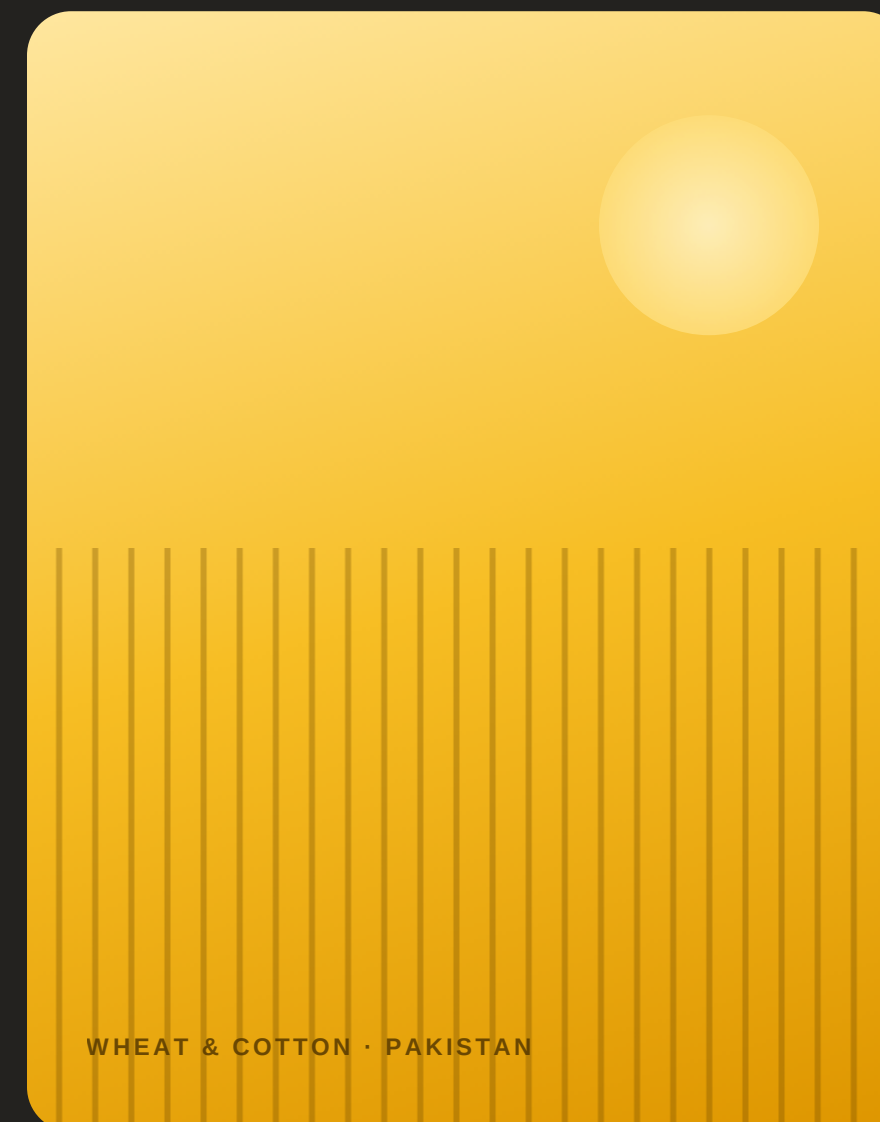


🔥 GRINAAMA · EPISODE 01

AGRI NAAMA

Wheat, Cotton & the Road Ahead

A data-driven review of Pakistan's two anchor crops — wheat and cotton — across three lenses: unit economics, government policy, and climate.



HOW TO READ THIS REPORT · THREE LENSES, TWO CROPS

🔥 Unit Economics

Input costs, global commodity prices, benefit-cost ratios & farmer decision-making

🇵🇰 Government Policy

MSPs, procurement, subsidies, IMF constraints & reform packages

🌱 Climate

Water availability, heat stress, rainfall anomalies & monsoon risk

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Macro Context

The Iran war & its agricultural ripple

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Wheat

Rabi 2025-26 & the food crop

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From 'white gold' to net importer

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A 100% import-dependent sector

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Private Sector Innovation

Precision agriculture as an answer

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Kharif 2026 Outlook

Targets, risks & what must go right

The Iran War's Agricultural Ripple

Consumer inflation hit double digits for the first time in 21 months — a direct transmission from war-driven energy costs into farm input prices.

10.89%

YoY Inflation

April 2026 · double digits, first in 21 months

2.48%

MoM Spike

Sharpest month-on-month in 2 years

39–42%

Wheat & Flour, YoY

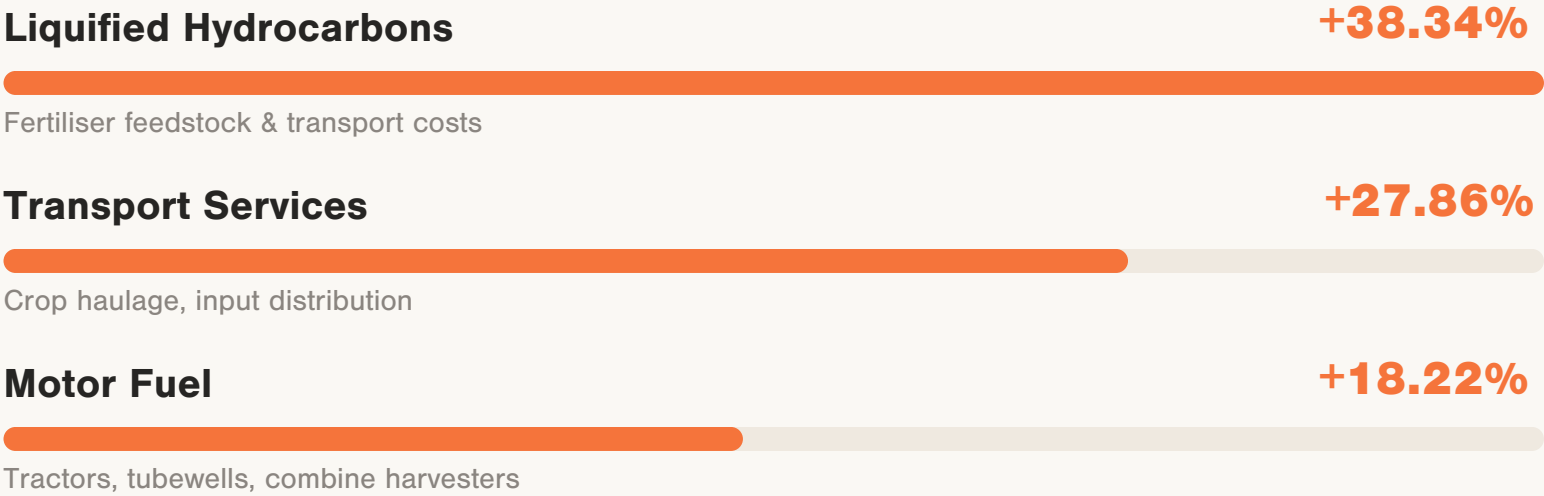
72% of Pakistan's food basket

77%

Custom Hire Cost Rise

Diesel Rs258 → Rs458 / litre

ENERGY & TRANSPORT — MOM INCREASE



WHEAT

Pakistan's most critical food crop — by volume, and by its role in food security and political economy.

72%

of the food basket

80%

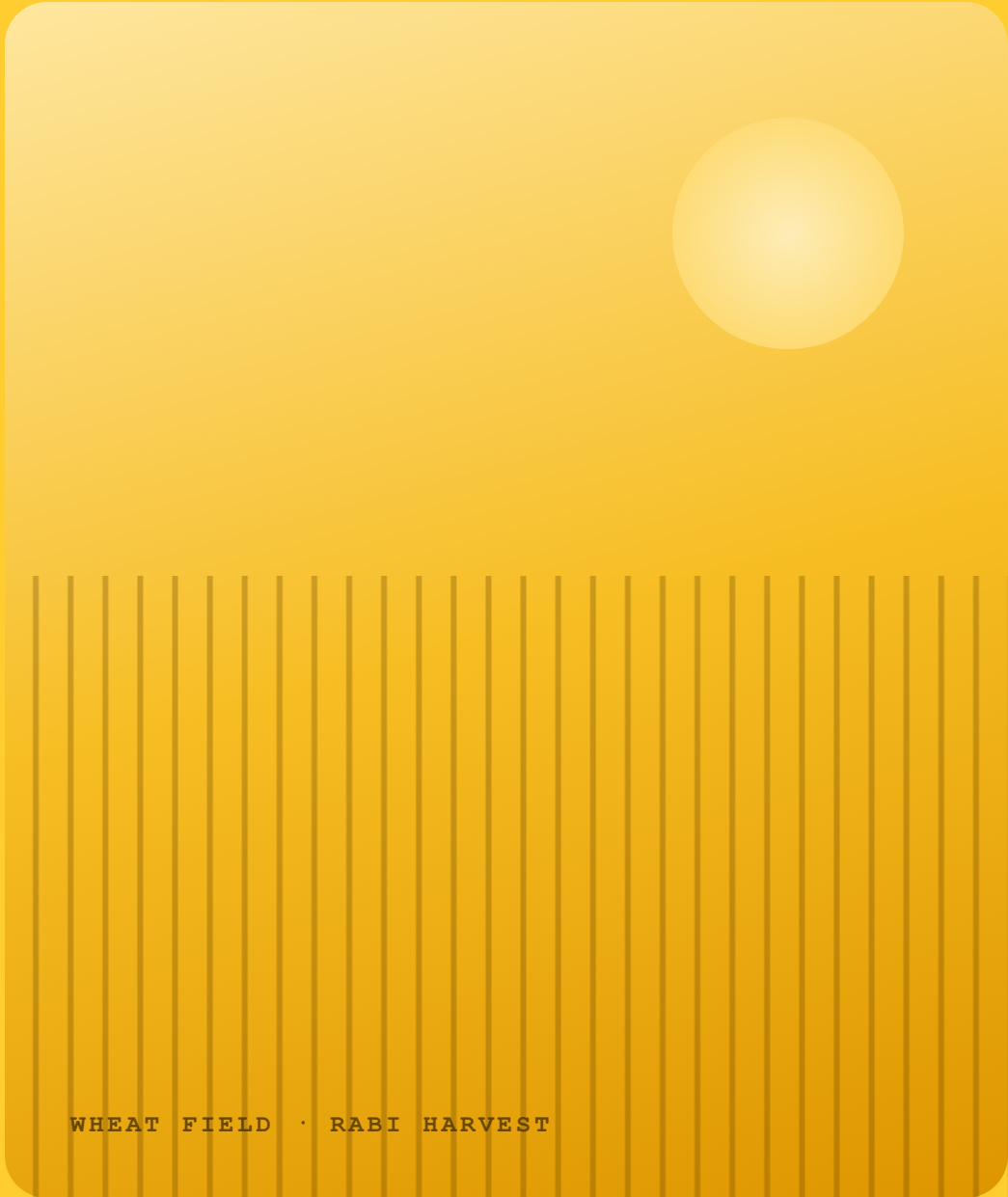
of all farmers grow it

40%

of cultivated land ·
~22M acres

124kg

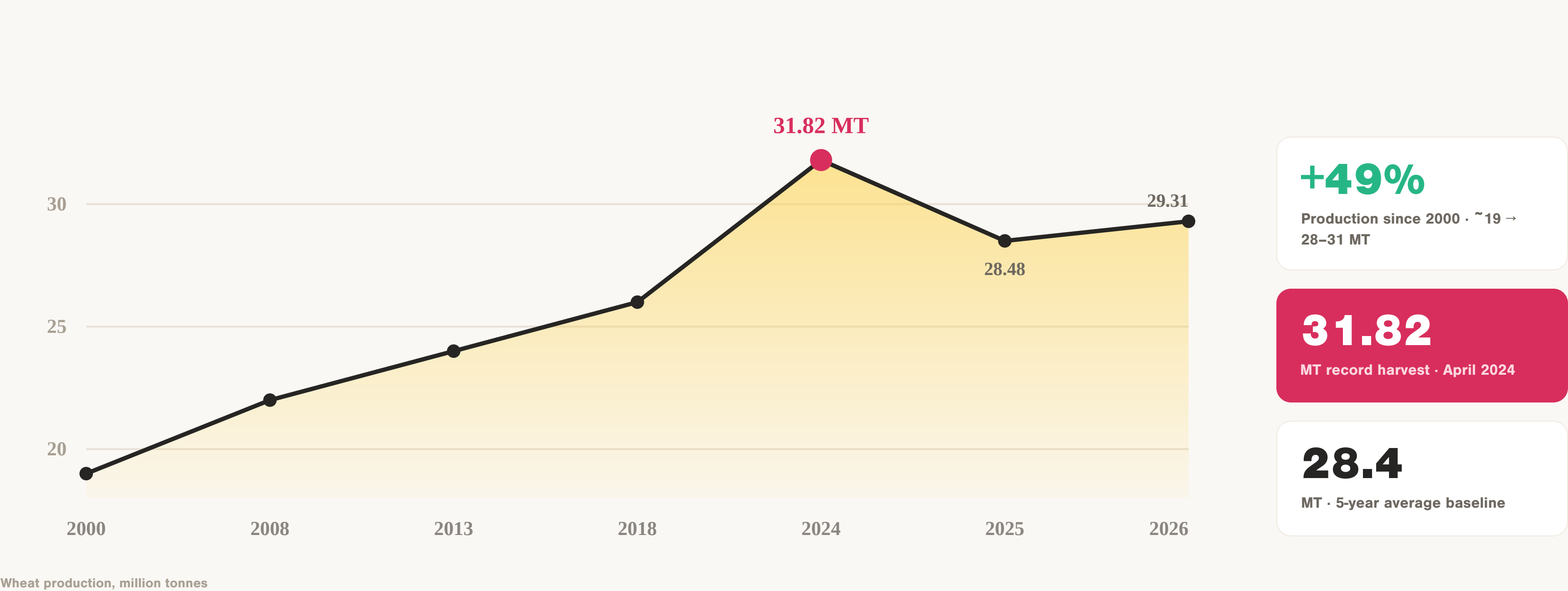
per capita / year —
highest globally



WHEAT FIELD · RABI HARVEST

A 25-Year Production Record

Wheat has been Pakistan's most reliable performer, with steady gains for two decades.



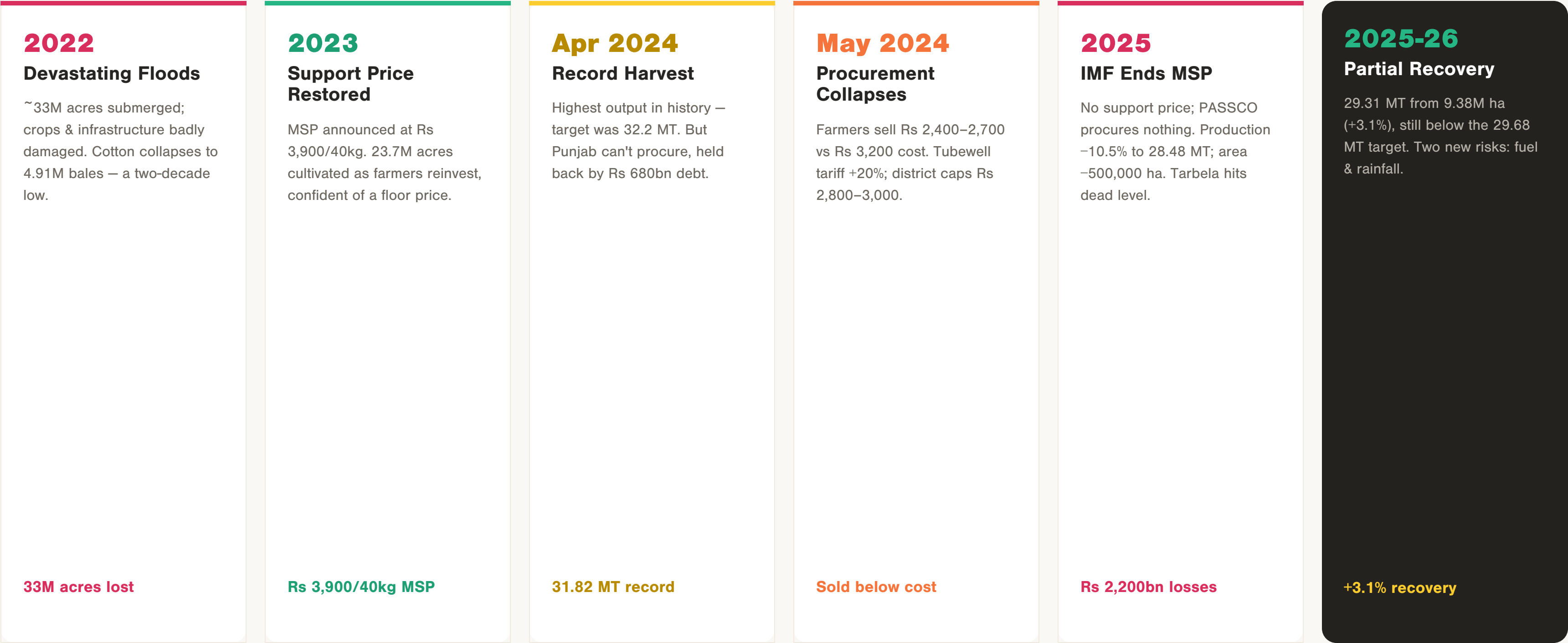
The Numbers Behind the Gains

Steady improvement across every metric, driven by better seed varieties, inputs, and expanding area.



The Policy–Climate Spiral

Four years in which price policy and weather compounded into farmer losses of Rs 2,200 billion.



Rabi 2025-2026: Two Compounding Crises

The current season faces a structural fuel shock and an unprecedented rainfall anomaly — both landing at harvest.

RISK 01

Fuel Price Shock

+77% diesel surge
Rs 258 → Rs 458 /
litre

- › Production cost **Rs 2,500 → Rs 4,000/acre** (PIDE)
- › Custom-hire (combine, tractor) costs up sharply
- › Tubewell irrigation more expensive per acre
- › **Structural** — Iran war, won't revert to baseline

Net effect — cost of production up ~60% per acre; energy costs now baked into the baseline.

RISK 02

Rainfall Anomaly in Harvest

100–350% above-normal
Mar–Apr harvest window

- › **Quality** — sprouting & mould in standing crop
- › **Lodging** — plants flattened, mechanical harvest blocked
- › **Compressed window** — all crop hits market at once
- › **Distress sales** before the procurement system opened

Net effect — a price crash during harvest, then a sharp post-harvest spike as stocks tightened.

The Wheat Paradox

Despite low prices and no support price, wheat acreage in Punjab still **rose slightly** in 2025-26. The reason: farmers have no viable alternative.

- Low-risk, low-input
- Climate-resilient
- Established markets
- Straw for livestock

Acreage rarely falls more than 3–5% — but prolonged losses could trigger a shift. Even a 5% decline would force costly imports.

NATIONAL DEMAND	EXPECTED SUPPLY 25-26
31 MT	29.31 MT

PROCUREMENT · THE 2025-26 STORY

- 01 Punjab **abandoned direct procurement** — Rs 680bn debt + Rs 110bn annual interest.
- 02 New private system targeted **3 MT at Rs 3,500/40kg**.
- 03 It launched **after 40% was harvested**. Prices fell to Rs 3,000 — distress sales.
- 04 Prices later **rebounded above Rs 3,500** as yields disappointed and stocks tightened.

PRICE JOURNEY · RS / 40KG



COTTON

From 'White Gold' to net importer — the foundation of Pakistan's textile exports.

50–60%

of export earnings — textile dependency

90%

small farmers · <5 hectares

–50%

production since 2004-05 peak



COTTON BOLLS · WHITE GOLD

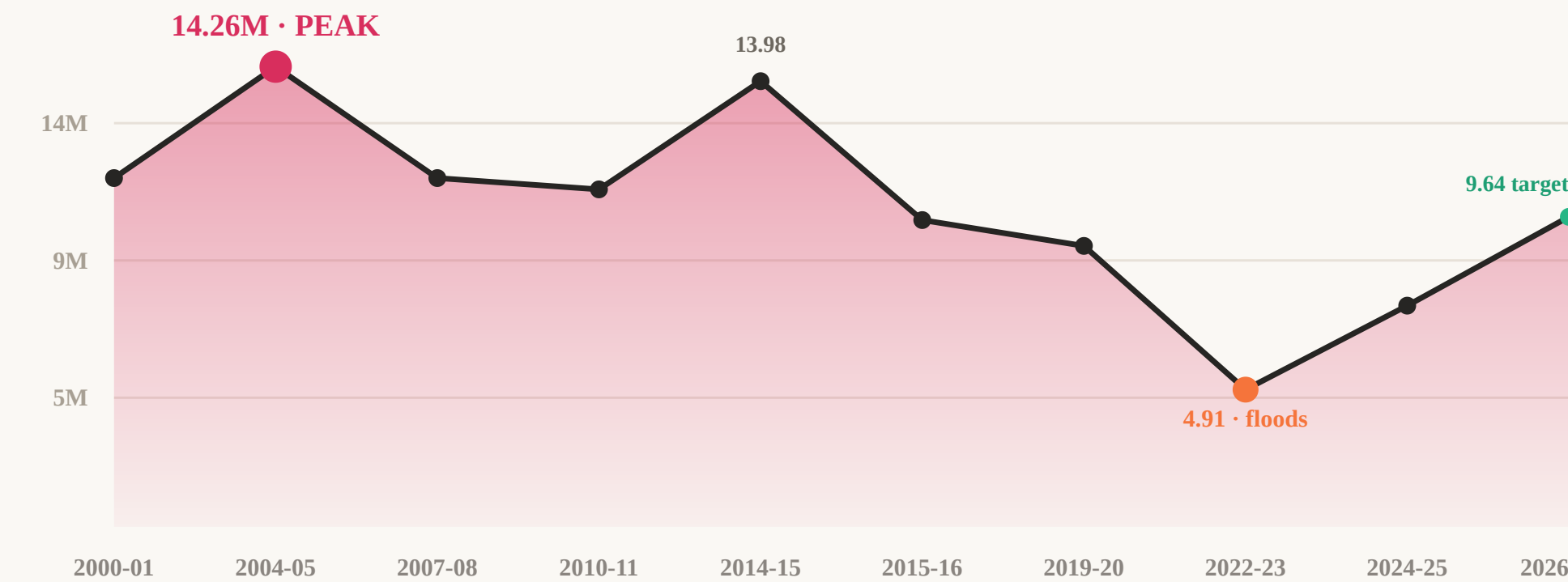
~1,200 km cotton belt along the Indus (27°N–35°N)

Punjab 70% · Sindh 30% of production

Sown Apr–Jun · harvested Aug–Dec

The Long-Run Decline

A quarter-century trend: from a record 2004-05 harvest to a structural net importer.



Cotton production, million bales · 2000-01 to 2025-26 target

-50%

production since the 2004-05 peak of 14.26M bales

4th → 9th–10th

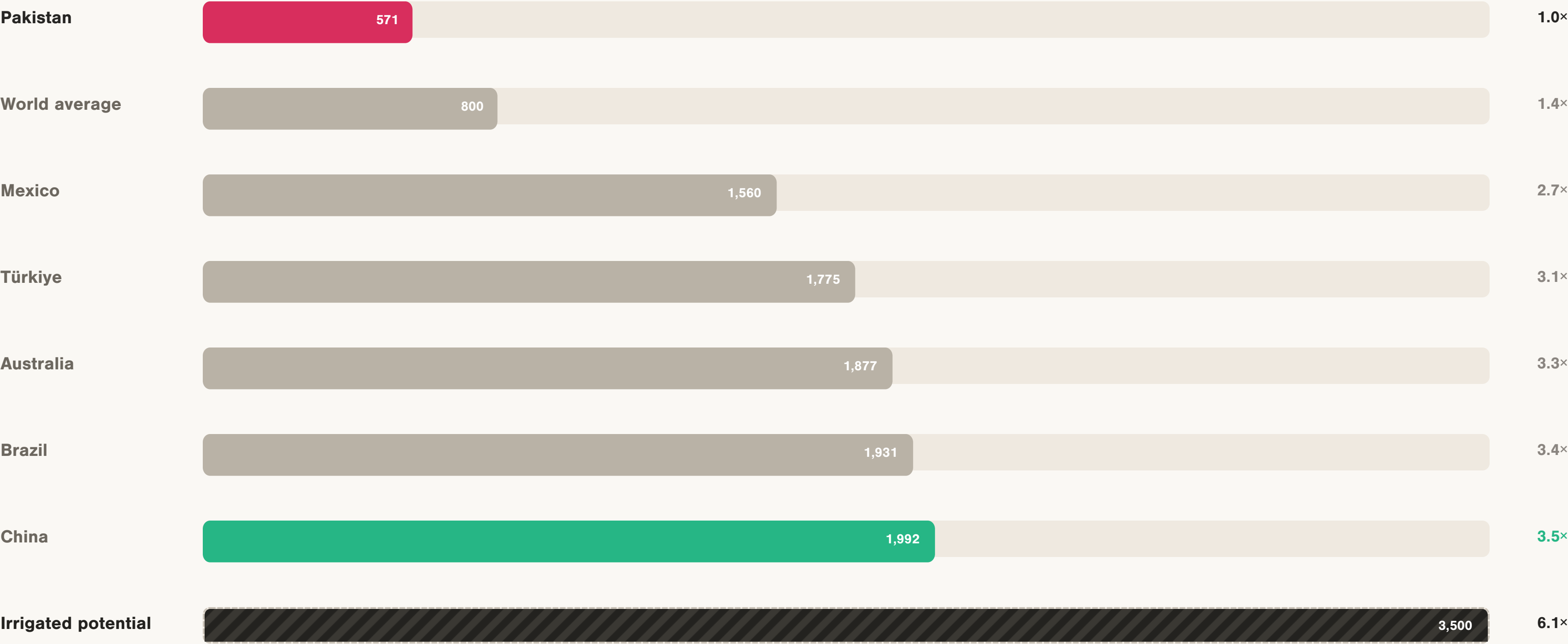
global producer ranking (PIDE)

13–15M

bales needed to run textile at capacity

The Yield Gap: Pakistan vs. the World

One of the largest underperformance gaps in global agriculture for an irrigated crop.



1 Bt Seed Failure

Pakistan adopted first-gen Cry1Ac Bt in 2010 — while the world moved to 2- & 3-gene tech. By 2019-20, >80% pink bollworm hit the top zones.

No functioning commercial seed market (unlike maize's Pioneer/Syngenta). Top varieties **FH-142 (25%)** and **NIYAB-878 (17%)** aren't climate-resilient.

59% use uncertified, genetically degraded seed

86% cite certified seed as a rival-crop edge

2025 hybrid seed import liberalisation — a step forward, but late.

2 Climate & Pest Stress

South Punjab's belt regularly hits 40°C+ during flowering. Heat cuts yields **and** Bt toxin expression — a double blow.

Whitefly (*Bemisia tabaci*) has been national since 2011. Farmers spray **18–20× per acre** vs the recommended 5–6.

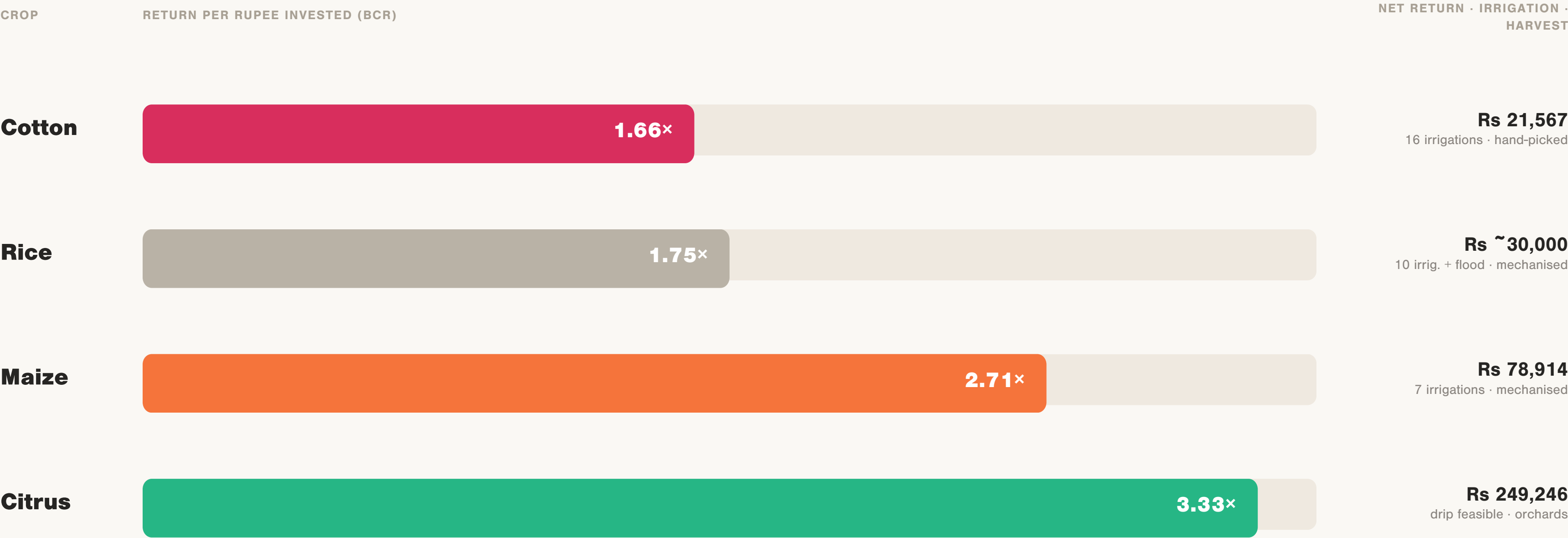
1.64% yield loss per +1°C (Li et al., 2021)

24% loss per +1°C at flowering in Bt cotton

100% of farmers report whitefly attack

Competing Crops Win

When alternatives deliver 2–3× the return per rupee, rational farmers switch. The benefit-cost ratio tells the story.



Cotton sits at the bottom — citrus returns 2× more per rupee and Rs 227,000 more per acre. Rational farmers switch.

4 Sugarcane Displacement

Sugar-mill licensing (2012–2018) pulled land from cotton in south Punjab. Guaranteed offtake made cane the low-risk choice.

RAHIM YAR KHAN · ONE DISTRICT

Sugarcane area	+625%
Cotton area (800K → <300K acres)	–27%
Sugar mills in RYK alone	6 of 47

Counter-narrative: mill licensing & Bt-resistance correlate with the crash far more tightly than any climate index — Ashraf et al. (2024).

5 Pesticide & Institutional Failure

Public extension has withdrawn; private 'advisory' is sales-driven. Dealer incentives and product quality both fail farmers.

70% of pesticide imports bypass Form-1 registration

3+ yrs Form-1 registration vs 90 days in Australia

50% of pesticide sprayed is wasted — poor technique

Counterfeit & adulterated products confirmed in Punjab & Sindh cotton belt.

The Import Gap Today

Domestic supply now falls structurally short of what the textile industry needs to run.



Cotton bales, to run textile capacity. Source: Ministry of Finance

~7.2M

bales · estimated 2026 import requirement

4th→9th

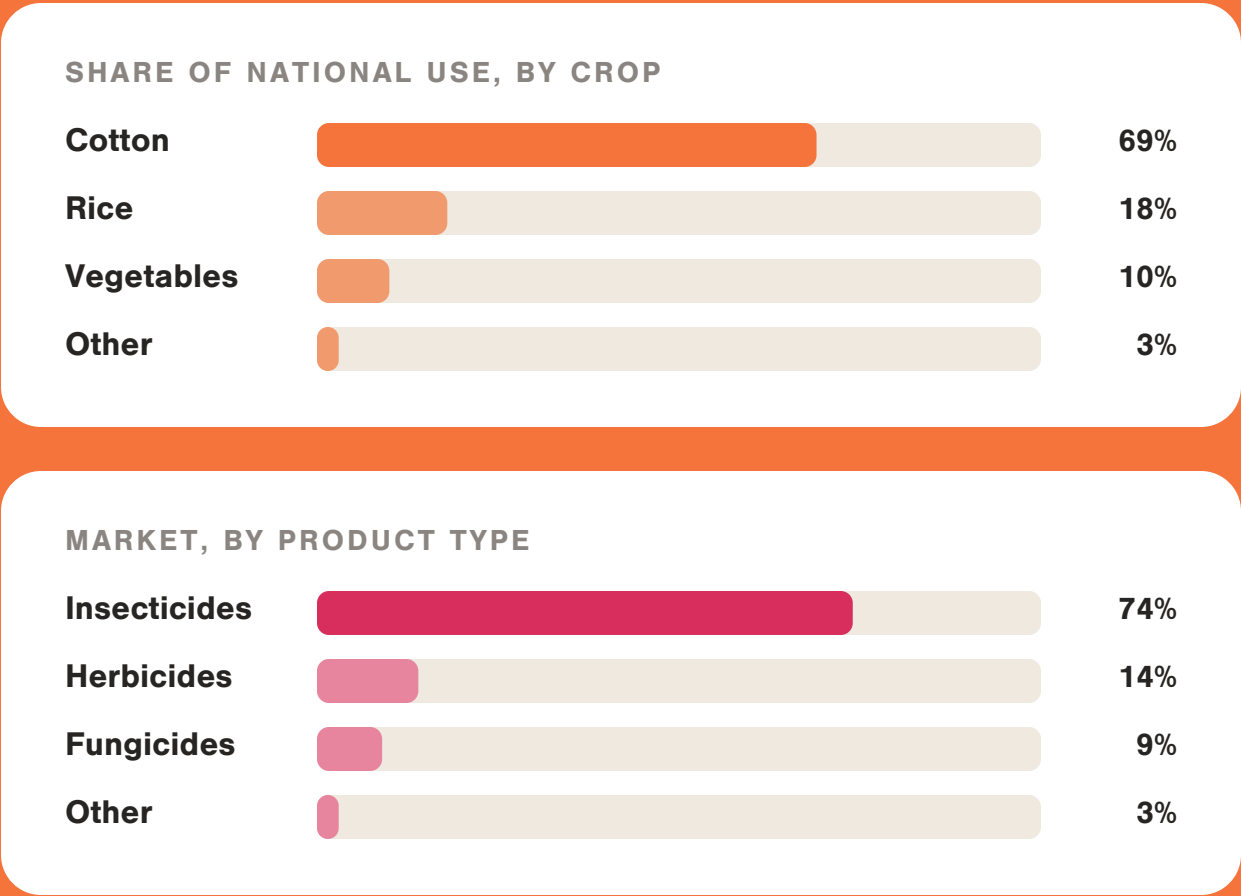
global producer ranking has slipped (PIDE)

50–60%

of national export earnings ride on the textile sector this cotton feeds

The Pesticide Crisis

100% imported. No meaningful domestic manufacturing — ~80% arrives as technical-grade active ingredient, 20% as finished product.



Regulation, Quality & Overuse

01 Counterfeit & Adulterated Products

Fake pesticides concentrate in Punjab & Sindh cotton areas; repacking is the weak point. FIA raids confirm scale, but weak prosecution lets offenders escape.

02 Registration Bottleneck (Form-1)

Only 30% use proper Form-1; 70% bypass it. It needs 17+ documents and 3+ years — versus 90 days in Australia and 120–180 in the EU.

03 Climate Mismatch in Imports

Products developed for temperate zones underperform in Pakistan's arid belts — driving overuse, resistance, and discouraging local R&D.

04 The Two-Year Shelf-Life Rule

An APTAC decision — not law — caps shelf life at two years. Many formulations last 3–5, forcing premature disposal and needless FX pressure.

05 Dealer-Driven Overuse

Weak extension pushes farmers onto sales-driven dealer advice. They spray 18–20× per acre vs 5–6 recommended; ~50% is wasted.

Health, Capacity & Governance

- 06

Occupational Health Risks

No protective equipment or training. Links to non-Hodgkin lymphoma, leukemia, bladder cancer. Groundwater contamination confirmed in the cotton belt.
- 07

High Entry Barriers to Local Manufacturing

Heavy capital, skilled chemists & toxicologists, and costly multi-season trials. No tax relief, duty exemptions, or PPP incentives exist.
- 08

Weak Testing Infrastructure

Federal & provincial labs lack equipment, staff, and budgets — creating bottlenecks that let substandard products reach farmers.
- 09

Post-Devolution Regulatory Ambiguity

After the 18th Amendment, Punjab's 2012 law created dual registration — overlapping compliance, litigation delays, and jurisdictional confusion.
- 10

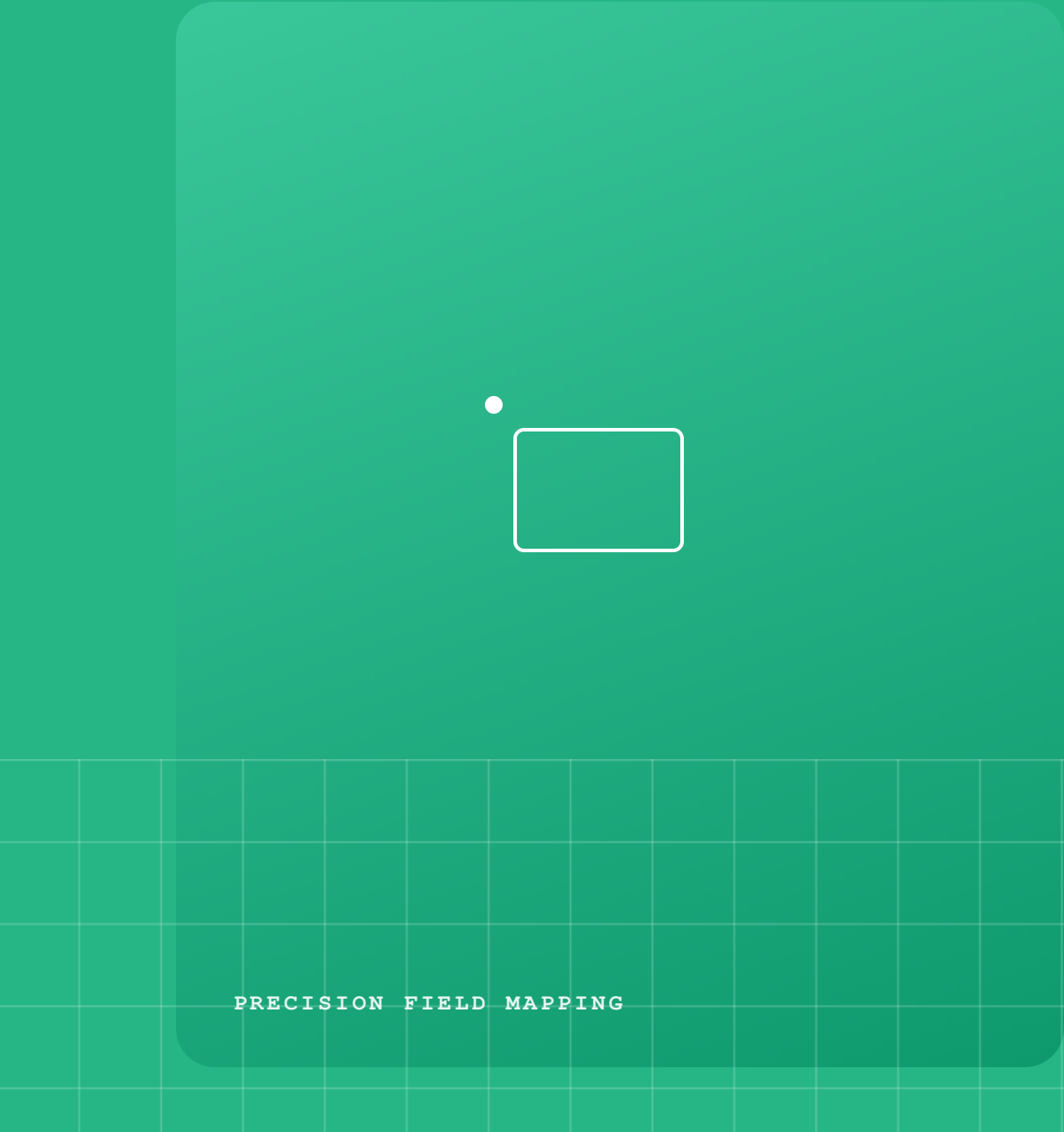
Sindh's Legal Enforcement Gap

Inspectors lack legal support — filing FIRs and countering defences without counsel — leading to dismissals and minimal penalties.

Precision Agriculture

The technology answer to dealer-driven overuse, thin margins, and information asymmetry.

A farmer can't control unit economics, policy, or climate. But how they use inputs on their own land — **that is in their hands.**



Targeted, Data-Driven Application

A drone-based precision-ag company replacing blanket, input-heavy methods — over 600,000 acres served cumulatively since 2021.

ACRES
SERVED

600K+

cumulative since
2021

COVERAGE
SPEED

10×

faster vs conventional
spraying

WATER
SAVINGS

90–95%

vs ground spray
equipment

ADDRESSABLE
MARKET

74M

total agri acres in
Pakistan

Four Services, One Principle

01 Field Mapping

Aerial imaging to monitor crop health, spot problem areas, and guide irrigation & fertiliser — replacing the inspection walk smallholders can't do systematically.

Earlier detection, targeted response

02 Precision Spraying

Even coverage with far less waste, labour, and human exposure. Directly counters dealer-driven overuse — application becomes visible and accountable.

10× faster · 90–95% less water

03 Solid Spreading

Uniform drone distribution of fertiliser, seed, and granular nutrients — replacing broadcast methods that waste inputs through uneven spread.

Even distribution, less input waste

04 Orchard Spraying

Specialised application for tall, dense fruit trees where ground equipment can't reach — extending precision ag into higher-value horticulture.

Opens precision ag to horticulture

Kharif 2026 Outlook

Targets, risks, and what must go right for the season ahead.

9.64M	67.45	+19%	3
bale cotton target	MAF water availability	agricultural credit growth	downside risks to watch

Government Production Targets

Cotton 9.64M bales target · 7.08M actual 24-25 Gap ~2.56M; sector needs 13–15M total	Rice 9.17 MT target · 9.72 actual 24-25 Achievable; depends on flood conditions	Maize 9.77 MT target · ~9.0 actual 24-25 Achievable with a normal monsoon	Sugarcane 80.3 MT target · 84.2 actual 24-25 Set below prior year — cotton zoning push
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67.45

MAF Water Availability

Sufficient for irrigation — if the monsoon is normal

Rs 3,062bn

Agricultural Credit

+19% vs FY2025 (Ministry of Finance)

Three Downside Risks

RISK 01

Diesel Structurally Embedded

Rs 458/litre

Not a spike — the Iran war baked elevated energy costs into the baseline. Cotton, with 16 tubewell irrigations/season, is most exposed.

Urea demand 6.5–7.0 MT · DAP 1.2–1.5 MT, with ~60% used in Kharif.

RISK 02

Monsoon Unpredictability

4.91M

A flood year like 2022 brought cotton to 4.91M bales, devastating both crops. Cotton is more heat- and water-timing-sensitive than rice.

Climate uncertainty is non-diversifiable at the national level.

RISK 03

Fertiliser Supply Disruption

~60%

Of DAP is consumed in one season, making peak Kharif the highest-risk window. Hormuz tensions already threaten fertiliser production.

Regional conflict + global supply stress = potential Q3–Q4 shortages.

Sources & Interviews

DATA & RESEARCH

PBS Crop Reporting Service

MNFSR

USDA FAS

PIDE

FAO GIEWS

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PCCA

APTMA

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INTERVIEWS

Dr. Inayat Ullah

PIDE – Chief of Research, CACCRE

Dr. Waqar Ahmad

Agriculture Expert & Journalist

Dr. Abid Niazi

Ayub Agricultural Research Institute, FSD

Dr. Jahanzaib

Principal Scientist, Cotton Section, AARI FSD

Ahmed Bilal

Sapphire Farm Services

Ghasharib Shoukat

Pakistan Agriculture Research

EPISODE 01 · SUMMARY

Wheat, Cotton & the Road Ahead

Three lenses — unit economics, government policy, and climate — across the two crops that anchor Pakistan's food security and export earnings.

Unit Economics

Government Policy

Climate