Journal of Social Sciences Research & Policy (JSSRP)

Evaluating Agricultural Policies Introduced in the 1950s and their Impacts on Pakistan's Economy

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ISSN: 3006-6557 (Online)
ISSN: 3006-6549 (Print)

Vol. 3, **No.** 1 (2025)
Pages: 172-180

Key Words:
Agricultural Policies, 1950s, Pakistan's Economy

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Abstract: *In the year 1947 Pakistan was, in reality, an agrarian country. The share of the agriculture sector in the national GDP was explicitly greater than that of other sectors such as the manufacturing sector and services sector. In the early years, the reason for greater agriculture share in the national GDP was due to underdeveloped industrial infrastructure and lack of labour force in the services sector. To sum it up, the lack of industrial infrastructure, few areas of services and lack of technical education paved the way for the agriculture sector to grow and develop. These were certain structural factors responsible for the decent growth rate in the agriculture sector. The process of the Green Revolution has been discussed in great length. The economic and political cost in the shape of the debacle of East Pakistan and such other implications of the agricultural policies was the main rationale of this paper.*

Introduction

In 1947 Pakistan was, in reality, an agrarian country. The share of agriculture sector in the national GDP was explicitly greater than that of other sectors such as manufacturing sector and services sector. In the early years the reason of greater agriculture share in the national GDP was due to underdeveloped industrial infrastructure and lack of labour force in the services sector. To sums it up, the lack of industrial infrastructure, few areas of services and lack of technical education paved the way for the agriculture sector to grow and develop. These were certain structural factors responsible for the decent growth rate in the agriculture sector. The overall dynamics and domestic issues such as the resettling of refugees, the internal political chaos, and adverse international conditions didn't allow the government of that period to restructure the economy and give space to other sectors, too, to grow against the agriculture sector. Attempts to reconfigure the economy and explore other areas, apart from agriculture sector, such as industrial sector and services, became possible only after the initial political and economic shocks had been dealt with (Rashid & Viqar, 1984).

Because of the primacy of the agricultural sector, sustained growth of production in agriculture has been a cherished goal of Pakistan's economy throughout its history. The relative growth performance of agriculture and subsectors is summarized in Table 1.

Table 1: Growth Rates of Agriculture and Its Sub-sectors from 1949–50 to 1965

Annual Growth Rates (%)	Agriculture	Crop	Livestock	Wheat	Cotton	Cane	Rice
1950-55	0.72	2.41	4.84	4.14	2.45	0.43	1.11
1955-60	3.50	3.74	0.75	4.14	2.28	1.81	2.20
1960-65	6.30	11.80	5.65	3.36	1.95	4.66	3.98

Source: Government of Pakistan

The table allows for the derivation of two fundamental conclusions. The agricultural sector has exhibited a consistent annual growth rate of 3.27 percent over the period from 1949-1950 to 1996-1997. The growth rates of cattle, wheat, cotton, and sugarcane have all exceeded the average growth rate by a small margin. The annual growth of the crop production subsector has experienced a slight decline, whereas the growth rates of the other subsectors have surpassed the average growth rate. The second point is that the trajectory of agricultural growth has exhibited a certain level of volatility. Throughout various intervals, there have been instances of significant advancement, contrasted with periods of underperformance. The data indicates that the annual growth rate of value added by agriculture was just above 1.1 percent in the early 1950s. Following this, the growth rate escalated to 2.2 percent during the timeframe from 1954-1955 to 1959-1960 (Ghaffar, 1982). Agricultural value-added demonstrated annual growth rates of 3.78 percent during the initial half of the decade and 6.26 percent in the subsequent half, indicating that the economic expansion initiated in the 1950s persisted into the 1960s. The recorded growth rates can be linked to advancements in agricultural production, while the livestock sector has remained stable. From the early 1960s and extending into the latter part of the decade, agricultural output exhibited annual growth rates fluctuating between 4.8 and 8.2 percent, respectively. During the latter half of the 1960s, rice, wheat, cotton, and sugarcane experienced annual growth rates of 12.2%, 9.7%, 7.3%, and 7.3%, respectively. The sole crop that demonstrated a growth rate of 7.3% was sugarcane. Between the early 1970s and the early 1980s, the annual growth rate in the agricultural sector declined to a historically low level of 0.79 percent. In light of the observed increase in crop production at a rate of 0.45 percent, it is crucial to acknowledge that the outputs of rice, cotton, and sugarcane have been exhibiting a persistent decline (Stanley, 1972). The exclusion of poultry from the analysis revealed a consistent decline in the overall trajectory of the animal business. During the latter part of the 1970s, there was a notable resurgence in agricultural development, characterised by crop output and livestock growth rates surpassing 4.1 and 3.2 percent, respectively. This represents a noteworthy advancement. Since the 1980s, non-cereal livestock and crops have played a pivotal role in the advancement of the agricultural sector. The annual growth rate of the agricultural sector stood at 3.29 percent, while the growth rates for cattle and cotton exceeded this figure, reaching 4.76 percent and 6.72 percent, respectively (Stanley, 1972).

The agricultural sector experienced a growth rate of 3.29 percent. The growth rates observed in the agricultural sector and cereal crops experienced a notable decline, recorded at 2.64 percent and 2.11 percent, respectively. The period from 1984–1985 to 1989–1990 witnessed a notable increase in the output of cotton and cattle, leading to an enhanced agricultural growth rate of 4.56 percent relative to the preceding period. While wheat has experienced a slight recovery, the growth rates for sugarcane and rice remain significantly below their previous levels. Throughout the 1990s, annual growth rates declined to levels below 4.2 percent and 3.1 percent during the periods from 1989-1990 to 1994-1995 and from 1994-1995 to 1996-1997, respectively. The observed declines transpired over the course of the decade. The swift growth of the sugarcane and cattle industries significantly enhanced the agricultural landscape during the 1970s. The underwhelming performance of cotton, rice, and wheat exerted a detrimental influence on the sector (Leslie, 1972).

Government Intervention in Agriculture Sector: An Overview of the 1950s Policies

The late 1950s and early 1960s marked a pivotal moment in Pakistan's economic landscape, characterised by the introduction of significant reforms and the adoption of innovative technologies within the agricultural sector, commonly referred to as the Green Revolution. The advancements in technology within the agricultural sector, spurred by the Green Revolution, catalyzed substantial social, political, and economic changes in the country. The existing regional economic inequalities and imbalanced land allocation primarily originate from the agricultural and economic strategies enacted during the 1950s (Zadi, 1997).

The prices of agricultural commodities play a crucial role in shaping the incentives for farmers and determining their actual income levels in developing countries. In developing nations, governmental agricultural policies frequently aim to supply food to urban consumers at subsidized prices, which can have detrimental effects on rural agricultural communities. In contrast, in developed countries, agricultural sectors receive financial support sourced from taxpayer contributions. In line with trends observed in other developing economies, Pakistan has implemented interventionist strategies in its output and agricultural input markets since its inception in 1947 (Afzal, 1992).

Output Markets and Trade:

After getting its freedom, the country ran into a number of problems, such as problems with resettling people, a lack of food in places that were short on supplies, limits on taxes, and problems with the balance of payments. In both trade and local markets, the government had no choice but to get involved. The plan called for reducing imports in the industrial sector by putting duties and rules on foreign finished goods and taxing the sale of raw cotton and jute. This was done so that the local industry could get cheap raw materials. Because of this approach, the prices of produced goods in the country went up much more than global standards. Because of the import replacement plan, the exchange rate went up, which was like a tax on the agriculture industry. However, the prices of most farm products stayed much lower than world averages, and government agencies were required to buy these goods. In order to make the buying process easier, it was hard for most farming goods to move between areas. Cotton was one of the few that could. There wasn't enough food in the country in the 1950s because the farming sector wasn't working as well as it should have (Alauddin, 1975).

In the 1960s, an organised support price system was put in place by setting a price for wheat in reaction to a crisis. After this, products like rice, cotton, sugarcane, corn, potato, onion, grain, and oilseeds were seen to be added. The goal was to protect farmers from big drops in prices after the harvest. Instead of forcing people to buy things, a choice system has been put in place, which has led to prices being set higher than international standards. Despite this, the ban on exporting and transporting goods stayed in place. In the 1970s, commodity price techniques went in the opposite direction of what had been going well. Pakistan devalued the rupee against the US dollar by about 121% in 1972 to help the farming sector's terms of trade. The main reason for the big rise in the prices of farming inputs is that they are mostly imported. In addition, many changes were made to institutions and structures, such as creating state-owned businesses and taking over already-existing ones, so that the government could keep a closer eye on marketing and sales (Brown, 1978).

Input Markets:

The government has historically engaged in the markets for agricultural inputs. In the early 1950s, the government implemented measures to bolster the consumption of various agricultural products, aiming to increase their utilisation among the populace. There are two classifications of subsidies: budgeted subsidies and implicit subsidies. The initial category consists of public financial resources allocated for fertilisers, pesticides, and tube wells. The government provides support to farmers by compensating the

disparity between the costs incurred for inputs and the actual payments made. The second category is not reflected in government financial statements and encompasses power subsidies, irrigation water subsidies, and loans provided to farmers. The irrigation subsidy represents the disparity between the revenue generated from farmers through water fees and the operational and maintenance expenses associated with the canal system, excluding the investment in new equipment (Brown L. R., 1970). The disparity in interest rates between agricultural loans and non-agricultural loans is referred to as the agricultural credit subsidy. The disparity in electricity rates between agricultural and non-agricultural applications is referred to as the energy subsidy. The allocation for pesticide subsidies increased from Rs. 127 million in 1956 to Rs. 422 million by the conclusion of 1959. The figures subsequently declined, concluding at Rs. 61 million in the fiscal year 1980–81. In 1981 and 1982, the removal of pesticide support resulted in a fully liberated market. The advantages of deregulation are evident in the significant increase in pesticide usage. The seed grant was relatively modest in size and concluded in the fiscal years of 1982 to 1983. Currently, private enterprises dominate approximately 55% of the seed market, primarily via imports. The Punjab Seed Corporation and the Sindh Seed Corporation are prominent state-owned entities in the seed sector that operate at a loss, thereby deterring private investment in this domain (Chaudhry, 1982). The removal of the grant for tube wells in 1994–1995 exhibited significant regional variability. The fee structure for a 1cusec capacity reveals a variation based on geographical and environmental factors: Rs. 17,000 per unit in the non-perennial canal command area, Rs. 19,000 per unit in saline regions, and Rs. 22,000 per unit in rain-fed areas (Alauddin, 1975).

The Green Revolution: A Blessing or Curse?

The adoption of innovative high-yielding varieties (HYV) of food grains is referred to as the "Green Revolution." Between 1955 and 1992, advancements in agricultural technology associated with the Green Revolution facilitated a threefold increase in food grain production, thereby accelerating economic growth during that period. The critical aspect of the new method was the immediate utilisation of a combination of high-yield seed varieties, chemical fertilisers, and irrigation water. Consequently, affluent farmers with the financial capacity to procure essential inputs and implement them immediately may achieve greater planting density and enhanced returns per acre compared to their less affluent counterparts. The anticipated implications of this development on Pakistan's agricultural sector are significant, encompassing economic, social, and environmental dimensions. The recent technological advancement has altered the trajectory of economic growth by establishing a novel connection between inputs and outputs. The transformation also altered the dynamics of economic growth by influencing the functioning of social groups, the distribution of income, and the changes occurring in the natural environment (Zadi, 1997). While the Green Revolution did not alter land ownership, it exacerbated economic and social inequalities due to its implementation in a farming system characterised by widespread land rental arrangements. Significant landholders were attracted to the substantial returns that high-yield variety technology could offer and opted to reclaim land they had previously leased to cultivate crops on expansive farms utilizing mechanized equipment. The return of land to its original owners resulted in a reconfiguration of farm sizes, subsequently increasing the prevalence of landlessness among economically disadvantaged individuals. The proportion of large agricultural operations, defined as those exceeding 150 acres, and small-scale farms, characterised by less than 7.5 acres, has increased. Conversely, the proportion of medium-sized farms, which range from 7.5 to 25 acres, has decreased (Dorner, 1972). The rationale provided was that the reactivation of land usage adversely affected medium-sized farms to a greater extent than it did small farms. Alongside the issue of fragmentation, an increasing number of impoverished individuals were forfeiting their land as landlords sought to reclaim it. Between 1961 and 1973, data indicates that approximately 794,042

peasants transitioned to paid employment. This represents 43% of the total workforce engaged in agriculture within Pakistan (Falcon, 1970).

Following the Green Revolution, landowners began reclaiming leased properties to cultivate their own farms utilizing paid labour and capital investments, thereby accelerating the expansion of capitalist agriculture. In Pakistan, the implementation of capitalism within the agricultural sector has resulted in an increased social and economic dependency of impoverished peasants on landlords, contrasting with the trend observed in Europe where such systems fostered greater independence among the agrarian class. Landowners wielded significant social and political influence, which impacted the development of the emerging market. Large agricultural enterprises significantly influence the local entities responsible for producing farming inputs and marketing the harvested crops. As a result, individuals with limited financial resources may find themselves reliant on landlords for access to goods, financial assistance, and even the rental of water from tube wells. This indicates an increase in the bargaining power of landlords, resulting in a greater dependency of individuals on their rental arrangements. A recent study indicates that approximately 38.5% of impoverished agricultural labourers are compelled to engage in unpaid labour on their landlords' farms. The presence of asymmetric market conditions and the dynamics of power in the region result in these peasants forfeiting as much as one third of their income. In Pakistan, the Green Revolution exacerbated income disparities among individuals and intensified regional economic imbalances. The income growth in Punjab and Sindh experienced significant acceleration due to the adoption of high-yield seed varieties, which enhanced agricultural productivity and necessitated irrigation practices. Baluchistan and the North-West Frontier Province, conversely, did not witness comparable growth due to their limited irrigation resources. The disparities in income between irrigated and non-irrigated areas within the same province have increased accordingly (Faruquee, 1995).

The introduction of high-yield variety seeds resulted in a trade-off regarding genetic diversity, and their compatibility with the existing soil micro biomes proved to be suboptimal. This situation resulted in a higher propensity for encountering pest issues compared to the standard variety, consequently leading to an increased application of pesticides. The insufficient availability of soil testing tools on farms resulted in farmers frequently applying fertilisers such as DAP and Urea that were not aligned with the specific requirements of the soil. The application of inappropriate herbicides and chemical fertilisers, coupled with excessive removal of topsoil and the associated carbon loss, has exacerbated soil degradation in the years following the Green Revolution. Recent data indicates that the deterioration of land resulting from suboptimal agricultural practices during the Green Revolution significantly contributes to the decline in crop yields within Pakistan's agricultural sector (Afzal, 1992).

Mechanization of the Agriculture Sector:

The main rationale behind the Green Revolution was to revolutionize the agriculture by introducing certain new technologies, and HYS to cause immense growth in the agriculture sector. The following schemes were introduced by the government to support the Green Revolution:

The Issue of Tube-wells:

Circa 1960, the era of tube wells commenced, leading to a significant increase in the number of private farmers who undertook the excavation of irrigation wells during this period. By the mid-1960s, approximately 2 million acre-feet of irrigation water were being introduced annually, coinciding with an installation rate of 9,000 to 10,000 units per year. In addition to the private wells, several public tube wells were constructed. As of 1968, the operational count of these large wells exceeded 5,000. The alteration in seed and fertiliser utilisation marked a significant advancement in the agricultural development of West Pakistan. The agricultural sector experienced significant impacts due to the introduction of new high-yield varieties of wheat and rice. Between 1958 and 1959, wheat production

increased from 4.4 million tonnes to 6.5 million tonnes. During the agricultural years of 1968–69, rice production reached 2.1 million tonnes, surpassing the 1.4 million tonnes produced in the preceding two seasons (Ahmad, 1991). The application of inputs such as fertilisers, seeds, and water undoubtedly constituted the primary factor that altered the agricultural output function. It remains crucial to analyse the government's pricing strategy, particularly the discounts applied to nearly all purchased goods. The value of the fertiliser subsidy in the fiscal year 1957–58 exceeded 110 million rupees (Ahmad V. a., 1984). The initial issue arises from the fact that the majority of tube wells are situated in affluent, historically established districts and canal town regions of Punjab. In 1965, it was observed that Punjab accounted for 75,000 tube wells, representing 92% of the global total. Beyond Punjab, there has been limited expansion in the installation of tube wells. The challenging topography of the old NWFP and Balochistan significantly limited the accessibility of groundwater resources. The required digging depth for tube wells resulted in significant costs. The salinity of groundwater in Sindh rendered it unsuitable for agricultural purposes, resulting in the installation of only a limited number of tube wells. This plan established the foundation for discriminatory practices and the inequitable allocation of resources across various groups by previous administrations (Pasha, 1998).

Tractorization of Agriculture in Pakistan:

Tractors have been utilised and integrated into the agricultural landscape of Pakistan for an extended period. In the early 1950s, Pakistan's agricultural sector was characterised by a mere 3,500 tractors. A significant portion of these resources was allocated towards the development and remediation of agricultural wastelands. The rapid increase in population and the substantial availability of agricultural labour during the First Five Year Plan (FYP) from 1955 to 1960 resulted in a lack of emphasis on mechanization in farming practices (Pakistan 1957). Nonetheless, these plans failed to alter a series of conditions that, either directly or indirectly, fostered an exceptionally favourable environment for investment. The acquisition of tractors was significantly facilitated by the support provided by the Agriculture Bank of Pakistan (ADBP). The ADBP rates ranged from 6 to 7%, in contrast to private banks, which imposed interest rates of 11 to 14% on medium-term loans. The foreign currency required by the farmers for the tractor purchase was provided to them at the government-established rate rather than the more favourable lower rate (Ishrat, 1999). The agricultural sector experienced robust performance in the late 1960s, contributing to the increased adoption of mechanisation. There exists potential for an enhancement in production levels. Between 1950 and 1960, the data indicates that the nation's wheat production increased by 45%. In 1968, the total number of operational tractors in Pakistan was recorded at 18,000. The farm mechanisation strategy underwent modifications during the Third Five-Year Plan (1955–60), which articulated that "mechanisation will assume a more significant role in agriculture, and the quantity of tractors in both public and private sectors will increase further (Falcon, 1970)." The central argument regarding tractors is that the complete advantages of green revolution technology cannot be realised in their absence. The initial job losses attributed to mechanisation are expected to be offset by an increased demand for labour resulting from enhanced agricultural productivity. Between 1955 and 1960, the Fifth Five-Year Plan mandated the annual importation of 14,000 to 14,500 trucks. In the periods spanning 1979 to 1980 and 1980 to 1981, the aggregate figures for imported tractors were notably elevated, recorded at 16,237 and 21,709 respectively (Zadi, 1997).

Opinions about the Mechanization of the Agriculture Sector

Individuals in Pakistan hold diverse perspectives regarding the societal advantages associated with the mechanisation of agriculture. Individuals holding these varying perspectives can typically be categorised into two distinct groups: proponents of mechanisation and those opposed to it. Lawrence (1970), a proponent of mechanisation, argued that it presents a favourable opportunity for Pakistan as it

necessitates minimal capital investment. His research indicated that improvements in mechanisation methods led to a decrease in both market and opportunity prices per unit of output. Lawrence posits that the methods of production—utilizing bullock power with both traditional and enhanced tools, as well as tractor power with various implements such as wheat drills and cotton planters are not overly capital-intensive given the current economic context of Pakistan (S.R., 1969). Concentrating on intermediate technologies such as enhanced bullocks, standardized equipment, and stationary threshers appears to be misaligned with current trends, as the downward trajectory persists. The arrival of trucks tends to lead to a significant reduction in unit prices. In establishing a wheat-cotton cycle, the rationale for employing machinery such as tractors and pull combines becomes evident.

Rahman (1983) examined the impact of mechanisation on the structural dynamics of rural areas, emphasising labour patterns, prevailing landholding trends, the interactions between tenants and landlords, and associated challenges. A report from the government of Pakistan in 1973 indicated that the population of individuals aged 10 to 14 was 42.37 million, with 19.70 million actively engaged in the workforce. In Pakistan in 1974, projections indicated that 71.5% of the labour force would originate from rural regions. A recent survey indicated that the unemployment rate stands at 12%, while the labour force is expanding at an annual growth rate of approximately 3.3%. The introduction of imported machinery appears illogical in rural regions where there is limited familiarity with advanced technologies. To prevent any disruptions from escalating into significant issues during the ploughing season, it is essential to establish a reliable service and parts delivery system. In Pakistan, accessing these types of services and acquiring new components presents significant challenges (Brown G. T., 1978). The farmers face significant distance in accessing these essential services. Frequently, individuals employ horse or ox carts, among other innovative methods, to transport their machinery to distant service centres. Farmers frequently utilise their tractors for recreational purposes or as a means of transportation while travelling to or from service centres. In order for tractors to operate efficiently, they require fuel, which is priced at approximately Rs. 3,110 per gallon in Pakistan. The current price of diesel fuel is approximately fifty percent of that figure. Pakistani farmers are unable to transition to oil-based farming due to the elevated cost of oil. The fragmentation of farmlands, characterised by their small size and irregular shapes, presents a significant challenge for the efficiency of tractor operations. In this scenario, utilising draft animals emerges as the optimal decision, as they yield milk, meat, and dung, which serve dual purposes as fuel and fertiliser. As the utilisation of machinery increases, there is a corresponding decline in the number of draft animals maintained in Pakistan. The evidence suggests that mechanisation contributes to the expansion of farm sizes. A study conducted by the World Bank and the Agriculture Development Bank of Pakistan indicates that the average size of farms owned by farmers who received loans for tractor purchases increased by 143%, rising from 19 hectares to 45 hectares. A mere 11% of farmers failed to enhance the quality of their land. Additional sources of land comprised previously uncultivated areas, land that had been previously leased, and newly acquired or rented properties, which compelled certain sharecroppers and tent farmers to relocate. The analysis indicated an increase in cropping levels from 111% to 118% (Ahmad V. a., 1984). Evidence suggests an increase in intensity on small farms, potentially indicating a trend towards more intensive farming practices. Notwithstanding this, there was a lack of compelling evidence to suggest that the utilisation of tractors resulted in increased crop yields. Conventional wooden ploughs and long-established technologies in the region appear to possess durability that may outlast the anticipated transformations in the nation's systems. The essential requirements include appropriate technological and cultural innovations that leverage local resources, are sustainable in production and maintenance, generate employment opportunities, and enhance agricultural practices. An objective analysis of the social implications of

mechanisation in Pakistan reveals unfavourable outcomes. Mechanisation faces significant constraints due to natural methods, climatic factors, resource availability, human capital, and prevailing working conditions. The decision by the government of Pakistan to mechanise farmland and engage in agreements with foreign entities for financial resources and goods was made despite the availability of studies indicating the adverse consequences of mechanisation, which were accessible to planners and officials involved in the process. The rationale behind the government's decision to implement such a plan and subsequently elevate the national debt remains ambiguous. To determine potential actions, it is essential to examine the structural and political components that extend beyond the scope of social accounting, which this study does not address (Faruquee, 1995). The primary objective of government policy is to advocate for mechanisation and persuade individuals that it represents the sole solution to the challenges faced by their struggling agricultural sectors. In implementing this strategy, they provide incentives and initiate a substantial marketing campaign across newspapers, radio, and television, aiming to encourage even expatriate Pakistanis to return with tractors as gifts for their families. A recent survey indicates that approximately 2.1 million individuals from Pakistan are employed in nations within the Arabian Gulf and the Middle East. Twenty-five percent of the 250,000 individuals originate from agricultural backgrounds. The average monthly income for this group is $550. These labourers accumulate significant savings and remit funds to their households. Remittances sent back to Pakistan constitute the primary source of foreign currency earnings for the nation.

Conclusion

In assessing the various dimensions of the Green Revolution, it is evident that there was a notable increase in agricultural productivity during the 1960s and 1970s. The introduction of high-yielding varieties (HYVs) of wheat and rice during the late 1960s represented a pivotal technological progress in the agricultural sector of Pakistan. This agricultural advancement involves multiple stages and has influenced nearly all aspects of agriculture and rural development. While there are varying perspectives regarding its impacts and the nature of those who benefit from it, there is a consensus that it has had a favourable effect on the nation's economy. The Revolution led to an increase in GDP, improved productivity, and expanded employment opportunities for the population. The green revolution has positively impacted agricultural productivity and rural development in Pakistan. It has also had a substantial effect on our social and political structures, consequently affecting economic outcomes. However, specific shortcomings in the revolutionary process hindered the sustainable growth of our agricultural sector, rendering it a temporary occurrence. Addressing these deficiencies is crucial for the sustainable cultivation of our agricultural sector in the long run. The adoption of a strategically sound and cost-effective development approach could promote sustained growth within the agricultural sector over the long term.

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