



## Doubling farmers' income: Its necessity and possibilities in Indian context

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### ABSTRACT

At the crucial juncture of Indian economy trying hard to shoot up its way to the trillion dollar economy club, it is inevitable that agricultural sector needs to contribute a large part to it, considering the fact that India is an agrarian economy. But this dream is impossible without thinking of a way out to increase farmers' income because ultimately the responsibility of food security of our nation rests on their shoulders and if they are feeble, then we can never expect any dream of economical growth to come true. With farmer suicide rate being 9.4 per cent and per capita income of farmer staggering low each year, it is difficult but not impossible to increase farmers' income. The article is a discussion of what models can be followed to achieve to some extent if not possible to fulfill the Prime Minister's call of Doubling Farmers' Income by 2022. The authors elaborate on the CPRV Model and the points of intervention from farm to fork pathway of any agricultural produce.

**Key words:** CDRV Model, Doubling farmer's income, Farm to fork interventions, Farmers' income

Agriculture in India engages nearly 119 million of farmers and 144 million landless labourers (Census 2011). According to the Agriculture Census (2012), about 80 percent of Indian farmers fall under the small and marginal category. The average size of land holding in India is 1.15 ha and will decrease even more in coming years due to land fragmentation, industrialization and urbanization which are forcing farmers to quit farming and look for more viable livelihood options (Bhattacharyya *et al.* 2018). Moreover, it is mainly the small and marginal farmers who are exposed to the high risk of farming which is a result of climate vagaries, uncertainties in production and market demand, lack of access to support services, and markets.

The risk is further jeopardized by the limited scope of farm mechanization and the consistent failure of half hearted government efforts which have been unable to make farming an exciting profession to the old as well as new generations. As a consequence the involvement of technorich and innovative section of the young generation in Indian agriculture has been always a distant hope and this situation presents both the cause and effect of low-remunerative agriculture in India. Moreover, agriculture has never been a passion or profession for the educated section of the society due to low profitability in Indian context. NSSO report

(2012-13), in alignment with the current scenario, says 40% farmers want to quit agriculture if they get alternatives. An immediate government intervention is very much necessary to alter and improve the situation before the fight for food security faces disastrous challenge from mass migration of Indian farmers to other occupations. Different remedial policies have been incepted at times to better the condition of farmers with limited achievements. Recently policy makers have awakened from slumber. Amidst brainstorming discussions on how to make farming a lucrative profession, the concept of doubling farmers' income has emerged as a new benchmark target for inclusive development of Indian economy. This has also sparked debate and questions on feasibility of such a grandiose goal. Without getting into controversies, this paper examines the challenges of Indian farming, the importance of doubling farmers' income in Indian context and provides a conclusive roadmap to doubling farmers' income.

### *Income level of Indian farmers*

It was difficult to arrive at any single figure regarding what is the present income level of a farmer in India. Various economists, statisticians had their own logic of calculating the income. Over the past three decades, Indian agriculture has grown at an annual rate of around 3 per cent. This has helped improve farm incomes and reduce rural poverty (Datt and Ravallion 1996; Warr 2003). However, of late, the farm sector has come under stress — the growth therein being decelerated to 2.7% per annum during 1995-96 to 2009-10 from 3.2% per annum during 1980-81 to 1994-95. But, more

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Table 1 Income source of farm household as per land holding size

| Land holdings               | % of total house hold | Per cent share in income sources |           |                    |                   |
|-----------------------------|-----------------------|----------------------------------|-----------|--------------------|-------------------|
|                             |                       | Agriculture                      | Livestock | Wages and salaries | Non-farm business |
| Sub-marginal (0.002-0.5 ha) | 40.0                  | 16.2                             | 14.8      | 36.1               | 32.9              |
| Marginal (0.5-1.0 ha)       | 23.3                  | 36.3                             | 15        | 21.4               | 27.4              |
| Small (1.0-2.0 ha)          | 19.0                  | 49.6                             | 15.7      | 15.4               | 19.3              |
| Medium (2.0-4.0 ha)         | 11.5                  | 56.6                             | 13.8      | 9.7                | 19.9              |
| Large (>4.0 ha)             | 6.3                   | 67.0                             | 12.2      | 4.4                | 16.4              |
| All                         | 100.0                 | 41.4                             | 14.4      | 19.8               | 24.4              |

Birthala *et al.* (2013)

worrisome is the continuance of excessive employment pressure on agriculture, despite a significant decline in its share in the national income. The sector engaged 52% of the country's workforce in 2009-10, compared to 69 per cent in 1983, while its share in the gross domestic product (GDP) declined from 40% to 15% during this period. Further, the Indian agriculture is dominated by small landholdings, and the average size of landholding has shrunk to 1.16 ha in 2010-11 from 1.84 ha in 1980-81 (Birthala *et al.* 2013).

The per capita income of very small farmers has been reported as ₹ 2503 to ₹ 32324 for large farmers per capita per annum. An overall average income of ₹ 10411 per capita per annum has also been reported through NSSO 2005 data (Birthal *et al.* 2014). The consumption expenditure survey of NSSO 2011-12 reveals that near about one out of five rural household with self-employment in agriculture as their principal occupation were having less income than the poverty line. The data also indicates about the condition of some prominent states like Jharkhand (45.3%), Odisha (32.1%), Bihar (28.4%), Madhya Pradesh (26.5%), Uttar Pradesh (23.2%), Karnataka (22.5%), Gujarat (22.5%) rural household below poverty line.

The figures indicate that the farm income has increased at different rates in last 22 years depending upon the growth rates of outputs, wage bills and price received. The real income growth rate for all farmers during the 1993-94 to 2004-05 was 3.30% and has increased up to 5.52% per year

during 2004-09 to 2011-12. Although per farmer growth rate has increased less than 2% in first decades and about 3% in later decades. When NABARD conducted a survey in 2016-17 (NABARD report 2018), the NABARD All India Rural Financial Inclusion Survey (NAFIS) showed that average agriculture household income was a mere ₹ 8931 per month in 2016-17. Farmers were facing rising indebtedness, lesser financial inclusion, and absence of insurance facility, according to the report. In the past four years, the income of a farm household had increased by just ₹ 2505 per month. This was calculated by comparing the NABARD report with a 2012-13 study by the National Sample Survey Organization (NSSO), another government body that estimated the average monthly income of farm household at ₹ 6426 (Jitendra 2018).

#### Reasons for low income of farmers

Indian agriculture is a complex entrepreneurship system. In one side it is commercially as competitive as international market, however in other side the direct benefit share of farmers in the profit chain is very meagre. In any case, deeply enrooted middlemen system cuts the maximum profit share under unrestricted political influence which pays, sometimes, less than the production cost to the farmers.

#### Low income, indebtedness and suicide: The impending necessity of doubling farmers' income

Low income forces farmers to borrow money from money lenders at exorbitant rates to carry out their agricultural activities and meet household and other expenditure for social occasions like marriages. But crop loss or low production and profitability makes them unable to repay their loans. The pressure of indebtedness becomes such that they become forced to commit suicide. The pathetic condition of Indian farmers can be explained by the alarming number of farmers committing suicide across the Indian states. Several controversies and political turmoil have taken place over this issue but

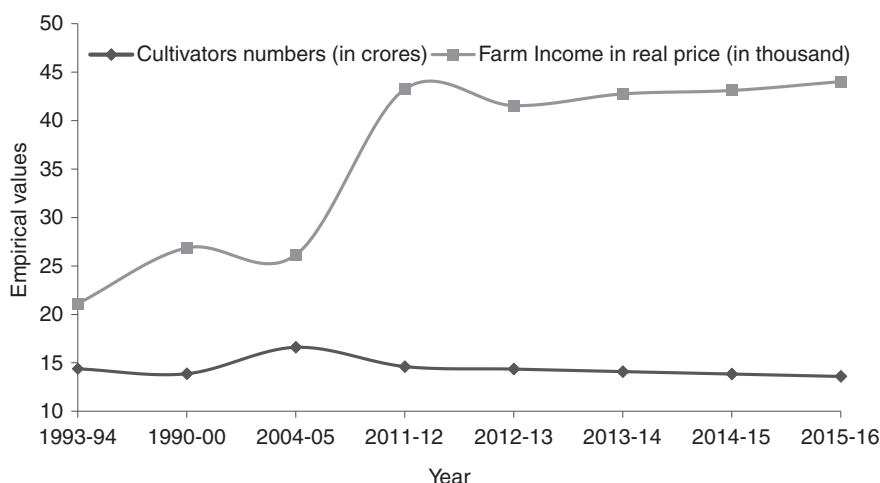


Fig 1 Trends in farmers income in India (base year 2004-05).

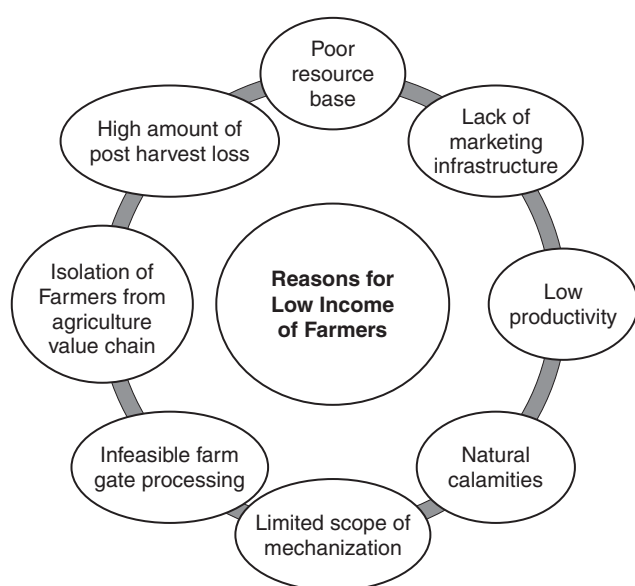


Fig 2 Issue of lower farmer income.

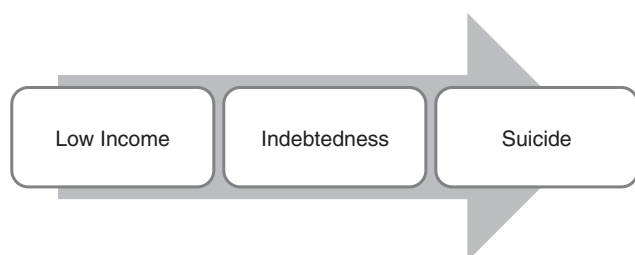


Fig 3 The vicious result of low farmer income.

without suggesting any plausible solution to this problem.

The National Crime Records Bureau (NCRB) of India reported that a total 296438 Indian farmers had committed suicide since 1995 (NCRB 2015). Of these, 60750 farmer suicides were only in Maharashtra since 1995 while others in Odisha, Telangana, Andhra Pradesh, Madhya Pradesh, Gujarat and Chhattisgarh. About 11.2% of all types of suicides committed every year in India are by farmers

(NCRB 2015). The Fig 1 shows the per cent of all suicides committed by farmers over the years in India.

The highest number of farmers' suicide occurred in 2002, thereafter decreasing with 9.4% in 2015. There have been doubts regarding the accuracy of farmer suicide data because of under reporting of such cases mainly because of social stigma and political underplay. Fig 2 shows the trend I farmer suicides over the years. The primary reasons of suicides as reported by farm families have been the indebtedness to different forms of money lenders in maximum cases (38.7%) followed by farming related issues (19.5%) (NCRB 2015). These figures are enough to point out the agrarian distress which India is going through and why the income level of farmers has become an issue of discussion.

#### *Roadmap to doubling farmers' income: The CPRV model*

The strategy for doubling farmers' income will be impossible to achieve by implementing a blanket policy or technology all over India because of regional disparity, agro-ecological variability and different resource base. Four broad strategies for doubling farmer income are: i) productivity maximization, ii) cost minimization, iii) value addition and marketing and iv) risk minimization. All these four strategies are being applied in several programmes and planning either individual or in combinations. As per the reviews value addition and marketing contribute much more in real income followed by cost minimization and production maximization, whereas the risk minimization strategy act as safety net from any negative externalities (Fig 5).

#### *The CPRV model: Interventions along the farm to fork pathway*

To achieve a sustained increase in farmers' income in India, it is necessary to intervene the farm to fork toil of farmers at four different levels in several ways. The four levels are Cost Minimization, Productivity Maximization and Risk Minimization which needs to be done in farm itself while the interventions of fourth level involving Value

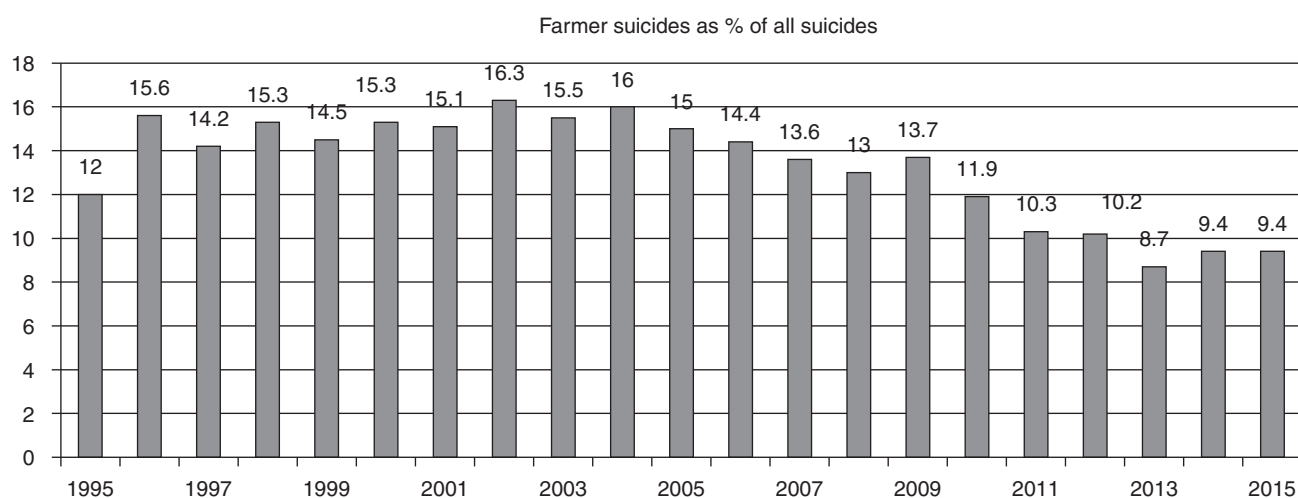


Fig 4 Farmers' Suicides as a Percentage of all suicides (NCRB, various years).

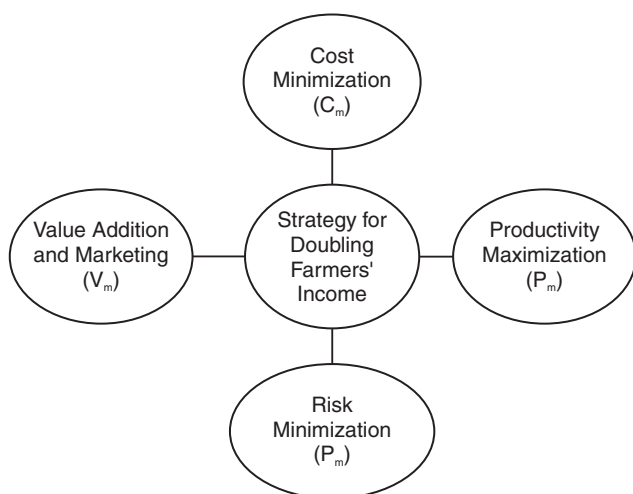


Fig 5 The CPRV model for increasing farmers' absolute income.

Addition and Marketing needs to be carried out both inside and outside farm. The practices or interventions which needs to be followed under each of the four levels has been explained below in details.

#### *In farm: Cost minimization ( $C_m$ )*

General economic rule says the real income of farmers can be enhanced through minimization of cost of cultivation. Cost minimization is a challenging work and requires proper planning before also during the crop season. It is an inside farm activity which involves decision making of the farmer and his farm family. It can be made possible through the use of improved technologies.

#### *Farm mechanization*

Cost of cultivation can be reduced by mechanization of farm operations. In India, majority of farmers are small and marginal which make mechanization a difficult task. In order to undertake mechanization of farm operations in small and marginal land holdings, the community farming is a best option. This will not only enable the mechanization of farm operations, it will also enable farmers to realize the benefit of scale economics by reducing the transaction cost and increasing the size of marketable surplus at aggregate level. The Custom Hiring Centres of various Government, NGO or private entrepreneurs can be utilized by small and marginal farmers who cannot afford to buy costly machinery themselves. Mechanization helps in reducing labour charges, completing agricultural operations on time so that delayed in operations do not affect the quantity and quality of agricultural produce.

#### *Resource use efficiency: Soil health card and PMKSY*

Resource use efficiency can be enhanced by adoption of location specific inputs, judicious use of inputs especially fertilizer and plant protection chemicals. The major initiative of issuing soil health cards to farmers to promote judicious use of fertilizers and protect soil health has an additional benefit of cost minimization also. The

application of recommended doses of fertilizer according to requirements of soil helps farmers to save money on by avoiding unwanted purchase of fertilizers and nutrients. Since the inception of the scheme, a total of 10.73 crore Soil Health Cards have been distributed to farmers during Cycle-I (2015-17) and 4.71 crore during Cycle-II (2017-19) (PIB 2018).

*Pradhan Mantri Krishi Sinchai Yojana (PMKSY)* was launched on July 1, 2015, to give "har khet ko paani" (water to every field) and improving water use efficiency through "more crop per drop". The government identified 99 projects for early completion under the Accelerated Irrigation Benefit Programme (AIBP), which together will irrigate 76 lakh ha upon completion. The component of micro irrigation (MI) in PMKSY has brought 8.13 lakh ha of additional area under MI (Gulati *et al.* 2016).

#### *In farm: Productivity maximization ( $P_m$ )*

With given situation of flourishing human population, area under agriculture cannot be expanded anymore, rather it is shrinking day by day. About 1 million ha land has been converted for non agricultural purposes since 2004 in India (Chand 2017). Therefore, enhancing productivity is the only option to enhance the farm income from the same small piece of land. Multi-story cropping, diverse crop selection, mixed and relay cropping and improvisation of cropping system involving cash crops have to come out from the text book knowledge to the farmlands for maximum use of resources. All these are interventions meant to be done within the farm.

#### *Quality inputs*

Some of the important means of increasing productivity include increasing seed replacement ratio, adoption of improved varieties/hybrids, promotion of resource conservation technologies like zero tillage, direct seeded cultivation of rice. In order to increase the production further, the cultivable waste lands should be brought under cultivation by inclusion of sustainable horticultural and field crops.

#### *Cropping intensity*

The production can be also enhanced by increasing the cropping intensity. Promotion of short duration and low input requiring crops like pulses will be instrumental in increasing the cropping intensity presently from 134 to 190% through assured irrigation and inputs supply at proper time proper quantity. Crop productivity growth rate should be 4.1% and livestock value added products 6% per year to double farmers' income by 2022.

#### *Post-harvest losses*

Post-harvest losses are one of the important causes of low farm income. Farmers loose more than 15% of their income due to post harvest losses. The post-harvest losses can be brought down by establishment of cold storage facilities, improving the farmers' access to the market and

adoption of scientific methods of harvesting, post-harvest handling, packaging, transportation and storage.

#### *Diversification through livestock*

Livestock is an important sector for enhancing farmers' income which can be improved by adoption of artificial insemination aided breed improvement, scientific fodder and feed management and creating adequate veterinary and animal husbandry facilities. A number of studies from developing countries have suggested that diversification of rural economy towards non-farm activities has considerable potential to augment farmers' income and reduce rural poverty (Adams *et al.* 1995; Adams 2001; Reardon *et al.* 2007; Reardon *et al.* 1998.; Barrett 2001, Lanjouw 1999). Diversification towards non-farm activities overcomes the land constraint to income growth, enables the farmers cope up with the shocks of crop failure and enhances their capacity to invest in productivity-enhancing agricultural inputs and technologies (Collier 1996; Reardon 1996). Area under high (presently 37.54 million ha) value crops should increase by 4.4% each year (Chand 2017).

#### *In farm: Risk minimization ( $R_m$ )*

Any enterprise or economic activity involves risk. In agriculture there remains chance of crop loss due to any natural catastrophe. Hence farmers can save themselves from incurring loss by adopting certain safety measures which again requires planning before the start of the cropping season.

#### *Crop insurance*

As agriculture till date remains heavily dependent on prevailing climatic conditions, crop insurance becomes essential for the farmer to protect himself from economic losses in the wake of natural calamities. Crop insurance in the Pradhan Mantri Fasal Bima Yojana (PMFBY) is another flagship programme to reduce risk of the farmers. For the first time, farmers' share of the premium was pegged at 2% for *kharif* crops and 1.5% for *rabi* crops. As a result, the area covered under insurance increased from 27.2 million ha in *kharif* 2015 to 37.5 million ha in *kharif* 2016, and the sum insured increased from ₹ 60773 crore to ₹ 1,08055 crore over the same period (Gulati 2016).

#### *Integrated farming system*

Most of the time success of crop production is uncertain because of external environment like rainfall, drought and market demand, supply etc. Therefore, it is advisable to shift farmers focus from crop production to other income generating activities so as to ensure consistent flow of income. Promotion of Integrated farming system approach involving synergic blending of crops, horticulture, dairy, fisheries, poultry, etc. seems viable option to provide regular income and at site employment to small land holder, decreasing cultivation cost through multiple uses of resources and providing much needed resilience for predicted climate change scenario.

#### *Both inside and outside farm: Value addition and marketing ( $V_m$ )*

Diversification into high-value agriculture requires a value-chain approach, and we are lagging behind in that, too. India may be producing 145 million tonnes of milk and more than 270 million tonnes of horticulture products but our processing levels (in the organised sector) are way below — less than 20% in milk, and less than 5% in fruits and vegetables — international levels. Encouraging processing and building value-chains would help create non-farm jobs in rural areas. Until all these factors come together, dream of doubling real farm incomes by 2022 will remain far-fetched (Gulati *et al.* 2016).

#### *Food processing*

Value of the end product of farm can be enhanced through adoption of high horticultural crops, undertaking of farm gate processing of agricultural produce, systematic grading, sorting, packaging and branding of the end product. Farmers can take these activities in a scientific and systematic way only if they are made aware about the importance of aforesaid activities and provided with adequate amount of training to undertake them. Care must be taken to ensure that adequate efforts are made to motivate, educate and train farmers to undertake the farm gate processing and value addition activities.

#### *Marketing efficiency through APMC, eNAM and GrAM*

Some marketing reforms have been introduced by Government but their successful implementation will take time. The idea of eNAM was introduced in 2016 to enable buyers located in distant places to purchase agri-commodities from any *mandi*. So far, 417 *mandis* located in 13 states are claimed to have been connected to the e-NAM portal. But still the implementation of the scheme has a long way to go considering the fact that Indian farmers are not that digitally sound (Gulati 2016).

Another honourable mention is the proposal in Union Budget 2018 of upgrading 22000 rural *haats* into Gramin Agricultural Markets. These markets were proposed to be linked to eNAM and made free from regulations of APMC enabling direct marketing by farmers. Also the physical infrastructure of these markets would be upgraded through MGNERGA. The marketing of agricultural produce by leveraging these Government schemes would not only enhance the efficiency of rural marketing but also ensure remunerative prices to farmers for their produce.

#### *Essential Commodities Act, 1955 and interest of farmers*

The Essential Commodities Act (ECA), 1955 was enacted to protect consumers from exorbitant price rises of certain daily use commodities. The Act declares hoarding of agricultural produce and creation of artificial demand in the market as illegal. But there are certain times when farmers themselves in order to escape the market glut and falling prices of their produce, restrict supply of their commodities into market and sell off when prices are fair.

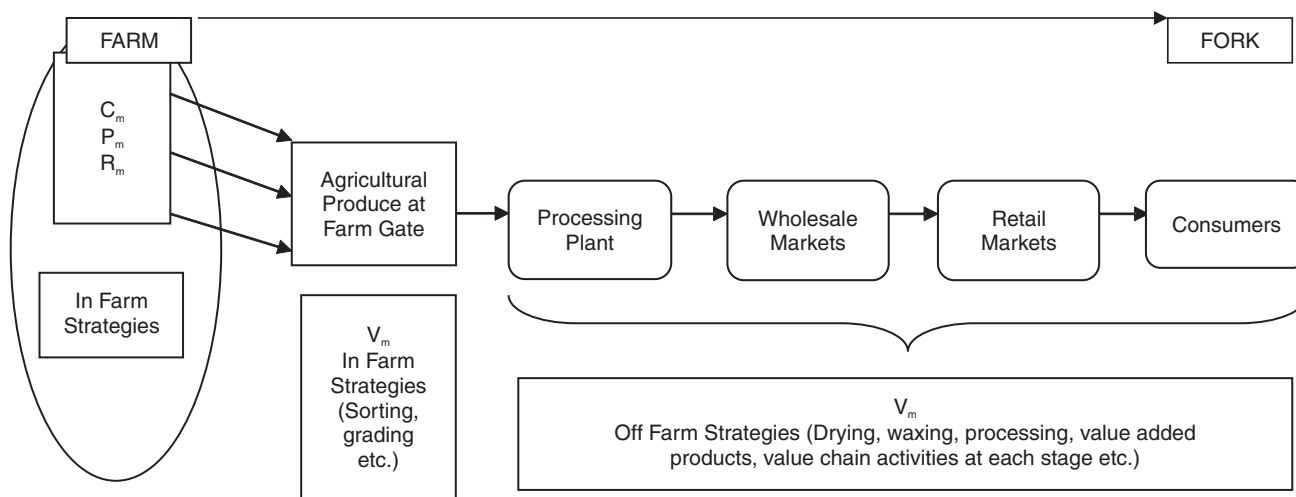


Fig 6 The CPRV Model: Interventions along the Farm to Fork Pathway.

Also in order to maintain year round supply of seasonal produce, hoarding of a certain amount is necessary. Here comes the necessary provision of making changes in the ECA to differentiate between speculative hoarding and justified hoarding of farmers to protect farmers' right to remunerative prices for their produce.

#### Bringing CPRV into practice

In order to bring the CPRV Model into practice, Government of India and other organisations have already initiated certain schemes which can be leveraged by farmers to realise their dream of enhancing farm income. Value Addition and Technology Incubation Centre in Agriculture (VATICA) has been conceptualized by ICAR to create a facility to provide incubation training to rural youth in processing and value addition. ICAR on its own funding support has created 3-4 units as model units in the KVK campuses. KVKs are strategically located and linked with Agricultural Universities and ICAR Institutes to identify different trades and establish trade-specific value addition and incubation centres for educating youth and the farmers to practice various components of technology management at the incubation centres and with the support from different lending agencies, they can establish their own processing and value addition units for commercial purposes. Promotion of cooperatives and commodity clusters can be done for quality management and control over market. There are plenty of examples of successful cooperatives in India among which brands like AMUL and Mother Dairy operate at national level. But unfortunately, these success stories have remained confined only to the dairy sector. Similar cooperative structures should be promoted in other agricultural products also to take advantage of aggregation of resources. Farmers can be organized into Commodity Groups and Commodity Clusters can be formed. When the small farmers are facilitated to organize groups, trained and guided properly, they can attain tremendous development goal which would eventually make the group self-reliant and

self-sufficient. Col. Deshwal of Bulandshahar, Uttar Pradesh, has set an unique example of such specialised agriculture and has secured the title of "Carrot King". Such clusters comprising farmers producing only a particular commodity can not only manage the quality of their product, share a uniform pattern of cultivation, pool resources but also exert command over that commodity's supply and price in the local market and also try for exports.

#### Conclusion

India is a vast nation with population of over a billion. Ensuring food and nutritional security of the nation rests on the shoulders of farmers and if farming becomes non remunerative then the day is not far when India has to revert back to its begging bowl status which was before the Green Revolution Era. Hence ensuring the wellbeing, growth and empowerment of farmers should be the first priority of our nation and the mission of doubling farmers' income is a step towards that.

#### REFERENCES

- Adams (Jr) R H. 2001. Non-farm income, inequality and poverty in rural Egypt and Jordan. Policy Research Working Paper 2572, World Bank, Washington D C.
- Adams (Jr) R H and He, Jane J. 1995. Sources of income inequality and poverty in rural Pakistan. Research Report No. 102, International Food Policy Research Institute, Washington, D C.
- Barrett C B, Reardon T and Webb P. 2001. Non-farm income diversification and household livelihood strategies in rural Africa: Concepts, dynamics and policy implications. *Food Policy* 26(4): 315-32.
- Bhattacharyya S, Burman R R, Sharma J P, Padaria R N, Paul S and Singh A K. 2018. Model villages led rural development: A review of conceptual framework and development indicators. *Journal of Community Mobilization and Sustainable Development* 13(3): 513-26.
- Birthala P S, Negia D S, Jha A K and Singh D. 2014. Income sources of farm households in India: Determinants, distributional consequences and policy implications. *Agricultural Economics*

- Research Review*. 27:(1) pp 37-48.
- Census. 2011. Govt of India Retrieved from <https://www.downtoearth.org.in/news/farmers-have-decreased-farm-labourers-increased-census-report--40940>
- Chand R. 2017 Doubling Farmers' Income: rationale, strategy, prospects and action plan. NITI Aayog, GOI.
- Collier P, Radwan S and Wangwe S. 1986. *Labor and Poverty in Rural Tanzania*. Calarendon Press, Oxford, U.K.
- Datt G and Ravallion M. 1996. Why have some Indian states done better than others at reducing poverty. Policy Research Working Paper 1594, World Bank, Washington D C.
- Gulati A, Manchanda S and Kacker R. 2016. Harvesting solar power in India. ZEF Working Paper 152, ZEF Centre for Development Research, Bonn, Germany.
- Jitendra. 2018. In 4 years, farmers' income has increased by just Rs 2,505 per month.
- Lanjouw P. 1999. Rural non-agricultural employment and poverty in Ecuador. *Economic Development and Cultural Change* 48(1): 91-122.
- NABARD report. *Down to Earth*. <https://www.downtoearth.org.in/news/agriculture/in-4-years-farmers-income-has-increased-by-just-rs-2-505-per-month-nabard-report-61410>, 2018
- NCRB. 2015. Accidental Deaths and Suicides in India 2015. New Delhi: Ministry of Home Affairs.
- NCRB. (Various Years) Accidental Deaths and Suicides in India. New Delhi: Ministry of Home Affairs
- PIB. 2018. Fertility of Soil. Ministry of Agriculture and Farmers' Welfare. New Delhi.
- Reardon T and Taylor J E. 1996. Agro-climatic shock, income inequality and poverty: Evidence from Burkina Faso. *World Development* 24(4): 901-14.
- Reardon T, Berdegue J, Barrett C B and Stamoulis K. 2007. Household income diversification into rural nonfarm activities. (In) *Transforming the Rural Non-farm Economy: Opportunities and Threats in the Developing World*. Eds: S Haggblade, P Hazell, T Reardon. Johns Hopkins University Press, Baltimore.
- Reardon T, Stamoulis K, Cruz M E, Balaiscan A, Berdegue J and Banks B. 1998. Rural non-farm income in developing countries. *The State of Food and Agriculture 1998* (Part III). Food and Agriculture Organization, Rome.
- Warr P. 2003. Poverty and economic growth in India. (In) *Economic Reform and the Liberalization of the Indian Economy*, Eds: K Kalirajan and U Shankar. Edward Elgar, Cheltenham, UK and Northampton, MA, USA.