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# Incidence of Poverty and Livelihood Status of Farmers in Bihar: Village Level Evidences

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## ABSTRACT

The study is based on the longitudinal information collected under Village Dynamics of South Asia (VDSA) project supported by the Bill & Melinda Gates Foundation (BMGF) in the selected villages of Bihar. An attempt has been made to explore the incidence of poverty and livelihood status of farm households between 2010-11 and 2014-15 using descriptive and econometric techniques. The study has shown that the incidence of poverty among farm households is high, but has shown an impressive decline of 34 per cent during the study period. The decline in poverty during period was higher in semi-marginal households (45.8%) than other categories of farm households. The implementation of targeted programmes of social security and public distribution system (PDS) might have contributed to faster reduction in poverty among weaker section of rural society. The total value of assets of the farm households, except of transport vehicles has considerably enhanced due to either possession of new assets, rejuvenation, and/ or value appreciation of the existing assets. There has been about two fold increase in the total value of assets during the period. The decline in poverty and increase in electrification and communication network might be responsible for phenomenal increase in domestic assets on farm households. There has been spectacular increase in access of farm households to toilet, electrification, cooking gas and communication facilities in villages, which indicate improvement in livelihood in rural Bihar. The investment on human capital or skill development along with the complementarities among various types of infrastructures, institutions and development programmes need to be ensured to accelerate the process of poverty alleviation and livelihood improvement in rural Bihar.

**Keywords:** Asset, Bihar, Farm households, Farmers, Livelihood, Poverty

## INTRODUCTION

Bihar, with a population of about 104 million, is the third most-populated state in India after Uttar Pradesh (200 million) and Maharashtra (114 million). The state supports about 9 per cent of population with 2.9 per cent of the geographical area and the most densely populated state (1106/Sq Km) of the country. Till recently, it was also one among the slowest growing states of the country but the growth rate of state's Gross Domestic Product (GDP) has considerably accelerated during the past 10 years, with state economy growing at about 10 per cent per annum. However, the state continues to be the economically most backward among the states of India, with one of the lowest annual per capita income (Rs. 31.3 thousand) and highest incidence of poverty (34.1%). Further, prevalence of

under-nutrition and malnutrition alongwith high mortality rate among children is rampant in the State. Agriculture continues to be a significant sector as it contributes about 19 per cent to the state Net Domestic Product and provides employment to about 67 per cent of rural work force. Agricultural households constitute about 51 per cent of the total rural households in the state, dominated by marginal and small landholder farms (Anonymous 2018). The dominance of marginal and small-scale farms (< 2 ha) and low labour productivity as main features of rural Bihar are expected to continue in the foreseeable future as pressure of population on land resource is still increasing. These marginal and small farmers, with declining resource base, require a steady flow of income from farming as well as other income-generating activities.

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There have been extensive studies on different aspects of farm business, but the dynamics of the household income and livelihood status has seldom been explored with a panel micro-level data set. The understanding of nature, pattern and dynamics of the household income and livelihood status in one of the most poverty stricken states of India is critical to outline the pathways for alleviating poverty and improving livelihood of rural households in Bihar. In the present paper an attempt has been made to study poverty level, asset possession, access to facilities to households and their participation to different programmes for rural development which have direct bearing on poverty and their livelihoods.

### **MATERIALS AND METHODS**

This study is based on high-frequency primary data collected for five years under the ICAR-ICRISAT collaborative project entitled, "Tracking Change in Rural Poverty in Household and Village Economies in South Asia." All the 38 districts of Bihar were grouped into two categories, that is, the more developed ones and the less developed ones on the basis of certain development indicators namely; agricultural development, socio-economic status and infrastructure parameters. A sample of two districts that is; Patna from more developed districts and Darbhanga from less developed districts were selected randomly for detailed investigation. A sample of one block from each district and two villages from each sample block were randomly selected. The census was conducted in each sample village and information pertaining to demographic characteristics, land, dwelling houses, the facilities available in each dwelling house, livestock, agricultural and domestic assets, and financial information were obtained from all the households in the identified villages, which were further grouped into four categories. The first group comprised households owning less than 0.40 hectare of land. These households were termed as 'Sub- marginal households'. In the second step, the remaining households were equally distributed among tertile groups, with the bottom, middle and top groups being referred to as the 'small', 'medium' and 'large' households, respectively. Thus, four groups were created in each village. Thereafter, 10 households were selected from each group randomly making sample size of 40 households per village and total 160 households from all the selected villages of Bihar. At first, the income of the household was worked out in terms of its earnings from

the farm, farm labour, non-farm labour, salaried jobs, business, caste occupation, remittances, pension, subsidy and benefit from government programmes and thereafter, poor and non-poor households were identified on the basis of their income. The data collected were analyzed using descriptive statistics (percentage, frequency counts and means).

### **RESULTS AND DISCUSSION**

While analyzing poverty related data, it was observed that the overall incidence of rural poverty was 62.3 per cent in Bihar in 1993-94 which was much above the all India level of 37.3 per cent. It declined to 55.7 per cent in 2004-05 and further declined to 34.1 per cent in 2011-12 as against national level poverty levels of 42.0 per cent, and 25.7 per cent, respectively. Hence, the incidence of poverty has continuously declined in Bihar during last two decades. It was mainly due to faster economic growth, particularly in agriculture and service sectors (Singh *et al.*, 2014). A comparative analysis of rural poverty among different categories of farm households revealed that the poverty among sub-marginal households has been much higher than incidence of poverty in other categories of farm households during the period under study (Table 1). However, the incidence of poverty declined from 48.4 per cent in 2010-11 to 13.9 per cent in 2014-15 in villages under study. It was mainly due to rapid economic growth in Bihar during the period. The State GDP grew at the annual rate of 7.6 per cent (at 2011-12 prices) during 2011-15. It has further been observed that the incidence of poverty declined with increase in ownership of land by households, indicating inverse relationship between poverty level and ownership of land (Chand *et al.*, 2015). Hence, land still plays an important role in alleviating poverty and improving livelihood status in rural Bihar. Promotion of non-farm rural employment observed to be the most appropriate option for increasing crop productivity and improving livelihoods of small landholders in Bihar (Singh *et al.*, 2018). It is suggested to promote additional income generating activities in the tribal areas and reduce their sheer dependence on farming activity for livelihood security (Patil *et al.*, 2019).

The decline in poverty was higher in sub-marginal households (45.8%) than corresponding decline in other categories of farm households during 2010-11 to 2014-15. The implementation of targeted programmes of social

**Table 1: Year and household category wise population below poverty line in villages under study (%)**

Year	Sub-marginal (≤0.4 ha)	Marginal (0.4 to 1 ha)	Small (1 to 2 ha)	Medium (> 2 ha)	All
2010-11	69.8	58.2	49.5	9.1	48.4
2011-12	46.8	45.9	15.1	3.4	32.2
2012-13	47.3	42.6	12.9	3.2	30.4
2013-14	30.7	31.6	18.1	2.9	24.2
2014-15	24.0	19.4	14.1	1.6	13.9
Decline in poverty over five years (%)	45.8	39.3	35.4	7.5	34.5

Source: Authors' estimates based on VDSA Field Survey, 2010-11 to 2014-15

security, emphasis by government on development of rural infrastructure and improvement in functioning of Public Distribution System might have contributed towards faster reduction in poverty among weaker section of rural society. The majority of households of sub- marginal category belong to farm and non- farm labour households. Hence, an increase in average rural wage from Rs. 127 in 2010–2011 to Rs. 208 in 2013–2014 in these villages had accelerated the process of declining poverty in this category of households (Kumar *et al.*, 2016).

**Asset of farm households:** Household assets are defined broadly to include natural, physical, human, financial and social capital at the disposal of the households. These assets are stocks, which may depreciate over time or may be expanded through investment. Based on access to a particular set of assets for a given period, the household then decide which activities it will select and the intensity of involvement in that activity. Possession of household assets is strongly associated with the levels of poverty as well as livelihood status of farming households. Sources of assets have a detrimental effect on the ability of households to pursue successful household livelihood strategies and levels of human security are determined by access to and the quality of sources of assets. Lack of access to or control over the asset is detrimental for improving livelihood status of farming households. Table 2 depicts the value of assets of an average farm household in villages under study. The households own numerous assets and listing complete inventory is neither desirable nor comprehensible. Therefore, almost all measurable assets were clubbed together and classified under five broad groups, viz. (i) farm machineries, (ii) livestock, (iii) transport, (iv) domestic assets including items of communication, and (v) residential houses. The farm machineries group

includes all machineries, tools, and implements which were used on farm. The livestock assets comprised farm animals, which were being reared by the households. The transport group included motor bikes, cars, bicycles, and other means of transport including 'Jugars'-locally fabricated means of rural transport. The domestic assets included all items used to carry domestic chores and also to communicate. The residential houses encompassed all sorts of structures being used for habitation of family members and animals and storage of farm produce.

The total value of assets of the farm households except transport vehicles has considerably enhanced due to either possession of new assets, rejuvenation, and/ or value appreciation of the existing assets. There has been about two-fold increase in the total value of assets in this short span of five years, viz. 2010-11 to 2014-15. Among main assets owned by farm households, residential house is the most important asset because it is necessary for living of family members of all categories of households.

Farm equipment was also an important asset, possessed by all the farm households in 2010 and the value of assets increased with some minor variation due to either depreciation or addition of some machineries and implements. The value of farm machineries in 2014-15 increased probably due to subsidy available to farmers for purchase of agricultural machineries under Rashtriya Krishi Vikas Yojana. Domestic assets constitute about one-fourth of total value of assets in 2010 and their value increased by about three fold during period under study. The proportion of value of domestic assets also increased to 37.5 per cent in 2014-15. The decline in poverty and increase in electrification and communication network might be responsible for phenomenal increase in domestic assets on farm households.

**Table 2: Per household value of assets on farm households in Bihar (in '000 rupee)**

Assets	2010-11	2011-12	2012-13	2013-14	2014-15
Farm machineries/implements	44.2(10.3)	39.1(8.2)	40.0(8.2)	40.6(7.9)	45.6(5.8)
Livestock	21.2(5.0)	13.7(2.9)	15.6(3.2)	19.2(3.7)	19.7(2.5)
Transport vehicles	20.8(4.9)	14.7(3.1)	21.1(4.3)	17.0(3.2)	15.7(2.0)
Domestic assets	113.3(26.5)	131.2(28.1)	132.8(27.2)	149.8(29.0)	293.7(37.5)
Residential houses	227.9(53.3)	268.7(57.5)	278.8(57.1)	289.9(56.1)	408.4(52.2)
<b>Total</b>	<b>425.4(100.0)</b>	<b>467.4(100.0)</b>	<b>488.3(100.0)</b>	<b>516.5(100.0)</b>	<b>783.1(100.0)</b>

Source: Authors' estimates based on VDSA Field Survey, 2010-11 to 2014-15

Note: Figures in parentheses indicate percentage to value of total assets in the respective year

All the farm households had their own residential house and invested, on an average, Rs 1.86 lakh, accounting for more than three- fourth of investment on total assets owned by them. Type of residential house of Farmers has also been examined. Residential houses are categorized in four groups namely; *pucca* (brick walls and RCC roof), *semi – pucca* (brick walls with tiles roof), *kutcha* (mud walls with tiles roof) and *thatched* (mud walls with thatched roof). An increase in proportion of *pucca* residential houses and decline in proportion *kutcha* and thatched houses of farmers clearly indicates an improvement in living condition of farming communities in villages of Bihar (Himanshu 2019). However, one- tenth of farming households were still living in *kutcha* and thatched residential houses. Some of them had high severity of poverty and they were living in un-hygienic condition, which needs institutional intervention for improving their livelihoods.

**Access to facility:** Access to facilities is an important foundation for improving livelihood of weaker section in rural area which generates strong linkages to other economic sectors. Rural livelihoods are enhanced through providing facilities like; hygienic living, toilet, safe drinking water, safe cooking facility and access to mass communication. There have been marked improvements in availability of facilities in rural area (Table 3). The lack

of access to clean water and sanitation facilities for rural communities is responsible for high incidence of water borne diseases which accelerate the cycle of poverty.

Government launched a massive programme for improving access to toilets to achieve open defecation free (ODF) status across rural India by December, 2018. Analysis of data revealed that various facilities for improving livelihoods in rural area observed increasing trend during period under study. Access to toilet increased among farm households from 42.5 per cent in 2010-11 to 53.8 per cent in 2014-15. Number of electrified farm households also continuously increased from 49.5 per cent in 2010-11 to 71.8 per cent in 2014-15, mainly due to launch of Rajiv Gandhi Rural Electrification programme in the state.

There was no tap water facility available to farm households in most of villages under study; however, the community tap water facility was available in only one study village, which also became non – operative. Hand pipe water is considered as safe drinking water and about 34.4 per cent of households had their own hand pipe in their dwelling house in 2010-11 which increased to 54.2 per cent in 2014-15. There were sufficient number of public hand pumps available in villages and all households had access to the hand pumps for drinking purposes, however,

**Table 3: Access to Facilities on Labour households during 2010-11 to 2014-15 (% of households)**

Particulars	2010-11	2011-12	2012-13	2013-14	2014-15
Toilet	42.5	43.2	44.2	51.7	53.8
Electricity	49.5	56.3	59.4	67.5	71.8
Safe drinking water	34.4	41.9	49.4	49.4	54.2
Cooking gas	14.2	25.6	31.9	30.6	33.8
Cable connection	0.6	0.6	13.1	12.5	15.6

Source: Authors' estimates based on VDSA Field Survey, 2010-11 to 2014-15

some farm households were also found using ponds/pyne for bathing purposes. Only 14.2 per cent farm households were using cooking gas in 2010-11, which increased to 33.8 per cent in 2014-15. The majority of them did not afford cooking gas but depend on residue, collected wood and dung cake for cooking purposes. During five years of study period, it was observed that farm households showed increasing interest towards cable connection in their households but most of them had less expensive DD antenna.

Hence, it may be said that access to facilities increased to farm households during last five years but still the majority of them were deprived of various facilities for improved livelihood. It can only be accomplished by public intervention by providing subsidy to needy households. Based on the findings of the study, it is recommended that the farmer should be given more opportunities to participate in various income generating activities in both agriculture and non-agricultural ventures and rural development programmes, which would enhance their livelihood diversification activities (Barrett *et al*, 2001).

**Access to development Programmes:** Various programmes for welfare and development of the rural households are implemented by different departments of Union and State governments. The social security systems in the form of pensions to vulnerable groups and welfare funds for various categories of rural households are

reasonably well spread. Universal public distribution system in Bihar helps improving food security. These measures have prevented abject poverty to a great extent. But from the point of view of capabilities as well as entitlements, Bihar is still much behind in helping rural society in comparison to other states in tackling the problems of the poor. More than 20 development and welfare programmes are being implemented in rural Bihar for the benefit of rural households and the majority of these programmes are targeted to the weaker section including farm households.

Analysis of data related to various development and welfare programmes revealed that Public Distribution System (PDS) was the most popular programme for farm households because three-fourth of farm households had access to this programme. Food grains and kerosene oil are provided through PDS to Below Poverty Line (BPL) families and only kerosene oil to Above Poverty Line (APL) families. Social security schemes were the second popular scheme among farm households because their participation showed increasing trend during period under study. It includes old age pension, pension for physically handicapped and widow pension. About 12.5 per cent farm households had access to these schemes in 2010-11 and increased to 16.4 per cent in 2014-15. Hence, it may be said that the coverage of social security schemes observed increasing trend in Bihar during the period under

**Table 4: Proportion of farm households obtained benefit through different govt. programmes (Figures in %)**

Development Scheme	2010-11	2011-12	2012-13	2013-14	2014-15
Public Distribution System	77.5	76.9	78.1	77.6	77.6
Mid-day Meal	1.9	26.9	36.4	35.7	32.1
Social Security Schemes (Pension)*	12.5	15.0	13.6	18.4	16.4
Agril. Development Project	5.0	13.1	30.9	1.8	Neg.
Anganwadi	8.1	6.9	10.5	15.5	16.4
Drought/Flood relief	5.0	8.8	00	00	00
CM Cloth& Bicycle programme	00	7.5	1.8	15.1	16.3
MANREGAS	1.9	2.5	00	0.6	00
Indira Awas Yojna	2.5	00	00	00	00
KCC& SHG	17.5	17.5	00	8.6	0.6
Other Programmes**	3.2	0.6	00	00	00

Source: Authors' estimates based on VDSA Field Survey, 2010-11 to 2014-15

Figures in parentheses indicate per labour household benefit from respective scheme/project

\*Includes Old age Pension, Pension for physically handicapped and Widow pension.

\*\*Includes Family planning and other ad hoc assistance

study. In mid-day meal scheme, students (children) are provided mid-day meal in the school which not only help increasing enrolment and attendance in the school but improve health of children by reducing malnutrition among children, particularly children belonging to poor households. The coverage of mid-day scheme was very low in 2010-11 (1.9%) but it covered more than 30 per cent of farm households in terminal years of the study. The access to various agricultural development programmes namely; National Food Security Mission (NFSM), Rastriya Krishi Vikas Yojana (RKVY), National Horticulture Mission (NHM) etc. varied much widely among farm households under study. It was about 31 per cent in 2012-13 and became negligible in 2014-15.

Anganwadi project was started by the Union government in 1975 as part of the Integrated Child Development Services program to combat child hunger and malnutrition. Anganwadi centres also provide basic health care in villages. It is a part of our public health-care system. Basic health-care activities include contraceptive counseling and supply, nutrition education and supplementation, as well as pre-school activities. The Centre is also used as depots for oral rehydration salts, basic medicines and contraceptives. About 8.1 per cent farm households had access to Anganwadi centres of their village in 2010-11 and coverage was increased to 16.4 per cent by 2014-15.

A few farm households got benefit from MNREGA and Indira Awas Yojna during initial years of study (2010-11) but none of farm households got benefit from these two important schemes meant for poor and socially backward community. Really these projects lost their steam during last few years in Bihar, particularly in villages under study. Flood and drought relief programmes are not a regular programme because it operates in the year of drought and flood only. Bihar faced serious drought in 2010 and devastating flood in some parts of Bihar in 2011 and few farm households got some relief. But it is evident from information available in villages under study that it is only cosmetic programme for farm households.

CM Cloth and Bicycle programme was launched in Bihar for providing school dress and bicycle to girls' student in school which has been a successful programme in the state. About 7.5 per cent farm households got benefit from this project in 2011-12 and its coverage increased to

16.3 percent in 2014-15 in villages under study. Self Help Group (SHG) is not a popular programme in Bihar and the progress of Kisan Credit Card (KCC) programme is also unsatisfactory. During 2010-11, the coverage was about 17.5 per cent of farm households but their coverage observed declining trend. Farm households had more access to social security schemes than agricultural development programmes.

## CONCLUSION

The study has shown that the incidence of poverty among farm households in the selected villages of Bihar is high, but has shown an impressive reduction of 34 percent during 2010-11 to 2014-15. The implementation of targeted programmes of social security and PDS might have contributed to faster reduction in poverty among weaker section of rural society. Among various development programmes PDS is the most common which helped reducing poverty and strengthening food security in rural Bihar. However, social security programmes seem to be more robust than economic development programmes including agricultural development. The investment on human capital or skill development in rural area will be equally important in the endeavor for alleviating poverty and improving livelihood status. Finally, the complementarities among various types of infrastructures, institutions and development programmes need to be ensured to accelerate the process of poverty alleviation and improving livelihood in rural Bihar.

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