

ISSUES AND SOLUTIONS OF THE AGRICULTURE SECTOR OF PAKISTAN TO INCREASE PRODUCTIVITY

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Abstract: Agriculture is an important part of Pakistan's economy. It makes up a large part of the country's GDP, generates employment, ensures food security, and helps many people make a living. About 38.5% of the people who work in rural areas rely on this sector. There are a lot of problems in the industry, such as a lack of water, a growing population, traditional farming methods, a shift in labor from the country to urban areas, and an uneven distribution of canal water systems. The government needs to take the lead in figuring out and fixing the serious problems in the farming sector, such as giving farmers more help, bringing in new technologies and policies, and building more dams. Pakistan's economy depends extensively on the country's farm industry. The biggest problems are the lack of water, the lack of modern farming methods, the difficulty in getting credit, and the lack of infrastructure. To deal with these problems, the paper suggests increasing access to credit through micro-finance, developing modern farming methods, giving farmers access to markets, and improving irrigation and other infrastructure; by putting these ideas into action, Pakistan's agriculture industry can become more productive, and help the country's economy grow.

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Introduction

Pakistan has a lot of lands that can be used for farming because it has a lot of green, fertile fields. Agriculture is the country's main source of income. At the time of freedom, 50 to 51% of GDP came from farming. Now, the field adds 18.5% to the annual GDP. Out of 79.6 million hectares of land, only 22.1 million hectares are used for agriculture, 23.3 million hectares of land are used for farming and 4.6 million are forested. Pakistan has alluvial areas that are good for farming and all four seasons. Pakistan's irrigation system is known worldwide, and about 80% of the farmed land depends on it (Latif, 2007). Not only that, but many other businesses get their raw materials from agriculture. Pakistan is one of the top ten countries that make the most wheat, rice, corn, and cotton. Major crops like wheat, rice, cotton, and sugarcane are responsible for 4.9 percent of the GDP growth, while smaller crops are responsible for 2.1 percent (Rehman et al., 2015). The country is also well-known for making oranges and dates. The rise of agriculture is also helped by livestock, fishing, and forestry (Jatoi, 2020). Pakistan's agricultural sector gets 60.5% of its income from animals, 2.1% from fisheries, and 2.1% from forestry (Ashfaq et al., 2020). Pakistan Bureau of Statistics, Labour force survey 2017-18, says that 39% of the working population is employed in the

agriculture industry. Only 10% of water is used for industrial, household, and industrial uses. The other 90% is used for agricultural production (Butts, 1997). Even though the country's farmland is growing quickly, there is a big gap between what people want and what they can get. Pakistan has a semi-industrialized economy that works well with its farm sector. Still, Pakistan's farmland is becoming less productive, and the country has problems with food security. WHO, UNICEF and FAO reports say that 20.3% of the people in Pakistan are malnourished. The most important thing right now is to solve problems with food security. High water use by the sector also makes it hard to get enough water. In the coming years, the country will have trouble getting enough water (Iqbal and Iqbal, 2015). Pakistan has 1000 cubic meters of water per person. Countries with less than 1000 cubic meters per person are called "water scarce" (Afzal, 2009). Most of the land in Pakistan is not usable. To solve problems with food security, it is important to use these empty areas. The number of people living in Pakistan is growing faster than most other third-world countries. Because there are more people, there is less water per person. Also, the growing methods used in the past don't produce enough food to meet the needs. Ultimately, this is

causing problems with food security (Pingali and Rosegrant, 1995).

Self-reliance and the use of old, traditional ways are two of the biggest things that hurt the productivity of agriculture. Bandyopadhyay and Perveen (2003) say that all the problems in the agriculture sector can be solved by a move from self-reliance to making money. Pakistan's agriculture-based economy is getting close to a critical point because the population is growing, and there isn't enough water. This whole situation affects how well crops grow. Azam and Shafique (2017) found that agricultural productivity, the economy, the lack of water, and food security are all related. If Pakistan can raise the share of its GDP from agriculture each year, all of these problems will be solved one by one. Pakistan's farming subsectors include a lot more than just growing crops. Livestock and fisheries make up a big part of them (Vojtech, 2010). In 2019–20, the productivity of livestock went up. To make animals more productive per unit, rules must be implemented. Along with cattle, poultry is an important part of the agricultural subsector. It employs 1.5 million people and is growing at a faster rate of 7.5% per year (Khurshid et al., 2021). The government needs to fix the problems in agriculture and its subsectors, such as livestock, poultry, fisheries, and forests.

Agricultural Productivity 2020-2021

Pakistan's crop cycles are mostly caused by cotton, wheat, rice, sugarcane, corn, tobacco, and mustard. Rabbi and Kharif are both times when plants grow. During 2020-21, the amount of food produced by Pakistan's farms increased by 2.77 percent. More sugar cane was made from 66.380 million tonnes to 81.009 million tonnes. The amount of rice made went up from 7.414 million tonnes to 8.419 million tonnes, and the amount of maize made went up from 7.883 million tonnes to 8.465 million tonnes. However, the amount of cotton made went down from 9.148 million bales to 7.064 million bales. A record amount of wheat was grown at an increased rate of 8.1%. The number of cotton gins went down by 15.58 percent. With 11.53 percent of GDP and a 60.07 percent share of agriculture, livestock grew by 3.06 percent. So, the success of agriculture in 2020-21 showed an overall growth of 2.77 percent. Some people think that the government's "Rabi Package" is the cause of the growth in farming. Subsidies for fertilizer and fungicides were part of the plan. From Kharif 2019 to Kharif 2020, Béné et al. (2016) found that the amount of water available dropped by 0.2%, from 65.2 MAF to 65.1 MAF. Besides Kharif and Rabi crops, which are used for farming. The two other major sub-sectors that add to the growth of agriculture are:

Fisheries

Fisheries are important to the income and food security of the country. It also gives people a way to make a living, especially those who live along the coast and brings in money from exports. In FY2020, 701,726 metric tonnes of fish were produced, while in

FY2021 only 690,600 metric tonnes were made. So, the overall amount of fish and fish products has decreased by 1.5 percent (Rehman et al., 2017).

Livestock and poultry

These two subsectors are important to Pakistan's farm sector (Watto and Muger, 2016). 11.5 percent of the GDP came from livestock, and 60.1% of the value added to the farm sector came from livestock. Gross added value increased by 3 percent, from Rs 1,461 billion in 2019-20 to Rs 1,505 billion in 2020-21 (Table 1).

Agriculture Sector	FY 2019	FY 2020	FY 2021
Agriculture	0.56	3.31	2.77
Crops	-4.96	5.54	2.47
Livestock	3.82	2.10	3.06
Forestry	7.28	3.60	1.42
Fishing	0.80	0.60	0.73

Table 1 Comparative Analysis of growth in the Agriculture sector in FY2019, 2020 and 2021 (Pakistan P. B., 2020)

ISSUES RELATED TO AGRICULTURE IN PAKISTAN

Pakistan's agriculture is having several problems that hurt productivity and, in the end, hurt the country's economy. Some things are being talked about.

Lack of water

The biggest problem in farmland is water. Pakistan used to have too much water, but now there isn't enough water in many parts of the country. River Ravi is thought to be the backbone of the farm sector because it helps 90% of the crops grow. Pakistan's population is growing so fast that it will soon hit 250 million people. The amount of water available per person will decrease because of this population increase. A big drop in food output and a 70-million-ton food shortage could also be caused by the controversy over the Balighar Dam, one of the biggest problems in the agriculture sector (Ahmad et al., 2013).

High prices for seeds and fertilizer

In Pakistan, the prices of farming tools (like fertilizers and seeds) are so high that they are not in the same range as the prices in other countries. Fertiliser prices are high because natural gas sales are increasing and fertilizer companies have a lock on the market. Price increases for fertilizer and seeds make it hard for the normal farmer to do his best work, which is another big reason for low productivity (Khan et al., 2013).

How prices are set in Pakistan

In less developed countries (LDCs) like Pakistan, government policy changes can cause prices to go down. This is often blamed as a major reason for their poor agricultural performance, measured by their low productivity and growth in agricultural productivity. People say that these distortions were kept in place for several reasons, such as to make it easy for the agricultural sector to bring in money, to keep food prices low for politically active consumers, and to

protect the industrial sector, which has a higher growth potential. In many developed countries, it is also said that the policies used in most less developed countries to move resources away from the agriculture sector and into more modern parts of the economy have the opposite effect of pricing policies (Ullah et al., 2020).

Using pesticides that are too old

The use of low-quality pesticides in farming is a big problem that hurts the environment and causes major health problems because the effects last for a long time. Even though the government said it had stopped people from using low-quality herbicides, it has been seen that people are still using old or harmful pesticides. Because there aren't enough good pesticides on the market, people are more likely to use old and low-quality ones. This is bad for Pakistan's sustainable agriculture and economic growth (Ali et al., 2017).

Not using land that could be used for farming Pakistan has the most people in any country, and the number of people living there is always growing. This rise in population affects how much food is available per person. Pakistan has a lot of empty lands that could be used for farming. (Ahmad et al., 2013) To meet food needs, the government of Pakistan has taken steps to use land in Balochistan that isn't being farmed.

Getting rid of some of the load

Long-term load shedding is one of the most dangerous things that could happen to Pakistan's farm industry. Most of the land is watered by tube wells, but they don't work because there isn't enough power. Diesel can be used instead of petrol to power the tube wells, but few people do this because diesel is so expensive (Singh et al., 2013).

Not very good seed

Low-quality seeds are a big reason crops don't grow well. Low-quality seeds make it harder for seeds to sprout and change the plant's life cycle. The low productivity in agriculture is caused by several things related to seed quality, such as a lack of or restricted access to certified seed, misinformation from seed distributors, and the use of low-quality seed (Bhutto and Bazmi, 2007).

Traditional ways of farming

Pakistan's agricultural sector isn't as productive as it could be because of how farmers have always done things. The yield from traditional ways is lower than the yield from modern methods. But it's not easy to change conventional methods into modern ones. In poor countries with few resources and small farms, it's especially hard to switch from conventional to modern methods (Reddy and Ankaiah, 2005).

Lack of direction

Most of our farmers can't read or write. They haven't been taught much about how to improve the amount of food grown. Also, the government doesn't usually set rules about the quality of seeds, fertilizers, and

other farming inputs that could lead to high yields (Usman, 2016).

Lack of research

Lack of research in agriculture is one of the most important reasons for low productivity. Many other countries have been able to increase their crop yields because they have done more study in the agriculture department. On the other hand, this could ensure that educated people get involved in agriculture, which is also a need of the hour (Farooqi et al., 2005).

Natural disasters

Because of changes in the climate, the weather in Pakistan is always changing. These changes could affect crops. Sometimes it rains when it doesn't need to, which makes the crop less productive. (Sharma et al., 2016). Drought and lack of rain are natural disasters that hurt output.

Farmers' dissatisfaction

You can't do well if you don't get the full prize for your hard work. The same is true for our farms. They don't get the full prices for their crops because a third man takes them from the farm to the market. Also, the unpredictability of market prices is another thing that makes farmers sad.

Solutions suggestions for agriculture problems:

To solve the problems listed above, the following ideas are suggested:

Scaling up with modern and advanced technology

Modern technology can be improved and scaled up to make farming more productive. A recent study on laser land and "zero tillage" technology shows that crop yield increases by about 20%. In the same way, testing of bed and furrow technology showed that it used less water and produced more crops than previous methods. Very few people in Pakistan use these technologies, which are needed to improve the output of the land. For current technology to move faster, policymakers should take steps like making sure equipment is available and showing how it works in the field. Farmers need help with money to easily get the things they need. (Liliane and Charles, 2020): Private sectors should be helped with money and know-how to make new irrigational and technical technologies in their countries.

Biotechnology in modern agriculture

Biotechnology in modern agriculture could be a key part of making crops more productive. This can be done by making crops more resistant to pests, diseases, and environmental and yield pressures (Strupczewski, 2003) For agriculture to be more productive, biotechnology and its modernization are necessary.

Building a dam and a nuclear power plant

Building the Kala Bagh dam is a good way to help farmland in the long run. Other small dams and canals, like the Greater Thal Canal, the Gomal Zam Dam, the Stapara Dam, the rising Mangla Dam, the rained channel, the Kacchi Canal, and so on, can also help solve problems. The nuclear power plant is very good at making electricity. Aslam (2016) says recent

developments with China Corporation are a good way to solve energy problems.

Reclamation and drainage

Saltiness and standing water make it hard for the ground to produce crops. Pakistan's crop production has dropped by 25% because the land is too salty. Research has shown that sugarcane and wheat lose 33% and 27% of their yields when the water table rises less than 1 m and between 1 and 2 m (Gollin, 2019) says that when the water table rises from a depth of 2-3 m to 1-2 m, 60% of cotton yields are lost, and 7% of rice yields are lost. Salty soil also makes them produce less. From 1960 to 2001, WAPDA finished 61 projects to clean up and control the salt in drainage areas of the Indus Basin. Even though they are taking care of these problems, they are still there. There is a need for the Government of Pakistan to keep helping and strengthening through the right biochemical changes and infrastructure.



Figure 1 Solutions & Recommendations

Land reforms

It seems like both large and small land holdings are inefficient and don't produce as much as they could, so there is a huge need to study and keep track of the best size farm. Then, land changes were implemented so that most farms had the right amount of land. These changes give renters and farmers reasons to use new technology and invest in their land, increasing the land's productivity. These are important to getting small farmers out of poverty and giving them more power. (Rusike and Sukume, 2006) Because these things are important for growth and increase, there needs to be political will and sincerity, a real commitment from the government, and the right laws (Figure 1).

Agricultural credit and loan services improvement

The amount of food that can be grown rises when farmers have better access to credit. Money is the most important thing to have if you want to buy better fertilizers, insecticides, seeds, pesticides, and current irrigation and farming technologies. Small farmers

don't have enough money, so expanding the spread of formal banking networks so people can get to them quickly and easily can be a good thing. Banks should make it easy to repay loans and get money out by offering rolling credit. Small farmers should be able to get loans from the government, and those who sell chemicals and fertilizers should be subject to proper checks and balances. These loan and credit options make it easier to make more things (Chhachhar et al., 2014).

Effective communication

Different communication and information methods, like radio, TV, cell phones, and the internet, are important and effective ways to get information and knowledge to farmers. When these technologies are used in other places, good things happen. Farmers should be able to get information and knowledge from radio and TV programs about agriculture. These should be written in the local or area language so farmers can understand them easily. A recent study in the district of Muzafargarh, Punjab, shows that about 91% of farmers have cell phones and that 87% of farmers get information about farming from private advisory staff. Professionals and farmers still have difficulty talking to each other, and this gap needs to be closed. This can be ensured by having irrigation and farming experts living in rural places (Conway and Barbie, 1988).

Boosting the production of high-quality seeds

If you want to make more, you need good seeds. In Pakistan, only 40% of the daily needs are met. The main and most important sources of seeds are private industry and agricultural research. Private sectors should give the right kind of financial, technical, and legal support to help improve production. There should be a strong partnership between the private sector that makes seeds and the research centers that study agriculture and biotechnology. They should support farmers in adopting good practices and make their crop and seed production more effective.

Better use of inputs and access to them

Modern farming inputs are the foundation of any agricultural revolution. These inputs include better fertilizers and seeds, crop protection, water, herbicides, machinery chemicals, and irrigation information. Crop production can be raised by making these products easier to get in Pakistan. Farmers' access to these inputs would be greatly improved if they were available on time and close to their homes, with subsidies and fair prices. This would have a hugely positive effect.

Help with pricing policies

Research has shown that farmers are sensitive to help with rates. In the past, when the government helped with pricing measures, yield growth went up. When these prices increase, the land becomes more productive by using new and better farming techniques. So, the right prices are important for growth. Also, when prices are in line with foreign prices, it gives farmers a reason to grow more crops,

which is what Fischer and Edmeades (2010) say will happen. The government should set up a good method for collecting crops so farmers can get the best pay.

Teaching farmers how to do their jobs

Their crops grow and produce more when they get the right training and education. Farmers' minds are opened to information when they get an education. Hands-on training and learning new ways to farm keep the farmer updated on new ideas. It lets farmers talk about what they've learned. As farmers' education increases production, there is a great need to give them more training and education options. Lockheed et al. (1980) say that efforts to raise awareness and daily field visits are good ways to do this.

Better control of irrigation water

Lack of water is one of the biggest problems in agriculture. Estimates say it would be between 28 MAF in 2015 and 41 MAF in 2025. The siltation process and the inefficiency of the drainage system are to blame. If the canal was fully lined with a high-efficiency irrigation system and watercourses, its efficiency could go up to 81.2%, while it is only 42% now. Along the main rivers, water isn't being given out in a fair way, which should be fixed. Now is the time to try new things. This is to improve how irrigation systems work so that they can produce more. Water use should be made more efficient by improving water management practices and agronomy with new ideas. This will require changing old policies, farming methods, and effective institutions. Pereira et al. (2002) say that drip irrigation is the best way to water plants.

Extension services and how well research works

Extension and research make agriculture more productive. So, these things need to be invested in and helped for productivity. According to research, the public sector should create and run a research program for farmers' technologies to reach their full potential. Along with the private sector, the public should participate in study programs. For a study to be more useful, it is important to have institutions, human resources, and a comprehensive policy development plan (Birkhaeuser et al., 1991). Work should be done to make these things work better.

Improved connections between agriculture training, education, and research development. It's important for better and more sustainable farming to have strong links between these three things. In the last few years, people have developed ideas for an integrated model that uses communication and information technologies for education and study in agriculture. This model is meant to reach the nexus and bridge the gap between these factors. A private-public partnership is a good way to set up inputs, advice, and services for this nexus and help it grow. This service is popular around the world. As a result, Aslam (2016) says that this nexus development is crucial for improving agricultural productivity.

Conclusions

Pakistan's economy is built on its farm industry, which is also its main source of growth. Even though it is important, it has problems like not having enough new technology, not having enough facilities, and not having good marketing strategies. To make this industry more productive, the government should focus on making technology easier to use, improving infrastructure, and making marketing strategies that work better. It should also inspire farmers to use new farming methods and better farming practices, like modern irrigation systems. By doing these things, Pakistan can ensure that agriculture is an important part of the country's economic and social growth.

Conflict of interest

The authors declared absence of conflict of interest.

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