

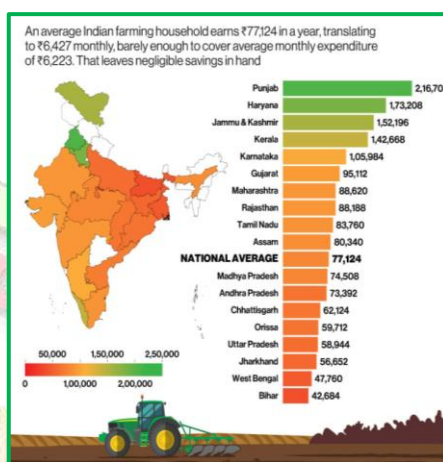
Doubling Farmers' Income: A Crucial Step towards Agricultural Prosperity

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Agriculture has been the backbone of economies around the world, providing sustenance and livelihoods for millions. In the Indian context, agricultural households derive income from four sources, viz., cultivation, livestock, non-farm business, and wages and salaries. Past strategy for the development of the agriculture sector has focused primarily on raising agricultural output and enhancing food security. As a result of this, now India is not only food self-sufficient at the aggregate level but also a net food exporting country. However, the strategies failed to acknowledge the importance of increasing the income of farmers and did not include any explicit actions to improve their well-being. As a result, farmers' incomes remained low, which is evident from the incidence of poverty among farm households. This is often seen as both a challenge and an opportunity, aiming to uplift the lives of rural communities, enhance agricultural productivity, and ensure food security. In this article, the given map depicts the average income of farmers in different states of India.



Source: (Business Today 2020)

Fig1: State-wise average income of Indian farmer

The trend in farmer income in India: Two national-level surveys of NSSO titled Situation Assessment Survey of Farmers in 2003 (59th Round) and Situation Assessment Survey of Agricultural Households (SAS) in 2013 (70th Round) provide estimates of farmers' income from various sources including agriculture. According to SAS for the year 2012-13, the average annual income of a farm household from farm as well as non-farm sources was Rs. 77,112. Sixty percent of the total income of an agricultural household was derived from farm

Year	Net value added at market prices (Rs. crore)	Wage bill at market prices (Rs. crore)	CPIAL (2004-05=100)	Total farm income of all farmers' (Rs. crore)		Cultivators (Number in crores)	Farm income per cultivator (Rs.)	
				Market price	Real prices		Current price	Real prices
1993-94	223709	45755	59	177954	303814	14.39	12365	21110
1999-00	426582	90951	90	335631	372923	13.88	24188	26875
2004-05	527289	93130	100	434160	434160	16.61	26146	26146
2011-12	1409932	252804	183	1157128	632514	14.62	79137	43258
2012-13	1558480	245750	220	1312730	596695	14.36	91416	41553
2013-14	1753691	276532	245	1477159	602922	14.10	104763	42760
2014-15	1849931	291708	261	1558223	597020	13.85	112507	43106
2015-16	1940636	306010	273	1634625	598764	13.60	120193	44027

Source: (Chand 2017)

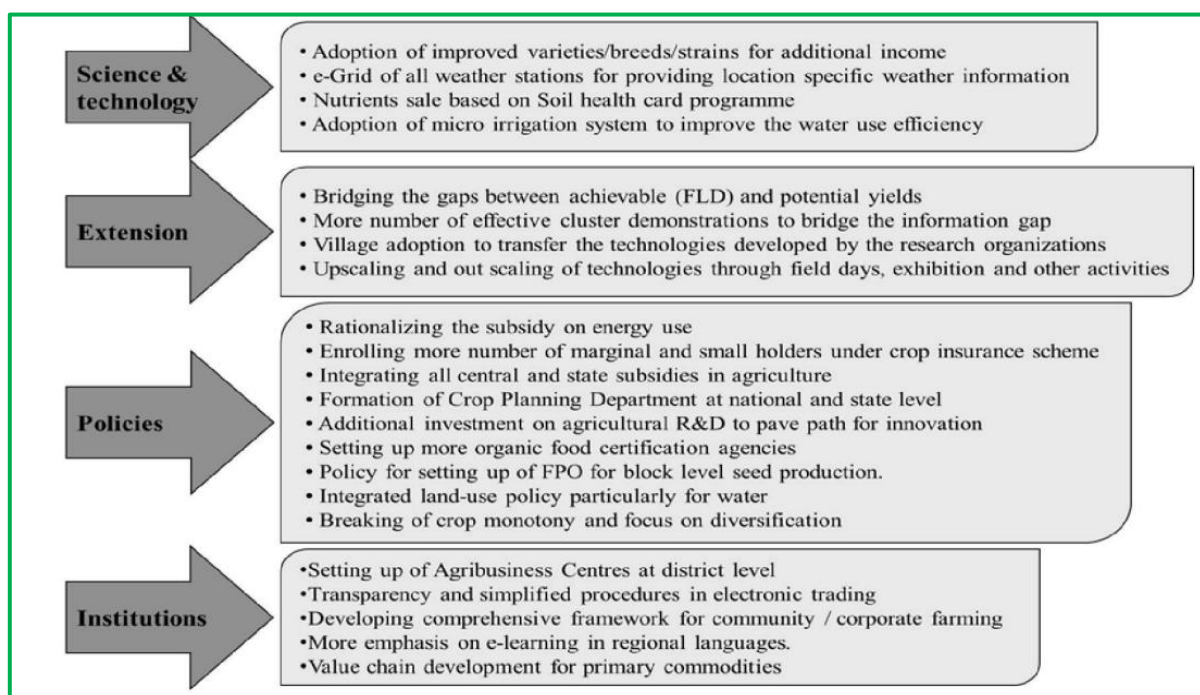
activities (cultivation and farming of animals) and 40 percent was derived from non-farm sources (wages, salary, non-farm business etc.). During the past 22 years, between 1993-94 and 2015-16, farmers' income in nominal terms increased 9.18 times.

Doubling farmer income- Framework

Increasing agricultural income by two-fold is a colossal challenge, but it's also an urgent necessity.

Increasing farmer suicide rates and erratic weather patterns further add to the problem. The sources of growth in output and income can be put into four categories.

- 1) Development initiatives including infrastructure
- 2) Technology
- 3) Policies and
- 4) Institutional mechanisms



Source- (Balkrishna 2022)

Fig- Sources of growth in output and income

To achieve the goal of doubling farmers' income, the government had set up a committee to recommend changes to all parts of the agricultural production and supply chain.

The Government constituted an Inter-ministerial Committee in April 2016 to examine issues relating to 'Doubling Farmers' Income' (DFI). Doubling the real income of farmers till 2022–23 over the base year 2015–16 requires annual growth of 10.41% in farmers' income (Chand 2017). This implies that the ongoing and previously achieved rate of growth in farm income has to be sharply accelerated. Hence, strong measures will be needed to harness all possible sources of growth in farmers' income within as well as outside the agricultural sector.

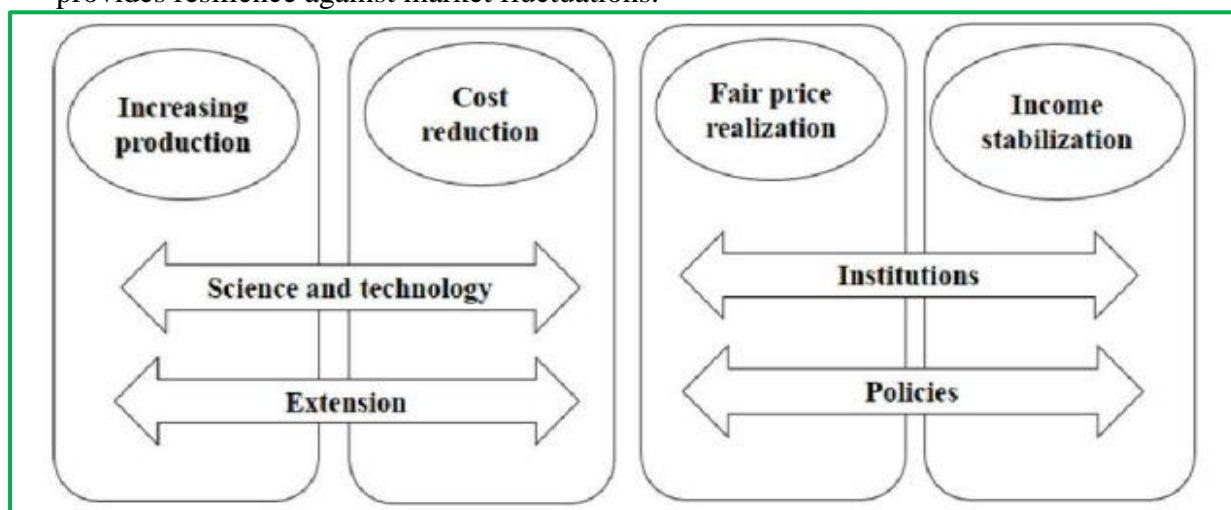
Strategies for doubling farmers' income

The quantitative framework for doubling farmers' income has identified the following strategies-

1. **Improvement in productivity-** by combining a better set of agronomic practices with better technology, varieties, and the use of high-quality seeds, fertilizer, irrigation, agrochemicals, and precision farming, it is possible to significantly increase agricultural

output and farmer revenue. Each year, the nation needs to utilize 12.8, 4.4, and 7.6 percent more high-quality seed, fertilizer, and power to support agriculture.

2. **Resource use efficiency or saving in cost of production-** Research organizations should strive to develop innovative technologies that push the boundaries of production and enhance the efficient utilization of resources. Enhancing Total Factor Productivity (TFP) stands as a crucial driver of output expansion, directly leading to cost reduction and consequently amplifying earnings. To attain the objective, there is a need to expedite the growth rates of underlying output-enhancing factors by 33 percent.
3. **Increase in cropping intensity-** India has two main crop-growing seasons, namely Kharif and Rabi. Land use statistics show that the second crop is grown on only 38.9% of the total cultivable land. This signifies that over 60% of agricultural land in the country remains fallow for half of the productive timeframe. Consequently, augmenting crop frequency will not only be advantageous for farmers but also augment their earnings. To achieve the envisioned target, there is a need to increase the extent of double cropping by 1.85 million hectares and expand irrigated land coverage by 1.78 million hectares.
4. **Diversification towards high-value crops-** Diversification towards high-value crops (HVCs) like fruits, vegetables, fiber, condiments & spices, and sugarcane offers great scope to improve farmers' income. Hence, the area under fruits and vegetables is required to increase by 5 percent each year. This reduces the dependency on a single crop and provides resilience against market fluctuations.



Source- (Balkrishna 2022)

Fig- Framework for implementation of the mission of doubling farmer's income by 2022

5. Increase in production of livestock-In the case of livestock, improvement in herd quality, better feed, increase in artificial insemination, reduction in the calving interval, and lowering the age at first calving are the potential sources of growth
6. The sources outside agriculture include:
 - Shifting cultivators from farm to non-farm occupations- Non-farm sectors provide 2.76 times more productive employment than the agriculture sector in rural areas.
 - Improved price realization by farmers- Improvement in terms of trade for farmers or original price received by farmers. Use of CPIAL (Consumer price index for agricultural labor) as a deflator to change nominal farm income to real farm income.

Combining all these strategies ICAR and SAUs should develop models of farming systems for different types of socioeconomic and biophysical settings combining all their technologies in a package with a focus on farm income. This would involve combining technology and best practices covering production, protection, and post-harvest value addition for each sub-system with other sub-systems like crop sequences, crop mix, livestock,

horticulture, and forestry. Such a shift requires an interdisciplinary approach to develop knowledge of all disciplines. There is a need to liberalize agriculture to attract responsible private investments in production and market. Similarly, FPOs and FPCs can play a big role in promoting small farm businesses.

Inside agriculture sector	Outside agriculture sector
<p>Improvement in agricultural productivity</p> <ul style="list-style-type: none"> 2000-01 to 2013-14, both the aggregate crop productivity and the required input productivity increased by the same rate of 3.1% annually. The rate of generation of total farm income would increase to 16.7% by 2020-21 and 25% by 2023-24 as compared to 2013-14. livestock productivity was sought to increase by 10.8% and 16.6% by 2020-21 and 2023-24 (increase the total farm income to 27.5% by 2020-21). 	<p>Repositioning cultivators from farm to non-farm occupations</p> <ul style="list-style-type: none"> In 2011-12, the worker productivity in the rural areas accounted for ₹62,235 per worker (64% farm sector workforce) and ₹1,71,587 per worker (39% non-farm sector workforce). Between 2004-05 to 2011-12, NSSO has revealed that there has been a sharp decline of 34 million individuals. The agricultural workforce is expected to fall to 55% by 2022-23, including a 13.4% reduction in cultivators.
<p>Improvement in total factor productivity</p> <ul style="list-style-type: none"> NITI Aayog policy report TFP in the Indian agricultural sector heightened to 2.62% during the period 2004 to 2012 and with this rate, the farmers' income is expected to grow to 26.3% by the year 2022-23. 	<p>Advancement of trade terms for farmers</p> <ul style="list-style-type: none"> NITI Aayog policy reports the farmers' income during 2011-12 to 2015-16 suffered a major setback due to crucially lower growth in constant prices of value-added agricultural products and also due to 50% higher increase in CPIAL than the increase in farm gate process of agricultural produce. Two major changes: <ol style="list-style-type: none"> Online trading as market reformation Opening markets to traders outside the mandi as a unified national agricultural market would bring a remarkable change in increasing the farmers' income considerably.
<p>Increase in cropping intensity</p> <ul style="list-style-type: none"> Low crop intensity is supposed to be the inaccessibility to sufficient water for proper irrigation Pat rate of 0.7% for an increase in cropping intensity in the country, the farmers' income can be significantly increased by 3.4% by the year 2022-23 and 4.9% by the year 2025-26. 	
<p>Diversification towards high-value crops</p> <ul style="list-style-type: none"> 2013-14, 77% of the gross cropped area of staple crops produced only 41% of the total crop output, while just 19% of the gross cropped area. The crop output can easily increase to 1% each year, leading to 5% increase in the farmers' income by 2022-23. 	

Source- (Balkrishna 2022)

Fig- Strategies of increasing farm income

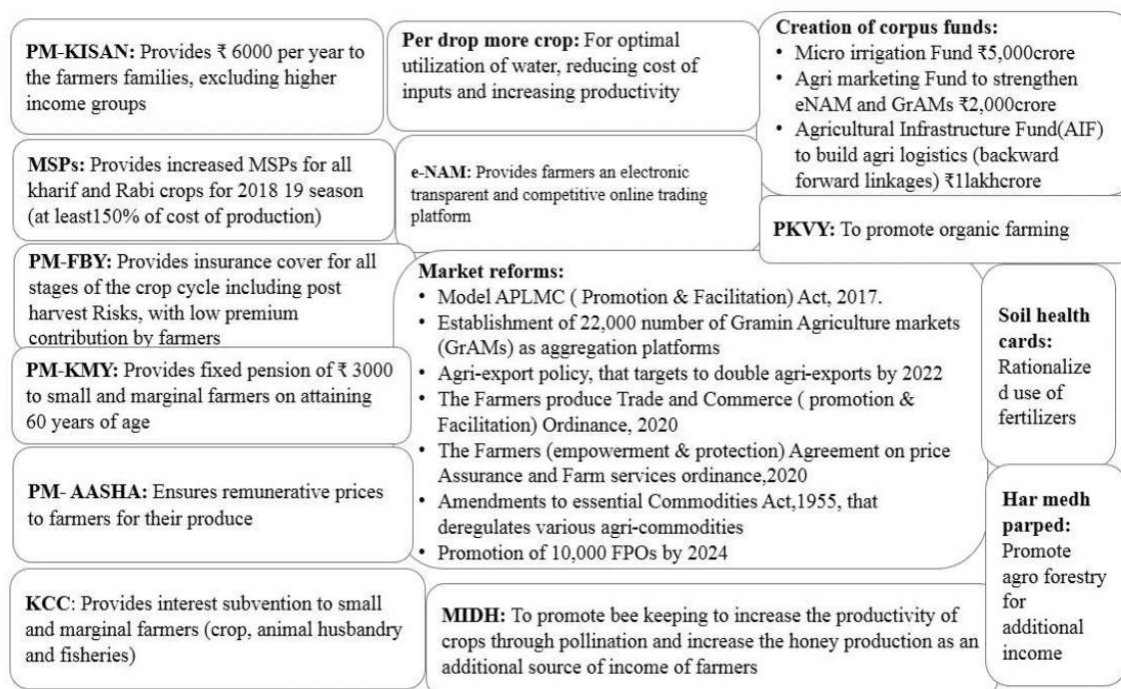
Initiatives taken by Govt. of India

1) Institutional Reforms

- Pradhan Mantri Krishi Sinchai Yojana, Pradhan Mantri Kisan Samman Nidhi (PM-KISAN), pradhan Mantri Kisan Man Dhan Yojana (PM-KMY), Soil health card, and Prampragat Krishi Vikas Yojana- Aiming to raise output and reduce cost.
- Pradhan Mantri Fasal Bima Yojana- To provide insurance against crop and income loss and to encourage investment in farming.
- Interlinking of rivers - To raise output and farm incomes.
- 'Operation Greens' to address price volatility of perishable commodities like Tomato, Onions, and Potatoes (TOP).
- PM Kisan Sampada Yojana to promote food processing in a holistic manner.
- MSP increase: The Government has approved the increase in the Minimum Support Price (MSPs) for all Kharif & Rabi crops for the 2018-19 season at a level of at least 150 percent of the cost of production.
- Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA)
- Atma Nirbhar Bharat Package for Agriculture: It includes comprehensive market reforms and the creation of 'The Agricultural Infrastructure Fund (AIF) worth Rs. 1 lakh crore.

2) Technological Reforms

- Initiating E-NAM: The National Agriculture Market (eNAM) is a pan-India electronic trading portal that networks the existing APMC mandis to create a unified national market for agricultural commodities.
- A Micro Irrigation Fund of ₹5,000 crore has been created under Nabard. The government has also rolled out various schemes for micro-irrigation & agricultural mechanization.
- Technology mission on cotton which aims to increase the income of the cotton growers by reducing the cost of cultivation as well as by increasing the yield per hectare through proper transfer of technology to the growers.



Source: (Balkrishna 2022)

Fig- Various initiatives by Govt. of India

- Technology Mission on Oilseeds, Pulses and Maize (TMOPM)
- The schemes implemented under TMOP are:
- ❖ Oilseeds Production Programme (OPP)
 - ❖ National Pulses Development Project (NPDP)
 - ❖ Accelerated Maize Development Programme (AMDP)
 - ❖ Post Harvest Technology (PHT)
 - ❖ Oil Palm Development Programme (OPDP)
 - ❖ National Oilseeds and Vegetable Oils Development Board (NOVOD)
 - **Mission for Integrated Development of Horticulture (MIDH)** a scheme for the holistic growth of the horticulture sector covering fruits, vegetables, root & tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo.
 - **Sugar Technology Mission** – aimed at reducing the cost of production of sugar and improving sugar quality through steps for improvements in productivity, energy conservation and improvements in capital output ratio.
 - **National Mission on Sustainable Agriculture** – aim at promoting sustainable agriculture through a series of adaptation measures focusing on ten key dimensions encompassing Indian agriculture namely; ‘Improved crop seeds, livestock and fish cultures’, ‘Water Use Efficiency’, ‘Pest Management’, ‘Improved Farm Practices’,

‘Nutrient Management’, ‘Agricultural insurance’, ‘Credit support’, ‘Markets’, ‘Access to Information’ and ‘Livelihood diversification’.

- **In addition**, schemes relating to tree plantation (Har Medh Par Ped), Bee Keeping, Dairy and Fisheries are also implemented.

Challenges

1. A NITI Aayog policy paper by Ramesh Chand states that **past strategies for the development of the agriculture sector did not recognize the need to raise farmers’ income** and focus primarily on raising agricultural output and improving food security.
2. The government has increased the **MSP for all crops**. However, the farmers question the cost calculation formula and allege that the actual production cost is much more than what has been factored into the formula.
3. **Decreasing Profitability in agriculture sector**: Profitability has been declining in recent years due to plummeting agricultural prices and rising cultivation costs. Recently, prices of critical inputs such as fuel and fertilizers have risen sharply as well. Further there have been issues in land and labour productivity on farms, post-harvest processing, agricultural research and extension, among others.
4. **Web of Middlemen**: There exists a strong web of intermediaries that enjoy maximum profit and leaves bare minimum revenue for the farmers. A major share of the income is cornered by the middlemen.
5. **Policy Lacunae**: According to many experts, the policies to achieve the growth rates have not been clearly articulated by the Centre to the states. This becomes extremely crucial considering agriculture is a State subject. In addition, there have been issues in the implementation of policy initiatives. For example, many States have opted out of PMFBY due to implementation issue.

Action plan

- 1) The Union Government needs to lay down a clear roadmap to wean farmers away from rice and wheat **towards more lucrative, high-value crops**. For this, the government should do greater MSP procurement of millets and educate the masses about their higher nutritional value in comparison to rice.
- 2) There should be a **focus on developing robust food processing industries** in every state that will help in boosting farmers’ income. For instance, Gujarat has one of the largest potato processing industries. The income of potato farmers has nearly trebled in recent years. This will reduce post-harvest loss and create an additional market for farm outputs.
- 3) **Boost to Allied Sectors**: Allied sectors, such as animal husbandry, dairying and fisheries, need to be given a boost to provide an assured secondary source of employment and income, especially for small and marginal farmers. Considering more than 86% of farmers are small and marginalized, measures of boosting alternative income like beekeeping, agroforestry etc. should be promoted.
- 4) There is a need to attract youth into agriculture by duly implementing schemes like ARYA and providing good agriculture education. **The participation of youth** will help in reducing the uncertainties associated with farming by acting as a bridge between state of art solutions and traditional farmers.
- 5) **Reallocation of Labour**: At present, the agriculture sector contributes 15% to India’s economy while employing > 40% of the workforce. The situation of the agriculture sector and farm income can be improved by reducing the burden of the population on agriculture by creating sufficient jobs in agriculture-linked industries and the services sector.
- 6) **Cooperative farming should be promoted**-This will allow farmers to take advantage of economies of scale, do better risk management and enjoy a greater bargaining power. The success of AMUL is a classic example of the benefits enjoyed by cooperative farming.

- 7) **Extension of Irrigation Facilities:** The coverage of irrigation facilities needs to be extended while ensuring an effective water conservation mechanism.
- 8) **Improve Agricultural Credit:** An inclusive approach to provision for agricultural credit has to be undertaken to address the issue of skewness in its regional distribution
- 9) **Exploring Global Markets:** There is a need to give increased focus on exploring global markets for agricultural commodities to give an additional source of market for the surplus of agricultural produce India currently has.

NITI AYOOG has identified a four-point action plan which includes the following measures-Remunerative prices for farmers by reforming the existing marketing structure; Raising productivity; Reforming agriculture land policy; and Relief measures (Kumar Shiv 2018). The gaps and measures suggested are as follows-

❖ **Remunerative prices for farmers by reforming the existing marketing structure-** It consist of 2 reforms: marketing reforms and minimum support price (MSP) reform. Under marketing reform, states have failed to address monopolistic and uncompetitive practices in the inter-state trading of agricultural products. The major disadvantage of MSP regime is that it totally ignores the demand dimension, thereby resulting in not only an inefficient use of resources but also accumulation of unwarranted stocks of cereals. Since the MSP regime favours cultivation of wheat, rice and sugarcane, not only has it led to reduction in the area under acreage of other crops like pulses, oil seed and coarse grains but it has also led to, as highlighted above, accumulation of unwarranted stocks of cereals.

Niti Aayog, has suggested a system of “price deficiency payments” to cure the distortion caused by the MSP regime. Under this system a subsidy would be provided on targeted produce in case the price falls below MSP-linked threshold. One advantage of this, as highlighted by the action plan, is that it would spread price incentives to producers in all the regions and all the crops considered important for providing price support.

❖ **Raising productivity-** Since Indian agriculture is dominated by marginal farmers (67.10%) so raising productivity is likely the single most important factor of incomes. The Niti Aayog has advised substantive investment in irrigation, seeds & fertilisers and new technology coupled with a shift into high-value commodities to double the incomes. To increase productivity govt. should provide subsidy ad support for farm inputs. The major input subsidies provided to farmer are fertiliser subsidy, the irrigation subsidy, the power subsidy. A fourth indirect subsidy is the credit subsidy. There is also a need to address the issue of lower farm mechanisation in India which is only about 40% as compared to about 60% in China and around 75 % in Brazil. A rental market for farm equipment and machines should be developed to relive monetary pressure on farmer.

❖ **Reforming agriculture land policy-** Niti Aayog has suggested bringing in far-fetched amendments in tenancy and leasing law so that small farmers who wish to lease their land do not face any hurdle. As the proportion of small and marginal holdings is significantly large, land reform measures like freeing up land markets can help farmers improve their Income.

❖ **Relief measures-** Issues such as investment in agriculture, insurance coverage come under relief measures. Niti Aayog has suggested many modifications in the existing Pradhan Mantri Fasal Bima Yojana. The action plan has suggested that the scheme should have a capped subsidy amount per farm household. Secondly, the plan has also suggested extending the time period of coverage under the scheme for three to five years so as that coverage extends to both good and bad years.

Way Forward

- 1) The low level of farmers' income and year to year fluctuations in it are a major source of agrarian distress.
- 2) To secure future of agriculture and to improve livelihood of half of India's population, adequate attention needs to be given to improving the welfare of farmers and raising agricultural income.
- 3) It is essential to mobilize States and UTs to own and achieve the goal of doubling farmers' income with an active focus on capacity building (technology adoption and awareness) of farmers that will be the catalyst to boost farmers' income.
- 4) Since India is a diverse country where the majority of agriculture is monsoon dependent therefore interventions are needed which include research, technology promotion, extension, post-harvest management, processing and marketing, in consonance with the comparative advantage of each State/region and its diverse agro-climatic features; and then the Country can indeed achieve the goal of doubling farmers' income by the year 2022.

Conclusion

Doubling farmers' income is not just an economic objective; it embodies a larger aspiration for agricultural growth, rural development, and food security. By employing strategies that focus on technological advancement, crop diversification, value addition, access to credit, and capacity building, governments and organizations can pave the way for the prosperity of farming communities. Addressing challenges like climate change impacts and policy implementation will require concerted efforts, but the benefits in terms of enhanced livelihoods, reduced poverty, and a stronger agricultural sector make the journey worthwhile. In this pursuit, collaboration between governments, NGOs, farmers, and the private sector is paramount. Ultimately, doubling farmers' income is a step towards creating a more resilient, sustainable, and prosperous agricultural landscape.

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