



Indian Farmer and Government Initiatives: Policies, Gaps and Way Forward

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Abstract: In India, the government continues to implement various programs and policies yearned at increasing agricultural production by facilitating the sale of its products and providing tax relief to Indian farmers. However, most farmers cannot benefit from such plans/policies due to a lack of understanding and are prone to misinformation and scepticism. Farmers are well aware of the risks posed by climate variability and adverse weather conditions. They are unsure which crop to grow due to changes in soil structure caused by unpredictable weather conditions. These are just some of the problems facing Indian farmers. Extensive research has been waged on the importance of farmers to the nation, how they contribute to the national gross domestic product, why they commit suicide, and how beneficial efforts and programs affect them. In this review article, mainly discuss the government's agricultural and production policies, Indian farmers' conditions, government initiatives to alleviate the problem of farmers, advances in sustainable agriculture technology, policies and suggestions on the development of farmers.

Keywords: Economy, Government policy, Climates, Soil health, Farmer

India has been an agricultural economy for many years in addition to agriculture has played an important role in the Indian economy ampersand 58% of all workers are involved in agriculture (Mospi 2021). India's economic activity depends on 55% of Indian agricultural land (Sharma et al 2021). Bedide (2021) states that the "Farmer's Land" is famous in India, because most people are engaged in agriculture, directly or indirectly. India's past speaks volumes about agricultural efficiency, excellent climate and abundant natural resources (Bedide 2019). India (most of its land has wheat, rice and cotton) is also a world-leading producer of spices, legumes and milk (Tyagi 2012). Chemical fertilizer usage, agricultural residue burning, and pesticide use all contribute to global pollution (Dhaliwal et al 2010, Nagendran 2011,). Shaikh and Gachande (2015) stated that the amount of subsoil and macrofauna decreased, which instantly affected the C-N rate and the nitrification function. Most farmers in India are small and marginal owners, and if they invest more in inputs and don't get a higher return because they haven't been able to cope with pests, disease and bad weather, their production costs will increase (Dey 2018).

The agricultural industry has generated 20.19% of India's GDP in recent decades, which has increased to 3% (Mospi 2021). In short, India has the amplest agricultural powerhouse in the world ampersand its backbone is farmers and other agricultural workers. Like many other companies, agribusiness has faced unexpected challenges and

problems for decades. Farmers in India face various challenges and obstacles. This assessment will predominately concentrate on farmer circumstances, government efforts, privileges, and proposals for farmers' welfare.

The word "FARMER" shall cover all agricultural operators, farmers, farm workers, tenants and rear farmers, fishermen, beekeepers, gardeners, plotters and planting workers and all other primary agricultural commodities involved in the economic and/or living of cultivated crops and other primary agricultural commodities. Tribal families/individuals involved in shifting agriculture, as well as the gathering, usage, and sale of minor and non-timber forest produce (NPF 2007). Farmers works start from preparation to harvesting. A farmer is responsible for cultivating the land, harvesting crops, seeding, and preserving seeds. Indian farmers direct and indirect linked to economy and GDP (Headey and Masters 2019).

India's Farmers Condition

The majority of farmers are deeply in debt. Agriculture provides a living for more than 58% of farmers in India. (Ghosh et al 2021). Farmer suicides in India are being reported from all across the country. Moneylenders continue to play an important part in agricultural development, with interest payments that surpass the income earned (Esteves et al 2013, Varshney et al 2018). The price of a crop is inversely proportional to its production. The higher the

productivity, the lower the price, and vice versa. It is impossible to achieve good rainfall, good productivity, and the best price at the same time. As a result, farmers have limited incomes or no profits or losses (Mishra et al 2018, Challob et al 2020). The cost of producing rice fields is now comparable to the cost of final production. However, rice grass needs to be reused as feed for cattle, which is beneficial to farmers. Costs need to be kept low if crops are damaged by excessive rain or drought condition, or if everything is going well and productivity is low (Gulati et al 2018).

Scholars have given numerous causes for farmer suicides in India, including monsoon failure, climate change, excessive debt, government policies, mental health, personal and familial difficulties (Deccan 2018, Kumar 2016). The major causes are as follows (Fig. 1):

Input costs: A foremost reason for farmer suicides in India has been the rising inconvenience on farmers due to high agricultural input prices. The conclusion of these variables is apparent in the general increase in agrarian costs; for wheat, the cost is now three times greater than it was in 2005 (Singh et al 2016, Anonymous 2020).

Manure and seed prices: Whether it's manure, crop protection chemicals, or just manufacturing seeds, farming has become prohibitively expensive for already burdened farmers (Dey 2018).

Agrarian equipment costs: Input expenses are not restricted to fundamental raw materials, however. The usage of agricultural gear and equipment such as tractors, submersible pumps, and so on adds to the already growing expenses. Furthermore, these secondary inputs have grown increasingly difficult to get for small, marginal farmers (Singh et al 2016, Rao 2017).

Labour costs: Similarly, the cost of recruiting employees and animals is rising. While this may represent an improvement in workers' socioeconomic condition, mostly as a result of MGNREGA and a rise in the minimum basic income, it has not coincided with the agricultural sector's boost (Singh et al 2016, Anonymous 2021).

Distressed due to loans: According to NCRB statistics, the victims of 2,474 of the 3,000 farmer suicides investigated in 2015 defaulted on local bank loans. This is a strong enough signal to draw parallels between the two. However, whether or if the banks harassed them is a debatable topic that needs more exact empirical evidence (Kumar 2016).

Furthermore, a departure from the norm revealed that usurers lent just 9.8 percent of the loans taken out by these farmers. As a result, creditors' pressure or power may be far from being a major driving force, as is commonly assumed. Another cause of strong connections between farmer

suicides and debt is the prevalence of both. Karnataka had 946 debt suicides, while Maharashtra had 1,293 debt suicides (Fig. 2). Remember that both states have among the highest rates of farmer suicides and debt (Kumar 2016, Deccan 2018, Anonymous 2021).

Lack of direct market integration: Although efforts such as the national agricultural market and contract farming are assisting in integrating farmers' goods directly with the market, eliminating the role of middlemen, reality remains behind (Anonymous 2021).

Lack of awareness: Because of their inability to capitalize on the benefits of government programs, marginal smallholder farmers have been particularly susceptible as a result of the digital divide and literacy gap. This is evident in continued unsustainable agricultural practices, such as sugarcane cultivation in water-stressed areas (Kumar 2016, Dey 2018).

Water management: The concentration of these suicides in water-stressed parts of states such as Maharashtra and Karnataka is an indication of how the water crisis, and therefore the inability to satisfy production needs, has exacerbated the threat. This is especially true in light of the ongoing failure of the monsoons (Kumar 2016).

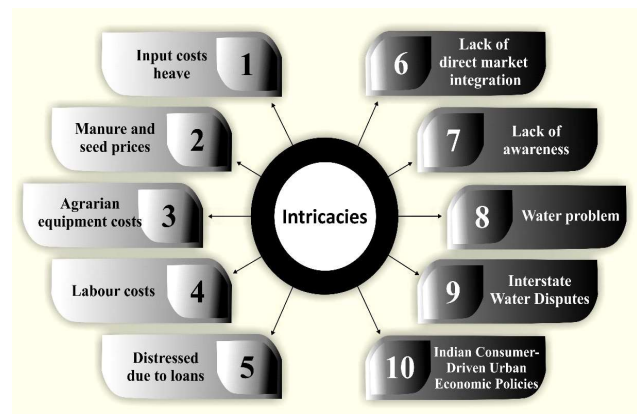


Fig. 1. Multifarious farmers intricacies

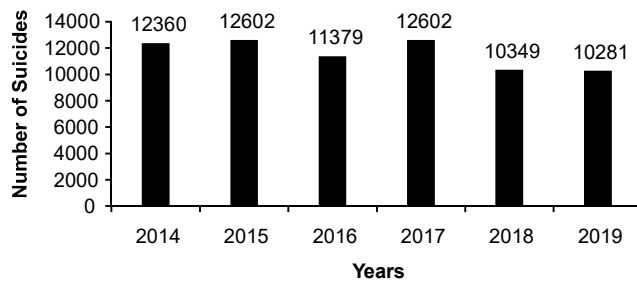


Fig. 2. Number of farmer suicides in India (Hossain et al 2020)

Interstate water disputes: States' unwillingness to satisfy each other's water requirements has exacerbated the already-existing issue. One example is the newly resurrected Kaveri conflict, in which Karnataka and Tamil Nadu struggled with water shortages both within and outside the court, to the point of refusing to comply with the court's order (Singh et al 2016, Dey 2018, Anonymous 2021). Climate change has been the last nail in the coffin, increasing the uncertainties associated with the already unpredictable monsoon system and, by extension, agricultural productivity. While flash floods have resulted in crop losses, delayed monsoons have resulted in a year-over-year reduction in production (Rao 2017).

Indian consumer-driven urban economic policies: Urban consumers drive India's political economy more than rural producers. This is evident in the speed with which price restrictions are imposed in the event of a price increase (imposition of minimum export prices, inclusion of goods in essential products, etc.) and the gradual removal once the price is under control. To preserve our steel sector, we established a minimum import price. This differential handling of the agricultural sector also restricts profit margins and, as a result, farmers' ability to break free from the debt cycle (Kumar 2016, Deccan 2018, Dey 2018). Loan exemptions rather than restructuring and reinvestment measures: our approach to controlling farmers' debt and hence farmers' suicides have been pacification strategies, such as the UP government's recent decision to forego loans worth 36 billion rupees. Surprisingly, this occurs at a time when agricultural output is supposed to rise following a strong monsoon (Singh et al 2016, Rao 2017). In essence, crop failure, unsustainable output, and farmer indebtedness as a result of failing to enhance the farmer's economic standing are the main forces behind these suicides.

Government Initiatives: The significant difficulties now are that agriculture development is no longer a primary focus for policymakers, as shifting paradigms of development theory at the global level and specific events in India lower agriculture to a secondary priority. The post-war development theory literature highlighted the importance of agricultural technology up-gradation as a prerequisite for industrial expansion, which was then regarded as the sole indicator of a country's success (Kumar 2019). The Indian government prioritizes farmer welfare and implementing various farmer welfare programs to revitalize the agricultural sector and improve its economic conditions (Balkrishna et al 2020). Several new initiatives have been introduced by the government, including the Soil Health Card Scheme, Neem Coated Urea, Paramparagat Krishi Vikas Yojana (PKVY), Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), National

Agricultural Market (e-NAM), Pradhan Mantri Fasal Bima Yojana (PMFBY) (Table 1), and others. All farmers profit from these initiatives.

Actions Benefiting Indian Farmers

Sustainability Ideas: Some recent central government development programmes aimed at increasing output while decreasing costs include the *Pradhan Mantri Krishi Sinchayee Yojana*, the *Soil Health Card*, and the *Prampragat Krishi Vikas Yojana*. The *Pradhan Mantri Fasal Bima Yojana* is another significant project that provides crop and income insurance. Aside from risk coverage, it will stimulate agricultural investment. Another notable effort with a high potential for increasing productivity and agriculture revenue is river interconnection (SFAC 2013, Rao et al 2006, Kumar and Khurana 2021). These programs must be executed in a time-based way to have the intended effect on the financial health of farmers. Quality of seed and efficient manure usage are critical foundations of productivity development. It's also been noted that increased electricity supply to agriculture leads to increased efficiency and economy. Most states have a relatively limited supply of power for the agricultural industry (GOI 2017).

Advancement in technology: There is growing evidence that agricultural technologies, such as precision farming, can substantially increase farmers' output and income. In addition, the current engineering such as laser leveler, precise sowing and sowing and methods such as CRS for rice intensification, direct rice sowing, non-tillage, raised bed sowing and hill sowing, enable technically highly efficient cultivation (Rao et al 2009, Varshney et al 2018, Tyagi 2012). Their commercial profitability is low and these technologies are being developed by the government. Requires an extension significant adoption by farmers. It should emphasize teaching farmers about the potential of this technology, promoting access to finance and developing a regulatory climate that allows them to embrace it (Esteves et al 2013, Dandekar and Bhattacharya 2017, Chapagain and Raizada 2017, Dey 2018, Bedide 2021).

Institutional: The size of Indian agriculture is dominated by marginalized and small farmers who face tremendous difficulties. Small farm size prevents many farmers from diversifying their fruits and vegetables, owing to price risk and an uneconomic lot for sale (Mariappan and Zhou 2019). Small-scale farmers in various input and output market transactions are equally disadvantaged in terms of bargaining power. This barrier can be addressed by organizing farmers through institutional mechanisms such as farmer organizations (Singh 2008). The SFAC has offered examples of successful collective action by farmers working via established institutions. It provides convincing evidence

Table 1. Various schemes implemented by the Government of India

Aim	Implementing agency	Budget allotment	Beneficiary	Present standpoints	Gaps	Reference
Pradhan Mantri Kisan Samman Nidhi Yojana, 2018						
Support Rs 6, 000/year for small and marginal farmers of India. Financial assistance to all land-holding qualified farmer families	Central Sector Scheme under PM-KISAN	Rs 75, 000 Crore (2021-22)	The Scheme is predictable to reach around 12.50 crore, farmer families	Farmer families with total cultivable holding upto 2 hectares provided benefit of Rs.6000 per annum per family payable in 3 equal installments, every 4 months. 1 st installment to eligible beneficiaries during this financial year 2018-19 for the period from 01.12.2018 to 31.03.2019.	Many farmers submitted their application forms after the announcement of the scheme on February 1. But due to limitations in the government machinery, not all of them were registered in the first period.	Indian budget 2021, Jagadeeswari et al 2021, Balkrishna et al 2020
Pradhan Mantri Kisan Maan Dhan Yojana, 2019						
On reaching the age of 60 years, the scheme provides Rs. 3000/- month for Small and Marginal Farmers	Ministry of Agriculture & Farmers' Welfare, Department of Agriculture, Cooperation & Farmers' Welfare, Government of India with the Life Insurance Corporation of India (LIC).	Rs. 50 crore (2021-22)	In the first three years, the Scheme intends to reach about 3 crore participants.	If farmer dies after the 60 years; the spouse will receive 50% of the pension as Family Pension. After the death of both the farmer and the spouse, the accumulated corpus shall be credited back to the Pension Fund.		Indian budget 2021, Balkrishna et al 2020
Pradhan Mantri Kisan Suraksha Abhiyan Utthaan Mahabhiyan (Kusum) Yojana, 2019						
Increase farmer income and provide sources for irrigation and de-dieselizing the agriculture area. Farmers in the country for the implementation of solar pumps and grid-connected solar and other renewable energy facilities.	Ministry of New & Renewable Energy	1,000 crore (2021-22)	Until the 28th of February, 2021, a total of 24,688 independent solar pumps and 64 grid-connected farm pumps had been solarized.	1 Large Scale Solar power generation projects are being installed to achieve the ambitious target of 100 GW of Solar Power generation by 2022. Farmers increase their income by utilizing their barren and uncultivable land for solar or other renewable energy based power plants.	Limitations in construction of new solar power plants.	Indian budget 2021, PIB 2020, GOI 2021
Pradhan Mantri Fasal Bima Yojana (PMFBY), 2016						
Provide maximum premium during 2% Kharif, 1.5 % Rabi food & oilseed crops, and 5% annual commercial or horticultural crops, with the remaining actuarial or bidded premium split equally by the Central and State Governments.	Department of Agriculture, Cooperation & Farmers Welfare (DAC&FW), Ministry of Agriculture & Farmers Welfare (MoA&FW), Government of India (GOI)	16,000 crore (2021-22)	A total of 224.7 lakh farmers will benefit from the program till the year 2019-20.	Wider coverage area: Unlike the previous insurance plan, this coverage also includes disasters such as riots, hailstorms, floods, etc Reasonable premium: for Rabi crop 1.5%, Kharif 2% and commercial crop 5% same premium rate	Financing mechanism: premium subsidies are divided between the state government and the central (50%). The plan may not be completely centrally supported. Failure to implement Settlement delay	Indian budget 2021, Tiwari et al 2020, Kumar et al 2021

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Pradhan Mantri Krishi Sinchai Yojana (PMKSY), 2016						
Irrigation supply chain, like distribution network, farm level applications, and water sources (One drop more crop)	Ministry of Agriculture & farmer Welfare	4,000 crore (2020-21)	PMKSY-PDMC has covered an area of 46.96 lakh ha. under Micro Irrigation during the previous five years.	Convergence of irrigation investments at the field level, expansion of cultivable land under guaranteed irrigation, improved on-farm water usage efficiency to decrease water waste, and increased adoption of precision irrigation.		Indian budget 2021, Srikala 2020, Chaudhari 2021
National Agriculture Market (e-NAM), 2016						
e-marketing platform (One Nation One Market)	Ministry of Agriculture and Farmers' Welfare, Government of India.	410 crore (2020-21).	The e-NAM site has already integrated 585 mandis from 16 states and two union territories, and it will soon be expanded to encompass another 415 mandis, bringing the total number of e-NAM mandis to 1,000.	NAM portal networks existing APMC (Agriculture Produce Marketing Committee) / Regulated Marketing Committee (RMC) market yards, sub-market yards, private markets and other unregulated markets to unify all the nationwide agricultural markets by creating a central online platform for agricultural commodity price discovery.	The state APMC Act must have a specific provision for e-auction / electronic trading as mode of price discovery.	Indian budget 2021, Yadav et al 2021, Manjula 2021
Soil Health Card, 2015						
Implementation of micronutrients and soil ameliorant (Swasth Dhara, Khet Haraa)	Department of Agriculture & Cooperation Ministry of Agriculture Government of India	315 crore (2021-22)	6954 villages were chosen by the State/UT, where 20,18 lakh samples were collected, 14,65 lakh samples analyzed and 13,54 lakh cards delivered to farmers, against the objective of 26,83 lakh samples.	To make agriculture more productive, sustainable and climate resilient; to conserve natural resources; to adopt comprehensive soil health management practices; to optimize utilization of water resources; etc	In certain villages, GPS signals are not caught. In the state of Telangana, new AEOs were appointed in February 2017. As a result, they were unable to mobilize farmers who received SHC last year. Due to a lack of soil testing labs in some mandals/villages, SHC was not supplied to farmers.	Indian budget 2021, Meena & Chadda 2021, Stott et al 2021
Paramparagat Krishi Vikas Yojana, 2015						
Promote organic farming	Department of Agriculture, cooperation and Farmers Welfare	450 crore (2020-21)	Under the PKVY initiative, 237820 hectares of land have been transformed into organic farming land, benefiting 3,94,550 farmers.	PKVY aims at supporting and promoting organic farming, in turn resulting in improvement of soil health. The Scheme targets to form 10,000 clusters of 20 ha each and bring nearly two lakh hectares of agricultural area under organic farming by 2017-18	The cluster chosen for Organic Farming shall be 20 ha or 50 acres in extent and in as contiguous a form as possible.	Indian budget 2021, Reddy 2020, Vijai & Elayaraja 2021

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Aim	Implementing agency	Budget allotment	Beneficiary	Present standpoints	Gaps	Reference
Weather Based Crop Insurance Scheme, 2016						
Insurance for crop seeds, oilseeds, and horticulture crops	Department of Agriculture & Cooperation (DAC) and Farmers Welfare, Government of India	4,813 core (2020-21)	A total of 15 lakh farmers have benefited in kharif season (2016).	To ease the burden of insured farmers due to the possibility of financial loss due to crop loss due to bad weather conditions such as rainfall, temperature, wind, humidity, and so on..	Only severe weather events that potentially result in significant crop losses are included.	Indian budget 2021, Standing committee 2021, Dupdal et al 2020

of value chain integration for farmers (SFAC 2013). There are several other successful examples of greater output and higher market returns achieved by collective action via group action or some type of organization (Gupta 2015). Some of the organizations, particularly those in remote and underserved areas. By June 2016, SFAC has promoted 510 FPOs with 5,71 Lakh farmers in 28 nations (GOI 2017). The FPOs were likewise outstanding. Some states, as well as NABARD, encourage FPOs. However, there are few FPO numbers and networks, which should be increased to help farmers to decrease transaction costs, get access to technology, enhance bargaining power, and integrate into value chains (SFAC 2013).

Suggestions for farmers' welfare: Farmers in India, especially small and marginal farmers, are under a lot of stress. The situation is expected to worsen unless immediate steps are taken. A farmer-centric approach to agriculture is required for the welfare of farmers and overall improvement of the agricultural sector in India. Some of the major areas of concern that needs to be focused upon are given below.

Better agricultural inputs: Inputs determine the overall yield and quality of agricultural output. Hence, it is necessary to ensure availability of high-quality seeds and agrochemicals at affordable rates. Similarly, irrigation facilities must be provided wherever possible.

Access to credit facilities: Availability of credit facilities at affordable terms and conditions is necessary for the farmers to purchase good quality agricultural inputs. In addition, financing options to upgrade farm infrastructure and start secondary agricultural activities should also be available to improve farm productivity and profitability (Balkrishna et al 2020).

Efficient agricultural extension services: India has extensive research infrastructure for agriculture in the form of ICAR institutes, Central and State agricultural universities, and other research institutions (Singh and Aggarwal 2020). However, the lab to land transfer of technologies is not efficient enough. Hence, efforts must be made to strengthen the agricultural extension services, with a focus on small and marginal farmers (Balkrishna et al 2021).

Farmer-centric policies: Policy interventions have the maximum impact on farmers' income (Tyagi 2012). The lack of participation of the organized private sector is a major impediment to unlocking the full potential of Indian agriculture. The liberalization of the agricultural sector would increase the competitiveness of the sector and promote its development (Bedide 2021). Structural reforms in the agricultural sector, such as land leasing, contract farming, and agro-forestry, would be beneficial to kick-start growth in the agricultural sector (Rao et al 2006, Tyagi 2012, SFAC 2013, Gulati et al 2021). Some of the major areas where policy interventions of the government could have a beneficial impact are mentioned below.

Market reforms for remunerative prices: Market reforms are necessary to enhance competition in the agricultural sector and ensure remunerative prices for the farmers (Shaikh and Gachande 2015). Market prices must be kept above the MSP during harvest season through various mechanisms, such as direct purchase and shortfall price payment (Varshney et al 2018, Sharma et al 2021).

Investment for modernization of agriculture: Some of the latest agricultural practices, such as precision farming, hydroponics, aeroponics, and IOT implementation, are costly endeavors. However, they are necessary to increase agricultural efficiency, especially in the current agricultural scenario. Hence, investments in the agricultural sectors, especially by the private sector, can help to modernize farm operations (Shaikh and Gachande 2015, Rao et al 2006, Jain and Kannan 2021).

Supply chain and market linkages: Traditional supply networks in agricultural sector are exploitive for the farmers (Jain and Kannan 2021). Strategies are required to integrate small and marginal farmers to the modern agricultural supply chain. Agricultural facilities, like warehousing, must be made accessible to the farmers at affordable prices, especially for perishable agricultural products (Aditya et al 2017, PIB 2021, Gulati et al 2021). Market linkages must be developed to leverage the demand for fresh and high quality agricultural products (Aditya et al 2017, GOI 2017, Balkrishna 2020).

Farmers' cooperatives: Small-scale farm operations are

often not viable economically (GOI 2017, Mospi 2021). Collective action, resource pooling, and group marketing through various groups, such as Farmers Producer Organizations (FPOs), can help to carry out agro-business operations in a professional manner. Involvement of government agencies in the formation, maintenance, and development of FPOs can be effective in enhancing farmers' income through improved output and market connections (GOI 2017, PIB 2021, Mospi 2021, SFAC 2013).

Agro-processing: Value addition to primary agricultural produce through agro-processing industries is an effective way to capture more value from agriculture. However, the agro-processing industry in India is still at nascent stages and is plagued by various issues, such as inconsistent supply. Policy changes, such as contract farming, can help to bridge the gap between farmers and processors (SFAC 2013, Mospi 2021).

CONCLUSION

Indian farmers labor really hard to provide food for their families. The government initiates many schemes/policies for farmers, however owing to a lack of knowledge and misinterpretation. Farmers are not reaping the full benefits of policies. They do not want to go through any paperwork if they can receive money with no paperwork from landlords at a high interest rate. The government is working to modernize farmers, however small and marginal medium farmers do not have enough money for an Android phone and lack understanding. The government raises awareness through campaigns, advertisements, and other means. If we modify some policies/schemes, we get better results in the future. Farmers are being informed about new policies and initiatives that may aid India's growth.

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