Is "Doubling Farmers' Income by 2022-23" a viable target? – Insights from the literature

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ABSTRACT

The Government of India has set up the target of doubling the income of farmers by 2022-23 in order to create a sense of income security among the farmers. The main purpose of this study is to synthesize the opinions of various researchers regarding the realization of such an ambitious target. The paper makes an attempt to describe the framework of "Doubling Farmers' Income by 2022" and highlights the challenges and measures suggested by various researchers to get deeper insights about the viability of the target. It was found that the views of experts about the attainability of the objectives are divided into two factions. Some of the researchers are hopeful about the realization of "Doubling Farmers' Income" through the integration of sources within as well as outside the agriculture whereas the others referred to it as the miracle of miracles.

INTRODUCTION

Agriculture, with its allied sectors, has sustained its supremacy in terms of employment generation and maintaining the food security of the nation. It caters to almost 70% of rural Indians occupied with it for the sustenance and contributes approximately 16% towards India's Gross Value Added (GVA) at current prices (Indian Economic Survey, 2019; Central Statistics Office, 2019). During the unprecedented situations like COVID-19, when all the businesses are thrashed, agriculture has emerged as the most promising sector with positive growth.

It is often argued that any organization cannot sustain for a longer period without any profit. Similarly, the appropriate returns of farmers have greater importance concerning the prosperity of agriculture. But, a larger majority of the households engaged with agriculture are grappled with low and erratic income (Food and Agriculture Organisation, 2017), the major indicators of agrarian distress [1]. Being the largest enterprise, agriculture assumes special attention to improve the condition of more than 140 million Indian farmers (Khanam et al., 2018; Ali, 2018). It is strongly believed that the higher and steady income of the farmers is the only tool to counterbalance the chronic agrarian crisis prevailing in India [1,2].

In this context, the former finance minister (Arun Jaitely), during the budget speech in 2016, announced the objective of doubling the income of farmers by 2022, provided 2015-16 as the base year [3], by quoting *"We are grateful to our farmers for being the backbone of the country's food security. We need to think and give back to our farmers a sense of income security. The government will reorient its interventions in the farm and non-farm sector to double the income of farmers by 2022".* The targeted income comprises the income from both, agriculture as well as the allied activities [4]. The studies of [1,3,5] stated the objectives of DFI as follows:

- To promote farmers' welfare
- To reduce agrarian distress and
- To reduce the disparity between the income of agricultural and non-agricultural households

In order to get a deeper insight into the challenges and prospects of "Doubling Farmers' Income by 2022-23" we reviewed the existing studies of various researchers. The present study is an attempt to synthesize the opinions and suggestions of various researchers about the attainability of the target.

Review of Literature

The review of the literature is organized as follows. The first section attempts to describe the framework of DFI. The next section comprises the major challenges to DFI whereas the third section deals with the opinions and suggestions of various researchers about the realizations DFI respectively.

Since the inception of five-year planning, agriculture has witnessed a considerable increase in production because of the greater concentration of previous strategies towards production enhancement [6,7,8]. During the last five decades, the food production has recorded a 3.75 times increase along with a commendable hike of 45% in per person food availability. But, the increased production does not always guarantee a higher income to the farmers [1]. Therefore the low level of absolute income along with regular fluctuations has become a natural corollary for the cultivators (FAO, 2017). [9] Found the per capita income of more than 70% of the farmers less than Rupees 15000. In 17 states of India, a median farmer is subsisting with less than Rupees 1700 as average monthly income (Indian Economic Survey, 2015) [10]. Furthermore, Alvarage, 2020; [11] noticed the widespread discrepancies between the income of agricultural and non-agricultural households as a common phenomenon in developing countries. An average farmer of the modern era is surviving on 30-40% of the income earned by an urban non-farm worker [7]. The situation of a farmer is quite similar to the cultivator of the 1980s who was living with one-third income as compared to the non-agricultural workers [1]. A large bunch of farmers is engaged with agriculture just because of the lesser skills beyond farming and willing to migrate if provided an option [10,12,13,2]. Poor socio-economic conditions and unhealthy enabling environment for the sector not only demoralize the interest of youth but also create dissatisfaction among the existing peasants [7,5,3,14,15]. Such dissent of farmers from their occupation hinders the long term investment in agriculture [12,7]. According to the National Crime Record Bureau, a significant number of households (12602) engaged in the farming sector have quitted their lives during 2015 because of indebtedness. Studies by [16,17,18] referred to the epidemic of farmers' suicide as a decadal phenomenon that unveils the stress of the farming community.

Agricultural Household

There is no specific definition of agricultural households. According to the Situation Assessment Survey of 2003, a farmer was a person who possessed some land and was involved with agricultural activities on that land during the last 365 days. The survey considered a family, having at least one farmer member, as a farmer household. Whereas the Situation Assessment Survey of 2013 defined an agricultural household as a household earning more than Rupees 3000 from agricultural activities and at least one member of the family is employed in agriculture, irrespective of the status of occupation either primary or subsidiary, during the last 365 days. The survey alienated the condition of land possession. Similarly, the National Bank for Agricultural and Rural Development (NABARD) in its survey named “NABARD All India Rural Financial Inclusion Survey 2016-17” (NAFIS) did not mention any condition about the possession of the land. The survey considered a household as an agricultural household if it is earning more than Rupees 5000 and at least one member is engaged with agricultural activities. Status of employment may be principal or subsidiary but an additional condition of minimum produce value of Rupees 5000 is implied to eliminate the households conducting insignificant agricultural activities. As per the agricultural census of 2015-16, the farmers are classified into 5 classes based on operational landholdings.

Classes of Farmers	Operational Landholdings (in hectares)
Marginal	0-1
Small	1-2
Semi-medium	2-4
Medium	4-10
Large	10 and above

All the other households, except agricultural households, will be considered as “Non-Agricultural Households” (NAFIS, 2016-17).

Despite the disparity in the definition of “Agricultural Household”, there is a similarity between all the surveys about the scope of agricultural activities. These activities are not just limited to the cultivation of field crops but also include other activities like animal husbandry, horticulture, beekeeping, poultry, fishery and plantation.

Farmers’ Income

As per the Committee on Doubling Farmers’ Income (DFI Committee), “net return is a function of gross return minus the cost of production”. Gross Farm Income (GFI) comprises the total value of agricultural output and the payments of government to the farmers through farm programmes (United States Department of Agriculture). Net Farm Income can be calculated by subtracting farm expenses from GFI. However, the target of DFI is to double the total income of farm households that comprises income from cultivation, livestock, nonfarm business, wages and salary [13].

2.1 Doubling Farmers’ Income: The Framework

In April 2016, an inter-ministerial committee (DFI Committee) was framed to look out the issues regarding DFI to recommend the strategies to attain the objectives. The committee derived three broad variables namely, enhancement of productivity, cost reduction and remunerative prices from the basic equation of economics (Net Returns= Gross Returns – Cost of Production).

According to the DFI Committee and Ministry of Agriculture & Farmers Welfare, the basic manifesto of the strategy is directed by the following concerns/issues:

- Optimal monetization of farmers’ produce
- Sustainability of production

- Improved resource use efficiency
- Re-strengthening of extension and knowledge-based services and
- Risk management

2.1.1 Seven Points Strategy

As per the committee, the strategy of DFI revolves around the seven critical sources of growth identified by [1], operating within or outside agriculture. The various sources of growth lying within agriculture are:

I. Increase in production
II. Effective use of input cost
III. Minimization of post-harvest losses
IV. Value addition
V. Reforms in agriculture marketing
VI. Risk, security & assurance

2.1.2 The 16 Points Action Plan

By the same token, the finance minister (Nirmala Sitharaman) proposed 16 Points Action Plan during the budgetary session in February 2020. The government allocated Rupees 2.83 lac crores for the sectors including agriculture, allied activities, irrigation and rural development for the financial year 2020-21. The plan comprises the following points:

i. To encourage the states who undertake the implementation of following model laws issued by the central government
   - Model Agricultural land Leasing Act, 2016
   - Model Agricultural Produce and Livestock Marketing Act, 2017
   - Model Agricultural Produce and Livestock Contract Farming Act, 2018
   - Service Promotion and Facilitation Act, 2018
ii. Comprehensive measures for 100 water-stressed districts
iii. Expansion of the Pradhan Mantri Kisan Urja Suraksha evam Uttam Mahabhiyan (PM-KUSUM) scheme
iv. To encourage the balanced use of all kinds of fertilizers by changing the prevailing incentive regime causing excessive use of chemical fertilizers
v. To provide viability funding for setting up cold storage warehouses at block or taluk level
vi. Promoting Self Help Groups (SHGs), specially the women SHGs, by availing the assistance through MUDRA and NABARD
vii. To build a seamless national cold supply chain for the perishables
viii. To encourage the focus of states towards one product one district
ix. To expand the Integrated Farming System in rain-fed areas

x. To integrate the Electronic Negotiable Warehousing Receipts (E-NWR) with Electronic National Agriculture Market (E-NAM)

xi. To expand the agricultural credit availability through the NABARD refinance scheme

xii. To eliminate the foot and mouth disease Brucellosis in cattle and Peste des petits ruminants (PPR) in sheeps

xiii. Blue Economy

xiv. Raising fish production

xv. Promoting the growing of algae, seaweed and cage culture

xvi. 16 points action plan

Further expansion of SHGs under Deen Dayal Antyodaya Yojana for alleviating the poverty

DFI: Has it happened before?

The literature shows the shreds of evidence of doubling of farmers' income, in nominal terms, in a smaller period of five to seven years, during last three decades, from 1987-88 to 1992-93, 2004-05 to 2009-10 [1] and 2006-07 to 2013-14 [19]. In this regard, [19] reported another important finding that the majority of income doubled states were relatively less productive in the base year as compared to the states with higher productivity. Likewise, Chandrasekhar and [20] also did not find the traces of DFI, in real terms, between 2003 and 2013. [1] reported that the real income of farmers was doubled between a long time of 22 years from 1993-94 to 2015-16.

2.2 Challenges to DFI

India is a self-sufficient economy in terms of food security [21] and counted among the largest exporters of agricultural produce. But, it is passing through serious agrarian distress despite higher production. Various studies [22,23,5,24,25,26,12,4,27,2] have been conducted to bring deeper insights about the poor condition of the cultivator, also referred as the Annadata. As per the DFI Committee, farmers are encompassed by the twin perils named as uncertainties of the production environment and the complexities of market forces. Climate change has become a catastrophic challenge in the way of "Doubling the income of farmers" [26,28,4]. Specially, the major parts of Uttar Pradesh, Madhya Pradesh, Rajasthan, Gujarat, Punjab and Haryana are highly sensitive to climate change [29]. According to the Composite Water Management Index released by NITI Aayog in 2019, India is ranked 120th among 122 countries in terms of quality of water and grappling with a serious issue of the water crisis. The disaster is also accompanied by the increasing frequency of droughts and the unsustainable depletion of groundwater.

The Trans-Gangetic plain zone of India, one of the highly productive area, is facing discomposure in agro-ecosystem due to stagnancy in the yield level of wheat and rice along with the diminishing trend of profit [19]. [7] reported stagnancy in the productivity of rice and wheat despite the increased use of fertilizers and other inputs. Despite having a rich diversity [19] and huge potential for agriculture, the north-eastern region is a laggard in terms of growth due to the irrational use of land resources, poor infrastructure, deficiency of fertilizers and quality seeds [30]. The growing regional disparity has become a notable feature of Indian agriculture [7]. Apart from the several uncertainties caused by nature, various other factors such that infrastructure, marketing, technology and governance also have a significant influence on agriculture. John F Kennedy described the farmer as the only person who buys everything in retail, sells everything at wholesale and pays the freight both ways. Out of 140 million farmers, 80% are marginal [7] and operating on the smaller pieces of land. The widespread land fragmentation directly hits the profit efficiency of such farmers in terms of increased costs of the inputs [31]. Moreover, Raghuram (2020) noted a spontaneous rise in the gap between input costs and the realization of the price by the farmers. They are not getting remunerative prices for their produce [5] because of the poor marketing infrastructure. Only 6% of the total farmers are getting benefitted through the minimum support price [10].

Particularly, the farmers operating on a smaller piece of land are not benefitted from the interventions like MSP because of the smaller volumes of produce, increased transportation costs and inability to negotiate the price.

Generally, the farmers depend upon the local suppliers and middlemen for the inputs [32]. Limited information of the farmers about prices, consumers and demand is the major cause behind their exploitation by intermediaries [27]. [2] found that the contradiction between the interests of farmers and their political representatives is the major factor behind the negligence of the agriculture sector. Moreover, the inefficient governance regarding the cost of inputs resulted in compressed margins for the farmers that make them look at the moneylenders to meet further credit requirements [22,25,33,34] conducted a study to identify the determinants of duration of credit overdue and to understand farmers' perception concerning the loan waiver scheme. For this purpose primary data was collected from 376 farmers of Mahendergarh, Hisar and Karnal districts of Haryana based on agricultural performance. The results reported crop failure and family health problems as the main causes of default in loan repayment by 95 percent of the farmers. Expenditure on the education of children was another significant reason for default. They found that the farmers with lesser overall income, younger age, lesser education, smaller farm size and higher loan amount are more likely to default. Furthermore, Chikara and Kodan (2014) found a negative relationship between informal borrowings and the size of landholdings that indicates the higher dependency of marginal farmers towards the informal sources of credit.

2.3 Opinions and Suggestions of Various Researchers

The singular concentration on cultivation concerning DFI would not be sufficient because a large number of farm households is involved with various other activities along with farming [36]. [1] found that the farmers who also have some other sources of non-farm income are relatively less indebted in comparison to the farmers who had reported agriculture as their principal source of income. According to the Department of Animal Husbandry and Dairying, the livestock sector can play a pivotal role in bringing sustainability to the agriculture system by offering alternatives in extreme weather conditions. More than 20% of the agricultural households, owing less than 0.01 hectares of land, reported livestock as their principal source of income. Dairy farming has emerged as a prominent secondary source of income for a large number of households residing in rural areas. One-fourth of the total rural households, specifically the marginal and small farmers operating on less than 2 hectares of land, is catering to a large number of total goats in the country [19]. Numerous tribal families of Nagaland are engaged with poultry farming [19].

A plethora of studies [36,3,7,30,37,38,39,40,41,42] have suggested various measures to enhance the earnings of the cultivators [40]. indicated the possibility of doubling the income of farmers through the adoption of farmer specific approach to increase production and emphasized the involvement of weed management as an important ingredient of strategy for DFI. But the higher productivity, without a sound domestic as well as an export market, can generate surplus produce that would squeeze the margin of profit to the farmers [24]. [43] did not found any influential increment in the income of the vegetable farmers in Punjab despite higher production and productivity because of the deficient infrastructure, particularly for post-harvest handling activities. Higher Minimum Support Price (MSP) along with improved procurement can be used as the tool to improve the condition of the farmers [22]. Arrangement of appropriate returns of farmers through direct purchase of their produce would assist in assuring higher income to them [7]. [45]. indicated the possibility of such arrangements through the establishment of farmers' markets to provide a more profitable venue that would enable the local farmers to directly trade with the potential consumers [41]. Highlighted the need for an effective communication channel to improve the accessibility of information among farmers [46]. highlighted the suitability of Farmer Producer Organisations (FPOs) for the wellbeing of the small and marginal farmers through the reduction in overall cost and ensuring a better remuneration for their produce [42] conducted an empirical study on 100 farmers of Karnataka and found the participatory labor techniques a helping hand for the small farmers to bring affordability in important farm activities.

By referring to the More from Less for More (MLM) paradigm, [37] argued the need for innovation-led agriculture to get more output through limited resources. [47] mentioned that the escalation of technology and innovation would bring sustainability along with enhanced production. Lately, researchers have observed a phenomenal stride of innovation in agricultural production, enhancing productivity and preserving the environment [48]. The studies of [48,37] identified various system-based technologies like Genetically Modified Crops (GMCs), crop diversification, integrated farming system, conservation agriculture, climate-smart cropping and integrated crop management to make the most from the limited resources.

Undoubtedly, agriculture would not have evidenced such phenomenal progress without the innovations in technologies [49]. But, the production-centric strategies in the past have resulted in an excessive burden on natural resources [50]. A shift from prevalent agricultural practices has become a necessary phenomenon for the preservation of the environment [51]. Conservation Agriculture is a sustainable agriculture production system that suits the local conditions to protect scarce resources such as soil, air and water (European Conservation Agriculture Federation). Many of the earlier studies highlighted the need for diversification towards high-value crops. Crop diversification offers a wider spectrum of crops to the farmers to decrease the risk of uncertainties [32]. Tripathi (2020) stated the promotion of diversification as a need rather than to be an amenity. It has become more critical for some north-western states (including Haryana, Punjab and some parts of Uttar Pradesh) which are known for the significant contribution towards the green revolution in the past [3]. The diversification could be used as a tool to tackle the seasonal variability of farmers' income [53]. [48] stated the two types of diversification- horizontal and vertical. Horizontal diversification comprises crop intensification and crop substitution whereas vertical diversification is concerned with value addition to the product through processing. [55] noted a nationwide diversification from coarse cereals to high-value food-grains like wheat and rice. Coarse cereals like millet (Bajra), can be grown in adverse climatic conditions, offer alternatives in dynamic weather conditions [38]. [55. argued that the proper diversification would boost the income along with the protection of precious natural resources like soil and water.

Some researchers provided certain suggestions for the farmers to strengthen their position on their own. The reliance of farmers on individual components rather than an integrated approach to farming [56] is subjected to a high degree of uncertainty in income and employment. [57] stated the need for a customer-oriented approach among farmers about the selection of the crops. [30] suggested that the appropriate selection of crops, scientific land use and better management practices will help elevate the income to the farmers [7]. Recognized that allied activities like horticulture, fisheries and bee-keeping can significantly contribute towards the consolidation of earnings to the farmers [13]. conducted the cost-benefit analysis of Integrated Crop Management (ICM) through budgeting methods and postulated that the ICM approach may diminish the earning of farmers in terms of increased expenses but favorably influence the environment and society through the reduction in the use of fertilizers and the health issues among farmers. According to the Model Contract Farming Act 2018, the essence of contract farming lies in the pre-production agreement between farmers and sponsors to transfer the risks of market uncertainties to the latter. Contract farming (CF) has resulted in more income to the cultivators [60] but the impact of CF is not so appreciable [59] because of the minute participation of the poorest farmers which is the real concern for ensuring their welfare [61]. Therefore, the role of public and institutional support becomes indispensable to determine the welfare of the poorest on a larger scale [62]. In order to accomplish the objective of Doubling Farmers' Income, the Government is focusing on numerous facets including income support schemes, crop insurance, water conservation, waste management techniques and agriculture marketing reforms. Recently, several steps have been taken for the development of agriculture in sustainable manner by considering various aspects like improving soil fertility, enhancing productivity, boosting production, risk coverage, easy availability of credit and consolidating the irrigation systems. But the real success of such initiatives depends on the sound implementation system. [5] highlighted the need for investment in cold storage and food processing to bring agility in post-production activities. Prioritized investment in underdeveloped areas would generate higher returns as the extra unit of capital is employed [36].

Technology-enabled supply chain system, the sound public distribution system and the use of collective intelligence of the grass-root farmers for improving the productivity of workers might be the significant contributors in improving the financial immunity of the farmers [37]. The development of the value chain would significantly contribute to job creation in the non-farm sector in rural areas [24]. Furthermore, the increased opportunities for employment in off-farm activities would assist in reducing the burden of the excessive workforce on agriculture [9]. Some researchers [37,47,48] suggested the innovation in technology as the key factor to the realization of the objectives of DFI. However, [19] emphasized the consolidation of the gains through prevailing technology and supplement policies rather than harnessing new science or research to address the objective of DFI within a specified time.

Aspiring targets like doubling the income of the farmers would require collaborative efforts of all stakeholders (i.e. government, farmers, non-government institutions, industry) associated with agriculture (Ali, 2018). Although the views of experts regarding the achievement of DFI by 2022 are divided into two factions as it would require an unprecedented growth rate. Some researchers [24,33] referred to the realization of DFI as the miracle of miracles because it would require a higher pace of growth [5], more than 10% per annum [24,1,33] that has not been attained in the past. Whereas the others [3,1,40] are hopeful about the same through the integration of resources within as well as outside the agriculture.

Conclusion

Many of the researchers have referred to "Doubling of Farmers' Income by 2022-23" as an ambitious target that would require an unprecedented rate of growth that has not been achieved in the past. It was found that none of the researchers had indicated the traces of doubling of farmers' income in a shorter time-span of 5 to 10 years. Because of these reasons most of the researchers have mentioned this target as a miracle of miracles. However, some researchers are hopeful about the attainability of the same objective through the integration of the resources available within and outside agriculture.

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