SECTOR STUDY . MARCH 2026

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 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 is usually involved in 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

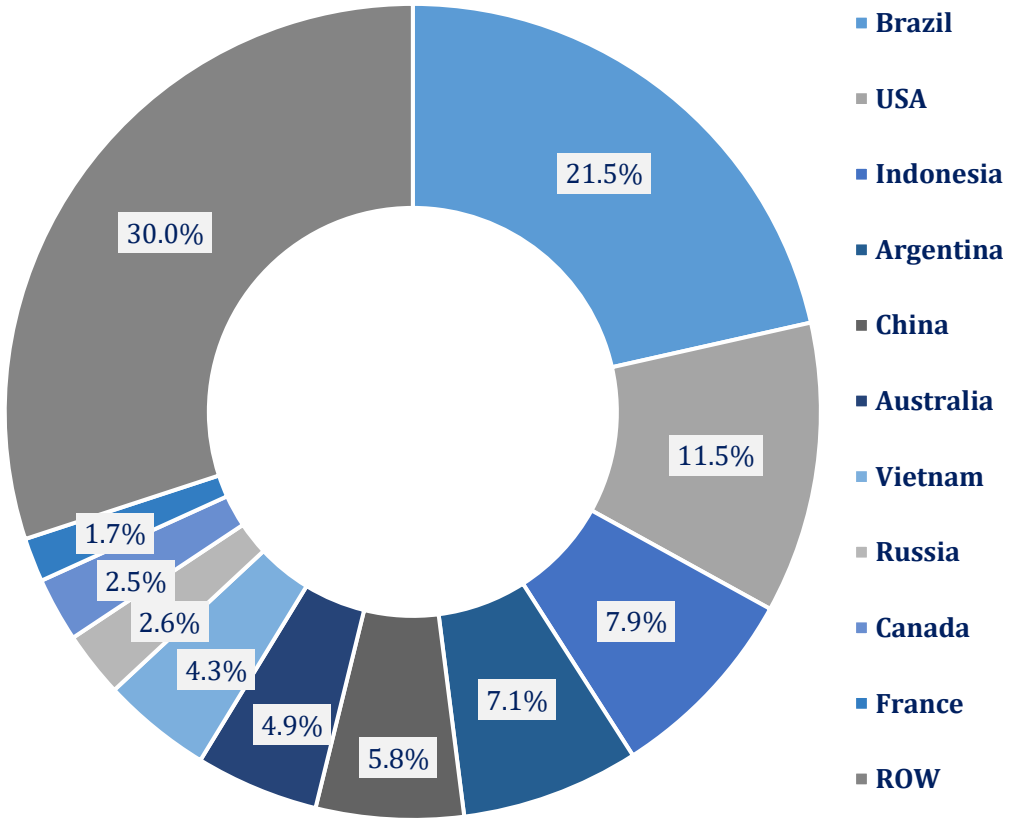
- During CY23*, global pesticide consumption stood at ~3.7mn MT (CY22: ~3.8mn MT) with a ~2.6% decrease YoY and a 14% decrease in a decade.

- The top ten countries cumulatively accounted for ~60% of the global pesticide usage in CY23. Brazil remained the highest user of pesticides at ~0.8mn MT (~21.5% of global pesticide usage), followed by the USA at ~11.5%, using ~0.4mn MT of pesticides. The rest of the world accounts for ~30.0% of the total pesticide usage. Pesticide use per area of cropland in 2023 was ~2.40 kg per hectare.

- America imported the highest amounts of pesticides from other regions of the world in 2023 (~1.97 Mt), just ahead of Europe (~1.96 Mt). While Asia exported the most pesticides to other regions, with quantities and values of ~2.4 Mt and USD ~11.4 bn in 2023.

- The slight decline in global pesticide consumption in CY23 is attributed to various factors, including increased adoption of integrated pest management (IPM) and shifts in global commodity prices. Although cotton remains a significant user of specific insecticides, the intensity of use is heavily influenced by regional pest pressure and local regulatory environments. High-acreage crops like soybeans and maize dominate herbicide consumption, far exceeding the usage rates seen in cotton production.

Global Pesticides Usage | Top 10 Countries*



Latest data available till CY23.

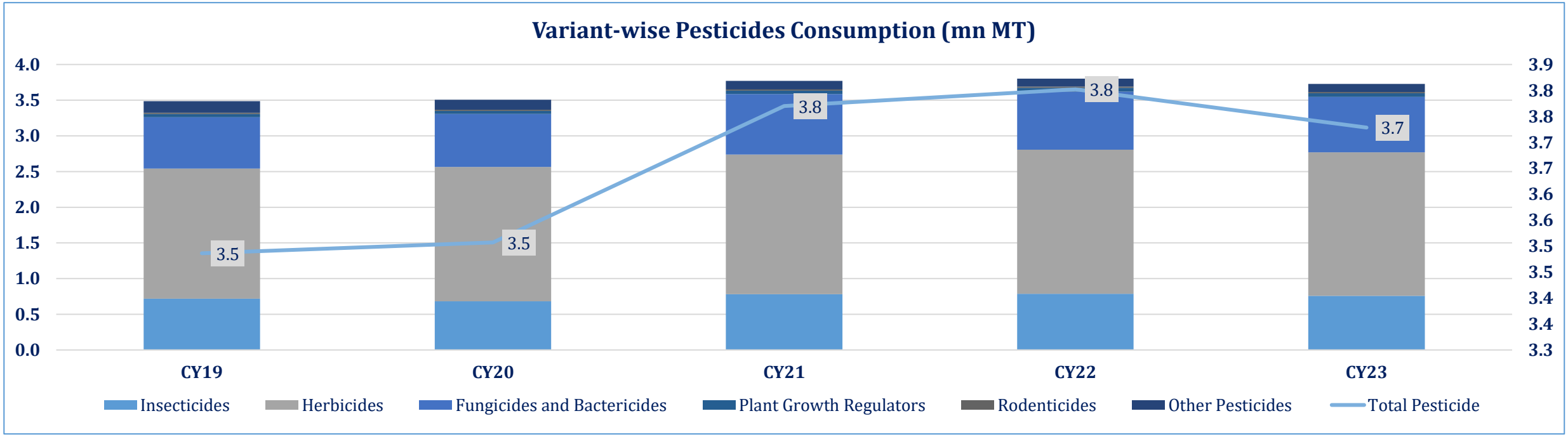
Source: FAO, EPA, ICAC

Pesticides

Global | Variant-wise Consumption

- The use of pesticides has remained stable in the latest 5-year available data. Herbicides remain the most used, maintaining a clear majority (53.9%) in total pesticide use in CY23 at ~2.0mn MT. Meanwhile, insecticides and fungicides account for ~20.4% and ~20.9% of total pesticide usage, respectively.

- Rodenticides, plant growth regulators, and other pesticides account for ~4.9% of total pesticide usage, with other pesticides dropping from ~4.7% in CY19 to 3.1% in CY23. Despite the slight drop in volume, the market's economic footprint expanded, with global pesticide trade value reaching USD ~43.7bn.
- Antimicrobials are used as pesticides, which include bactericides and fungicides applied against plant diseases. Across all countries, azole-based fungicides represented ~9% of total fungicides and bactericides.



Note: Latest data available till CY23.

Source: FAO, EPA, ICAC

Pesticides

Global | Trade

- Global pesticides exports amounted to USD ~41.2bn in CY24 (SPLY: USD ~43.7bn), down ~5.7% YoY. The top five exporting countries in CY24 were China, USA, India, France and Germany with respective export shares of ~21.8%, ~11.7%, ~10.1%, ~8.6% and ~8.5%.

- The top five importing countries during CY24 were Brazil, France, Canada, USA and India with respective import shares of ~12.8%, ~5.3%, ~4.8%, ~4.1% and ~3.8%. With the rest of the world accounted for ~54.3% of the global imports. In CY24, imports fell down to ~11.3% YoY at USD ~38.8bn (SPLY: USD ~43.7bn).

Global | Pesticide Exports (USD mln)

Countries	CY20	CY21	CY22	CY23	CY24
China	7,619	8,009	11,111	8,087	8,995
USA	4,436	4,761	5,415	4,738	4,830
India	3,422	4,499	5,549	4,324	4,142
France	4,334	4,581	4,234	4,120	3,551
Germany	3,935	3,935	3,939	3,748	3,513
Spain	1,404	1,437	1,650	1,737	1,561
United Kingdom	1,562	1,302	1,369	1,241	1,064
Israel	1,195	1,080	1,255	1,110	807
Belgium	1,813	1,972	2,309	2,061	818
Hungary	812	853	1,029	1,073	797
ROW	11,513	8,735	12,212	11,449	11,100
Total	**42,045**	**44,246**	**50,071**	**43,688**	**41,178**

Global | Pesticide Imports (USD mln)

Countries	CY20	CY21	CY22	CY23	CY24
Brazil	3,693	4,120	6,863	4,848	4,975
France	2,140	2,047	2,316	2,317	2,073
Canada	1,921	1,838	2,238	2,053	1,894
USA	1,857	1,844	2,108	1,668	1,585
India	1,507	1,853	1,794	1,476	1,571
Germany	1,733	1,732	1,833	1,742	1,492
Australia	1,068	1,212	1,548	1,185	1,324
Italy	998	1,034	1,062	1,094	1,033
Poland	953	983	1,048	1,025	895
Spain	1,034	1,054	1,054	976	930
ROW	25,141	26,529	28,207	25,301	21,027
Total	**42,045**	**44,246**	**50,071**	**43,688**	**38,754**

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

Source: ITC

Pesticides

Local | Overview

- Pakistan's pesticides sector recorded a revenue of PKR ~105.0bn (SPLY PKR ~124.6bn), down ~15.8% YoY.
- Pakistan largely depends on imports of pesticides (raw ingredients as well as final products) to meet local demand.
- The total volume of imported pesticides fell from ~0.037mn MT to ~0.032mn MT in FY25, showing a ~13.1% YoY decline. This is largely attributable to administrative and regulatory bottlenecks specifically involving a significant backlog in registration renewals and import processing, which was further compounded by a supply-side constraint resulting from the prohibition of certain pesticide variants.
- There was a more pronounced drop in the import of base ingredients. The cost fell from PKR ~47.7bn to PKR ~37.4bn, corresponding with a volume decrease from ~0.02mn MT to ~0.015mn MT in FY25.
- 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 FY25, the total number of registered players in Pakistan stands at ~304.

Sector Snapshot	Units	FY24	FY25
Revenue*	**PKR bn**	124.6	105.0
YoY Growth	**%**	19.0%	-15.8%
Imports | Pesticides	**USD mn**	196.0	154.0
	000 MT	37.3	32.4
Imports | Base Ingredients	**PKR mn**	47,700	37,411
	000 MT	19.5	14.8
Average Exchange Rate	**USD/PKR**	283.2	292.4
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 FY25, total imports of raw ingredients decreased ~21.6% YoY in value terms while in volumetric terms, these were recorded at ~14,839MT (SPLY ~19,460MT) down ~23.7% YoY.
- In FY25, Diamino Toulene formed ~45.7% of the total raw material imports. In volumetric terms, the country imported ~4,710MT of Diamino Toluene during FY25 as against ~1,705MT in SPLY. Diamino Toluene (DAT) is an intermediate in the production of fungicide stabilizers in the industry.
- Nitrile F.C formed ~32.2% of total raw ingredients imported during the period under review, whereas the volume imported declined to ~4,642MT in FY25, as against ~13,533MT in FY24 showing a ~65.7% decrease.
- 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 | Imports (PKR mn)	HS Code	FY24	FY25	China's Share FY25 (%)	ROW Share FY25 (%)
Nitrile F.C	2926.9050	33,109	12,054	99.1%	0.9%
Diamino Toluene	2921.5110	7,882	17,103	99.1%	0.9%
Pyrimidine Ring	2933.5950	2,839	2,841	87.4%	12.6%
Thiocarbamates	2930.2020	2,349	3,994	100%	0%
Nitro-sated Base	2909.4910, 90	963	1,044	36.7%	63.3%
Others	2906.2990 2909.4410 2933.9910	556	375	58.5%	41.5%
Total		**47,700**	**37,411**	**96.2%**	**3.8%**

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

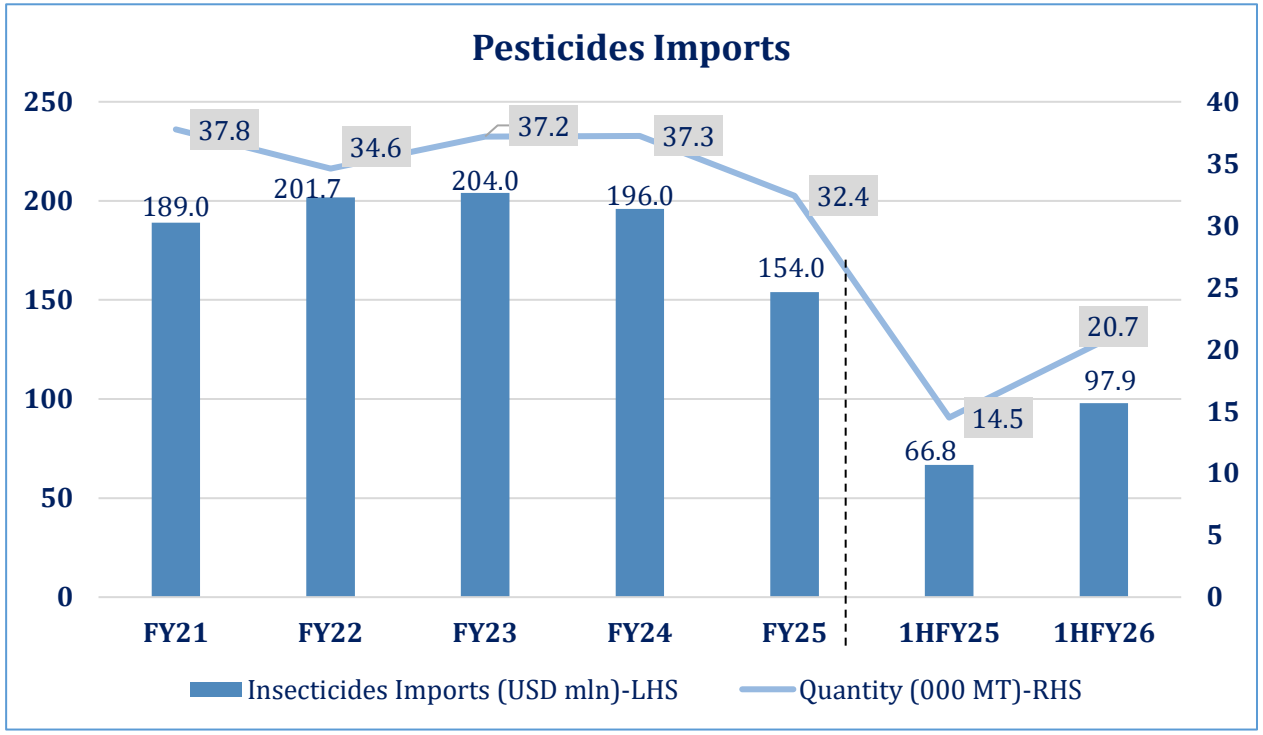
Source: PBS

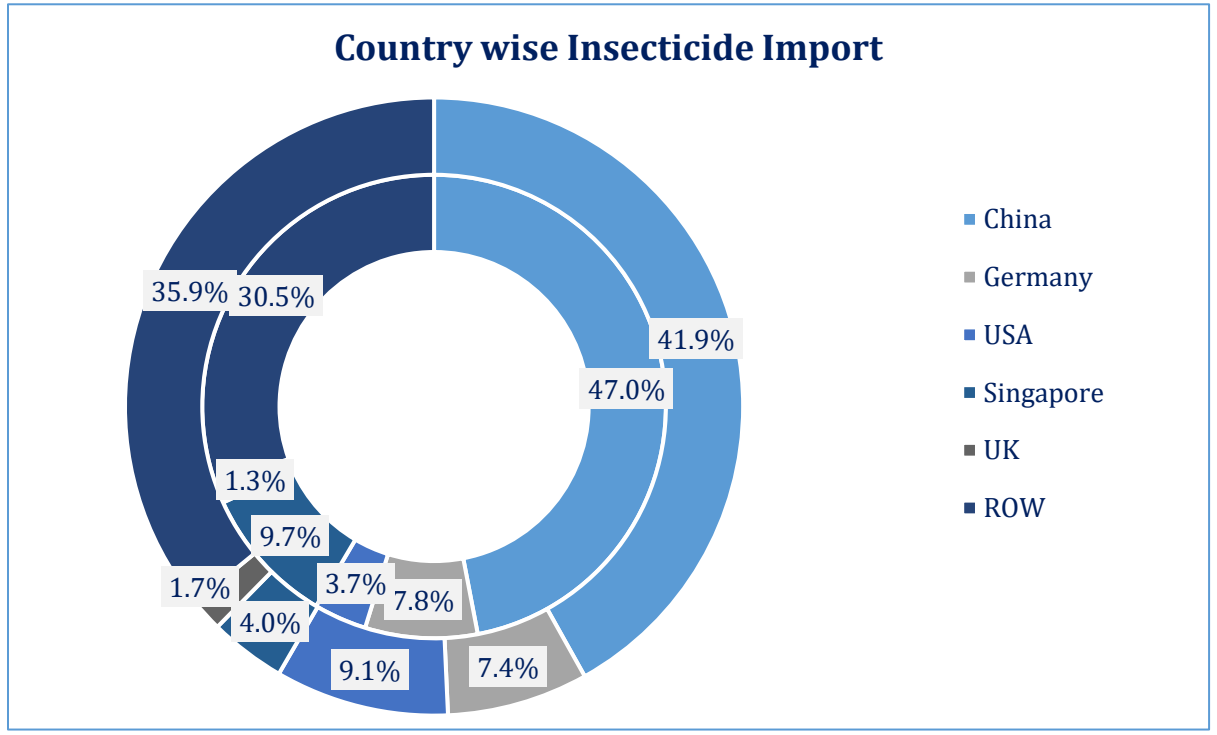
Pesticides

Supply | Active Ingredients

- In terms of value, imports averaged at USD ~197.7mn during FY20-24 and recorded ~21.4% YoY decline in FY25 to USD~154.0mn (SPLY USD ~196.0mn). Volumetrically, these stood at ~32,400MT(SPLY ~37,253MT), down ~13.0% YoY. During 1HFY26, imports increased both in value and volume terms by ~46.3% and ~42.7% YoY, respectively, compared to 1HYFY25.

- Country-wise, in FY25, Pakistan imported ~41.9% of total pesticides from China, ~9.1% from USA and ~7.4% from the Germany, with these cumulatively forming ~58.4% of total pesticide imports during the year (SPLY: ~58.5%).





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

Source: PBS, SBP

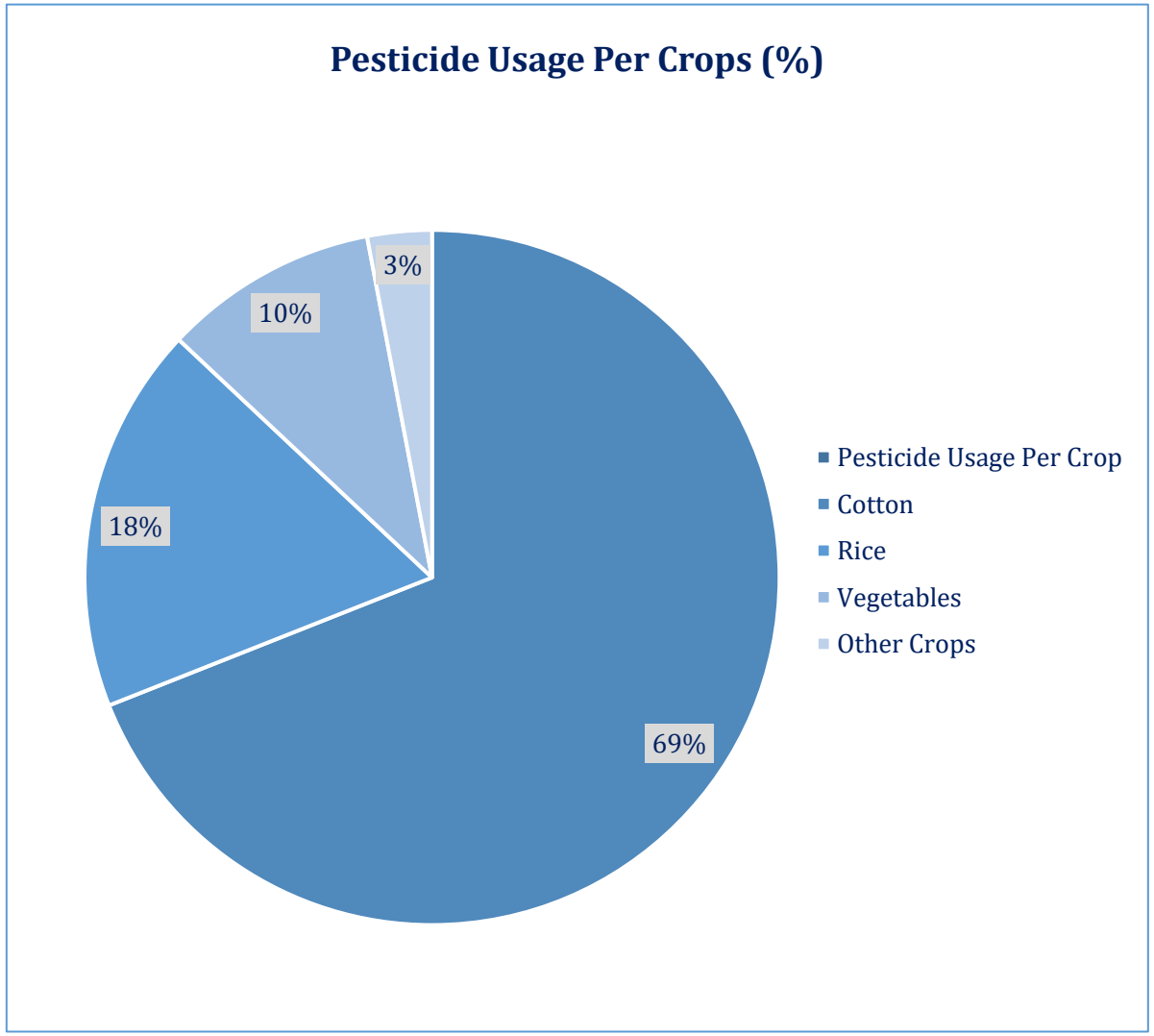
Pesticides

Local | Demand

- Major crops grown in the country (Cotton, Rice, Maize, Wheat, and Sugarcane) account for ~ 17.8% of the value added in the agriculture sector and contributed ~ 4.2% to GDP.

- Pesticides and fertilizers, along with high-quality seeds and irrigation, are essential for boosting crop yields across Pakistan. Usage patterns show a near-even distribution, with 51% applied during the Rabi season and 49% during Kharif, coinciding with the cultivation of major crops such as wheat, cotton, rice, maize, and sugarcane.

- Pesticide consumption in Pakistan is heavily concentrated in cotton, which accounts for ~69% of total usage, underscoring the crop's intensive pest management requirements relative to other agricultural segments. With cotton production and area under cultivation reducing, the use of pesticides is also expected to come down. Rice is the second largest consumer at ~18%, driven by its susceptibility to fungal and bacterial diseases. Vegetables follow at ~10%, while all remaining crops collectively account for the residual ~3%. The stark concentration toward cotton means that any adverse movement in cotton acreage or yield has an outsized negative impact on overall pesticide demand.



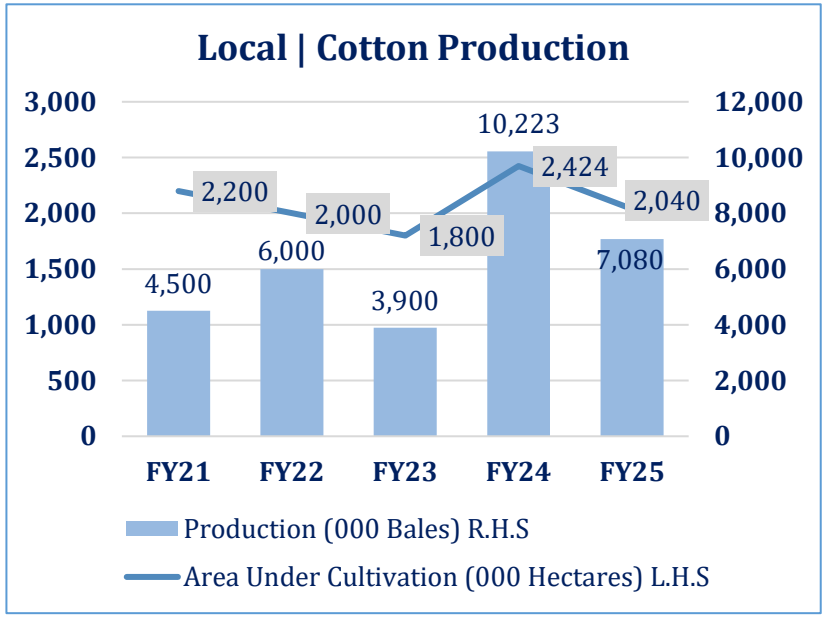
***Note**: The figures do not depict exhaustive crops data.*

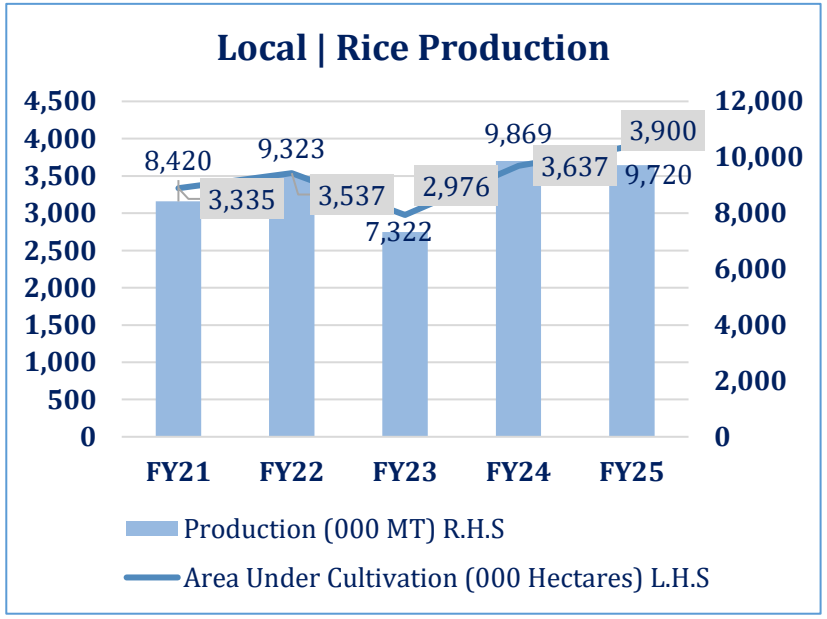
Source: CCP

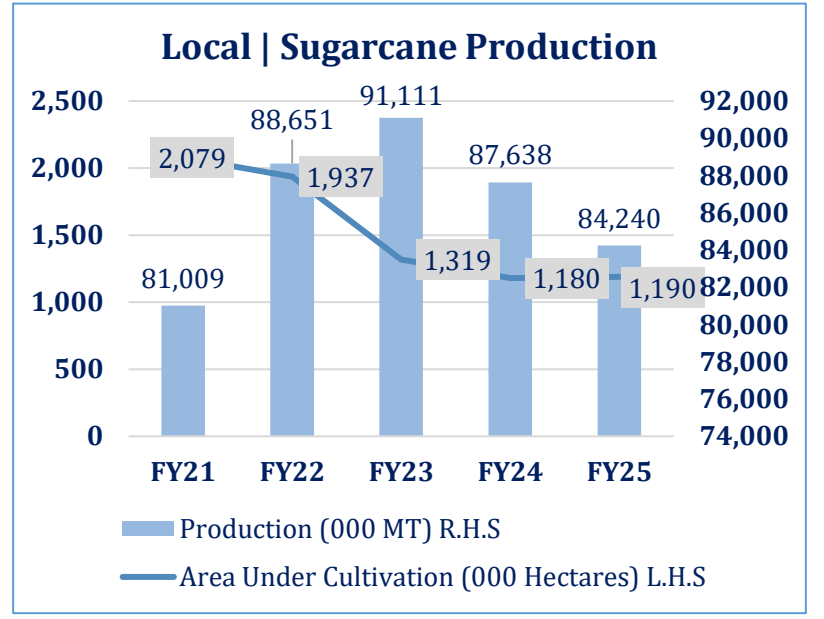
Pesticides

Local | Demand

- Cotton drives pesticides demand through intensive insecticides cycles, while rice and sugarcane provide stable demand for herbicides.
- In FY25, ~7.08mn bales of cotton were produced, registering a decline of ~30.7% YoY. This, in turn, resulted from ~15.8% YoY increase in area under cultivation. Reasons for this decline is unfavorable weather conditions, varying rainfall, policy shifts and input unavailability.
- Rice production during the same period also decreased by ~1.5% YoY, however showing a ~7.2% increase in area under cultivation. Despite an increase in cultivated area, production volume experienced a marginal decline, reflecting pressure on productivity, linked to climate changes, water availability, and input constraints.
- In FY25, sugarcane cultivation in Pakistan covered ~1.19mn hectares of area under cultivation, depicting a ~1.0% percent increase from previous year. Despite the slight expansion in the area, sugarcane production registered a modest decline of ~3.9%, falling to ~84.24mn MT, (SPLY ~87.6mn MT) primarily due to reduced rainfall and high temperature.







Source: PES, PCGA, PBS, AMIS

Pesticides

Local | Business Risk

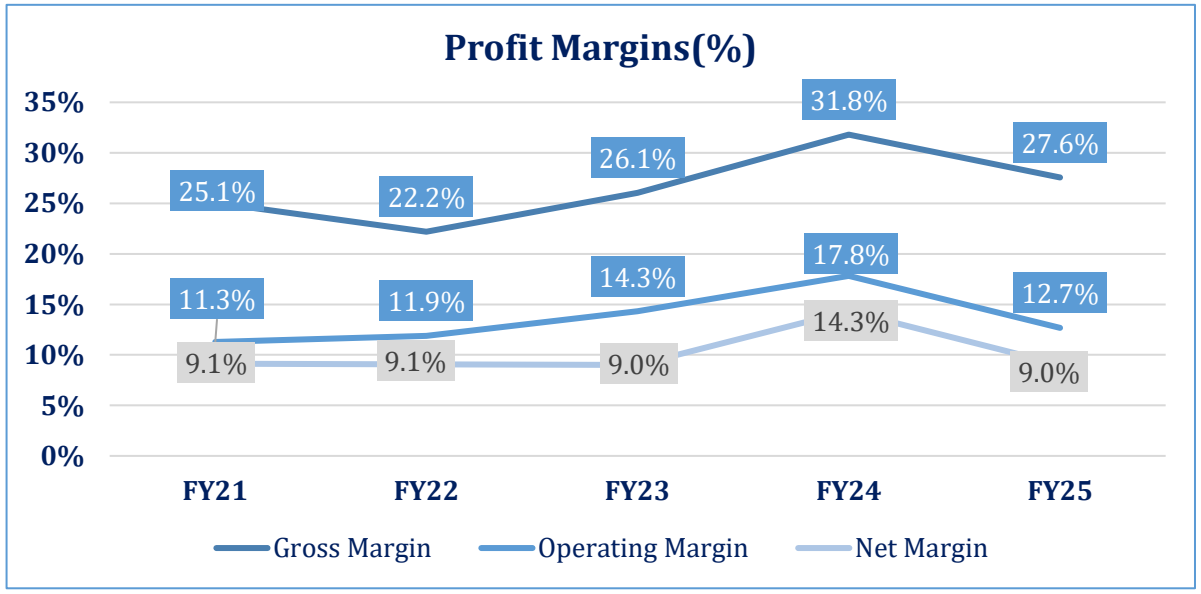
- This risk refers particularly to the challenges faced by the pesticide players, which can hamper the profitability and performance of the sector.
- The sector is highly dependent on imported chemical compounds to meet the local demand. Being highly dependent on imports, the inherent risk of supply 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 ~96.2% to country's total imports in FY25 (FY24: ~80.8%). 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.

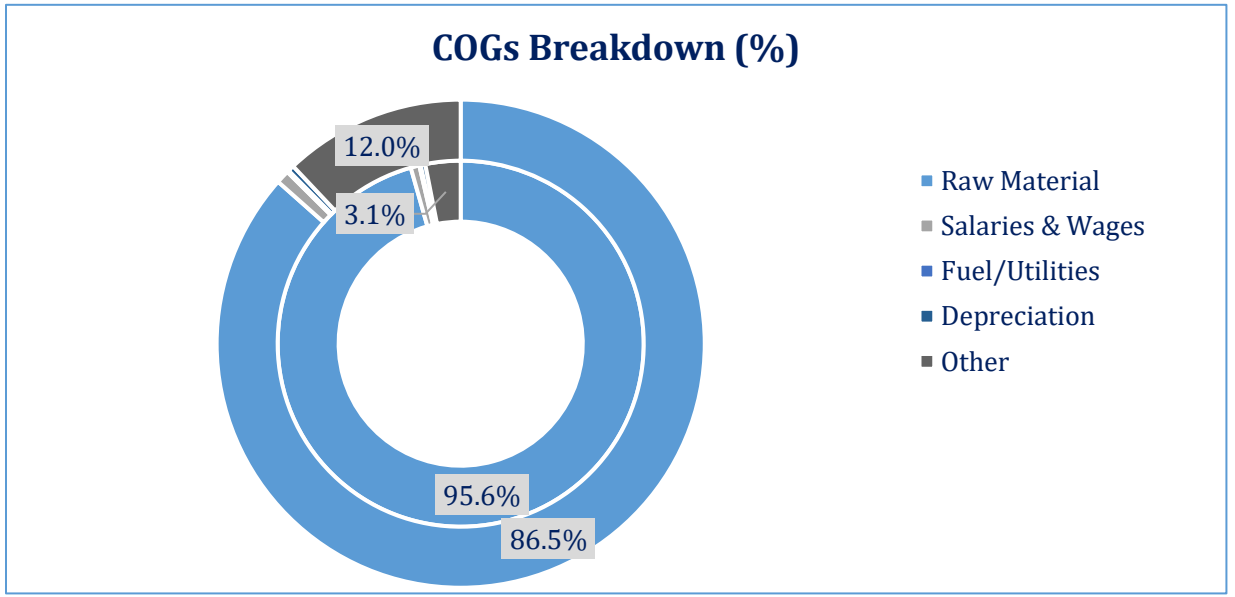
Source: PBS, Fortune Business Insights, MDPI

Pesticides

Business Risk | Margins

- In FY25, the industry suffers from thin profit margins and little value addition. As it relies heavily on imported raw materials and active ingredients, profitability is highly sensitive to the volatility of global prices and currency exchange rates. Any price revisions are also passed on to end consumers.
- During FY25, the gross margins decreased to ~27.6% attributable to sales dropping at ~16.7bn (SPLY ~19.9bn). While operating margins decreased to ~12.7% (FY24: ~17.8%) due to an increase in operating expenses. The net margins during FY25 were at ~9.0% (FY24: ~14.3) The slight decrease in finance costs was insufficient to offset the decline in gross and operating margins, resulting in an overall decline in net margin.
- Raw materials constitute ~86.5% of the total COGS in FY25, making it the overwhelmingly dominant cost component. Since virtually all raw materials are imported primarily from China (~96.2% of total imports in FY25), the sector's cost structure remains directly exposed to exchange rate fluctuations and global commodity prices, leaving players with negligible room for internal cost optimization and making margin pass-through to end-consumers the only meaningful relief valve.





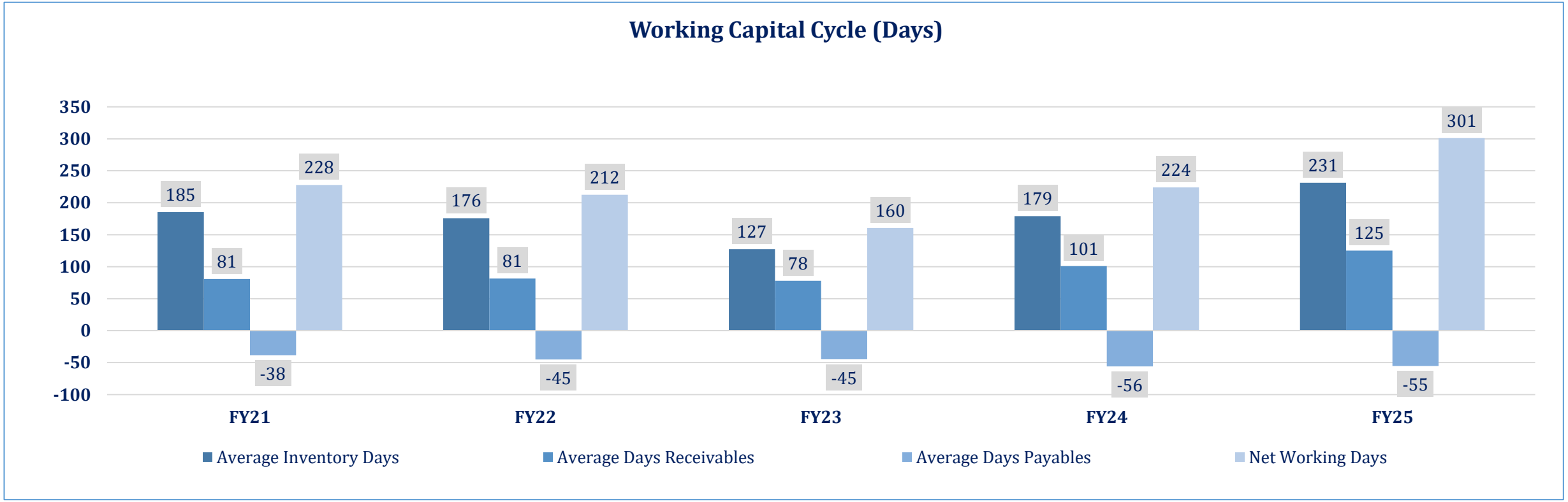
***Note**: Calculations are based on ~4 PACRA-rated clients.*

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 FY25, average working capital days were recorded at ~301 days, increasing by ~77 days (FY24: ~224 days), owing mainly to higher inventory days at ~231 days (SPLY: ~179 days). The inventory buildup is evident after relaxation in imports post FY23.
- Meanwhile, average trade receivables days increased to ~125 days in FY25(SPLY: ~101 days) whereas average payable days improved slightly to ~55 days (FY23: ~56 days).



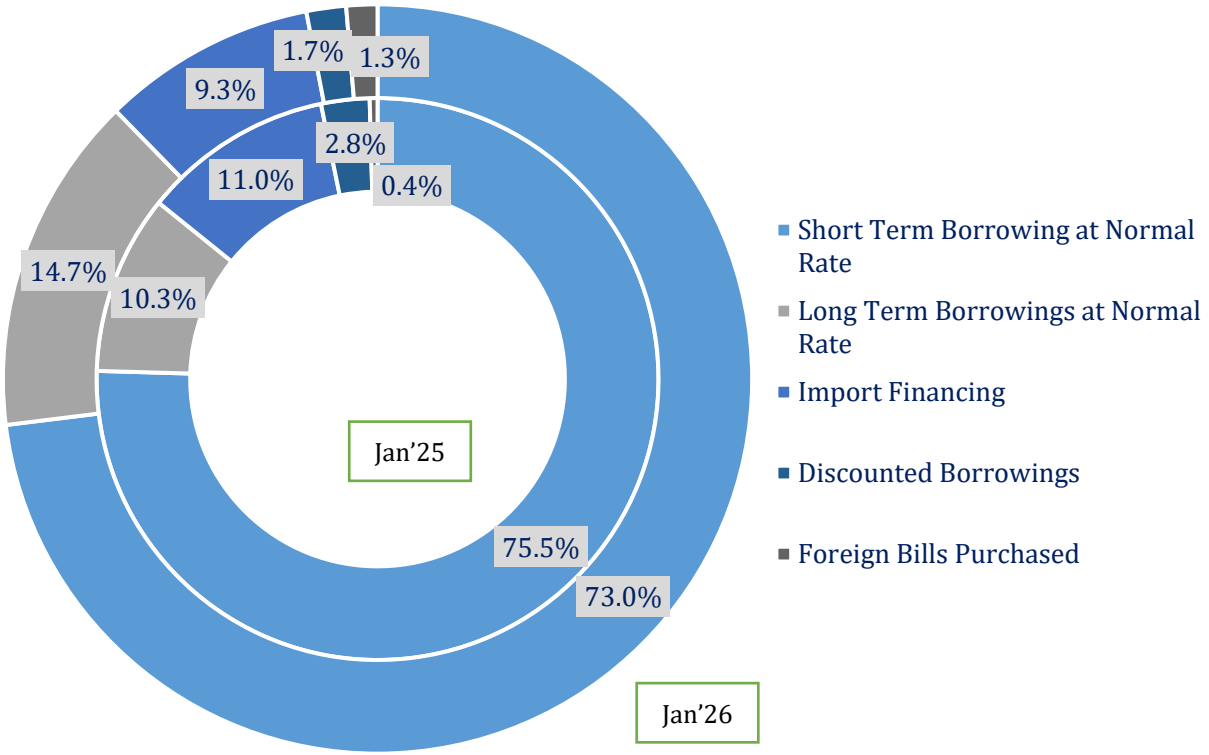
***Note**: Calculations are based on ~4 PACRA-rated clients.*

Source: PACRA Database

Pesticides

Financial Risk | Borrowing Mix

- As of End-Jan'26, the sector's overall borrowings stood at PKR ~41.6bn, down from ~8.8% YoY (End-Jan'25: PKR ~45.5bn).
- Short-term borrowings (STBs) at normal rate stood at PKR~30.4bn, declining ~11.6% YoY, and held the largest share in the sector's borrowing mix at ~73.0% (SPLY: ~75.5%).
- Long-term borrowings (LTBs) at normal rate stood at PKR~6.1bn, up ~29.4% YoY, and held a share of ~14.7% in overall borrowings (End-Jan'25: ~10.3%).
- Meanwhile, import financing, recording at PKR ~3.8bn (End-Jan'25: PKR ~5.0bln), declined by ~23.1% YoY as of End-Jan'26 and held ~9.3% share in the total borrowing mix during the period.
- Discounted borrowing (LTFF & EFS) stood at PKR~0.7bn (End-Jan'25: PKR ~1.3bn), decreased by ~43.8% YoY and held a share of ~1.7% 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	FY25	FY26	FY25	FY26	FY25	FY26	FY25	FY26
2921.5110	Diaminotoluene Base	0%	0%	2%	0%	0%	0%	2%	0%
2926.9050	Nitrile F.C Base	0%	0%	2%	0%	0%	0%	2%	0%
2933.5950	Pyrimidin Ring Base	0%	0%	2%	0%	0%	0%	2%	0%
2930.9070	Thiocarbamates Base	0%	0%	2%	0%	0%	0%	2%	0%
	Finished Goods	**FY25**	**FY26**	**FY25**	**FY26**	**FY25**	**FY26**	**FY25**	**FY26**
3808.9110,9170	Insecticides	0% - 20%	0% - 20%	2% - 6%	0%- 4%	0%	0%	2% - 26%	4%
3808.9310,9390	Herbicides	0%	0%	2%	0%	0%	0%	2%	0%
3808.9210,9290	Fungicides	0%	0%	2%	0%	0%	0%	2%	0%

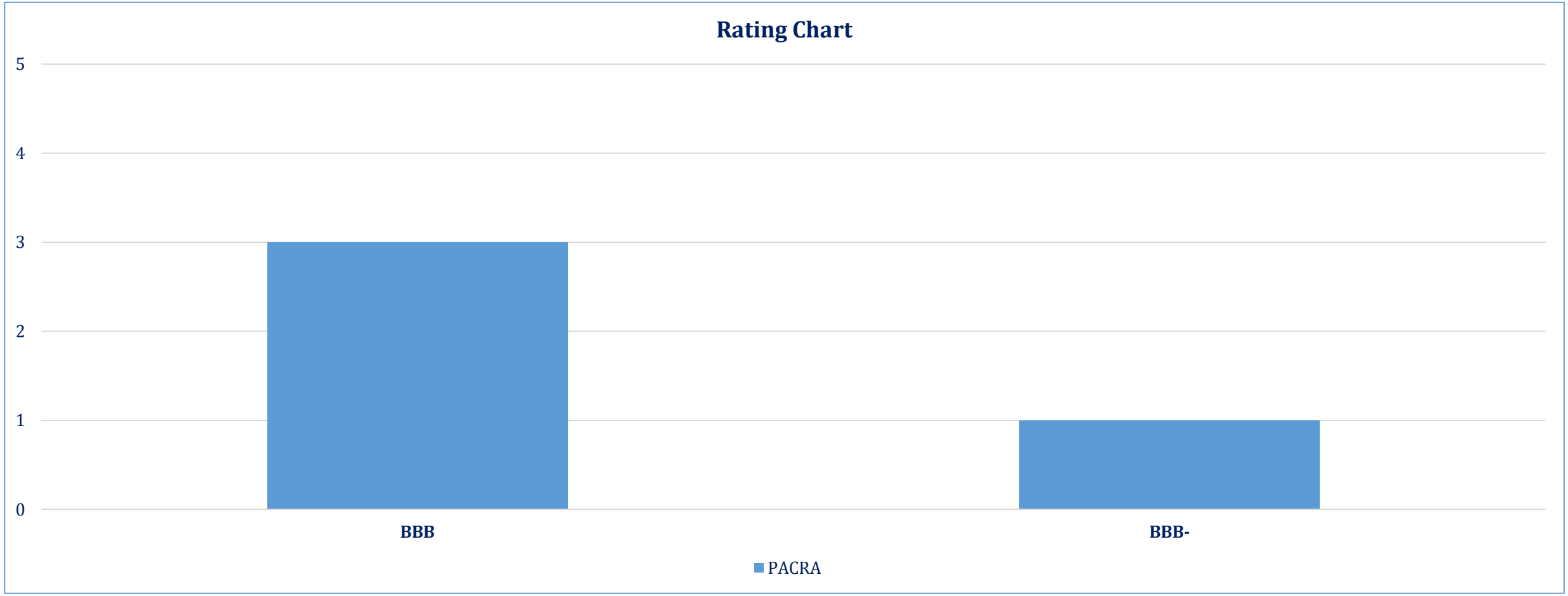
***Note**: HS codes for finished goods represent two variants.*

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 Highly Hazardous Pesticides are involved.
- Increasing usage of alternates like biopesticides for organic food

- Investment in research and development through supportive legislation
- Increase efficiency and improve quality through technological upgrade
- Reduction in import duties
- Introduction of biopesticides

Pesticides

Outlook: Stable

- Pakistan's economy posted a real GDP growth of ~2.7% in FY25 (FY24: ~2.4%), and the average CPI Inflation for July–April 2025 was 4.7%, marking a significant decrease from 26.0% in the same period last year. Real GDP grew by ~ 3.7% in 1QFY26 and is projected to grow by ~ 4.75% in FY26.
- For FY25, cotton, sugarcane, and rice registered a negative growth of ~30.7%, ~3.9%, and ~1.5% YoY., respectively. This downfall in production is due to unfavorable weather conditions, varying rainfall, policy shifts, and input unavailability. The agriculture sector posted a growth of ~2.9% in 1QFY26, with important crops recording a contraction of ~0.7% as compared to a contraction of ~13.1% during Q1 last year, mainly due to reduced cotton production.
- Pakistan's pesticide sector continues to face a significant shortfall in domestic production capacity, leaving it unable to meet local demand through internal manufacturing and necessitating a primary reliance on imported raw materials. In FY25, overall raw ingredient imports recorded at ~37,4bn YoY in PKR terms; however, volumetrically registered ~14,839MT (SPLY ~19,460MT), decreasing ~23.7% YoY. In FY25, to align with international safety standards, the government banned the import of 13 highly hazardous pesticides. The immediate ban on these specific active ingredients (raw materials) caused a sharp contraction in import volumes as traders could no longer legally bring these into the country.
- The sector is characterized by low to medium business risk. During FY25, the sector's average gross revenues decreased by ~15.8% YoY, resulting in gross margins decreasing to ~27.6% while operating margins also decreased to ~12.7% due to an increase in operating expenses.
- The government plans to increase the Federal Excise Duty (FED) on fertilizers and pesticides by 5% points to meet IMF revenue targets. This policy is expected to raise cultivation costs for farmers, potentially leading to higher food inflation and reduced demand for agricultural inputs.
- The Competition Commission of Pakistan (CCP) reports that the prevalence of counterfeit pesticides in Punjab and Sindh is causing severe crop damage and financial hardship for farmers. This illicit trade undermines fair market competition, while a total reliance on imports, coupled with rigid expiration rules and complex registration laws, results in significant waste and inflated costs.

Pesticides

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