Bridging Income Gaps: Empowering Marginal Farmers

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ABSTRACT

Agriculture continues to be the backbone of Indian economy and principal source of livelihood of rural families largely by small and marginal farmers and ensuring the food and nutritional security. These farmers are confronted with a number of issues of credit, input supply, proper linkage with market and so on. Women farmers are behind in adopting the drudgery reduction technologies followed by health and nutrition of farm families. Their livelihood can be improved by using different strategies of information and communication technologies (ICTs), capacity building, fight against climate change and enhancing food production. Budgetary requirements also needs to be taken care of. Market-oriented research and investment also must be enhanced to protect our farmers from glut situation and earning more income by utilising the concept of FPOs/FPCs in broader perspective.(Kumar *et al.*, 2020).

INTRODUCTION

Although global food production has increased in the past few decades, almost 800 million people still have insufficient food in south and southeast Asia, the Caribbean and Sub-Saharan Africa (Anon, 2015).

Moreover, global food production must double by 2050 to match population and income

growth and much of this must happen in Asia and Africa. (Alexandratos and Bruinsma, 2012)

In India marginal and small holding farmers farm about 44 per cent of the land and grow about 60 per cent of the total food grain (49% of rice, 40% of wheat, 29% of coarse cereals and 27% of pulses) and more than half of the nation's fruits and vegetables production (Anon, 2015). In India small and marginal farmers' average holding size is around 0.38 ha compared to 17.37 ha for large farmers which are not able to create sufficient employment and revenue from their cultivation of crops (Dev, 2012). Moreover, small and marginal farmers are more productive per hectare than the large farmers and have more intensive cropping (Chand *et al*., 2011).

The significance of small farms is well recognized in their contribution to total food grain production and poverty alleviation and correspondingly the contribution of marginal and small farmers to the total output is greater compared to share in the total landholdings (Gururaj *et al*.,2017). Based on the agricultural census 2010-11 (Anon, 2011) marginal and small farmers had represented about 85 per cent of the operational holding in India. Likewise. the marginal farmers operated area was about 51 per cent in 1970-71 which rose to 67 per cent in 2010. This is a fact which shows that the small holding farmers of Indian agriculture are far more significant now than ever before.

As per Hegde (2019) serious issues which have aggravated the income of small and marginal farmers over the past couple of years are unsteady climate change and absence of appropriate technologies to cope up with the changing environment thus impacting crop yields, insufficient irrigation facilities owing to inefficient distribution of available water resources and lagging progress of new irrigation schemes and disrupted supply of electricity again creating a hindrance in utilization of the available water irrigation resources, increasing cost of inputs, small and fragmented farms and increasing cost of labour leading to high production costs and reduced crop yields, in the lack of decentralised storage and processing facilities small and marginal farmers not able to retain their produce until realisation of higher price nor process for value addition, inadequate agricultural extension and information services regarding choice of appropriate crops, advanced technologies, weather forecasts, pest types and disease prevalent in region, price and demand information of different farm produce etc failing to empower the farmers to take appropriate remedial actions in a timely manner, insufficient necessary credit to purchase different inputs in time, excessive premium for crop insurance and hesitation in payment of farmers' claims leading to cash squeeze outside their means to overcome the crisis and low productivity of livestock, excessive cost of feeding due to unavailability of feed and fodder, failure to get rid of old and unproductive cattle and vagueness regarding the economics of dairy husbandry generating uncertainty regarding the future.

Type of support systems

Natural resource management: In case of small and marginal farmers, to overcome adverse climate changes losses and preferring consumers choice, adoption of suitable cropping systems and selection of suitable crops is essential to promote farmers' income and provide good food to consumer. Greater emphasis should be laid on mixed farming where crops and livestock can be raised keeping to fodder crops. Farmer income can be supplemented with uptake of tree-based farming which is less vulnerable to climatic changes and is eco-friendly. With the emergence of new technologies greenhouse cultivation must be promoted intensively for high value cropping earning high income. To

counter climatic changes application of climate resilient technologies in pulses, oilseeds and millets must be promoted. Micro-irrigation (drip irrigation, sprinkler irrigation system, micro-sprinklers, micro-jets, rain guns, gravity-fed drip system and semipermanent sprinkler systems) is a blend of technologies which are showing sufficient potential to attain increased irrigation and cropping intensity with a substantial effect on resource and cost economy, crop yield followed by farm productivity with the potential of bringing about 42.2 million ha under drip and sprinkler irrigation. Out of this approximately 30.5 million ha are suitable for sprinkler irrigation for cereals, pulses and oilseeds, a portion of fodder crops followed by drip with a potential of 11.7 million ha under cotton, sugarcane, fruits and vegetables, spices and condiments and certain pulse crops like red gram etc. The highest actual area under drip irrigation was in Maharashtra (0.48 m ha) followed by Andhra Pradesh (0.36 m ha), Karnataka (0.18 m ha), Gujarat (0.17 m ha) and Tamil Nadu (0.13 m ha) (Gurjar *et al*., 2017).

Soil health management: Soil health management is a major sector of agriculture that needs equal and maximum care and management. The constant decline in soil health is very often cited as a key reason of declining and stagnating yields. Soils are less fertile but imbalanced and improper use of nutrient and negligence of organic manures use are causing multi nutrient deficiencies in many areas with time as every year there is net shortage of approximately 10 million tonnes of nutrients added and extracted from the soil. (Anon, 2018) For reducing soil erosion, adoption of contour bunding, land levelling, planting of trees on field bunds in the watershed and non-irrigated areas must promoted. Chemical fertilizers are expensive. This increases cultivation costs, which requires to promote organic manure production by providing incentives for biogas slurry production, NADEP, compost, green manures and biofertilizers, more use of biopesticides, biofertilizers including PSB for pulses. Promotion of neem-coated urea is one great move towards fertilizer application that will reduce the denitrification of urea. The government of India has initiated a number of soil health programs such as soil health cards, neem oil coated urea selling, subsidy policy for nutrients like phosphorus and potash, organic/natural farming, Paramparagat Krishi Vikas Yojana (PKVY), National Mission on Sustainable Agriculture, National Water Mission etc.

Animal sciences: Livestock rearing is one of the most principal economic activities in rural parts of the country, significantly contributing to the national economy. It provides additional income for most of the farm-dependent families and for most landless households revenue earned by the livestock rearing activities has been the mainstay. The livestock sector positively affects distribution. Marginal farmers and small-holders make approximately 67% of the land holdings and constitute the core livestock production industry (controlling around 75% of bovines and 79% of ovine). Medium and large landowners own 9.8% percentage of cattle population and largest issue in livestock production is confronted with a yield gap of 28-52% and shortage of dry fodder, green fodder and concentrate rise by 11%, 35%, and 28% concentration (Anon, 2019). Since India is dominating in milk production, top milch breeds ought to be promoted for better germplasm and producing best breeds. Similarly, improving best milch breeds with local breeds and crossbreeds are to be adopted. The population of males has been growing and it is imposing burden on marginal and small farmers for their feeding and health habits. In response to this there must be a need to remove the unwanted male population by sexually-sorting semen. Livestock-based integrated farming system must be promoted

and is the need of the period that can maximize economic return per unit area per unit time to marginal and small farmers. In the same way, an increase in the number paravets to provide required minor veterinary care, fodder bank setup decentralizes overall production units and a well-normed insurance scheme needs to be implemented to counter the losses.

Infrastructural support: It is crucial to strengthen the supply chain of agricultural produce grown by small and marginal farmers, as the market is progressing. For income generating activities, value addition and processing for marketing through cooperatives must be given priority. Also, promotion of initiatives such as e-Choupal need to be replicated for promoting better prices for agricultural products without middlemen participation. The government is offering minimum support price, remunerative price must be fixed for produce at market. For promoting group farming it is needed to establish farmer producer company (FPO) with farmers at village level for better forward and backward linkages to strengthen their revenue. Reasons for FPC's high growth as seen by (Anon, 2009) as energetic management board of directors and team, cooperation of banking institutions which provides hassle-free loans to the PC for working capital and a clean high-return business opportunity investment.

Extension and training: A thorough and efficient extension system must meet the demand of small and marginal farmers in this fast-changing scenario and is the need to enhance the income securing sustainable growth of farmers. Skill development or extension staff capacity building is necessary to adapt needs of farmers and perform better for farmers' satisfaction. For manufacturing a robust system there is need for conducting benchmark surveys to identify problems through agroecological analysis revealing serious farm issues and priority areas of research. These areas of research must be prioritized and converted into short, medium and long-term extension targets.

Women empowerment and gender mainstreaming: As agriculture sector is mostly employed by women in the rural areas, they are the pillars of family and the health management. In process to this there is need of empowerment of rural women through self-employment by SHGs' promotional efforts in the fruit sector, vegetables and millets processing to earn income and become self-sustained in the society. For marketing of processed products there is a system of packaging, labelling and marketing skill among the SHGs and facilitating them for FSSAI licensing. Likewise, there is need to promote improved farm tools and to reduce labour through enhanced farm equipment for reducing drudgery for farm women. Family improved nutrition and sanitation ought to be encouraged among rural women and adolescent girls. To meet family daily needs on vegetables and fruits, nutrition garden idea providing a solution to fulfil the requirement and make farm women empowered by their actions must be promoted. Farm income should also complemented by other social interventions like nutri-sensitive agricultural research and innovations (NARI) engages in gender empowerment and demonstrations on nutrition to further nutrition-based agriculture, capacity building and gender mainstreaming with family emphasis agriculture, connecting agriculture to nutrition, capacity-building among women and youth, biofortification of locally available food, round-the-year dietary pattern, nutri-Thali, nutrition smart villages, etc. SAMPADA (scheme for agro-marine processing and development of agro processing clusters) for creation of effective supply chain management system from farm to store, expanding growth of the food processing industry, generating enormous employment

vacancies, waste reduction of agricultural exports, increasing the processed food production generates more revenue for farmers and are big steps towards doubling of farmers income. Value addition and technology incubation centers (VATICA), run for incubation and skill development in KVKs and a few FPOs, must be established.

Information and communication technology (ICT) and knowledge management: Indian agriculture involves millions of small and marginal farmers and many of those small and marginal farmers who are illiterate and have little or no access to resources to access modern technology in agriculture (Yadav *et al*.,2015). ICT is an emerging tool for achieving meaningful societal transformation (Meera *et al*.,2004). The goal of information and communication technology (ICT) is to provide the benefits of information revolution to the rural masses by enhancing farming efficiency, farm productivity and farmers' income (Sangeetha *et al*., 2015). Thus, it is important to harness the entire capability of ICT to provide farm information in minimum time. Creation of national-level farmers database on coordination with agricultural technology application research institute (ATARI) in all areas of ICAR system for giving farm specific advisory that makes agricultural sector look more organised and helps in agricultural research will offer location-based data in real time. Likewise, it would be necessary to have a web interface with social media and networking platform. For providing current data for agricultural concerns in plant-specific mobile Apps (diagnostic) and video modules for different farming practices should be developed. Updating of regular information there is need to maintain KVK website with new technologies and success stories followed by market and crop insurance linking data on site with Agmarknet/e-NAM for newest facts for market insight. There is an attempt required for ICT-based farming design information management and delivery system and efficient and relevant modification and redesigning in use of existing technologies and increasing awareness and farmers' capacity building programmes (Kumar *et al*.,2018).

Climate smart agriculture: Climate-smart agriculture (CSA) is a restructuring and redefinition process of food security systems to support food security under new realities of climate change. The widespread rainfall and temperature pattern alterations threaten agricultural production and increase the vulnerability of individuals reliant on agriculture for their livelihood which covers a big proportion of the world's poor which has troubled food markets with population-level threats to food supply. Threats can be minimized by augmenting farmers' ability to adapt along with increasing resilience and efficiency in resource use in agricultural production systems (Lipper *et al*.,2014). The effects of climate change to crop yields show that yield losses would be up to 60 per cent depending upon crop location and projected climate scenario (Challinor *et al*., 2014). There is a call for promotion of climate smart agriculture (CSA) by the climate-smart village (CSV), institutional and technological strategy alternatives to dealing with climate change in agriculture. Providing weather-insurance; usage of ICT for dissemination of climate information-based agro advisories for development of decision support tool design for planning and investment also need to be promoted. The emphasis should be placed on organizations as mechanisms for linking level between national level and community level adaptation and the associated range of activity. It is important to go for selection of technologies to local contexts, mapping local institutions and working in institutional collaboration, social and gender inclusion in climate change adaptation and development.

Agricultural methods pose risks to various interrelated ecological, economic, and social challenges brought about by climate change. Therefore, it is essential to increase investment and foster public-private collaborations to effectively connect with local organizations, enabling better adaptation strategies to climate change (Kumar *et al*., 2019b).

CONCLUSION:

The prosperity of agriculture in India relies on supporting small and marginal farmers by effectively utilizing their land to boost production and overall income. It is essential to provide these farmers with fundamental support systems to enhance their knowledge and encourage the adoption of scientific farming methods. Connecting farmers to suitable market channels is a significant challenge. Farmer Producer Organizations (FPOs) and Farmer Producer Companies (FPCs) have emerged as promising solutions to mitigate market risks. There is a pressing need to implement viable and scalable plans, along with a robust support system bolstered by technical expertise. These organizations should be integrated into the supply value chain, which can be reinforced through the establishment of FPOs and FPCs. Additionally, infrastructural support is crucial for facilitating collective marketing. Special attention should be given to women farmers, ensuring they receive equal access to resources, information, and wage sharing. Promotion of technologies that reduce labour burdens is vital and should be implemented in collaboration with farmers during research planning and execution. It's also important to look for climate-smart technologies to address environmental changes and promote the adoption of resilient practices. By embracing these approaches, small and marginal farmers can achieve sustainable livelihoods and create opportunities for integrated income generation.

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