

Reviving Pakistan's Agriculture Sector, Challenges & Solutions

OUTLINE

1) Introduction

Thesis Statement:

The agriculture sector of Pakistan, which is a vital part of its economy, is facing significant challenges owing to climate change, lack of research and adaptation, policy holes, and lack of tech adoption. The solution lie in climate adaptation, research-oriented policy formulation and tech adoption at the grassroots level on priority basis.

2) The urgent need to revive Pakistan's agriculture sector

3) A look at dismal performance of the sector using Economic Survey (2025)

4) Current Challenges

a) climate change and poor adaptation efforts

Case in point: Floods of 2022

b) Lack of focus on agricultural research

Case in point: Research budget in Budget FY 2025-26

c) Broad-based subsidies

Case in point: Populist subsidies of budget FY 2024-25

d) Lack of crop and livestock insurance

Case in point: Loss of wheat crop during floods of 2022.

e) Bans on export leading to price volatility and economic losses

Case in point: Export ban on maize crop in 2023.

f) Inefficient water usage ~~and~~

g) Poor crop water productivity

Case in point: crop water productivity of rice

h) Resistance to tech adoption

5) Solutions to Revive Agriculture Sector

a) Promoting production and use of climate resistant seeds

Case in point: Supporting and financing pilot projects at National Agriculture Research Council.

b) Allocating 2% of Agricultural budget for research focus

c) Using subsidies to target problematic areas.

Case in point: fertilizer subsidies for cotton bumper crop.

d) Crop and Livestock insurance
Case in point: Initiatives under FY25-26 budget need to be expanded.

e) Aligning export policies with national requirements.

f) Ensuring efficient water usage

g) Incorporating use of AI in agricultural systems

h) Incentivizing the use of technology

Case in point: Use the incentives of budget of FY24-25 as a guide.

6) Conclusion:

Pakistan is the fifth largest producer of sugarcane, cotton and milk worldwide. However, it risks losing these productivity credentials due to the issues plaguing the agriculture sector. Only this year, it has been reported that the production of exportable cotton bales had reduced from fourteen billion bales to just four billion bales (Pakistan Agriculture Council, 2025).

The story has been similar for all major crops and sectors of Pakistani

agriculture. A closer look at the dismal performance of the entire sector reveals several issues and problems. At the forefront is the climate change and failure of the system to adapt. Then there is lack of agri-focused research. The policies adopted to cater to the problems have mostly been of cosmetic nature ranging from broad-based subsidies to myopic export and import bans. On part of the farmers, the issues are inefficient water usage and resistance or reluctance to adoption of technological solutions. The solutions to these agriculture sector woes ~~it~~ lie, categorically, in local production and usage of resistant seeds. Allocating a small chunk of agricultural budget for agri-research and using targetted subsidies would be positive steps on part of the government. Providing insurance to agriculturists and aligning policies for import and export on prevailing productivity conditions would also be amazing additions. Government, researchers and farmers can also collaborate to ensure efficient water

usage and incorporate AI driven technological solutions into the farming systems to enhance productivity. The agriculture sector of Pakistan, which is a vital part of its economy, is facing significant challenges owing to climate change, lack of research and adaption, policy holes, and lack of tech adoption. The solutions lie in climate adaptation, research-oriented policy formulation and tech adoption at the grassroots level, on priority basis.

The agriculture sector of Pakistan employs forty percent of its workforce and contributes twenty percent to its GDP. These are big numbers that indicate the vitality of agri-sector for Pakistan's economy and these numbers need to be sustained — even increased with the increasing population of Pakistan. For many years, this sector has been marred with difficulties and losses. The governmental policies so far have been cosmetic in nature lacking grassroots changes. And so, the sector has failed to revive in the real sense of term. Take

cotton production for example. The government in the FY 2023-24 provided incentives like subsidized nitrogen and phosphorus fertilizers to produce a bumper crop of cotton, and so it did. Upon discontinuation of the policy **8.9% decline in cotton** production this year. This clearly indicates that the sector needs to be revived to ensure long-term and consistent productivity.

The official indicators from government provided reports clearly indicate the worrisome condition that the agriculture sector is currently facing. Let's take a look at numbers provided by Economic Survey of Pakistan **FY 24-25**. According to it the agriculture sector has shown growth of **0.54%**; however, the contribution of this sector in GDP has seen reduction. Major crops like wheat have shown decreased productivity by **8.9%**, cotton by **30.7%** and rice by **1.4%**. According to Pakistan Cotton Ginnery Association (PCGA), the practice of mixing high quality bales with low quality ones

is on the rise which is hurting Pakistan's export quality cotton bales and decreasing their demand in the international market.

A cursory look at the woes of agriculture sector reveals drastic climate change and poor adaptation efforts on part of Pakistan. These climate change impacts are further damaging what is left of the crops growing in Pakistan. Every year farmers sow crops in the hopes of getting a good yield and every year their hopes are ruined by rain spells and flash floods that follow. For instance, consider the flood of 2022, that ravaged four million acres of standing crops (NDMA, 2022). This is not the case with the year 2022, the same has been happening for several past years.

The lack of focus on agriculture research is another big cause of the dilemma that this sector is facing right now. Continued research is the backbone

of growth and adaptation of any sector of economic importance and cannot be ignored at all. Unfortunately in Pakistan, this has not been a focus area. According to Agriculture Engineer Ali Ahmad Syal, a country should spend at least 2 percent of budget of agri-sector on research and innovation. In the current budget, however, this budget has seen a sharp decline (Federal Budget for FY 2025-26). Decisions like these explain why Pakistan's agriculture has been stuck in a loop of recessions and failures.

Broad-based subsidies is yet another factor that's hurting the sector. These subsidies often serve the interests of large agriculturists but do little to treat the woes of small farmers. Consider the initiative taken under the last year's budget as an example - That budget offered ~~subsidies~~ duty exemption on import of threshers, harvesters and seeders and other tax breaks for agro-based industries. All of that

would have been beneficial to large and mid-scale farmers but did little to lower the input cost of small farmers.

Another big issue is the lack of insurance incentives for agriculturists. If provided, such insurance incentives can protect agriculturists from economic losses incurred during natural calamities. However, in Pakistan crop and livestock insurance has ^{not} been made available. It was the result of this that Pakistani agriculture faced the loss of two million acres of wheat and affected farmers were not helped in the aftermath of those floods. (Economic Survey of Pakistan, FY 2022-23). Given the increasing frequency of agricultural losses each year, insurance is a must for Pakistan's agriculture.

Unnecessary bans on import and export of crops is also hampering this sector's growth. The government often imposes import or export bans

without considering the fact that their untimely decisions could harm the farmers. Import bans often lead to soaring prices of staple grains while export bans lead to price drops for surplus crops and economic losses for farmers who are unable to recover their input cost or earn any profit. In 2023, the government placed a ban on export of maize which led to economic losses for the growers following a bumper crop of maize. Bans like these should always be placed after careful deliberation.

Inefficient water usage is yet another challenge. Most of Pakistan's land is still irrigated via flood irrigation method. In today's age, such a method is not only wasteful but also quite expensive, given the costs of electricity used, canals dug and the equipment employed. It is also pertinent to note that the canal system of Pakistan is several decades old and has become highly inefficient. This inefficiency cause productivity

losses to the farmers in the long run and so it can not be ignored. But despite these issues, we see reluctance in Pakistani farmers when it comes to adopting new, precise watering methods. That must change.

Low crop water productivity is another factor affecting the agricultural productivity. Crop water productivity is a measure of amount of crop produced using a cubic meter of water. In Pakistan, that value is low for almost all crops due to the fact that soil in Pakistan is hardly able to retain enough water long enough for plants to uptake it. Take rice crop for example. Its crop water productivity is 0.45 Kg/m^3 of water — far below the average of 1 Kg/m^3 for the South Asian Region (Pakistan Agricultural Council). Excessive tilling and other farming methods that damage natural soil structure are the culprits in this case.

When it comes to tech

adoption is another reason why this sector is facing hurdles and failing to adapt to the changing environmental and economic conditions. It is the high installation cost, additional costs associated with new irrigation methods and general lack of awareness among majority of the farmers that's deterring them from seeking technological solutions on their farms. According to Agriculture Engineer, Ali Ahmad Sial, the lack of government's focus on incentivizing new irrigation methods and creating awareness about these methods is the biggest deterrent in terms of tech adoption in Pakistan's farming sector.

When it comes to finding solutions to the challenges of agriculture sector and reviving its past glory, it is pertinent to mention that the solutions are numerous, it is the will of the government and the effort of public sector ^{that} can determine how well these solutions are adopted. The first step that can be taken in the face of climate change

is the production and widespread use of seeds that are resistant to harsh conditions like salinity, draughts and water logging. Government always offers subsidized access to such seeds but they are often for a particular crop or two. In an era where climate is affecting the productivity of all crops, we need resistant seeds for all crops too. Moreover, the production of these seeds should be done at local level to ensure their cheap availability ~~at~~ in sufficient quantities. National Agriculture Research Center (NARC) has piloted several projects of this kind. The government should provide funds to upscale such projects.

Besides promoting local production of high quality seeds, the government can also help agriculture sector by allocating 2% of out of agriculture budget for research and innovation. Several accredited research institutes are present in Pakistan, especially in Punjab and Sindh; however they are always facing financial

issues. Disbursing funds to these institutes can help them develop high yield cultivars, develop disease resistant seeds and develop hybrid plants that meet nutritional needs of the populace while also being cheap. According to FAO's World Food Summit, lack of economic incentives for research and innovation is one of the leading causes of agricultural decline in developing countries. If Pakistan wants to reverse this trend, it must focus on research and innovation.

Another target area for improvement is the use of targeted subsidies for problematic areas. These subsidies can ~~allow~~ help reduce the input cost of crops that are input intensive. This can encourage their plantation among the farmers too. Consider cotton crop for instance. The productivity of this crop has shown a decrease of 30% in this year compared to the last year (Economic Survey of Pakistan, 2025). To produce a bumper crop next year, the government has offered subsidy on

fertilizers specifically for cotton crop (Federal Budget -, Finance Division, 2025-26). Initiative like these for other crops and livestock issues can be transformation.

The introduction of crop and livestock insurance can also be a welcome step. Every year, in Pakistan, farmers incur losses when their ready crops are destroyed by heavy rainfalls and flood. Extreme heatwaves and floods damage livestock too. And yet, there is nothing to provide economic relief to those farmers to cover these losses. Introduction of insurance can be a solid step to cover such losses. In a welcome step, the government has introduced crop and livestock insurance under this year's budget (Federal Budget, Finance Division, 2025-26). Expansion and continuation of this initiative in future budgets will play a huge role in revival of agriculture sector.

technology yet another area of improvement. This can involve the use of drip irrigation, precision watering and drone spraying tech. The current ^{water} usage pattern in Pakistan is extremely wasteful and doesn't reflect the realities of today's age. What Pakistan strongly needs is a complete overhaul of these usage methods and switch to sustainable ones. According to agriculturist and farmer, Ahmad Hyat Bandhara, Pakistan's agriculture can be revived through adoption of water-efficient irrigation methods. This change needs to be made on priority basis before climate change completely ravages this sector.

Incorporating the use of AI driven solutions will also be a monumental shift. These solutions can allow for efficient use of water based on areas that need it the most. Moreover, they can provide valuable information to the farmers regarding best sowing times, weather changes, pest attacks and soil humidity changes. The trials

and pilot studies so far have revealed that AI has the potential to increase productivity by 70%. (Artificial Intelligence comes to farming in India, BBC, 2024). The deployment of same techniques to Pakistani agriculture can produce dramatic results too.

One of the main reasons of reluctance in adoption of technology is high costs involved and lack of government incentives. However, if the government incentivizes the adoption of technology, its adoption can be spurred. These incentives should attract small and middle scale farmers in order to change the way they see agriculture systems. These ~~sub~~incentives should cover solarization of tube wells, adoption of AI-based technology and use of IT services and weather data to time plantation and irrigation or harvesting of crops. Federal scheme that offered duty free import of combined harvesters and Punjab Government's Green Tractor scheme are exemplary

precedents in this regard. (Agro Excellence Farms, 2025). Incentives like these need to be emulated in other provinces as well.

The agriculture sector of Pakistan is facing a downward trend for decades now, and while efforts have been made to reverse this trend, none of the efforts have come to fruition. It can be seen clearly that the challenges in this sector are multifaceted, ranging from myopic policy making to wasteful water usage and from climate change impacts to public reluctance to innovate. Since broad-ranging issues require broad ranging solutions, the agriculture sector also requires ^{us} to adopt a revival approach that ~~is~~ addresses governmental policy making, public reluctance to tech adoption and ~~the~~ spurs climate change adaptation. In summation, the answer to the revival of Pakistan's agriculture lies in innovation and effective action both on part of government and the agricultural community.