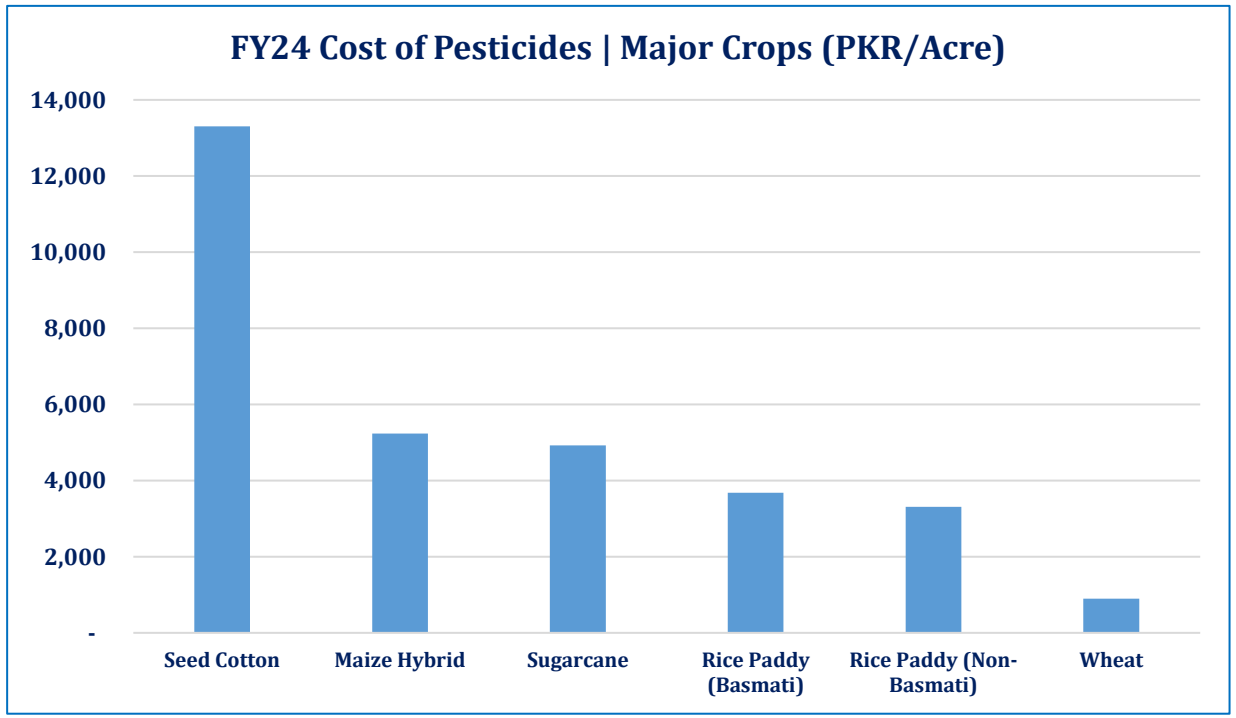
Source: PBS, SBP

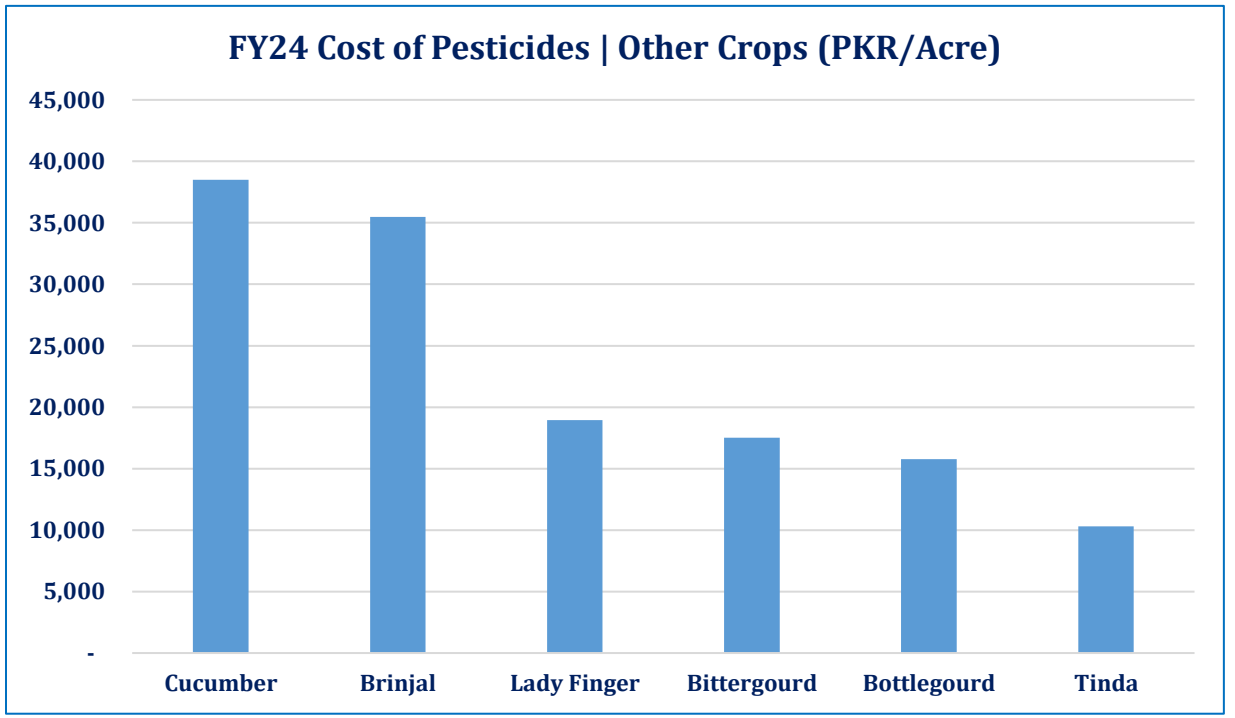
Pesticides

Local | Demand

- Major crops grown in the country (Cotton, Rice, Maize, Wheat and Sugarcane) contributed ~5.0% to GDP and ~20.8% of value addition to the agriculture sub-segment of the economy in FY24. Among the major crops, the cost of pesticide usage for seed cotton was the highest at PKR~13,307/acre in FY24 (SPLY: PKR~9,235/acre), recording a ~44.1% YoY increase.

- In terms of other crops, including vegetables and fruits, on average, the cost of pesticides is registered at PKR~22,754/acre. Cucumbers had the highest cost of PKR~38,494/ acre in FY24 (SPLY: PKR~20,286/acre), up ~89.7% YoY.





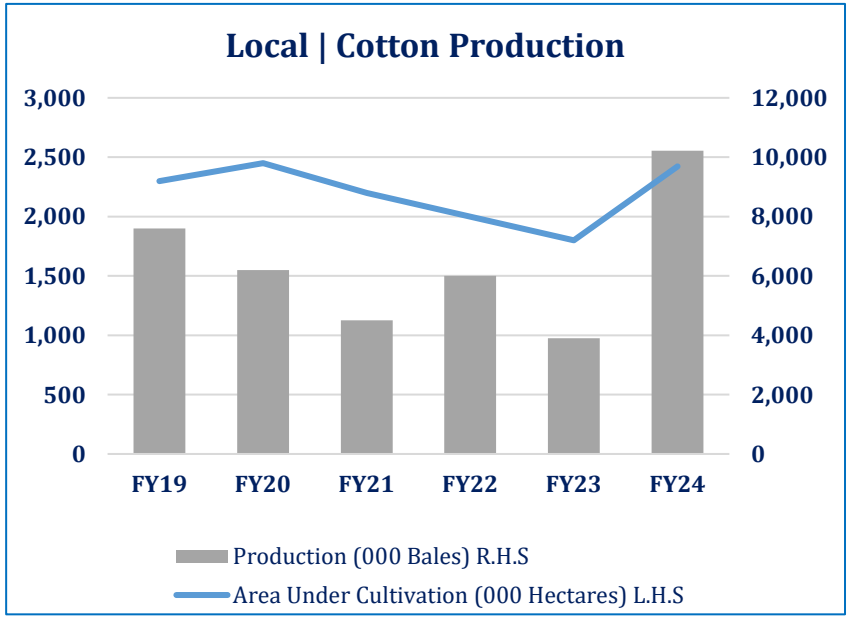
***Note**: The figures do not depict exhaustive crops data.*

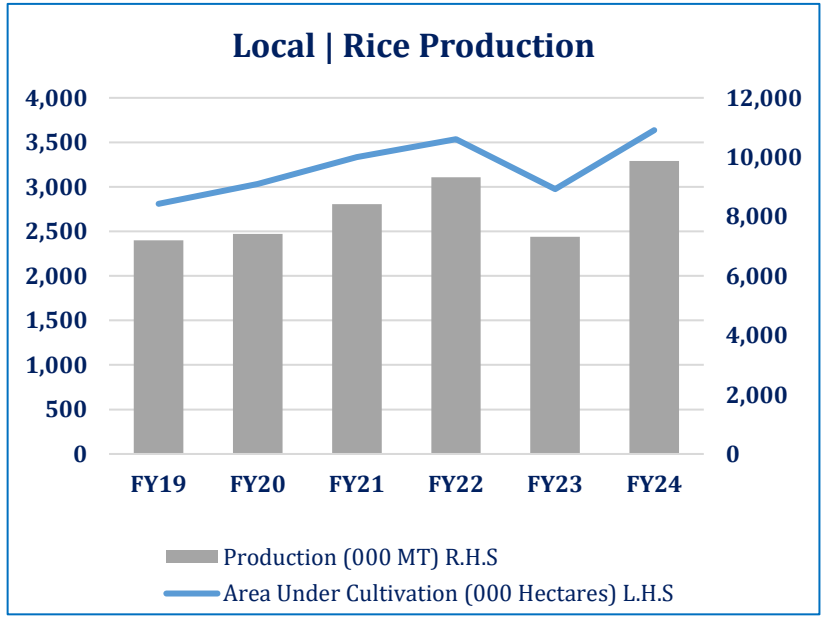
Source: AMIS

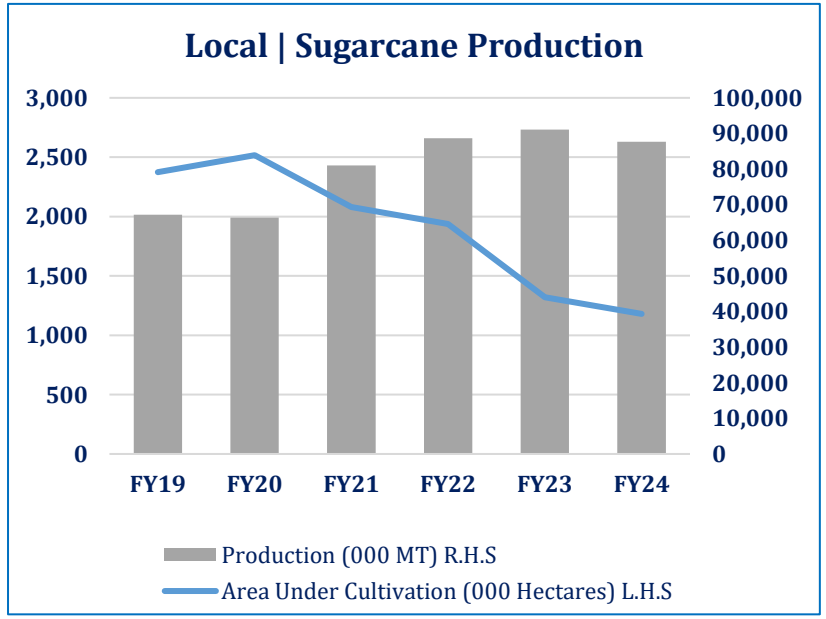
Pesticides

Local | Demand

- In FY24, ~10.2mln bales of cotton were produced, registering ~162.1% YoY increase. This, in turn, resulted from ~34.6% YoY increase in area under cultivation, better quality of pest-resilient seeds, favorable weather conditions, and attractive fixation of the intervention price of cotton (*Phutti*) at PKR~8,500/40KG at the start of the sowing season.
- Rice production during the same period increased by ~34.7% YoY, attributable to ~22.2% YoY increase in area under cultivation. This was supported by higher rice prices and favorable monsoon rains. Meanwhile, sugarcane production decreased by ~3.8% YoY in FY24, majorly attributed to a decline in area under cultivation of ~31.9% YoY.
- For FY25, production targets stand at ~10.8mln bales for Cotton, ~76.7mln MT for Sugarcane, ~8.7mln MT for Rice, ~9.3mln MT for Maize, and ~33.6mln MT for Wheat. As of End-Jan'25, total cotton arrivals amounted to ~5.5mln bales for FY25, while USDA's production numbers for FY25 (i.e., until Feb'25) stand at ~31.6mln MT for wheat and ~10.0mln MT for rice.







Source: PES, PCGA, PBS, AMIS

Pesticides

Local | Business Risk

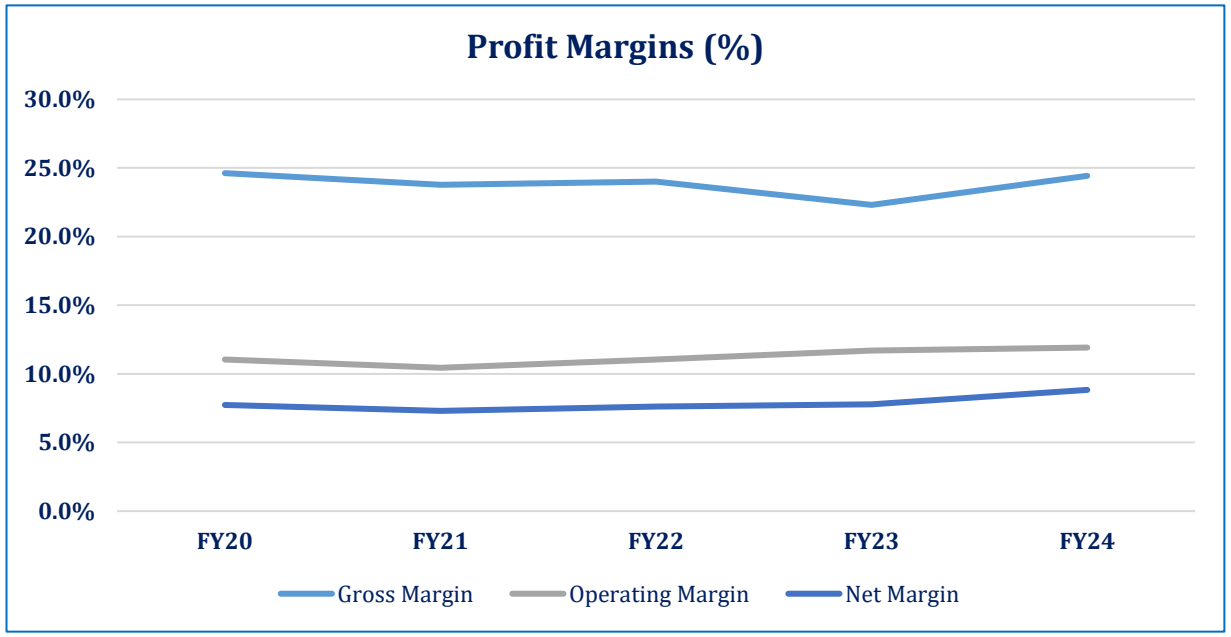
- This risk refers particularly to the challenges faced by the pesticide players, which can hamper the profitability and performance of the sector.
- The sector is highly dependent on imported chemical compounds to meet the local demand. Being highly dependent on imports, the inherent risk of supply chain disruption is high. The sector's costs are therefore subject to exchange rate movement as well.
- China is the single largest exporter of raw material to Pakistan (covered earlier), as it constituted ~80.8% to country's total imports in FY24 (FY23: ~83.3%). 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.

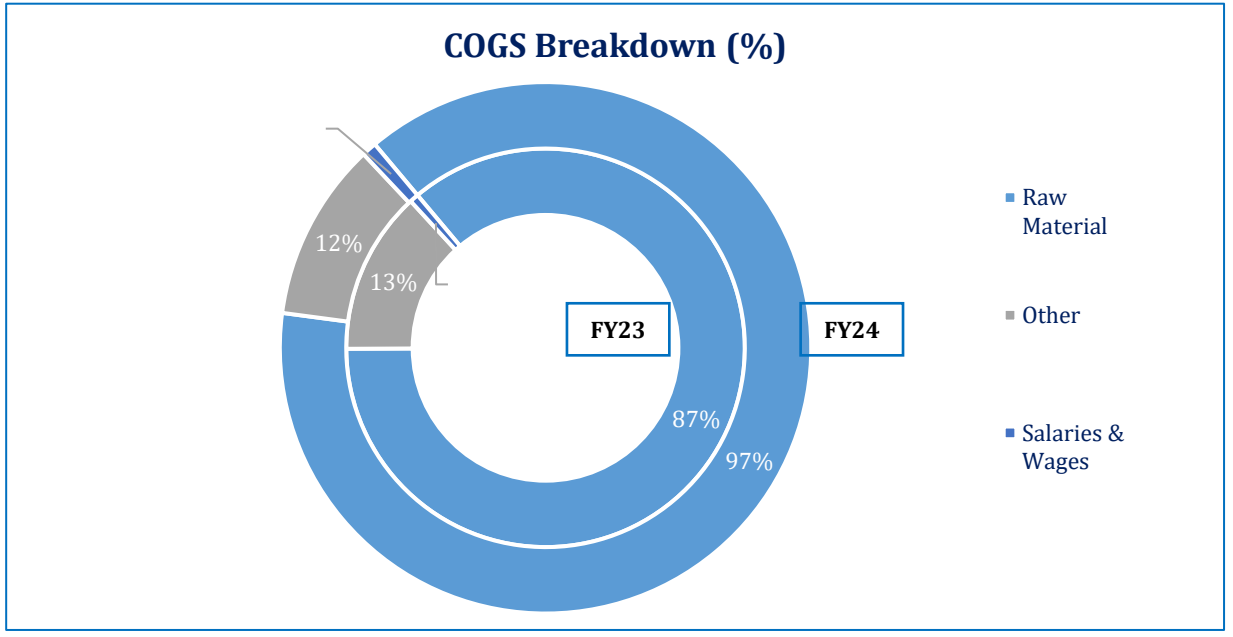
Source: PBS, Fortune Business Insights, MDPI

Pesticides

Business Risk | Margins

- The sector is characterized by moderate margins. There is little value addition. 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 FY24, the sector's average gross revenues increased by ~19.0% YoY, resulting in average gross margins to clock in at ~24.4% in FY24, while operating margins marginally increased to ~11.9% as operating profit increased by ~11.1% YoY in FY24. These reflect stable sales and controlled operating expenses. The average net margins during FY24 improved to ~8.8% (SPLY: ~7.8%). While finance cost decreased by ~32.6% YoY, other income increased by ~135.7% YoY.
- The sector's direct costs are majorly dominated by raw material costs, which make up ~96.7% of the total cost.





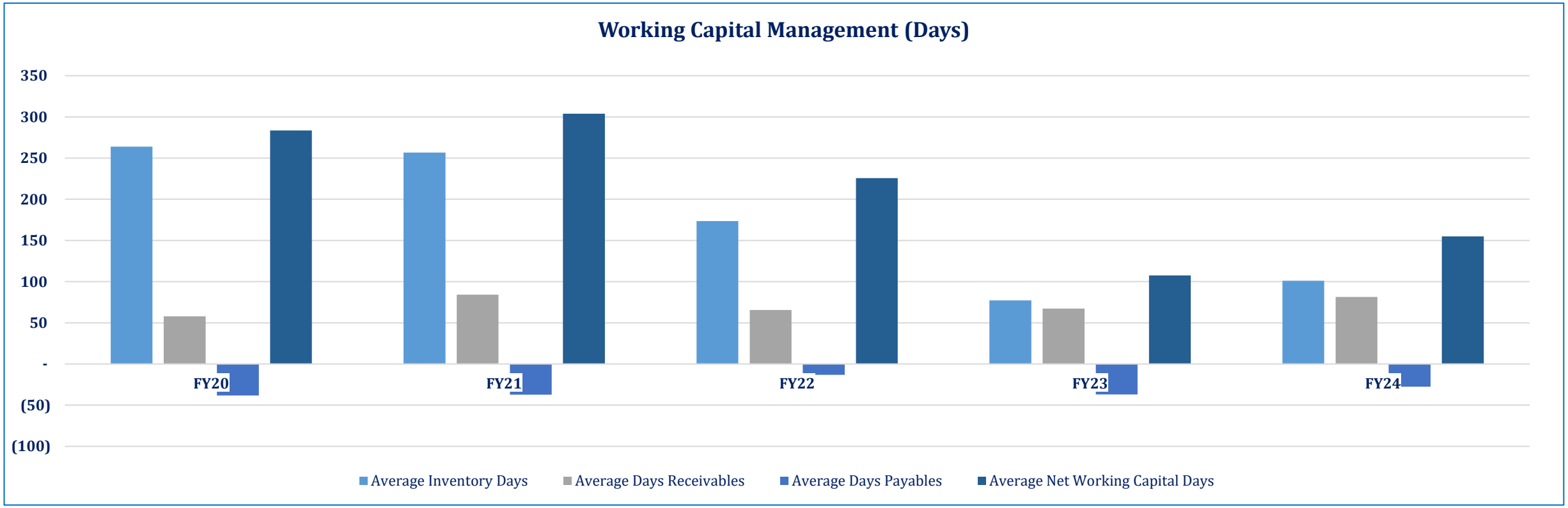
***Note**: Calculations are based on ~4 PACRA-rated clients.*

Source: PACRA Database

Pesticides

Financial Risk | Working Capital Management

- The working capital cycle of the sector is generally characterized by high inventory and trade receivable days. During FY24, average working capital days were recorded at ~155 days, decreasing by ~48 days (FY23: ~107 days), owing mainly to higher inventory days at ~101 days (SPLY: ~77 days).
- Meanwhile, average trade receivables days increased to ~81 days in FY24 whereas average payable days decreased slightly to ~28 days (FY23: ~37 days).



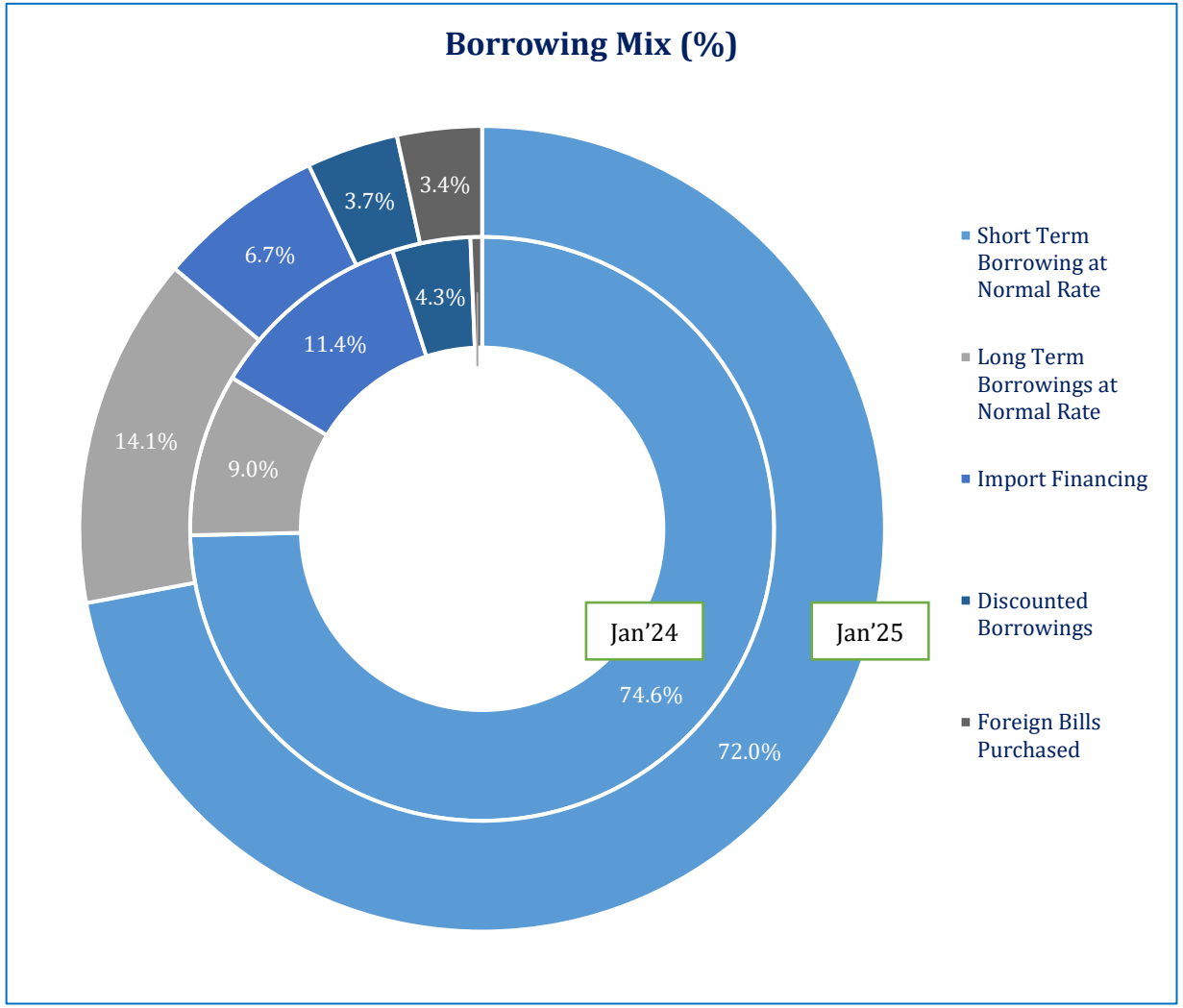
***Note**: Calculations are based on ~4 PACRA-rated clients.*

Source: PACRA Database

Pesticides

Financial Risk | Borrowing Mix

- As of End-Jan'25, the sector's overall borrowings stood at PKR~35.5bln, up ~33.9% YoY (End-Jan'24: PKR~26.5bln).
- Short-term borrowings (STBs) at normal rate stood at PKR~25.6bln, up ~29.3% YoY, and held the largest share in the sector's borrowing mix at ~72.0% (SPLY: ~74.6%).
- Long-term borrowings (LTBs) at normal rate stood at PKR~5.0bln, up ~110.4% YoY, and held a share of ~14.1% in overall borrowings (End-Jan'24: ~9.0%).
- Meanwhile, import financing, recording at PKR~2.4bln (End-Jan'24: PKR~3.0bln), declined by ~20.7% YoY as of End-Jan'25 and held ~6.7% share in the total borrowing mix during the period.
- Discounted borrowing (LTFF & EFS) stood at PKR~1.3bln (End-Jan'24: PKR~1.1bln), up ~13.8% YoY and held a share of ~3.7% in the overall borrowing mix.



***Note**: 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 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

Duty Structure

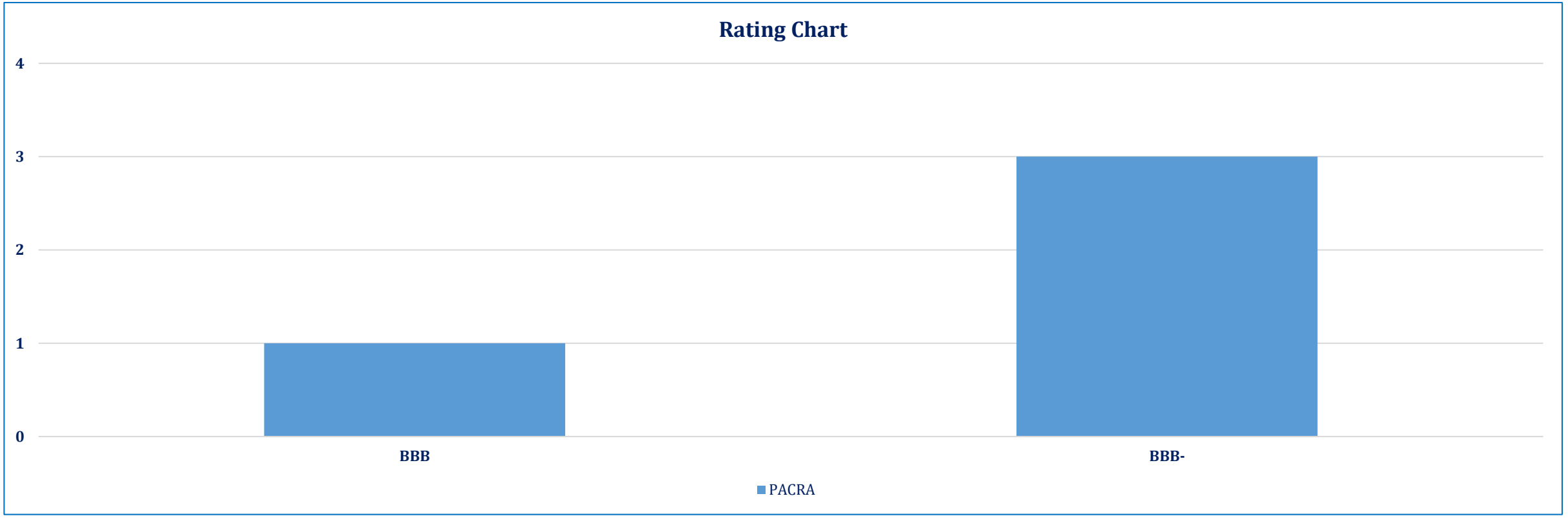
PCT Code	Description	Custom Duty		Additional Custom Duty		Regulatory Duty		Total	
	Ingredients for Pesticides	FY24	FY25	FY24	FY25	FY24	FY25	FY24	FY25
2921.5110	Diaminotoluene Base	0%	0%	2%	2%	0%	0%	2%	2%
2926.9050	Nitrile F.C Base	0%	0%	2%	25	0%	0%	2%	2%
2933.5950	Pyrimidin Ring Base	0%	0%	2%	2%	0%	0%	2%	2%
2930.9070	Thiocarbamates Base	0%	0%	2%	25	0%	0%	2%	2%
	Finished Goods	**FY24**	**FY25**	**FY24**	**FY25**	**FY24**	**FY25**	**FY24**	**FY25**
3808.9110,9170	Insecticides	0% - 20%	0% - 20%	2% - 6%	2% - 6%	0%	0%	2% - 26%	2% - 26%
3808.9310,9390	Herbicides	0%	0%	2%	2%	0%	0%	2%	2%
3808.9210,9290	Fungicides	0%	0%	2%	2%	0%	0%	2%	2%

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 input for crop protection and yields
- Stable demand
- Healthy margins
- Low import duties on raw ingredients

- Unorganized sector lacking corporate culture
- High competition
- Complete dependence on imported raw ingredients
- Exposure to exchange rate fluctuations
- Lack of investment in research and development

- Supply chain disruptions
- Low barriers to entry
- Health concerns due to excessive use of pesticides, especially where HHPs are concerned
- 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 economy posted a real GDP growth of ~2.5% YoY in FY24 (FY23: ~-0.2% YoY) and a growth of ~0.9% YoY in 1QFY25 (1QFY24: ~2.3% YoY). Large-scale manufacturing (LSM) recorded a sluggish growth of ~0.9% YoY during FY24, and further contracted by ~1.9% YoY in 1HFY25. The MPR stood at ~22.0% in FY24 before easing in consecutive rounds before recording at ~12.0% as at End-Feb'25. In FY24, major crops (Cotton, Rice, Maize, Wheat and Sugarcane) contributed ~5.0% to the GDP and ~20.8% of value addition to the agriculture sector.
- To fulfill local demand, Pakistan's pesticides sector remains entirely dependent on imported raw ingredients. In FY24, overall raw ingredient imports increased ~32.0% YoY in PKR terms, however, volumetrically registered ~1.3% YoY decline, amounting to ~19,460MT. In terms of final pesticide imports, these averaged at USD~195.3mln (FY20-24), with YoY decline of ~3.9% in FY24. During the year, the local average cost of pesticides stood at PKR~22,754/acre for fruits and vegetables, PKR~13,307/acre for seed cotton, and PKR~5,233/acre for hybrid maize.
- The sector is characterized by low to medium business risk. During FY24, the sector's average gross revenues increased by ~19.0% YoY, resulting in average gross margins to clock in at ~24.4% in FY24, while operating margins marginally increased to ~11.9% as operating profit increased by ~11.1% YoY in FY24. These reflect stable sales and controlled operating expenses. The average net margins during FY24 improved to ~8.8% on the back of ~86.6% YoY increase in net profits
- For FY24, cotton, rice and sugarcane registered ~162.1%, ~34.7% and ~(3.8%) YoY growth, respectively. The uptick in rice and cotton crops output signals stable demand for pesticides, therefore, going forward, sector's financial performance is expected to remain rangebound. For FY25, production targets stand at ~10.8mln bales for Cotton, ~76.7mln MT for Sugarcane and ~8.7mln MT for Rice, while as of End-Jan'25, total cotton arrivals amounted to ~5.5mln bales for FY25, with USDA's production numbers for FY25 (i.e., until Feb'25) recording at ~10.0mln MT for rice.
- Moreover, in 1QFY25, the agriculture sub-segment of the economy exhibited slow growth of ~1.2% YoY (SPLY: ~8.1%), important crops recorded ~(12.3)% YoY uptick. Agricultural output, however, is expected to pick up pace for the remainder of FY25, serving as a major demand driver for pesticides. However, the sector remains dependent on imports (both raw ingredients as well as final product). Meanwhile, the GoP is actively working on improving the applicable regulatory framework centered on better pest management and pesticide residue control.

Pesticides

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