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The Punjab Agrarian Crisis

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Abstract

Punjab's farming economy, once known for its success after the Green Revolution, is now facing a deep and long-term crisis. This paper looks into how economic pressures and environmental decline have come together to create serious stress in the state's agriculture. Using secondary data from government reports, research studies, and recent fiscal documents (2024–2025), it examines the deeper causes behind the declining viability of farming in the state. The analysis shows that more than half of the state's agricultural households are in debt, and the situation is far worse among marginal farmers, where nearly 84 percent are indebted. The continued dependence on the rice–wheat cycle, which once ensured national food security, has over time damaged the soil and led to fast depletion of underground water. The study suggests that Punjab's agrarian recovery will require a mix of crop diversification, ecological restoration, and reform in rural credit systems to make farming sustainable again.

Keywords: Punjab agriculture, farmer indebtedness, agrarian distress, crop diversification.

Introduction

Punjab agriculture has undergone significant structural changes since the advent of New Agricultural Strategy during the mid-1960s. The traditional agriculture has progressively given way to modern and commercial agriculture (Satish, 2006). The New Agricultural Strategy relates to the package of high-yielding varieties seeds, assured irrigation, use of chemical fertilizers, insecticides, fungicides, pesticides, herbicides, machinery and modern agricultural practices. It has helped in increasing the income levels as well as total food grain production. It can't be viable for marginal and small farmers, who cannot cut their costs, can't afford the latest technology. The green revolution had made impressive strides in Punjab agriculture and achieved many landmarks to enhance the income of the farmers (Sekhon et al, 2009). The potentials of new technology began to be exhausted in the 1980s generating pressure of economic stress among the poor strata of peasantry (Gill, 2005) and have started declining since the 1990s (Singh, 2000). The new economic policy advocates withdrawal of the state from the economic sphere by leaving it to the logic of market forces. Leaving the agricultural sector to the vagaries of free market could prove disastrous (Jodhka, 2006). The subordination of cultivators to market and capital forces without safety net to support them in times of crop loss, accounts for the devastation of rural communities (Vasavi, 1998).

The period since the introduction of the new economic policies in 1991 has seen a dramatic increase in costs of cultivation as a result of the sharp increase in inputs prices, resulting from the withdrawal of subsidies and the privatisation and in many areas collapse of the infrastructure (Wilson, 2002). The yield of principal crops increased tremendously during 1970s, which led to increase in the net returns of the farmers. Despite the increasing use of agricultural inputs, the returns were almost stagnant during the 1980s and have started declining since the 1990s (Singh, 2000). As a consequence, per hectare net return is declining and this is the real crisis of Punjab agriculture. More than five decades later, Punjab's agricultural model faces stagnation, ecological depletion, and an alarming level of farmer indebtedness. Chronic indebtedness and resource degradation have together created what many scholars now call a structural agrarian crisis—a deep-seated malaise rather than a short-term fluctuation in output or income.

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This paper makes an attempt to examine the environmental pressures particularly groundwater depletion and soil degradation—that undermine economic viability. This paper also discusses the socio-economic consequences of indebtedness, including inequality, mental health issues, and migration trends. This research paper is based on secondary data and institutional reports. Key sources include publications from the Directorate of Economics and Statistics (DES Punjab), the Indian Society of Agricultural Development and Policy (ISADP), PRS Legislative Research (Punjab Budgets 2024–25 and 2025–26). A combination of descriptive and comparative analytical methods has been used to study.

Discussion and Findings

The Green Revolution Legacy and Structural Saturation: The Green Revolution transformed Punjab into the nation's largest supplier of wheat and rice. However, by the late 1990s, the same production system that had once symbolized progress began showing deep cracks. The dominance of the rice–wheat rotation locked farmers into a narrow, input-intensive model that depended heavily on irrigation, chemical fertilizers, and state procurement through the Minimum Support Price (MSP). While this arrangement initially ensured stability and prosperity, it gradually discouraged crop diversification, depleted soil fertility, and resulted in stagnating yields. Excessive use of nitrogen-based fertilizers caused micronutrient imbalances and soil compaction, making productivity gains harder to sustain. By 2025, groundwater levels in many central districts were falling at an average rate of 75 cm per year—a warning sign of environmental collapse. The need to dig deeper wells pushed up electricity consumption and operational costs, reducing profitability and deepening financial stress among farmers.

Soil Depletion: The Green Revolution fundamentally reshaped Punjab's agrarian structure, transforming it into India's largest producer of wheat and rice. But with time, this success story has faded into a troubling story of ecological depletion. The overdependence on the rice–wheat monoculture—sustained by assured procurement, chemical inputs, and free electricity for irrigation—has led to the steady collapse of soil health across much of the state. Continuous cultivation of these two water-intensive crops has interrupted the natural nutrient cycle of the soil.

The absence of crop rotation and organic residue management has deprived the soil of essential micronutrients such as zinc, iron, manganese, and sulfur. To maintain yields, farmers have increasingly relied on chemical fertilizers, particularly urea and DAP, creating a severe

nutrient imbalance. Data from the Punjab Agricultural University (PAU) indicate that while the recommended N:P:K ratio is 4:2:1, actual usage patterns in many districts have reached over 27:9:1, reflecting an alarming overuse of nitrogenous fertilizers. Such imbalance has led to soil compaction and declining organic carbon content, reducing the soil's ability to retain moisture and support microbial activity. Over time, this degradation has diminished productivity despite higher input use—a clear case of diminishing ecological returns. The once-rich alluvial soils of Punjab are now showing signs of fatigue. Studies reveal that the average soil organic carbon content in central Punjab has fallen below 0.3 percent, far lower than the optimal 0.75–1 percent required for healthy soil. As a result, the soil has lost much of its biological strength, making it increasingly dependent on external inputs to sustain production. The combined effect of nutrient imbalance and waterlogging in canal-irrigated zones. Declining soil fertility also increases farmers' costs, as they are compelled to use more fertilizers and energy to maintain yields—linking ecological stress directly to financial distress.

Interdependence between energy, water and cost: Punjab's farming system has become trapped in a costly feedback loop. Since the late 1990s, Punjab's demand for groundwater has far outshined its natural recharge capacity, leading to a rapid and alarming fall in the water table. Historical data reveal a sharp growth in depletion rates—from an average annual decline of **18 cm between 1982 and 1987**, to **42 cm during 1997–2002**, and further to **75 cm during 2002–2006**. This pattern raises grave concerns about whether Punjab's rice–wheat monoculture, so reliant on intensive irrigation, can remain sustainable in the long run.

The almost every block in Central Punjab now faces critical levels of groundwater overexploitation, indicating that the crisis is both deep and widespread. The rising cost of cultivation is closely tied to this ecological stress, as farmers are forced to pump water from ever-greater depths, consuming more energy and inflating operational expenses. As groundwater levels drop, farmers are forced to extract water from greater depths, which requires more electricity. Since power is heavily subsidized, the immediate financial burden falls on the state rather than the farmer, but the environmental and fiscal costs are vast. The agricultural power subsidy has flown from around ₹1,000 crore in the early 2000s to ₹9,330 crore in 2024–25. This hidden cost effectively converts environmental damage into a fiscal liability for the government. Although the subsidy remains a politically sensitive issue, it hides the real cost of unsustainable water use and delays the reforms that Punjab urgently needs. A

sudden removal of such support, however, would escalate production costs and intensify indebtedness among farmers, reflecting the complex policy challenge facing Punjab.

Farmer Indebtedness: Magnitude and Structure: As of 2025, approximately 53.2 percent

of Punjab's agricultural households remain indebted—one of the highest proportions in India. The burden is disproportionately heavier on land-poor farmers, especially marginal and small farmers.

Farm-Size Category	Indebtedness (%)	Annual Economic Surplus (₹)	Non-Institutional Borrowing (%)
Marginal Farmers	84	18,474	55
Small Farmers	81	79,780	52

The data reveals that the marginal farmers operate with extremely limited economic surpluses—barely sufficient to meet household needs. Their borrowing is often not for productive purposes but to cover daily consumption, medical emergencies, or social-religious ceremonies and education. Among marginal farmers, debt operates primarily as a coping mechanism for subsistence rather than an instrument of capital formation or growth. Institutional credit remains skewed toward short-term crop loans, while only about 27 percent of total lending qualifies as long-term investment credit. This imbalance highlights the absence of sustained capital flow into agricultural modernization, diversification, or infrastructure development. Amid this gap, the *arhatiya* system—a traditional network of commission agents—continues to play a dominant role in Punjab's rural credit system. The commission agents (Arhatiyas) offer immediate, Guarantee free loans with flexible repayment options but at excessive interest rates ranging from 15 to 24 percent per annum. Their role extends beyond financing—they mediate input supply, facilitate market access, and often recover dues directly from the Food Corporation of India (FCI) payments during procurement. This creates a system of economic dependency, binding farmers into a cycle of indebtedness that persists across generations.

Socio-Economic Dimensions of Agrarian Distress: The issue of indebtedness in Punjab has gradually deepened beyond an economic concern, emerging as a serious **public health emergency**. Mounting debt is no longer just a question of repayment capacity—it now affects the mental well-being, social stability, and even the survival of farm households. Prolonged indebtedness leads to feelings of helplessness and loss of dignity among farmers, which, when combined with social isolation and uncertainty about the future, creates a fertile ground for mental health crises. Easy access to **lethal agrochemicals** like pesticides often makes these moments of despair tragically irreversible. In many reported cases, the same substances meant to protect crops become the instruments of self-harm—a grim reflection of the psychological toll that economic distress can take. Within this broader context, **two distinct patterns of distress** can be identified in rural Punjab:

1. **Subsistence Crisis among Marginal Farmers** – This form of distress is primarily driven by **consumption-related borrowing**, where loans are taken not for productive investment but for daily survival—covering essentials such as food, healthcare, and education. Chronic poverty, small landholdings, and the absence of stable non-farm income make repayment nearly impossible, trapping these farmers in a cycle of debt dependence.
2. **High-Exposure Crisis among Medium and Large Farmers** – In contrast, relatively larger farmers face distress of a different kind. Their exposure lies in **high-value institutional loans**, often tied to expensive machinery, input costs, and market volatility. Fluctuating crop prices, rising fuel costs, and delayed procurement payments can quickly turn profitable operations into financial losses, creating huge repayment pressure.

Together, these patterns reveal that **indebtedness in Punjab is not uniform but layered**—reflecting both structural poverty and market exposure. The human cost of this crisis underscores the urgent need for policy responses that address not only credit reform but also **mental health support and rural social protection**. Both farming categories experience intense psychological strain, pointing to the urgent need for integrated mental health services and financial counseling at the village level. Without addressing the emotional and social dimensions of debt, purely financial interventions risk remaining incomplete.

Policy Recommendations: The crisis in Punjab's agrarian economy is not merely a matter of declining yields or rising costs—it reflects a deep structural imbalance between ecological resources and economic incentives. The following policy measures are recommended:

Credit System Reform: Direct Benefit Transfers (DBT): All procurement payments should be made directly to farmers' bank accounts to reduce dependence on arhatiyas and prevent financial manipulation.

Flexible Institutional Credit: Expand credit ceilings and allow limited consumption-based borrowing to disincentivize informal lending.

Adopt a **diversified cropping pattern** to reduce dependence on the rice–wheat system and restore ecological balance. Diversification will **lower pressure on groundwater**, improve **soil fertility**, and enhance **farm income stability**.

Encourage balanced fertilizer use by linking input subsidies to soil health card recommendations. Special incentives should be given for green manuring and the incorporation of crop residues instead of burning. Power subsidies should be rationalized gradually, with **targeted cash transfers** to protect small and marginal farmers. To ease the pressure on land and groundwater, Punjab needs to strengthen its agro-processing industries, especially for maize, pulses, and fruits. Creating rural value chains and employment opportunities will diversify income sources and reduce overreliance on traditional cropping.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper

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