Socio-economic Characterization of Rural Households: A Village Level Analysis in Bihar

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1.0 Introduction

The alleviation of poverty has consistently been one of the chief objectives of Indian policy. The country's modern history contains myriad examples of discussion on this topic as far back as 1901 (Srinivasani, 1998). After India achieved independence from Great Britain in 1947, it launched a series of development programmes under various Five Year Plans which contain some kind of poverty eradication or social justice components. The consideration of economic policies vis-à-vis their impact on the poor highlights a continued emphasis by Indian policy makers on poverty alleviation.

The First Five Year Plan was launched in 1951, since then there have been eleven plans, the most recent being the Twelfth Five Year Plan launched in 2012. The consideration of economic policies viz-a-viz their impact on the poor highlights a continued emphasis by Indian policy makers on poverty elimination. However, there have been serious shortcomings of government efforts in alleviating poverty during the past few decades. Even after sixty five years of independence, one - fourth of India's Population still lives in poverty.

In India, poverty is conventionally defined in terms of income poverty, i.e., number of people living below the poverty line and it is measured in different ways, predominantly in terms of inadequacy of income to procure a defined minimum level of calories. It has to be noted that the so defined poor may be incurring expenditure, not just on food intake to get minimum number of calories, but also on several other non-food items. Hence, the methodology of estimating poverty and identification of BPL households has been a matter of debate in India. The Multi-dimensional Poverty Index (MPI) is also being used to measure the incidence of poverty. MPI indicates the share of population that is multi-dimensionally poor adjusted by the intensity of deprivation in terms of living standards, health and education. According to this parameter, India with a poverty index of 0.296 and poverty ratio of 46.6 per cent is among 50 poor nations of the world (Government of India, 2011).

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The substantial regional differences in economic growth and human development indicators within India are also cause of great concern. Even within states, urban and rural sectors show a considerable disparity. An understanding of why certain states were able to reduce poverty would facilitate the implementation of effective policies for poverty reduction through- out India. Some states have had the benefit of starting with a low level of poverty, when states were reorganized. Others have empowered the poor by developing their internal resources, arranging more central assistance and promoting social and economic equality.

During the mid to late 1990‘s, the country experienced tremendous economic growth, particularly in industrial and service sectors. Its GDP grew at close to 6 percent annually during this period (Panagariya 2002). Many individuals have suggested that poverty fell considerably during 1990‘s due to trickle down effects. Others do not find evidence that the economic growth strategy employed by Indian Government has reached broad segments of the population.

Historically, rates of poverty reduction have been very closely related to agricultural performance, particularly to the rate of growth of agricultural productivity. In simple terms, this indicates that the countries that have increased their agricultural productivity must have also achieved the greatest reductions in poverty. However, agricultural growth alone may not be sufficient to substantially reduce the incidence of rural poverty. In India, Ahluwalia (1978) indicated that trickle down mechanism operated in the rural India. However, Bardhan (1985) did not find any evidence of the existence of strong linkages between agricultural productivity and poverty reduction. Srinivasan (1985) had cautioned that the results showing relationship between agricultural growth and poverty reduction should be interpreted carefully since there was very little evidence of trickle down mechanism at the all India level. Dev (1998) had shown that labour productivity in agriculture explained a large part of the variations in poverty. On – farm employment is critically important to poor people‘s livelihoods, and not just for the landless-agricultural labours but it is a key means for many farmers to supplement their income. Evidence on this subject is primarily drawn from the Green Revolution experience in Asia. In India increasing agricultural productivity associated with the adoption of new technologies clearly increased demand for labour (Lipton and Longhurst, 1989; Hazell and Ramasamy, 1991). Furthermore, the majority of the additional labour used was hired rather than family labour.

A healthy growth of real agricultural wages is considered to be a sufficient condition for significant reduction in rural poverty (Deaton and Dreze, 2002). Rural wages in real terms have increased considerably during the period 1983 to 2004. The growth in real wages increased from 2.0 per cent during 1983-93 to about 3.4 per cent per year during 1993-2004. The significant increase in real wages in the rural areas, particularly in recent years may be attributed to the several initiatives undertaken under the various government schemes. The

government investment in rural infrastructure and rural development might have also contributed to this growth in wages (Kumari, 2011)

Besides economic factors affecting rural poverty, an effective population control, improvement in educational level and development of better infrastructure were the major factors identified for eradication of poverty in Bihar (Thakur et al., 2000). The probability of experiencing poverty was more in those households which had more chronic energy deficient (CED) persons. This implied that higher the percentage of CED persons, higher was the probability of households remaining poor. This calls for strengthening and effective implementation of various nutritional programmes, namely mid-day meals, Annpurna Yojana and Antyodaya Anna Yojana. The safe drinking water and the availability of basic amenities including health care to the poor households would improve the probability of their moving out of poverty (Kumari and Singh, 2010). The participation in social organizations had an inverse relationship with poverty. This implied that probability of being poor was higher when there was less participation in social organizations like Gram Panchayats, Dairy Cooperatives, Schools and Primary Agricultural Credit Societies (PACS). This calls for the need to encourage and provide opportunity to the poor households to participate in social organizations to minimize their poverty. Hence, investment in improving the quality of human capital would contribute positively to poverty alleviation by increasing labour skills. It calls for more investment in the improvement of educational infrastructure and periodic evaluation for their smooth functioning.

In India, Bihar is amongst the poorest states with poverty incidence of 41.4 per cent. Per capita net domestic product has been estimated to be $ 446 for Bihar which is about one – third of the corresponding national average ($ 1220) and less than one-fourth of Haryana ($ 2052), one of the richest states in India (Government of Bihar, 2011). There has not been any significant influence of the agricultural development and poverty alleviation programmes on reducing poverty incidence. It reflects that strategies adopted under various rural development programmes seem to be inappropriate in the Bihar context. The most of the programmes aimed at improving the economic status of poor households, only a few attempted at improving their human capital (i.e., education, health, housing, social participation, etc.). This might be the reason for ineffectiveness of these programmes on alleviating poverty during the last three decades.

1.2 Poverty :

Bihar is the poorest state in India. The overall incidence of poverty in Bihar as per Planning Commission is 53.5%, much above the all India level of 29.8%. Incidence of rural poverty in Bihar declined from 64.4 percent in 1983-84 to 56.6 percent in 1993-94 and further declined to 55.3 percent in 2009-10 (Table 1.1). The rural poverty gap between Bihar and India has

increased from 18.8 % in 1983 to 19.3% in 1993-94 but declined to 13.7% in 2004-05, which again increased to 21.5 % in 2009-10. Incidence of poverty has continuously declined in Bihar during last 26 years but number of poor persons increased from 38 million in 1993-94 to 54 million in 2009-10.

Table 1.1: Incidence of Poverty during last 30 Years

Period	Bihar			India		
	Rural	Urban	Combined	Rural	Urban	Combined
1983-84	64.4	47.3	62.6	45.6	40.8	44.4
1993-94	56.6	40.8	55.1	37.3	32.4	36.0
2004-05	55.7	43.7	54.4	42.0	25.5	37.2
2009-10	55.3	39.4	53.5	33.8	20.9	29.8
Change in rural poverty (%)						
1983-1994	- 7.8	- 6.5	- 7.5	-8.3	-8.4	-8.4
1994-2005	- 0.9	2.9	- 0.7	4.7	- 6.9	1.2
1983-2005	- 8.7	- 3.6	- 8.2	- 3.6	-15.3	- 7.2
2005-2010	- 0.4	- 4.3	- 0.9	- 8.2	- 4.6	- 7.4
Number of Poor persons in million						
1993-94			38		318	
2004-05			49		407	
2009-10			54		355	

1.3 Study Area

Bihar is the third largest state in India with respect to population and seventh largest in area. It supports 8.8 per cent of country‘s population with only 2.8 per cent of land mass. Agriculture is an important sector since it generates 16 per cent of State GDP but provides employment to 70 per cent of rural working force. About 69 per cent of total geographical area is used for cultivation but almost one–third area is under problematic with respect to soil or ecological situation which includes Water logged area (0.40 million ha.), Diara area (0.93 million ha.), Alkaline soil (0.32 million ha), and Tal area (0.10 million ha). Agricultural production showed increasing trend during last five years but agricultural productivity is still lower than corresponding national average. During 1983-94, there was almost no growth in agriculture sector in Bihar. Net State Agriculture Domestic Product stagnated at $ 0.73 billion during 1983-94 but Net State Domestic Product increased from $ 1.64 billion to $ 2.14 billion (at 1980-81 prices). Per capita income increased by less than one US Dollar; from $ 22.29 to $ 22.98 during the period but poverty declined by 7.5 percent. Performance of agriculture was also much poor in ninth five year plan (-1.4%) and tenth five year plan (0.96%), as given in Table 1.2.

Table 1.2: Growth in SGDP and SAgGDP in Bihar during 9th, 10th and 11th five year plans

Particulars	9th Five Year Plan	10th Five Year Plan	11th Five Year Plan
SGDP	2.9	4.0	10.93
SAgGDP	(-) 1.14	0.96	2.6

Despite the poor performance of agriculture in eighth and ninth five year plans, incidence of poverty declined by more than 10% during the period. Under adverse situation of two flood years (2007 & 2008) and two drought years (2009 & 2010) during the period of Eleventh Five Year Plan, the state achieved 2.6% growth in agriculture and 10.93% growth in State GDP. Agriculture performed much better in Eleventh Five Year Plan and recorded SAgGDP growth of 31.06% in 2006-07 and 11.32 % in 2008-09. Milk production increased from 3.0 million tonnes in 2004-05 to 6.3 million tonnes in 2010-11. Fish production also increased from 0.27 million tonnes in 2004-05 to 0.30 million tonnes in 2010-11. Despite higher growth in Bihar's economy, incidence of poverty increased from 41.4 % in 2004-05 to 56 % in 2009-10.

Agriculture is still an important sector in Bihar since it contributes about 16 per cent to State Gross Domestic Product and provides employment to about 70 per cent of working force in rural area. The state is characterized by small land holders in the country. More than 90 per cent of farm households belong to marginal farm category (less than 1 ha land) but own about 44 per cent of cultivated land in Bihar (Table 1.3).

Table1.3 Category wise distribution of landholdings in Bihar and India (%)

Farm size	Bihar				India			
	2003	**1992**	**1982**	**1971**	**2003**	**1992**	**1982**	**1971**
Marginal < 1 ha.	89.40	80.56	76.55	71.71	42.07	28.58	23.96	18.20
Small (1-2 ha.)	07.10	11.10	12.42	15.11	25.29	23.84	22.91	23.43
Semi-medium (2-4 ha.)	02.70	06.00	07.79	09.15	18.53	24.45	27.02	28.07
Medium (4-10 ha.)	00.70	02.14	02.82	03.66	09.56	18.68	20.22	23.63
Large > 10 ha.	00.10	00.20	00.31	00.37	04.63	04.44	23.63	06.67
All farms	100	100	100	100	100	100	100	100

Agriculture sector experienced a drastic change with respect to public investment, use of inputs, extension activities and crop-milk-fish production. State government assigned priority to the sector through providing fund to this sector by increasing annual average budget allocation from less than Rs. 200 crore during 2001-06 to more than Rs 1,000 crore during 2006-11. In Bihar, the State Agricultural GDP was almost stagnant at Rs 32.5 billion during 1981-94 and its growth was negative in Ninth Five Year Plan (-1.14%) which turned positive

in Tenth Five Year Plan (0.96 %). During 2004-11, State AgGDP grew at the annual growth rate of 2.6 per cent. However, State Gross Domestic Product recorded growth of 10.9 per cent during the period which was higher than corresponding growth achieved at national level. State agriculture sector also achieved spectacular growth of 31 per cent in the year 2006-07. But the state failed to maintain higher agriculture growth due to flood in 2007 and 2008, and drought in 2009 and 2010. Despite severe drought in 2010, the state recorded the food grain production of 125 lakh tonnes and milk production of 63 lakh tonnes, indicating sustainability in agricultural production in Bihar.

Per hectare Net State Agricultural Domestic Product (NSAgDP) increased from Rs. 29750 in 2001-06 to Rs. 36,193 in 2006-11, which worked out to be an annual increase of 4.3 per cent during the period, indicating increase in productivity of crops and animal in the state. However, an increase in area under high value crops and increase in high yielding dairy animals have also been observed during the period. Average per capita Net State Agricultural Domestic Product also increased from Rs. 1904 to Rs. 2209 during the period but annual increase was lower than the increase in per hectare NSAgDP, mainly due to increase in population by 25 per cent during the period 2001-11, which was higher than annual agricultural growth in the state. Bihar ranks sixth among major states of India with respect to per hectare State Net Agricultural domestic Product but at the lowest ladder with respect to per capita SNAgGDP. State Government prepared a Road Map for development of agriculture and allied sectors and tried to implement several projects/programmes for faster development of these sectors in the state. It is a coincidence that the Union Government has also launched several Mega projects namely; National Horticulture Mission, Rastriya Krishi Vikas Yojna and National Food Security Mission for agricultural development during last five years

Climate of Bihar is favourable for production of various field crops but agriculture of the state was highly dependent on behaviour of monsoon and distribution of rainfall till 2010. During the last 10 years, food grain production was the highest (122 lakh tonnes) in 2007-08 when state received the normal annual rainfall (1196 mm) in 56 rainy days but produced the lowest food grain (79 lakh tonnes) in 2004-05 when annual rainfall was below normal (1003 mm) with the least number of rainy days (26). The state has achieved almost sustainability in agricultural production because the record food grain (125 lakh tonnes) was produced in 2010-11 with only annual rainfall of 866 mm with only 34 rainy days. Food grain production in drought year was even higher than food grain production of the normal annual rainfall year 2007-08. In Bihar, there was severe drought in 1966 when only 866 mm of monsoon rainfall was received and food grain production was declined by 50 percent of normal production level. An increase in food grain production in the state in drought year 2010-11 was made

possible due to increase in number of private tube wells installed by farmers. However, the State Government also made some cosmetic efforts for maintaining agricultural production.

1.4 Agricultural production scenario:

Analysis of food grain production during last 10 years revealed that average area under food grain declined from about 68 lakh hectares during 2001-06 to 67 lakh hectares during 2006-11, but their share in gross cropped area remained constant at 88 per cent during the period. Despite decline in area under food grain and unfavourable weather (flood in 2007 & 2008 and drought in 2009 & 2010) food grain production increased by about 18 per cent during last five years over preceding five years (2001-06). There was spectacular increase in food grain productivity from 1176 Kg per hectare during 2001-06 to 1743 Kg per hectare during 2006-11. But production of rice, the main food grain crop which is grown in about two- third area of net sown area in kharif season, did not show any increase in productivity. Production of rice is still to cross 60 lakh tonnes whereas production of about 55 lakh tonnes of rice was achieved in 2003-04. Hence, it may be said that rice production in Bihar still depends on weather. In Bihar, rice cannot be grown successfully in scanty rainfall due to unreliable and costly irrigation sources. About 60 per cent rice is grown in irrigated situation but the majority of farmers provide survival irrigation to rice crop because diesel operated tube well is the main source of irrigation which is costly, particularly for marginal farmers who purchase water at the rate of Rs 70-90 per hour.

Wheat production was stagnant at 40 lakh tonnes during 1995-2006 but its average annual production increased to 59 lakh tonnes in 2010-11. Average per hectare wheat productivity showed increasing trend from about 20 quintals during 2001-06 to more than 23 quintals during last five years (2006-11). Maize productivity also increased from 23 quintals to 33 quintals per hectare during 2006-11. However, winter maize productivity of 80 quintals per hectare is common in Begusarai and Khagaria districts of Bihar. The high yield of winter maize is mainly due to favourable ecology for production of maize in winter season along with farmers‘ efforts in production of this crop in Bihar. State government made a little effort to boost winter maize production because farmers depend on non government sector for not only hybrid maize seeds but also for marketing, fertilizer and pesticide. Hence, there is an ample scope for increasing production of winter maize in Bihar. Increase in production and productivity of wheat and maize has been mainly contributed by adoption of modern production technology of these crops by farmers.

While comparing the productivities of principal crops with target set for respective crops at the terminal year of Eleventh Five Year Plan, there has not been any increase in rice productivity in the state but the targets set for wheat and maize productivities are likely to be achieved in the terminal year of the plan..There has been significant increase in per hectare

productivity of principal crops during last five years but the state is still placed at twelfth position in rice, seventh position in wheat and sixth position in maize productivity in the country.

Irrigation

Irrigation is one of the critical inputs for increasing agricultural production. In Bihar, about 54 percent area is irrigated which is much higher than the corresponding national average (42%) but among major states our irrigation efficiency is the lowest (134). Average gross irrigated area increased from 47 lakh hectares in 2001-06 to 47.98 lakh hectares in 2006-11 but it is mainly through private tube wells. Tube well irrigated area constitutes 62 percent of total irrigated area, mainly through private tube wells because more than 90 per cent of Govt. Tube wells are abandoned and do not provide irrigation to even 50 thousand hectares of land. State Government has installed few tube wells and handed over their management to individuals (officially to committee) but these tube wells are not functioning well in the interest of farming community. State government provided assistance to install 21,036 pump sets in 2009-10 but it had almost insignificant impact on increasing tube well irrigated area which increased by only four thousand hectares from 27.22 lakh hectares in 2008-09 to 27.26 lakh hectares in 2009-10. Hence, almost identical number of tube wells might have turned non- functional during the year.

Canal irrigation is considered to be a farmer friendly and reliable source of irrigation. But it is also the most unreliable source of irrigation in Bihar. Canal system was an inefficient source of irrigation in Bihar which failed to provide irrigation facility to less than 50 per cent of its command area during the year 2009-10. Canal irrigated area declined from 16.66 lakh hectares in 2008-09 to 12.02 lakh hectares in 2009-10, indicating unreliability of canal irrigation system in Bihar. State Government has been making huge expenditure under plan and non plan heads on development and maintenance of irrigation infrastructure. During last five years annual plan expenditure of about Rs 2500 per hectare of irrigated area was incurred in Bihar but these investment has neither resulted in visible increase in irrigated area nor satisfactory maintenance of irrigation infrastructure in Bihar. However, eleven medium and major irrigation projects for increasing irrigated area were initiated in Eleventh Five Year Plan. About 55 percent of ground water is still to be exploited for irrigation purposes. Hence, there is vast potential for increasing irrigated area in Bihar which will help increasing agricultural production for not only consumption but for raw materials for agro-industry.

Fertilizer

Fertilizer is known as an essential input for increasing crop production. A spectacular increase in fertilizer consumption has been observed during green revolution period in the country in

general and Bihar in particular. In Bihar, per hectare fertilizer (NPK) consumption was only 4 kilograms in early sixties which increased to 19 kilograms in 1975-76 and further increased to about 200 kilograms in 2010-11. Per hectare fertilizer consumption in crop production increased by more than two fold during last 10 years from about 80 kilograms in 2000-01 to 200 kilograms in 2010-11. The higher and imbalance use of chemical fertilizers threatened the soil health but soil of the state is still reach in organic carbon (0.5-1.0). However, increasing use of chemical fertilizers accompanied with declining use of manure would likely to have adverse effect on soil health. Deficiency of micronutrients (zinc, boron and sulphur) has been reported from different parts of state but there is no facility where farmers could get their soil tested to know the extent of micro-nutrient deficiency. Government of Bihar made unsuccessful efforts to provide soil test (NPK) facility to farmers but a few farmers could get the report of soil test. Recently, Department of Agriculture started a campaign for popularizing organic farming in the state. In this context it is worth pointing out that the rice production in water logged area of north Bihar was totally chemical free up to mid-nineties. The majority of farmers growing fruits and vegetables for their domestic use do not use fertilizers and chemicals. We should educate these farmers, on priority basis, for organic cultivation of these crops before making efforts for organic farming of food grain crops, which may threaten our food security in short period. It is also a difficult task for farmers to arrange organic/bio-fertilizers for huge area under food grains. Organic certification is another difficult and costly activity, particularly for small and marginal farmers, who constitute more than 90 per cent of farm households and own about 50 per cent of cultivated area in Bihar.

Seeds

Seed is known for increasing agricultural production, good quality seeds alone can increase 30 per cent of agricultural production. In Bihar, high yielding varieties cover 65 per cent area under rice, 95 per cent area under wheat and 88 per cent area under maize but farmers are using poor quality seeds because most of these seeds are home grown. State Government has been making sincere efforts to popularise and make available quality seeds to farmers since 2009. Under Chief Minister Beej Vistar yojana, rice and wheat foundation seeds were provided to farmers for production of quality seeds but only 25 per cent of produced rice and 31 per cent of produced wheat seeds could be utilised as seed in the next season. It may be considered a good effort in right direction but proper monitoring of this scheme could have made this effort more useful. In 2011 also, a large quantum of Daincha seeds for green manure, and hybrid rice seeds have been distributed among farmers but desired result may not be obtained due to poor monitoring of the scheme. Seed replacement rates of rice and wheat increased from less than 10 per cent in 2001-05 to 31% and 29%, respectively in 2010-11. Seed replacement rate of maize was high (45%) in 2001-05 but it also increased to 65 per cent

in 2010-11. But availability of quality seeds of vegetables is still much lower in Bihar, adversely affecting vegetable production in the state.

1.5 Performance of Allied Sector

Livestock sector contributes about 40 per cent to the State Gross Agricultural Domestic Product of Bihar and supports the livelihoods and food security of about two-third of rural households. This is one of the fastest growing sub-sectors of the agricultural economy in the state and recorded about 6% growth during the first four years of the Eleventh Five Year Plan. If developed appropriately, livestock sector has the potential to significantly enhance the rural economy. Despite the higher growth and substantial contribution to State GDP, Bihar is still not self-sufficient in milk, meat, eggs and fish production. These sectors have the capacity to provide opportunities for livelihood to people in their present location and situation. Bihar has abundant water resources such as ponds and tanks covering approximately 65000 hectares and major flowing rivers (around 2700 kms in length), which are fertile breeding grounds for pisci-culture. North Bihar also has capture fisheries resources like, chaurs and ox-bow lakes. Converting these capture fisheries to culture fisheries could make them important sources of income and employment for fishermen communities, apart from being an excellent source of cheap protein for people. Total fish production in the State is about 2.66 lakh tonnes; however, annual consumption of fish within the State is about 5.0 lakh tonnes. The underutilization of aquaculture resources, unscientific management of water bodies and lack of entrepreneurship are some of the most obvious reasons for the gap between demand and supply of fish in Bihar.

Eleventh Plan envisions promotion of livestock sector to enable Bihar to become self sufficient in related products. As major inputs for agro processing, dairy and fisheries produce can become an important source for value addition within the state itself, which in turn opens up income and employment opportunities. An effort has been made to examine the progress made in various component of livestock sector in the state.

The milk production target in Bihar is likely to be achieved by the end of Eleventh Plan but there has not been any visible sincere efforts made by state government, except Immunization programme which could not reach to remote villages. The programme of establishing Fodder Block Unit is still in planning stage .However, the state faced an embracing situation in supply of fodder to flood affected farmers in last flood. State Govt failed to revive their old Artificial Insemination Centres and a large number of villages are not provided with artificial insemination facilities. COMFED (Co-operative Milk Producers Federation Limited) is doing good work in milk marketing in Bihar but milk processing capacity has not increased for the last four years. COMFED could cover only livestock rich districts and farmers of backward districts are still deprived of benefits of marketing network of COMFED.

Fish production recorded an annual growth of about 6% during first four years of Eleventh Plan but the state govt. programme of establishing govt. sponsored hatchery and supporting farmers for construction of new ponds could not make much headway in the state. In Bihar, the major problem in development of agriculture and allied sector is poor implementation and monitoring of programmes.

In the Eleventh Plan, an Agriculture Road Map with an outlay of Rs. 3757.12 crore has been approved by the state government to boost the agriculture sector. Besides, several new initiatives have been implemented for the development of agriculture and allied sector in the state. Despite renewed emphasis on agriculture the average annual growth Rate of GSDP in Agriculture and Allied Sectors in the four years of the Eleventh Plan was only 1.9 per cent against the target of 7 per cent during the Eleventh Plan, mainly due to the drought and flood during first four years of Eleventh Five Year Plan.

2.0 Sources of data

The report is based on Information obtained through General Endowment Schedule from Sample households selected under the project entitled ¯Tracking changes in Rural Poverty in Households and village Economies in Eastern India.¡ü In Bihar, The scheme has been launched in July, 2010.

Multi-stage stratified Random sampling technique was adopted for selection of districts, villages and households for detailed investigation. At first, all the districts of Bihar were ranked on the basis of agricultural development and poverty parameters. Agricultural development parameters include irrigated area, fertilizer consumption and area under high yielding varieties of principal crops i.e., rice, wheat and maize whereas proportion of population Below Poverty line was considered as poverty Parameter. Districts were arranged in descending order on the basis of combined rank (Agricultural development and poverty) of the district. Districts were categorized in two groups i.e., more developed and less developed and two districts, one from each of these two groups were selected for selection of sample villages. A sample of one block was selected from each district with the help of Random Number (Table 2.1.)

To ensure equal representation of different groups of households, 10 households were randomly selected from each group, that is; landless, small, medium and large from each of four sample villages, making total sample size of 160 households in Bihar (Table 2.2).

Table 2.1Names of districts, blocks and villages are as under:

Name of district	Name of the block	Name of villages
Patna	Bikram	Arap, Baghakole
Darbhanga	Baheri	Susari, Inai

Table:2.2 District and village wise number of Households and Area Owned by all Households and Sample Households

Name of District/ Village	Household Categories	No. of Farmers	Area Owned (in acre)	No. of Sample	Area owned (in acres)
Patna/Arap	Landless Labour	479	28.74	10	0.00
	Small	96	87.36	10	10.60
	Medium	87	182.70	10	25.80
	Large	60	352.80	10	78.70
	Total	722	651.60	40	115.10
Patna/ Baghakole	Landless Labour	373	26.11	10	1.50
	Small	52	66.56	10	15.80
	Medium	36	158.76	10	35.50
	Large	42	339.78	10	101.00
	Total	503	591.21	40	153.80
Darbhanga/ Susari	Landless Labour	511	71.54	10	1.50
	Small	68	58.48	10	8.80
	Medium	35	55.65	10	15.80
	Large	30	167.40	10	56.90
	Total	644	353.07	40	83.00
Darbhanga/ Inai	Landless Labour	428	42.80	10	0.40
	Small	55	37.95	10	7.70
	Medium	36	43.56	10	11.70
	Large	71	249.92	10	42.40
	Total	590	374.23	40	62.20

2.1 Survey Method

Data collection was started in July, 2010 from 160 households i.e., 40 each from selected four villages of Bihar. Data include socio-economic, agro-biological and institutional variables. Data collection has been much more frequent in the project. Heads of households/respondents are interviewed once in two to four weeks, and investigators live in the village, maintain books on field observations and also records some qualitative insights and happening. Data relate to status of farm households as on 1st July, 2010.

2.2. Patna District:

Patna district is situated in the south Bihar alluvial plains (Zone III B) of four agro-climatic zones of divided Bihar. The district is bounded in north by river Ganga, in south by Jehanabad and Nalanda districts, in the east by Lakhisarai district and in the west by Bhojpur district. The

district is situated between 25º 13‘North and 25º 45‘North latitude and 84º43‘ East and 25 º 44‘ East longitude with a height of 67 meters from M.S.L. The geographical area of the district is 3.172 lakh ha with 4.13 % land not suitable for cultivation. Patna, besides being the state capital, is also the biggest urban centre of the state. As per 2011 census, population of the district is 57.73 lakh with population density of 1803 and fifteenth populous district in the country. It has highest literacy rate (73.%) as well as awareness level among the districts of Bihar. Patna district is most urbanized district of Bihar since urban population constitute 44 per cent of total population of the district. It has a ready market for almost all products of farm and non-farm sectors and is well connected by rail with almost all the district headquarters of the state and by air to the major cities of the country.

Administratively the district is divided into six subdivisions, twenty-three blocks, 344 Panchayats and 1433 villages (1294 inhabited). Three tiers Panchayat system is working in Patna since 2001. Patna district is surrounded by two river systems namely Ganga in the north and Sone in the west, which falls into Ganga at its north-western boundary. The river Punpun traverses to a significant stretch from south-west to north-east. .

Agro-ecologically South Bihar Alluvial Plains Zone III B is spread south of river Ganga. Physiographically, it is almost plain alluvium, but south of the natural levee of Ganga, there is a parallel stretch of Diara land receiving flash floods. Ganga River stagnates in low lands during Kharif season causing floods between September-December every year. Tal lands extend from Fatuha to Mokama blocks in the district. Here most natural drainage systems i.e. rivers from south simply vanish.

The district has mainly four types of soils ranging from moderately well drained to poorly drained, acidic to slightly alkaline and medium to heavy textured. The climate is of moderate type characterised by quite hot in summers to mild cold in winters. Rainfall is moderate and erratic during Kharif season. The net area sown in the district is 65.16 per cent of the total geographical area. The remaining area (34.85 percent) in the district is divided between non-agricultural uses (21.45%), current fallow land (8.55%), barren and uncultivable land (0.11%), permanent pastures and other grazing land (0.04%), plantations (0.15%). Gross cropped area is 2.57 lakh ha and net area sown is 2.01 lakh ha indicating cropping intensity of 127.64 in the district, which is a bit low as both Tal and Diara areas are mostly mono cropped.

Total irrigated area in the district is 60,545 ha, out of which canal irrigation accounts for the highest being as high as 60% but a large area does not receive sufficient canal water for crop production, particularly at the tail end. Sone canal system does not provide irrigation in half of area for the last 10 years. Ground water sources of irrigation depend on ground water recharging and alluvial deposit are best reservoir of ground water. In the district alluvial thickness ranges to a maximum of 700 m. Shallow tube-wells tap shallow aquifers whereas

deep tube wells the deep aquifers .As per recommendation of the "Over Exploitation Committee", the ground water potential has been worked out through hydrographs which is 81.15 (in'000 ha m) for net ground water recharge and 29.70 (in'000 ha m) for ground water draft for the district The farming situations in the district are mainly dependent on soil, topography and irrigation systems prevalent in the area. Climate-wise, the district by and large is homogenous; the rainfall and temperature variations are not large.

2.3 Darbhanga district

Darbhanga district is spread over a total geographical area of 2279 sq. km. and its population is about 39.22 lakh, out of which 91 percent live in rural areas. Scheduled caste population constitute 13 percent of total, however, less than one thousand population belongs to schedules tribes. The overall literacy in the district is 58.26 percent, with male literacy at 68.56 percent and female literacy at 46.88 percent. The population density is as high as 1721 persons per sq km and the sex ratio is 910. About 2.90 lakh households fall below poverty line, which is 66.28 percent of the total population of the district.

The district Darbhanga can be divided into four natural divisions. The eastern portion consisting of Ghanshyampur, Biraul and Kusheshwarsthan blocks contain fresh silt deposits from Kosi River. This region was under the influence of Kosi floods till the construction of Kosi embankment during the 2nd FYP. It contains large tracts of sandy land covered with wild marsh. The second division comprises of the anchals lying south of river Burhi Gandak and is the most fertile area in the district. It is also on higher level than the other parts of the district and contains very few marshes. It is well suited for rabi cultivation. The third natural region is the *doabs* between the Burhi Gandak and Baghmati rivers and consists of the low-lying areas over the chaur and marshes. It gets inundated every year due to floods. The fourth division covers the Sadar subdivision of the district. The tract is flooded by numerous streams and contains some upland.

The district has a vast alluvial plain devoid of any hills, has gentle slopes from north to south, with a depression in the centre. Numerous rivers originating from Himalayas flood this district time and again. Among the rivers flowing through the district, Kamla, Baghmati, Kosi are the most important ones.

The district has moist but healthy climate. There are three well marked seasons, i.e., rainy, winter and summer seasons. The cold weather begins in November and continues up to February, though March is also mild cold. Westerly winds begin from second half of March and temperature rises considerably thereafter. May is the hottest month when temperature goes up to 42 Degree Celsius. Rains set in towards the middle of June and continue till the mid

October. Average rainfall in the district is 1142 mm; however 92 percent rainfall is received during the monsoon season. Normally, there are 51 rainy days in a year.

There are 10 blocks, 329 panchayats and 1269 villages in the district. It is one of the under banked districts in Bihar, as per branch population is worked out to be 26 thousand.

2.4 Project villages

2.4.1 Socio-economic Status of Arap Village

The Arap village is located in the Bikram block of Patna district in Bihar. It is about 30 km from Patna. Literacy level is 70.73 per cent which is much higher than corresponding

literacy for Bihar state. The village area is about 1020 acres, constituting 30 acres orchard, 90 acres put to non- agricultural use. There is about 50 acres of land under *pynes, ahar* and *bunds*. There is neither forest nor waste land in the village. The village has multi-caste population, dominated by Other Backward Castes (OBCs), followed by Forward caste and Scheduled caste. Non-farm sector is the major economic activity of the village while about 33 per cent of households are engaged mainly in agricultural enterprises.

Arap village has all basic amenities like roads, provisions for potable drinking water, a health centre, schools, power, and a heritage of culturally rich harmonious society. The village administration, which follows the principles of Panchayati Raj system, is in place. Agriculture, private and government jobs, and other non-farm occupations are providing a sustainable livelihood support to a number of villagers. Modern means of communication and transportation have a deep reach in the village and people are taking full advantages of these facilities. Insufficient sanitation measures, dowry system, and indiscriminate exploitation of water are the major constraints that need to be addressed by creating awareness and providing essential infrastructure support.

Finger millet was the traditional crop of Arap in *kharif* season, but finger millet area has been shifted to paddy cultivation during the past 25 years. During post–green revolution period, wheat has been introduced in *rabi* season. About 98 per cent area is irrigated and tube-well is the main source of irrigation. However, canal was the main source of irrigation up to 2000 AD. Farmers provide survival irrigation only to crops due to high cost of tube-well irrigation. About 26 per cent of operated area is under tenant cultivation, but the tenancy is more prevalent among landless households. Work participation is comparatively low in the village, but the majority of large households are engaged in agriculture and non-farm activities.

The village is rich in livestock, but buffalo is more common among large households. However, investment on cattle is higher on all the categories of households, indicating possession of improved breed of cattle in the village. Goats are kept by the landless

households. However the villagers confirmed the increasing problem of lack of fodder for livestock. There is milk co-operative society, Sudha for milk marketing in the village. Bullock ploughing is still prevalent; however bullocks are being replaced by tractor but the pace of replacement is very slow.

There is a hospital named *Rajkiya Aushdhalaya,* which supplements healthcare in the village but it lacks good doctors and infrastructure facilities. For healthcare of livestock, there is a veterinary hospital in the village. There is lack of woman participation in the decision making but they are aware of their situation and keen to improve it. There is no community hall and facility for recreation in the village. *Caste discrimination* is still prevalent in the village. Out-migration is common in the village. The majority of out-migrants are engaged in salaried jobs in cities within and outside the state. Migration for a salaried job is high due to good level of education in the village.

The village has poor access to organized marketing system. There is visible sign of improvement in agricultural and other infrastructure with respect to education, transport, communication and health. The village has access to state agriculture department and ICAR Research Complex for Eastern Region, Patna that provides extension support to farmers through a variety of channels. But it needs more institutional interventions for a faster development of the village.

Among centrally sponsored schemes, Mahatama Gandhi National Rural Employment Guarantee Act (MNAREGA), that guarantees a 100 days employment in the rural area, is worth noting. It is being implemented in the village since 2005-06. Besides, the village panchayat facilitates other development activities, like brick-soling of the village roads/ streets, construction and maintenance of rural drainage systems, etc. However, some of the villagers also reported discrepancies with reference to registration and provision of job cards to the workers under MNAREGA.

2.4.2 Socio-economic Status of Baghakole Village

The village Baghakole was founded in the early thirteenth century when Bakhtiyar Khilji was the ruler of Bihar. It is located in the Bikram block of Patna district at a distance of about 55 km from Patna city. This village had poor connectivity but now has fairly good road connectivity with the construction of a pucca Bihta-Patna-Mahabalipur road. The area of village is about 800 acres, constituting 75 per cent cultivated area, 15 per cent put under non-agricultural use, 8 per cent under trees and groves and 2 per cent waste land. Total population of Baghakole is around 3000, comprising around 500 households. This village is rich in educational infrastructure with one high school, one middle school, two primary schools and

one Urdu school. About 25 girls of this village are pursuing higher education in a college at Bikram. The literacy level (64%) of this village is higher than the state literacy level.

In Baghakole, a majority of households (94%) belong to the Hindu community with only six per cent Muslim households. But, there is complete communal harmony in this village, so much so that a temple and a mosque are located side-by-side in the village. Across social groups, Other Backward Castes (OBCs) constitute around 50 per cent of households with 30 per cent households of Scheduled Castes and 20 per cent of Forward Castes. The majority of Forward Caste households belong to *Bhumihars*, whereas *Kahars* dominate among the OBC category and *Chamars* and *Dusadhs* are in majority in the Scheduled Caste Category. The dowry system and village feast system (shradh) are prevalent in the village, though these adversely affect the economic situation of most of the households. An interesting feature about out-migration from Baghakole is that it is high for salaried jobs and education, showing a higher level of general awareness for education.

The average size of landholding of 1.18 acres in Baghakole is higher than most of the villages and average land holding of Bihar. Soil of the village is sandy loam. In the southern part of the village, abundant sand is available and it provided substantial income and employment to the village labourers but sand mining has been discontinued due to some unavoidable reason. Most of the land is irrigated and private tube-well is the main source of irrigation for the last five years .However, canal was the main source of irrigation till 2005.

Agriculture in Baghakole up to 1970s was highly diversified with the cultivation of several varieties of rice, millets, maize, sugarcane, pigeon pea and other pulses. But subsequently, rice became the main crop in *kharif* and wheat became the major crop in *rabi*. Recently, lemon grass, mentha and some off-season vegetables including green pea have been introduced. Another significant development is the change in package of practices for crop cultivation. The farmers of this village have started producing and using vermi-compost for production of their crops. All these reveal higher level of awareness about improved package of crop cultivation practices among farming community of the village.

In Baghakole, livestock-rearing is second important economic activity after crop production and it is not limited to cattle and buffaloes only; goat and poultry farming are also practised. But despite a large number of animals in this village, the livestock healthcare facilities are limited. One artificial insemination unit was established in this village only in the year 2000 prior to which villagers had to go to Bikram or opt for natural insemination. The Dairy Cooperative, organized in 1985 in the village, is in shambles and needs improvement in management for benefit to farmers of this village.

Agriculture in the village is moving from manual to mechanised cultivation in Baghakole. Tractors, diesel engines and threshers are seen in good numbers. Bore-well is another common farm infrastructure owned by about one-fifth of the households. All the houses are pucca or at least semi-pucca in the village. All this indicates that economic status of people in Baghakole is comparatively high. Non-farm employment has emerged as an important source of household income in Baghakole. It has surpassed even the agricultural sector. Due to higher level of awareness and education, income from salaried jobs is also quite significant. Thus, occupational pattern in Baghakole reflects a considerable diversification in sources of income.

The healthcare facilities are practically non-existent in the Baghakole village. To avail a medical facility, the villagers have to go to either Bikram or Bihta, where also these services have become functional only from 2005 with the intervention of state government. Polio vaccination is being done in the village but facilities for other vaccinations are lacking. The emergence of diseases like gastritis, stomach cancer, high blood pressure, asthma, etc. due to changing life-styles, diversifying food baskets, increasing use of agricultural chemicals, etc. have made the life still difficult in this village.

Residents of Baghakole village do not have easy access to any organized agricultural market or procurement centre. There is no input dealer in this village and people have to go to Bikram, Bihta or even Patna to get a better quality and wider choice of products. The mobile phone revolution in the country has provided communication power to the residents of otherwise poorly-connected Baghakole village also. The electric supply continues to be erratic, affecting both living and working conditions in the village. In Baghakole, several welfare schemes/programmes of both central and state governments are in operation and effect of some of these programmes has become visible also but a wider impact has yet to emerge.

Thus, the village Baghakole is still not much developed, although it has better educational facilities as compared to several villages of Bihar. The economic status of the most residents of this village is low, but is showing improvement with diversification in occupational pattern. The village has some strong points also like better awareness, higher productivity of wheat and rice than the state average, diversification in cultivation towards medicinal plants and summer vegetables, etc. These strong points need institutional intervention for a faster development of the village. It has opportunities in milk marketing for which support of an effective and functional dairy cooperative is needed. Setting up of a food processing unit and a procurement centre in/around the village will go a long way in generating income and employment facilities in this village.

2.4.3 Socio-economic Status of Inai Village:

Inai is one of the oldest villages of Darbhanga district of Bihar. It is located in the Baheri block at a distance of about 30 kilometres from Darbhanga. Area of the village is about 320 acres, 80 per cent under cultivation, constituting 8 per cent area put to non- agricultural use,11 per cent under ponds and orchard,and 1 per cent waste land. This village has all weather road connectivity now with the construction of a pucca road to the block headquarters (Baheri) however village streets are still very dirty and unhygienic. Total population of Inai is about 3600, comprising around 600 households. The educational level is awfully low in the village with average schooling of 3 years only and literacy rate is 55.61 per cent but literacy rate is 82 per cent on large households and 48 per cent on landless labour households. The educational infrastructure is poor. Primary school was established in 1936, continues to be a primary school even today. The traditional joint-family system has almost vanished in this village and nuclear-family system has become largely prevalent however family size is still more than six, higher than corresponding state average. The *purdah* system is still observed in this village and the social structure is male-dominated. It is a multi-caste village, dominated by the *kurmi* households. A majority of the households in Inai belong to the Hindu community but Muslim households constitute about 17 per cent of total households. Across social caste groups, there are only two social groups, viz. Scheduled Castes (SCs) and Other Backward Castes (OBCs). The influence of *Maithili* culture can be clearly seen in the village. The dowry system and village feast system (*Shradh and religious)* are still social norms in the village.

The average landholding is very small(0.64 acre) in Inai village 88 per cent households own less thn 1.2 acre of land. Because of uneconomic size of operational holdings, leasing-in and leasing-out of land are common in the village. The soil is largely clayey with some sandy loam and coarse sandy soils near the river Kamla which flows through this village. The main source of irrigation is the bore-well. Over the years, the use of fertilizers has increased due to increase in awareness about modern crop production technology among farmers in the area, in general and this village, in particular. However, subsistence farmers cannot afford to buy enough quantity of balanced fertilizers for their crop production.

In Inai village, paddy, finger millets, horse bean, maize and sorghum were the main crops in the *kharif* season and urd, lathyrus, potato and vegetables were the main crops in the *rabi* season up to mid-1970s. Wheat which was not an important crop is presently grown on more than 40 per cent area in *rabi* season. Area under horse gram, jowar, *kharif*-maize and lathyrus has declined, whereas area under wheat, lentil, peas and green vegetables has increased.

In Inai village, livestock-rearing is an important activity and it is not limited to cattle and buffaloes only; goatry and poultry farming are also practised .The cattle is common livestock in the village since number of cattle is much higher (281) than population of buffalo(89). But, despite a large number of animals, livestock healthcare facilities do not exist in the village.

Farmers do not have easy access to Artificial Insemination Centre and other veterinary services. Also, there is no institutional arrangement for milk marketing in the village.

The village agriculture is moving from manual to mechanised operations, but bullock ploughing is still prevalent in Inai. Due to weak economic base of majority of farmers, farm machinery is largely possessed by large farmers. The use of sprinkler and drip irrigation system has not been introduced in the village. Out-migration is common in Inai village and, on an average, one person has migrated from each family in this village. The majority of out-migrants (75%) are employed as daily wage earners at destination place and it is prevalent among all categories of households. The migration for higher education or salaried job is low due to low level of education in the village. Non-farm employment has emerged as an important source of livelihood in Inai. It has even out-paced the agricultural income. Due to low economic base and low educational level, not much diversification is visible in the occupational pattern in this village.

The healthcare facilities do not exist in the village Inai. The Primary Health Centre, established recently, has yet to become operational is true sense. The residents of this village have to go to Baheri or Darbhanga for availing a medicinal facility. Due to increasing intervention of chemicals in agriculture, changing lifestyles and diversifying food habits, several new diseases like gastritis, stomach cancer, mouth cancer, cardiological problems, etc. have emerged. These have made the life still difficult in this village.

The residents of Inai village do not have easy access to any organized agricultural market or any procurement centre for their agricultural commodities. There is no input dealer in the village and farmers go to Baheri or Darbhanga for purchasing fertilizers and other inputs.

It shows clearly that the village Inai is not much developed in terms of agriculture and educational infrastructure. The economic status of the most villagers is also low. However, there are signs of improvement which need institutional intervention for a faster development of this village. There are opportunities in cultivation of off-season vegetables and medicinal plants, setting-up of small-scale food processing units and milk marketing.

2.4.4 Socio-economic Status of Susari Village

The Susari village is located in the Baheri block of Darbhanga district in Bihar. It is about 45 km from Darbhanga. Area of the village is about 690 acres, constituting 51 per cent cultivated area,30 per cent put to non- agricultural use, 14 per cent under trees and groves and 6 per cent waste land including water logged area. Literacy level is low (51.07%) and there is a complete dearth of higher education in the village. The village has multi-caste population, dominated by Other Backward Castes (OBCs). Agriculture is the main economic activity of the village but about 50 per cent workforce get employment in the non-farm sector. Despite

fertile soil, agriculture of the village is still under-developed, mainly due to small size of landholdings, frequent floods and poor infrastructural facilities, including collapsed agricultural extension system. The farmers are not aware about the modern technologies and their skills also need up-gradation. Poor access to improved quality seed varieties worsens the situation still more.

Paddy and finger millet have been the traditional major crops of Susari in *kharif* season, but finger millet area has been shifted to paddy cultivation during the past 20 years. During post–green revolution period, wheat has been introduced as *rabi*-season crop. About 85 per cent area is irrigated and tube-well is the main source of irrigation. Farmers provide survival irrigation only to crops due to high cost of tube-well irrigation. About 12 per cent of operated area is under tenant cultivation, but the tenancy is more prevalent among landless households. Work participation is comparatively low (28.36%) in the village, but the majority of large households (66.23%) are engaged in agriculture and landless households (53.47%) in non farm activities.

The village is rich in livestock, but buffalo is more common livestock in the village, particularly among large households. However, investment on livestock is higher on large category of households, indicating possession of improved breed of livestock on these households in the village. Farmers do not have access to organized system of milk marketing in the village. Bullock ploughing is still prevalent; however bullocks are being replaced by tractor but the pace of replacement is very slow. There is lack of healthcare facilities in the village, for both humans and livestock. The only Primary Health Centre of the village is non-functional and facilities for even artificial insemination (AI) of cattle do not exist.

On the social front, there is high addiction to alcohol and smoking, particularly among elderly men folk, lack of women participation in decision making, and discrimination between boys and girls in sending to schools. There is no facility for recreation in the village. *Purdah* system is prevalent even today and young women particularly brides, are not allowed to move alone in the village.

Out-migration is common in the village. The majority of out-migrants are engaged as daily wage earners in cities within and outside the state. Migration for a salaried job is low due to low level of education in the village. The village does not have easy access to any organized marketing system. Primary Agricultural Co-Operative Credit Society (PACS) is almost non-functional and there is no arrangement of providing quality agricultural inputs to the farmers in the village.

The village is still underdeveloped with respect to agriculture, education and economic status. However, there are signs of improvement which need institutional intervention for a faster development of the village.

3.0 Demographic features

The report is based on data collected from households of four villages in Bihar under the research project entitled, "Tracking changes in Rural Poverty in Household and Villages Economies in South Asia", Households under study are classified in three major social groups i.e; General, Other Backward Castes (OBC0 and SC/ST. Other Backward Castes are the largest social group, constituting 51.3 per cent of total households followed by General caste (35.6 %) and ST/ST(13.1%) (Table 3.1)

Table: 3.1 Category-Wise Social Groups of the Households in Study Villages , Bihar

Particulars	General	OBC	SC/ST
Labour	**4(10)**	**16(40)**	**20(50)**
Arap	0(0)	4(40)	6(60)
Baghakole	0(0)	4(40)	6(60)
Inai	0(0)	3(30)	7(70)
Susari	4(40)	5(50)	1(10)
Small	**15(37.5)**	**24(60)**	**1(2.5)**
Arap	4(40)	6(60)	0(0)
Baghakole	7(70)	3(30)	0(0)
Inai	0(0)	10(100)	0(0)
Susari	4(40)	5(50)	1(10)
Medium	**15(37.5)**	**25(62.5)**	**0(0)**
Arap	8(80)	2(20)	0(0)
Baghakole	0(0)	10(100)	0(0)
Inai	0(0)	10(100)	0(0)
Susari	7(70)	3(30)	0(0)
Large	**23(57.5)**	**17(42.5)**	**0(0)**
Arap	9(90)	1(10)	0(0)
Baghakole	10(100)	0(0)	0(0)
Inai	0(0)	10(100)	0(0)
Susari	4(40)	6(60)	0(0)
Total	**57(35.6)**	**82(51.3)**	**21(13.1)**

Figures in parentheses indicate percentage to respective total no. of households.

Inai village is dominated by OBC households who constitute 73 per cent of sample households and remaining 27 per cent households belong to SC category. Almost all SC households (20 out of 21) belong to labour household where as only 4 households of General category belong to labour household all of them are resident of Susari village. All the large households of Baghakole village and nine households of Arap village belong to General caste category..It

may be inferred that Arap and Baghakole village are dominate by forward castes and Inai village by OBC whereas Susari village has mixed caste population.

Population of 160 households under study was 989 in 2010 whereas population of large households was larger (31.04%) than other categories of households under study (table-3). The village under study are multi-castes. All the castes are categorized in three broad categories i.e. Forward caste, Other Backward Caste (OBC) and Scheduled Caste/Scheduled Tribes (SC/ST). The majority of households belong to OBC caste (51%) followed by Forward Caste (36%) and SC/ST (13%). Inai village is dominated by OBC category of caste but remaining three villages have mixed caste population. Size of family of large households was also large (8), which declined with the decline of land base of households. Among all the four villages, family size on landless and small households was lower than average family size of sample households (6). The prevalence of larger family size on the large and medium households is mainly due to higher acreage of land owned by these households, which is the main asset in rural areas. On the other hand, landless labour and small households own small acreage of land and small size of family. Agriculture is not their main source of livelihood. Family members of these categories of households maintain their livelihood through wage earning and non-farm activities. In this situation they prefer to have small family unit and maintain their livelihood through wage employment in agriculture and non-farm activities.

Among large households, larger family size was observed in Baghakole village (9) where per household land was also higher (10 acres) as compared to large households of other villages under study. Household-wise data of owned land and number of family were put to Rank Correlation test to ascertain the relationship between land and family size, and significant relationship was observed between land and family size. Hence, it may be concluded that land and family size are positively correlated, i.e. higher the size of land, higher will be the family size and vice-versa.

3.1 Education in sample villages

Education is one of the key components of human capital and a critical asset determining household ability to access higher return activities and escape poverty. In the study villages, literacy level was worked out at 78 percent which increases with an increase in ownership of land. Literacy level was 87 percent on large households, whereas it was lower on landless households (59%). Analysis of gender-wise literacy level revealed the wide-gap in male and female literacy. While, literacy level among males was 90 percent, it was only 64 percent in study villages (Table-3.2)

Table: 3.2 Literacy Levels of Different Categories of Households in Villages Under Study in Bihar

Particular	Illiterate	Education Level			
		Up to Matric	Up to Graduate	Up to Post Graduate	Population
Labour	**86(40.6)**	**121(57.1)**	**5(2.4)**	**0(0)**	**212(100)**
Arap	24(50)	23(47.9)	1(2.1)	0(0)	48(100)
Baghakole	17(33.3)	33(64.7)	1(2)	0(0)	51(100)
Inai	21(41.2)	29(56.9)	1(2)	0(0)	51(100)
Susari	24(38.7)	36(58.1)	2(3.2)	0(0)	62(100)
Small	**54(24.4)**	**133(60.2)**	**29(13.1)**	**5(2.3)**	**221(100)**
Arap	5(10.4)	31(64.6)	7(14.6)	5(10.4)	48(100)
Baghakole	13(21.7)	36(60)	11(18.3)	0(0)	60(100)
Inai	19(39.6)	19(39.6)	10(20.8)	0(0)	48(100)
Susari	17(26.2)	47(72.3)	1(1.5)	0(0)	65(100)
Medium	**43(17.3)**	**166(66.7)**	**38(15.3)**	**2(0.8)**	**249(100)**
Arap	6(9)	47(70.1)	13(19.4)	1(1.5)	67(100)
Baghakole	4(8)	36(72)	9(18)	1(2)	50(100)
Inai	13(23.6)	33(60)	9(16.4)	0(0)	55(100)
Susari	20(26)	50(64.9)	7(9.1)	0(0)	77(100)
Large	**39(12.7)**	**164(53.4)**	**88(28.7)**	**16(5.2)**	**307(100)**
Arap	7(10.8)	27(41.5)	27(41.5)	4(6.2)	65(100)
Baghakole	2(2.1)	52(55.3)	31(33)	9(9.6)	94(100)
Inai	14(17.9)	44(56.4)	19(24.4)	1(1.3)	78(100)
Susari	16(22.9)	41(58.6)	11(15.7)	2(2.9)	70(100)
Total	**222(22.4)**	**584(59)**	**160(16.2)**	**23(2.3)**	**989(100)**

Figures in parentheses indicate percentage to respective total population.

Male-female literacy gap was much higher on landless households, which declined with increase in size of land holdings. Analysis of data relating to education shows substantial levels of inequality in access to education by caste, class and gender (Appendix-I)

Level of education was also examined by categorizing educated persons in four groups, i.e. up to matriculation, Intermediate, Graduate and Post Graduate. Among literate persons,76 percent of them were educated up to secondary level, 21 percent up to graduate level and only 3 percent up to Post graduate level. The pattern of higher education was similar to literacy level of different categories of households, i.e., more higher on large sized households and least on landless households. About one-third of family adult members were Graduate on large households whereas only 4 percent family members of labor households could pursue education up to graduate level. None of the family members of landless households had post-

graduate qualification in the study villages, whereas 6 percent family members of large households had post-graduate degree.

Village-wise analysis revealed high level of literacy in Arap village as compared to other villages under study. Almost all the male members of our sample, small, medium and large households were literate while 61 percent family members of landless households were literate. The literacy level on large households was much higher (92-100%) in villages under study.

Secondary level of education was more common in rural areas, in general and villages under study in particular. It was found that about three-fourth of literate persons of sample households were educated up to secondary level, whereas one-fifth of educated persons could become Graduates. However, graduate level education was higher on large households (32.87%) which declined with decline in land base of the households. Majority landless and small households whose family members obtained graduate degree had other than agriculture as main occupation. None of the family members of landless and small households of three villages (Baghakole, Susari and Inai) could obtain post-graduate degree. In Arap village, 5 persons of two small households obtained post-graduate degree, but all the five belonged families belonged to non-agricultural families but categorized as small farmers in the present study. Family members of medium households of Susari and Inai villages could not reach up to post-graduate level. Out of 23 post-graduate family members, 16 belonged to large households. It may hence said, that high level of education is the domain of resource rich households in rural areas. In all the villages, female education was at lower level than boys and family members of larger households and forward castes were also higher.

BMI and Health Status

Body Mass Index (BMI) indicates health status of a person. BMI is calculated by dividing the weight in kilograms by height in meters squared. For adults BMI values are age and gender independent. In the present section, BMI was calculated for four groups of members of our sample households of four villages of Bihar which are: male and females (more than 13 years) and boys and girl children(less than 13 years). Village wise and household category wise persons are categorized on the basis BMI status that is; Under weight (<18.5), Normal (18.5-25), Overweight (25-30) and Obese (30 and above) .

Village wise analysis revealed that Baghakole village has larger proportion of normal males (70.69%) whereas less than 50 per cent of males are normal in Inai village. There is no Obese male in Baghakole village and number of Obese males is very low in other three villages under study. Proportion of under weight males is also higher in Inai village (Table-3.3)

Table 3.3 BMI of Males in Different Categories of Households, Bihar (in %)

Particulars	Normal	Obese	Overweight	Underweight	Grand Total
Arap	**62.69**	**1.49**	**16.42**	**19.40**	**100.00**
Labour	71.43	0.00	0.00	28.57	100.00
Small	61.54	0.00	7.69	30.77	100.00
Medium	50.00	6.25	25.00	18.75	100.00
Large	66.67	0.00	25.00	8.33	100.00
Baghakole	**70.69**	**0.00**	**10.34**	**18.97**	**100.00**
Labour	50.00	0.00	0.00	50.00	100.00
Small	100.00	0.00	0.00	0.00	100.00
Medium	69.23	0.00	0.00	30.77	100.00
Large	61.54	0.00	23.08	15.38	100.00
Inai	**47.37**	**1.75**	**5.26**	**45.61**	**100.00**
Labour	18.75	6.25	0.00	75.00	100.00
Small	66.67	0.00	0.00	33.33	100.00
Medium	63.64	0.00	9.09	27.27	100.00
Large	46.67	0.00	13.33	40.00	100.00
Susari	**62.30**	**1.64**	**9.84**	**26.23**	**100.00**
Labour	70.00	0.00	0.00	30.00	100.00
Small	73.33	0.00	0.00	26.67	100.00
Medium	50.00	0.00	30.00	20.00	100.00
Large	57.69	3.85	11.54	26.92	100.00
Grand Total	**60.91**	**1.23**	**10.70**	**27.16**	**100.00**

In case of boys and girls,95 per cent of boys and 93 percent girls are under weight in study villages. The incidence of malnutrition(underweight population) has been almost identical across the villages and categories of households(Table 3.4)

Table 3.4 BMI for Boy in Bihar (in %)

Particulars	Normal	Obese	Underweight	Grand Total
Arap	**3.33**	**3.33**	**93.33**	**100.00**
Labour	0.00	0.00	100.00	100.00
Small	0.00	0.00	100.00	100.00
Medium	0.00	14.29	85.71	100.00
Large	14.29	0.00	85.71	100.00
Baghakole	**8.00**	**0.00**	**92.00**	**100.00**
Landless	0.00	0.00	100.00	100.00
Small	12.50	0.00	87.50	100.00
Medium	11.11	0.00	88.89	100.00
Large	0.00	0.00	100.00	100.00
Inai	**0.00**	**2.50**	**97.50**	**100.00**
Landless	0.00	8.33	91.67	100.00
Small	0.00	0.00	100.00	100.00
Medium	0.00	0.00	100.00	100.00
Large	0.00	0.00	100.00	100.00
Susari	**4.88**	**0.00**	**95.12**	**100.00**
Landless	12.50	0.00	87.50	100.00
Small	0.00	0.00	100.00	100.00
Medium	0.00	0.00	100.00	100.00
Large	9.09	0.00	90.91	100.00
Grand Total	**3.68**	**1.47**	**94.85**	**100.00**

Land and tenure

Access to assets is of critical importance to the economic viability of rural households. Understanding the extent of this access and how it links to the ability of rural households to employ different pathways out of poverty is, thus, vital for designing rural development policies. Land is the most important asset in rural area.Land is the asset that has historically been most closely linked to rural development. Policies for promoting rural development have often centred on providing access through a variety of types of land reform, under the assumption that land access is critical for agricultural production and thus food security and income generation for rural households. However, landlessness may not the only indicator for poverty but lack of land is highly correlated with possession of other productive and domestic assets in rural areas. This implies that landless households are the poorest group in population. Majority of agricultural labour households are landless and about 42 percent of them were below poverty line in India whereas only 19 percent of farming households were below

poverty line (BPL) in India in 2004-05 (Kumar et.al.2004). In sample households of project entitled, "Tracking changes in rural poverty in household and villages economies in South Asia¡¨about 93 percent of labour households belong to poor category in Bihar. Hence, land ownership is an important determinant of poverty in Bihar. The average size of land holding is very low (0.37 ha) in the state, and about 84 percent of farm households owning less than 0.40 hectare of land, On the sample households, the average size of landholding of was 2.58 acres which was lowest on labour households (0.09 acre) and highest on large households (6.97 acres) (Table-3.5).

Table:3.5 Size of Landholding of Different Categories of Households in Study Villages, Bihar

Particular	% of Land of total area	Per Household (acre)	Per Capita (acre)	Total land (acre)
Labour	0.82	0.09	0.02	3.4
Small	10.38	1.07	0.19	42.92
Medium	21.35	2.21	0.35	88.31
Large	67.45	6.97	0.91	278.94
Total	100	2.58	0.42	413.57

The ownership of land is more skewed among sample households. Large farm households constitute only 25 percent of total households under study, but they owned 67.45 percent of total land. In Bihar, per capita cultivable land is worked out at 0.15 acre (6534 sq.fts.) but it is higher on sample households (0.42), mainly due to selection of fixed sample households (10 from each of four farm categories in villages under study). Village-wise analysis of land ownership revealed that there was large size of land holding in Baghakole village (3.83 acres), followed by Arap (2.88 acres), Susari (2.0 acres) and Inai (1.55 acres). In all the villages, large farmers constitute 25 percent of sample household but own more than 65 percent of rural land possessed by households (table 3.6).

Table:3.6 Size of landholding among different categories of household, Bihar

Particular	% of Land of total area	Per Household (acre)	Per Capita (acre)	Total land (acre)
Arap	**115.1(100)**	**2.88**	**0.5**	**115.1**
Labour	0	0	0	0
Small	10.64(9.24)	1.06	0.22	10.64
Medium	25.78(22.4)	2.58	0.38	25.78
Large	78.68(68.36)	7.87	1.21	78.68
Baghakole	**153.38(100)**	**3.83**	**0.6**	**153.38**
Labour	1.5(0.98)	0.15	0.03	1.5
Small	15.83(10.32)	1.58	0.26	15.83
Medium	35.04(22.85)	3.5	0.7	35.04
Large	101.01(65.86)	10.1	1.07	101.01
Inai	**62.19(100)**	**1.55**	**0.27**	**62.19**
Labour	0.4(0.64)	0.04	0.01	0.4
Small	7.65(12.3)	0.77	0.16	7.65
Medium	11.74(18.88)	1.17	0.21	11.74

Large	42.4(68.18)	4.24	0.54	42.4
Susari	**82.9(100)**	**2.07**	**0.3**	**82.9**
Labour	1.5(1.81)	0.15	0.02	1.5
Small	1.5(1.81)	0.88	0.14	8.8
Medium	15.75(19)	1.58	0.2	15.75
Large	56.85(68.58)	5.69	0.81	56.85

It is evident that the size of households is not only small but its distribution is also skewed in sample villages. Only one fourth of sample households own 30 percent of land, while analyzing the distribution of land among sample households it was observed more skewed distribution in Susari village (Gini Coefficient- 0.44) where as average size of land holding was 2.07 hectare. The distribution of land holding is less skewed in villages where average size of land holding is comparatively large (Table 3.7).

Table:3.7 Ginni coefficients of different villages of Bihar Bihar

Sl. No.	No. of HH	Proportion of HH (Pi)	Land holding	Proportion of LH	Cumm. Prop. LH (Li)	[L(i) + L (i-1)]	C X G	Ginni Coeff.
Arap								
1	10	0.25	0	0	0	0	0	
2	10	0.25	10.64	0.092441355	0.092441355	0.092441355	0.023110339	
3	10	0.25	25.78	0.223979149	0.316420504	0.408861859	0.102215465	0.545569
4	10	0.25	78.68	0.683579496	1	1.316420504	0.329105126	
Total	40		115.1	1			0.45443093	
Baghakol								
1	10	0.25	1.5	0.009779632	0.009779632	0.009779632	0.002444908	
2	10	0.25	15.83	0.103207719	0.112987352	0.122766984	0.030691746	
3	10	0.25	35.04	0.22845221	0.341439562	0.454426914	0.113606728	0.517897
4	10	0.25	101.01	0.658560438	1	1.341439562	0.33535989	
Total	40		153.38	1			0.482103273	
Inai								
1	10	0.25	0.4	0.006431902	0.006431902	0.006431902	0.001607976	
2	10	0.25	7.65	0.12301013	0.129442032	0.135873935	0.033968484	
3	10	0.25	11.74	0.188776331	0.318218363	0.447660396	0.111915099	0.522954
4	10	0.25	42.4	0.681781637	1	1.318218363	0.329554591	
Total	40		62.19	1			0.477046149	
Susari								
1	10	0.25	2.15	0.025934861	0.025934861	0.025934861	0.006483715	
2	10	0.25	9.25	0.111580217	0.137515078	0.16344994	0.040862485	
3	10	0.25	26.4	0.318455971	0.455971049	0.593486128	0.148371532	0.44029
4	10	0.25	45.1	0.544028951	1	1.455971049	0.363992762	
Total	40		82.9	1			0.559710495	

In the sample villages, per capita land is worked out at 0.60 acres in Baghakole, followed by Arap (0.5 acre), Susari (0.30 acre) and Inai (0.27 acre). Per capita land on large farms was also higher in Baghakole village (10.1acre) followed by Arap (7.87 acre), Susari (5.69 acre) and Inai (5.69 acres). About 75 percent of sample households of Inai and Susari villages had less than one hectare of land. Hence, it may be said that land is the main constraint in agricultural development and livelihood security in these villages. The access of rural households to a range of assets, particularly land is in general low, though highly heterogeneous across villages, and by categories of households within village. Large shares of agricultural households do not have adequate basic productive assets, and in general, it is the landless and the small land holders who suffer significantly more from this lack of access.

Any level of development on small area of land owned by the majority of households may not have any significant impact on their livelihood and poverty alleviation in Bihar. There is an urgent need to create employment opportunities in non-farm sector to improve livelihoods in rural Bihar. In addition to ownership, rural households access to productive land through various forms of tenancy. This mechanism may include land in exchange for payment of cash or kind or share cropping. In study villages, land lords contribute 50 per cent to required inputs (fertilizer, pesticide, irrigation) in crop production and share 50 per cent in output. While analyzing land tenure system on sample households, about 14.4 percent of sample households were either leasing-out or leasing-in land for cultivation purposes. Number of households leasing-out land (11.3 %) was higher than households leasing-in land (3.1%) in study villages . A larger proportion of medium farmers (20%) than large farm households (17.5%) leased-out their land in villages under study. Medium farm households of sample households are small land holders who own less than 3 acres of land (Appendix—II).

Hence, the practice of leasing-out land is not only due to large size of land holdings in Bihar, but the majority of small land holders migrant holders also leased-out their land for earning livelihood within and outside the state. This may be due to their small land holdings do not generate sufficient income for maintenance of their livelihood. As many as 21.7 percent BPL families also leased-out land in villages of Patna district under study (Singh et.al. 2011). As far as land area under tenural system is concerned, about 10 percent area owned by sample households was leased-out in study villages. Medium households leased-out about 15 percent of their cultivable area to fellow farmers for cultivation (table -3.8).

Table:3.8 Category-Wise Tenancy Status of Different Households in Study Villages, Bihar

Particular	No.of farmers Leased in	No. of farmers Leased out
Labour	2 (5)	0 (0)

Small	2 (5)	3 (7.5)
Medium	1 (2.5)	8 (20)
Large	0 (0)	7 (17.5)
Total	5 (3.1)	18 (11.3)

Figures in parentheses indicate percentage to respective total no. of households

On the other hand, more than one third of operated area of labour households was leased-in for cultivation purpose. In none of the villages, landless labour households leased-out their land because average size of land holding is very small (0.09 acre). In Arap village, all the landless labour engaged in cultivation were tenant farmers because they do not own land they cultivate, whereas in Susari and Inai villages, none of landless labour households leased-in land for cultivation because they preferred to work either as wage earners or migrated out side the village for their livelihood. Medium household of Baghakole village leased-out their 22.5 percent of land to fellow farmers for cultivation purpose as compared to 16.29 percent land in Arap village and only 8.35 percent land in Inai. In Arap village, small farm households leased-out about 16.35 percent of land to other farmers as compared to only 3.27 percent in Inai village, but none of the small households leased-out their land in Baghakole and Susari villages. (Appendix III). However, there is no specific trend in tenancy system but it has been observed that small land holders are also leasing-out their land in Bihar.

In Bihar size of land holding is not only small but these are fragmented and spread over a large area in different locations. The fragmentation of land holdings is one of the factors responsible for low level of investment in agricultural assets. The proper management of crop production and even adoption of modern agricultural technologies are adversely affected by fragmented land holdings. In the study villages, average size of land holding of large households is small (6.97 acres) but 53 percent of this category of households had more than 10 plots and 10 percent of them had more than 15 plots located at different places. Average size of landholdings small households is 2.21 acres but 60 percent of them had 5-10 plots. Similar landholding pattern was observed on medium category of households, too.(table-3.9)

Table:3.9 Category-Wise Number of Plots Own by Different Households in Study Villages, Bihar

Particular	Less than 5 Plots	5 to 10 Plots	10 to 15 Plots	above 15 Plots	Total
Labour	8 (100)	0 (0)	0 (0)	0 (0)	8 (100)
Small	15 (38)	24 (60)	1 (3)	0 (0)	40 (100)
Medium	12 (30)	21 (53)	7 (18)	0 (0)	40 (100)
Large	5 (13)	14 (35)	17 (43)	4 (10)	40 (100)
Total	40 (31)	59 (46)	25 (20)	4 (3)	128 (100)

Figures in parentheses indicate percentage to respective total population of total no. of plots.

Village-wise analysis revealed that the land fragmentation was more pronounced in Arap village where 40 percent of large households had more than 15 plots (Appendix-IV). In Inai

also, average size of land holding small farmers is only 0.77 acres but 90 percent of them had 5 to 10 plots. It is also evident that use of tractors for ploughing such small plots is not possible as was observed in Inai village. Hence, there is an urgent need to find ways and means to consolidate land, to improve agricultural production and productivity in Bihar.

Livestock

Livestock production is an important economic activity which affects crop production activities in rural Bihar. It is more important on landless and small farm households, because it may be practiced without having any land. Livestock constitutes an asset that is widely owned by rural households in Bihar and performs a crucial role as a saving and risk management instrument, while at the same time contributing to the generation of income and food security .Despite its importance, issues of access to livestock have not been quite as extensively researched as issues related to land and human capital but there is a tendency to consider them important solely for weaker section of rural area, while focusing most of the analysis of agricultural livelihoods on crop activities

An analysis of livestock domestication has been undertaken and it was observed that local cow is still dominant livestock in study villages, because 39.4 percent households keep local cows in these villages. However, the incidence of cow was higher on large households (55%) followed by medium households (45%), small households (42.5%) and landless labour households (15%). Cross-bred cow is also getting popularity among sample households, and it was found that 18.8 percent households had cross-bred cows. However, it was more common livestock breed on large households (35%) and medium households (27.5%). Labour households (7.5%) also kept cross-bred cows but majority of households domesticate cross-bred cows either in share domestication arrangement or obtained cross-bred cows as gift.

Bullocks are not preferred cattle in rural Bihar any more, due to large scale adoption of tractor as primary equipment for ploughing (tractorization), steep rise in cost of acquiring bullock and uneconomic and unviable small land holdings. Buffalo, however, is emerging more preferred livestock in sample villages. Among landless labour households, incidence of buffalo was more than the incidence of other category of livestock, whereas the comparatively higher incidence of buffalo domestication was observed on small households (35%) than other categories of households under study (Table 3.10).

Table:3.10 Category-Wise Different Livestock Owned By Households in Study Villages , Bihar

Particular	**Cattle**			**Buffalo**	**Goat**	**Others**
	Cow		**Bullock**			
	Local/Improved	**Cross-Bred**				
Labour	6(15)	3(7.5)	0(0)	7(17.5)	10(25)	1(2.5)

Small	17(42.5)	2(5)	5(12.5)	14(35)	0(0)	0(0)
Medium	18(45)	11(27.5)	5(12.5)	6(15)	0(0)	0(0)
Large	22(55)	14(35)	7(17.5)	13(32.5)	1(2.5)	0(0)
Total	63(39.4)	30(18.8)	17(10.6)	40(25)	11(6.9)	1(0.6)

Figures in parentheses indicate percentage to respective total no. of households

Economically weaker categories of households prefer domestication of buffalo because it thrives well on even grazing and poor quality of roughages. Goat domestication is the least important livestock activity but 25 percent of landless labour households were found domesticating goat in the sample villages. Analysis of herd size on different category of households revealed that the herd size of all livestock category was larger on large holdings but it declined with the land base of households, particularly in case of cattle

Incidence of livestock and their herd size seem to have association with size of landholding. The larger the size of landholding, higher level of incidence of livestock and herd size. To ascertain the association between land size and herd size, the related data were put to rank correlation test and it was found that these two attributes of households had significant association ($r = 0.76$). However, the distribution of livestock among sample households was more equitable than the distribution of land. Data of livestock (cattle + buffalo) were put to Gini ratio test to have precise information about distribution of livestock among sample households of different villages in Bihar (Table – 3.7).

While analyzing village-wise incidence of livestock high level of local/improved cows was observed on large, medium and small households in Arap and Baghakole villages (South Bihar) than Inai and Susari villages (North Bihar). None of the land less, small and medium households of north Bihar villages kept cross-bred cows (Appendix V).

On the other hand, incidence of bullock is low in all the villages under study. Almost all categories of households of Arap and Baghakole villages did not have bullock, mainly due to high level of tractorization in these villages. There was no specific trend in case of incidence of buffalo but domestication of buffalo is higher in north Bihar villages than that of south Bihar. As far as herd size of all the livestock is concerned, herd size of local/ improved and cross-bred cows was higher in Arap and Baghakole villages, whereas buffalo herd size was higher in north Bihar villages (Inai and Susari) particularly on medium and large households (Appendix VI).

Migration

In Bihar, migration for gainful employment is one of the important strategies for maintaining livelihood. Earlier, rural to rural migration for short term period was more common which turned to rural-urban migration for long period (Singh, Paris and Juice, 2005). An attempt has been made to analyze extent and incidence of migration, destination of migration and

occupation of migrants at destination places. Extent of migration is worked out at 55 percent in villages under study in Bihar. Among different categories of households, extent of migration was comparatively high on medium category of households (60%), large households (52.5%), and landless households (45%). Village wise analysis revealed that the extent of migration was higher in Susari village followed by Arap (52.5%), Inai (50%0 and Baghakole (45%).

There was high level of migration from small and medium category of households in all the villages under study, accept in Susari village, where the extent of migration was much higher in landless households (90%) . Contrary to popular belief of high level of migration from landless households, the extent of migration was comparatively high on large households of respective villages, namely Arap, Baghakole and Inai villages (Table 3.11)

Table 3.11 Extent of Migration of Households in Villages Under Study , Bihar

Particulars	Arap	Baghakole	Inai	Susari	Total
Labour	2(20)	3(30)	4(40)	9(90)	18(45)
Small	7(70)	6(60)	5(50)	6(60)	24(60)
Medium	7(70)	3(30)	7(70)	8(80)	25(62.5)
Large	5(50)	6(60)	4(40)	6(60)	21(52.5)
Total	21(52.5)	18(45)	20(50)	29(72.5)	88(55)

Hence, it may be inferred that one or more family members migrated from nearly fifty percent of households in studied villages. Incidence of migration is also high in villages under study (Table 3.12).

Table 3.12 Incidence of Migration of Male Members of Households in Villages Under Study , Bihar

Particulars	Arap	Baghakole	Inai	Susari	Total
Labour	4(17.39)	4(16.67)	4(12.5)	17(53.13)	29(26.13)
Small	11(42.31)	12(38.71)	5(20)	12(37.5)	40(35.09)
Medium	12(37.5)	5(19.23)	11(36.67)	24(66.67)	52(41.94)
Large	10(27.78)	25(47.17)	13(30.95)	11(29.73)	59(35.12)
Total	37(31.62)	46(34.33)	33(25.58)	64(46.72)	180(34.82)

More than one third of adult family members migrated for earning their livelihood. However, incidence of migration was comparatively higher on medium category of households than other categories in Inai and Susari villages. Village-wise analysis of incidence of migration did not reveal any specific trend but incidence of migration was higher n large households than landless households in respective villages (Appendix VII).

Hence it may be inferred that the migration is not limited to landless households and weaker sections of the society only. Caste-wise analysis of extent and incidence of migration has been

undertaken and it was found that level of migration was higher among forward caste in all villages under study (Appendix VIII).

The phenomenon of migration among forward castes is more pronounced in landless and large households. It is mainly due to high level of education among this group and they feel uncomfortable in working as wage earners within the village due to social reasons and prefer to migrate. However, education was also an important reason for high level of migration among forward castes. Hence it may be said that the migration has crossed the class and caste barrier in Bihar.

While analyzing the occupation of migrants at destination places, pursuing higher education emerged as an important purpose for migrating, particularly from medium and large households in studies villages. But only 2 out of 33 migrants from labour households were migrating for education in study villages (Table3.13).

Table:3.13 Category-Wise Occupation of Migrant on Destination , Bihar

Particular	Migrant	Purpose of Migration			
		Wage Employment	Salaried job	Education	Other
Labour	33(100)	19(57.6)	8(24.2)	2(6.1)	4(12.1)
Small	50(100)	10(20)	18(36)	13(26)	17(34)
Medium	87(100)	15(17.2)	15(17.2)	29(33.3)	28(32.2)
Large	69(100)	7(10.1)	10(14.5)	31(44.9)	21(30.4)
Total	239(100)	51(21.3)	51(21.3)	75(31.4)	70(29.3)

Figures in parentheses indicate percentage to respective total no. of migrants.

Wage employment and salaried jobs were equally important occupations of migrants of these villages. However,, wage employment was more important occupation for migrants of landless households (57.6%) and salaried jobs for small households (36%). Only 10 percent of migrants of large households migrated for wage employment. Other category of occupations included, for business, hair cutting, dairy production, driving, rickshaws pulling which was the occupation of about one-third of the migrants from study villages. Hence, it may be said that the self employment is also emerging as main occupation of migrants at destination places.

Occupation

Occupation in Indian villages reflects the base of the socio-economic culture prevalent in rural areas of country. The main occupation includes agriculture, handicrafts, petty business and other non-farm activities. But now villages present a different scenario with villagers taking up non-traditional occupations as well. They are now involved in academics as teachers, truck drivers, and clerks or getting engaged with various activities like masons, construction workers and vendors.

In the present section, an attempt has been made to study the occupation of sample households of villages of Bihar. Analyzing data revealed that about 33.57 per cent persons were workers in the villages under study (Table- 3.14).

Table 3.14 VillageWise Working Population in different Categories of Households

Village	Labour	Small	Medium	Large	Total
Arap	16(33.33%)	18(37.5%)	23(34.33%)	24(36.92%)	81(35.53%)
Baghakole	24(47.06%)	17(28.33%)	14(28%)	28(29.79%)	83(32.55%)
Inai	17(33.33%)	17(35.42%)	22(40%)	26(33.33%)	82(35.34%)
Susari	17(27.42%)	21(32.31%)	23(29.87%)	25(35.71%)	86(31.39%)
Total	74(34.91%)	73(33.03%)	82(32.93%)	103(33.55%)	332(33.57%)

However, Inai and Arap villages had comparatively large proportion of workers (35%) than Susari (31.39%) and Baghakole (32.55%). While analyzing the household category-wise worker population, the higher proportion of working force was on landless households (35%) than other categories of households (33%).

Village-wise and household-wise analysis did not have reveal any specific trend with respect to proportion of work force but large farm of Arap and Susari had large proportions of working population than their respective labour households (Appendix- IX).

It was only due to higher level of education in Arap (82%) particularly on large households (89%) who could get employment in non-farm sector whereas migration was high in large-size, particularly belonging to forward castes (100%), who were engaged in non-farm activities at destination places. In study villages, non-farm employment emerged as important occupation (60%) and farming placed at second place (36%) with respect to employment to sample households in Bihar (Table- 3.15).

Table: 3.15 Category-Wise Main Occupation of Households in Study Villages , Bihar

Particular	Non Farming	Farming	Farm Labour	Total Worker
Labour	61(82)	2(3)	11(15)	74(100)
Small	45(62)	27(37)	1(1)	73(100)
Medium	44(54)	37(45)	1(1)	82(100)
Large	50(49)	53(51)	0(0)	103(100)
Total	200(60)	119(36)	13(4)	332(100)

Figures in parentheses indicate percentage to respective total population of total worker.

Only 4 percent of work force had farm labor as main occupation, however it was higher on landless households (15%). Non-farm activities was main source of employment for landless (82%), small (62%) and medium households (54%), whereas farming was main source of employment for workers of large households (51%). As expected, farming was not as important source of occupation for landless labour households due to absence of land for

cultivation. Importance of farming as an occupation increased with increase in the land-base of households, whereas importance of non-farm occupations increased with reduction in the land-base of the households and about half of working force was engaged in non-farm activities. The occupational scenario is almost similar in all the four villages however farming is the main occupation for large households and non-farm for labour households in almost all villages under study. Only one person each of labour households of Arap and Susari village reported farming as main occupation. None 0f the labour households of Baghakole and Inai village aer engaged in farming as main occupation (Appendix-X). It can thus be inferred, that non-farm activity has emerged as main source of employment in villages under study.

Asset possession

Access to assets is of critical importance to the economic viability of rural households. Understanding the extent of this access and how it links to the ability of rural households to employ different pathways out of poverty is thus vital for designing rural development policies. The level of possession of asset is an economic and social factor that is more persistent than any other variables for determining poverty in rural area. Asset poverty can be defined as a household‘s inability to access wealth resources that are sufficient enough to provide for basic needs for a short period. There are trends in the development of asset sources over times and several factors that cause certain groups to fall into asset poverty more easily than others. Changes in these factors and structure have occurred over the years but asset poverty is continually higher than other forms of poverty such as income poverty. It provides a more accurate description of a household‘s true financial strength.

An analysis has been undertaken to understand the asset possession of sample households of villages in Bihar. Assets are categorised in six groups i.e; land, livestock, agricultural assets, domestic assets, transport assets, and communication assets. Structure of land possession and livestock ownership have been discussed in detail in earlier but importance of these assets in value term are undertaken along with other assets. Among various assets, land is most important asset followed by building, livestock and misc. asset constituting 89%, 8%, 1% and 3% of total assets, respectively in four villages under study. All the four household categories do not differ much with respect to pattern of possession of different assets but landless households had 60 per cent of total assets as land but much higher proportion of total assets in in form of building (33%) and livestock (4%) in comparison to other categories of households(table 3.16)

Table: 3.16 Percentage of Value of Different Assets to Total Assets on Sample Households in Bihar

Particular	Land	Building	Livestock	Others
Labour	60	33	4	4
Small	91	7	1	1
Medium	90	7	0.37	2
Large	87	7	0.45	5
Total	89	8	1	3

In all the villages and categories of households, value of land and building constitute 88 to 99 per cent of respective value of total assets of households. Baghakole and Susari villages are comparatively rich in livestock asset than Arap and Inai village .As far as per household asset is concerned, it increases with increase in land base of household because land is the main asset in rural area. Per household asset is much lower on labour households (Rs 1.96 lakh) than large household (Rs 54.15 lakh) (Appendix-XI).

Village wise possession of asset revealed that the households of Arap are rich in asset possession and Susari households are asset poor however landless households of Arap had the lowest asset because none of them had cultivable land, the main asset in rural area (Appendix-XII).

Village wise analysis of asset possession like; agricultural assets, domestic assets, transport assets and communication assets has been undertaken for sample households in four villages under study and it was found that domestic asset is possessed by all the households but agricultural assets are possessed by only land owners.Transport assets and communication assets are owned by more than two-thids of households but incidence of these assets tends to decline with decline in land base of households (Appendix-XIII)

It has been observed that access of rural households to a range of assets including land, building and livestock is low, though highly heterogeneous across villages and by categories of households within village. A large share of rural households do not have access to basic productive assets like; agricultural machineries, pump sets and livestock and generally it is the landless and the small land holders who suffer significantly more from this lack of access.

Savings and Borrowing

Saving is closely related to investment however increased saving does not always correspond to increased investment. In rural area, saving is generally kept for meeting productive and consumption expenses or it is one of the coping mechanisms to meet the necessities in adverse situations caused by natural calamities or otherwise. If saving is not adequate to meet the productive and/or consumption expenses there is a need to borrow money from institutional

and/or non-institutional sources. In fact, credit acted as a means to provide control over resources to enable farm and non-farm household to acquire the required capital for investment purposes.

In present section, an attempt has been made to analyse the saving and borrowing behaviour of sample households of four villages of Bihar under study. Despite persistent poverty, 58 per cent sample households have saving accounts in commercial banks and other institutions. About one-third of landless households of sample villages of Bihar have saving/investment account however about two-thirds of other categories of households have saving/investment accounts (Table 3.17).

Table: 3.17 Number of Households with Saving Account with Different Institutions in study Villages, Bihar

Particular	**Source of Borrowing**				
	Commercial Banks	**Co-operative Bank**	**Insurance(LIC, etc)**	**Post office**	**Others**
Labour	**4(10)**	**2(5)**	**3(8)**	**1(3)**	**3(8)**
Arap	2(20)	0(0)	0(0)	0(0)	0(0)
Baghakole	1(10)	0(0)	1(10)	0(0)	3(30)
Susari	1(10)	2(20)	1(10)	1(10)	0(0)
Inai	0(0)	0(0)	1(10)	0(0)	0(0)
Small	**10(25)**	**3(8)**	**12(30)**	**0(0)**	**0(0)**
Arap	4(40)	0(0)	4(40)	0(0)	0(0)
Baghakole	5(50)	(0)	3(30)	0(0)	0(0)
Susari	1(10)	1(10)	2(20)	0(0)	0(0)
Inai	0(0)	2(20)	3(30)	0(0)	0(0)
Medium	**12(30)**	**0(0)**	**16(40)**	**0(0)**	**1(3)**
Arap	4(40)	0(0)	5(50)	0(0)	1(10)
Baghakole	3(30)	0(0)	6(60)	0(0)	0(0)
Susari	5(50)	0(0)	2(20)	0(0)	0(0)
Inai	0(0)	0(0)	3(30)	0(0)	0(0)
Large	**11(28)**	**3(8)**	**12(30)**	**0(0)**	**0(0)**
Arap	5(50)	0(0)	3(30)	0(0)	0(0)
Baghakole	4(40)	0(0)	4(40)	0(0)	0(0)
Susari	1(10)	2(20)	4(40)	0(0)	0(0)
Inai	1(10)	1(10)	1(10)	0(0)	0(0)
Total	**37(23)**	**8(5)**	**43(27)**	**1(1)**	**4(3)**

Figures in parentheses indicate percentage to respective total no. of households

Insurance is most preferred source of investment (saving) in all the villages' but out of 40, only 3 landless households purchased insurance policy. The comparatively larger proportion of medium households(40 %) purchased insurance policy however the proportion was much higher in Baghakole(60%) and Arap village(50%).In Inai village, only 8 households purchased insurance policy i.e; one each of landless and large households and 3 each of small and medium households Appendix). Commercial bank was the second important destination of saving in villages under study in Bihar but it was more important destination of saving in Arap

and Baghakole village, mainly due to easy access to branch of commercial bank, larger size of land holdings and higher level of education. Household category wise per household saving was worked out and it was found that medium category of households could save comparatively higher

Amount (Rs 23.13 thousand) than large households(Rs22.05 thousand),small households(Rs 7.13 thousand) and landless households(Rs 1.37 thousand). The higher rate of saving on medium size of households was mainly due to comparatively large incidence of migration and employment in non-farm sector. But in Baghakole village, the saving on medium households was low(Rs 2.75 thousand) because non- farm employment was lowest on this category of households in the village (Table-3.18).

Table: 3.18 Category-Wise Saving of Households (in 1000 Rs) in Different Institutions in Study Villages , Bihar

Particular	**Source of Borrowing**					
	Commercial Banks	Co-operative Bank	Insurance (LIC, etc)	Post office	Others	Total
Labour	**24(46)**	**6.5(12)**	**15(28)**	**3(6)**	**4.2(8)**	**52.7(100)**
Arap	15(100)	0(0)	0(0)	0(0)	0(0)	15(100)
Baghakole	5(45)	0(0)	2(18)	0(0)	4.2(38)	11.2(100)
Susari	4(24)	6.5(39)	3(18)	3(18)	0(0)	16.5(100)
Inai	0(0)	0(0)	10(100)	0(0)	0(0)	10(100)
Small	**210(74)**	**5(2)**	**70.33(25)**	**0(0)**	**0(0)**	**285.33(100)**
Arap	120(91)	0(0)	12(9)	0(0)	0(0)	132(100)
Baghakole	70(74)	0(0)	24.5(26)	0(0)	0(0)	94.5(100)
Susari	20(47)	2(5)	20.32(48)	0(0)	0(0)	42.32(100)
Inai	0(0)	3(18)	13.51(82)	0(0)	0(0)	16.51(100)
Medium	**654.66(71)**	**0(0)**	**230.55(25)**	**0(0)**	**40(4)**	**925.21(100)**
Arap	505.16(86)	0(0)	42.2(7)	0(0)	40(7)	587.36(100)
Baghakole	50(50)	0(0)	50.15(50)	0(0)	0(0)	100.15(100)
Susari	99.5(45)	0(0)	120(55)	0(0)	0(0)	219.5(100)
Inai	0(0)	0(0)	18.2(100)	0(0)	0(0)	18.2(100)
Large	**730(83)**	**15(2)**	**137(16)**	**0(0)**	**0(0)**	**882(100)**
Arap	370(93)	0(0)	27(7)	0(0)	0(0)	397(100)
Baghakole	250(89)	0(0)	32(11)	0(0)	0(0)	282(100)
Susari	100(54)	13(7)	73(39)	0(0)	0(0)	186(100)
Inai	10(59)	2(12)	5(29)	0(0)	0(0)	17(100)
Total	**1618.66 (75)**	**26.5 (1)**	**452.88 (21)**	**3(0)**	**44.2(2)**	**2145.24 (100)**

Figures in parentheses indicate percentage to respective total Saving amount.

Borrowing

Three institutional financing agencies i.e; Commercial bank, Regional Rural Bank and Cooperative are operating in villages under study. Among institutional credit sources, commercial bank is more popular followed by Regional Rural Bank and cooperative in villages under study. Cooperative is functional in only Baghakole village.Despite sincere efforts of state government, cooperative is still not vibrant in majority of villages in Bhar.Besides

institutional agencies, non-institutional lenders are active in these villages. About two- third of households had access to institutional or non- institutional sources of financing in study villages. Despite various bank linked agricultural and non -agricultural development programmes , only 26 per cent households could obtain loan from institutional sources and 41 per cent from non- institutional sources in villages under study Among borrowing households three-fourth of landless and small households could get loans from non- institutional sources whereas only one-fifth of landless(21%) and one-fourth of small (26%)households had access to institutional credit agencies (TABLE-3.19).

Table: 3.19 Source Wise Quantum of Loans From Different Sources (in 1000 Rs) in Study Villages, Bihar

Particular	**Source of Borrowing**									Total
	Co-op. Bank	Comm. Banks	Gramin Banks	Friends & Relative	Shop keeper	Land lord	Moneylender	SHG	Others	
Labour	**0(0)**	**5(2)**	**20 (7)**	**20 (7)**	**3 (1)**	**1.5 (1)**	**227.5 (78)**	**1.2 (0)**	**12 (4)**	**290.2 (100)**
Arap	0(0)	0(0)	0(0)	0(0)	3(100)	0(0)	0(0)	0(0)	0(0)	3 (100)
Baghakole	0(0)	5(13)	0(0)	10(27)	0(0)	1.5(4)	7.5(20)	1.2(3)	12(32)	37.2 (100)
Susari	0(0)	0(0)	0(0)	10(20)	0(0)	0(0)	40(80)	0(0)	0(0)	50 (100)
Inai	0(0)	0(0)	20(10)	0(0)	0(0)	0(0)	180 (90)	0(0)	0(0)	200 (100)
Small	**3 (1)**	**90 (20)**	**60 (13)**	**11 (2)**	**10 (2)**	**8 (2)**	**247.5 (55)**	**0 (0)**	**24.5 (5)**	**454 (100)**
Arap	0(0)	65(100)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	65 (100)
Baghakole	3(2)	25(19)	35(27)	1(1)	0(0)	0(0)	40(31)	0(0)	24.5 (19)	128.5 (100)
Susari	0(0)	0(0)	25(26)	10(10)	10(10)	0(0)	52 (54)	0(0)	0(0)	97 (100)
Inai	0(0)	0(0)	0(0)	0(0)	0(0)	8(5)	155.5(95)	0 (0)	0(0)	163.5 (100)
Medium	**23 (1)**	**574 (30)**	**380 (20)**	**131 (7)**	**0(0)**	**50 (3)**	**336 (18)**	**0(0)**	**426 (22)**	**1920 (100)**
Arap	0(0)	568 (60)	0 (0)	11 (1)	0(0)	0 (0)	70 (7)	0(0)	291 (31)	940 (100)
Baghakole	23(4)	0(0)	315(51)	100(16)	0(0)	13(2)	30(5)	0(0)	135(22)	616 (100)
Susari	0(0)	0(0)	65(59)	20(18)	0(0)	0(0)	25(23)	0(0)	0(0)	110 (100)
Inai	0(0)	6(2)	0(0)	0(0)	0(0)	37(15)	211 (83)	0(0)	0(0)	254 (100)
Large	**25(2)**	**890(59)**	**180(12)**	**180(12)**	**0.5(0)**	**51(3)**	**65(4)**	**0(0)**	**115(8)**	**1506.5(100)**
Arap	0(0)	200(73)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	75(27)	275(100)
Baghakole	25(5)	190(41)	95(20)	100(21)	0.5(0)	51(11)	5(1)	0(0)	0(0)	466.5(100)
Susari	0(0)	500(80)	85(14)	0(0)	0(0)	0(0)	0(0)	0(0)	40(6)	625(100)
Inai	0(0)	0(0)	0(0)	80(57)	0(0)	0(0)	60(43)	0(0)	0(0)	140(100)
Total	**51(1)**	**1559(37)**	**640(15)**	**342(8)**	**13.5(0)**	**110.5(3)**	**876(21)**	**1.2(0)**	**577.5(14)**	**4170.7(100)**

Figures in parentheses indicate percentage to respective total quantum of loan.

Majority of large borrowing households (54%) and 45 per cent of medium households had access to institutional credit sources in villages under study. Hence, it may be inferred that non –institutional agencies are still important sources of credit, particularly for landless and small households in rural Bihar. Landless and small households had not only poor access to institutional source of credit but they could get smaller quantum of loans through institutional sources. Landless households obtained 91 per cent of their total loans from non –institutional sources(TABLE-3.20).

Table: 3.20 Number of Households Accessing Different Sources for Loan in Study Village, Bihar

Particular	**Source of Borrowing**								Others
	Co-operative Bank	Commercial Banks	Gramin Banks	Friends & Relative	Shopkeeper	Landlord	Moneylender	SHG	
Labour	**0(0)**	**1(3)**	**2(5)**	**2(5)**	**1(3)**	**1(3)**	**12(30)**	**1(3)**	**1(3)**
Arap	0(0)	0(0)	0(0)	0(0)	1(10)	0(0)	0(0)	0(0)	0(0)
Baghakole	0(0)	1(10)	0(0)	1(10)	0(0)	1(10)	2(20)	1(10)	1(10)
Susari	0(0)	0(0)	0(0)	1(10)	0(0)	0(0)	3(30)	0(0)	0(0)
Inai	0(0)	0(0)	2(20)	0(0)	0(0)	0(0)	7(70)	0(0)	0(0)
Small	**1(3)**	**4(10)**	**2(5)**	**2(5)**	**1(3)**	**1(3)**	**13(33)**	**0(0)**	**3(8)**
Arap	0(0)	3(30)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
Baghakole	1(10)	1(10)	1(10)	1(10)	0(0)	0(0)	1(10)	0(0)	3(30)
Susari	0(0)	0(0)	1(10)	1(10)	1(10)	(0)	3(30)	0(0)	0(0)
Inai	0(0)	0(0)	0(0)	0(0)	0(0)	1(10)	9(90)	0(0)	0(0)
Medium	**2(5)**	**9(23)**	**7(18)**	**4(10)**	**0(0)**	**3(8)**	**10(25)**	**0(0)**	**6(15)**
Arap	0(0)	8(80)	0(0)	2(20)	0(0)	0(0)	1(10)	0(0)	5(50)
Baghakole	2(20)	0(0)	4(40)	1(10)	0(0)	1(10)	1(10)	0(0)	1(10)
Susari	0(0)	0(0)	3(30)	1(10)	0(0)	0(0)	1(10)	0(0)	0(0)
Inai	0(0)	1(10)	0(0)	0(0)	0(0)	2(20)	7(70)	0(0)	0(0)
Large	**2(5)**	**8(20)**	**4(10)**	**3(8)**	**1(3)**	**2(5)**	**4(10)**	**0(0)**	**3(8)**
Arap	0(0)	4(40)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)	2(20)
Baghakole	2(20)	2(20)	2(20)	1(10)	1(10)	2(20)	1(10)	0(0)	0(0)
Susari	0(0)	2(20)	2(20)	0(0)	0(0)	0(0)	0(0)	0(0)	1(10)
Inai	0(0)	0(0)	0(0)	2(20)	0(0)	0(0)	3(30)	0(0)	0(0)
Total	**5(3)**	**22(14)**	**15(9)**	**11(7)**	**3(2)**	**7(4)**	**39(24)**	**1(1)**	**13(8)**

Figures in parentheses indicate percentage to respective total no. of households

Among non-institutional sources, moneylenders provided 78 per cent of total loans borrowed by them from institutional and non-institutional sources on interest rate of 36 to 60 per cent per annum.In Inai village Almost all the sample households borrowed from non-institutional credit sources. All the landless borrowing households of Arap and Susari villages obtained loan from money lenders only. Poor access to institutional credit agencies has been observed in Inai village where one medium and two landless households had access to institutional source of credit and none of sample small and large households had access to institutional sources of credit in the village. But about 30 to 80 per cent of medium and large households could obtain credit from institutional sources in other than Inai village under study. The poor access to institutional credit

in Inai village might be due to small size of land holding,distantly located bank branch and predominance of socially backward population.

The introduction of a new credit product called Kisa Credi Card with three different sub-limits viz. production, asset maintenance and consumptionneeds is step to address the challenges in agricultural credit delivery system.An effort has also been made to examine the access of households to Kisan Credit Card in study villages. About 17 percnt households of Arap village have access to KCC, 13 per cent in Susari village and 8 per cent in Baghakole village. Only 1 per cent households of Inai villasge have access to KCC. In KCC distribution programme also ,large and medium farmers could get benefit and small landholders again left out on the wishes of Non institutional source of lending in Bihar, in general and in four villages under study, in particular. Arap has a branch of Commercial bank(SBI) but even 20 per cent of households do not have access to KCC.The steam of process of KCC distribution seems to be exhausted,particularly in these villages of Bihar since only 18 households were provided KCC in four villages in 2011.It is also important to point out that more than 90 per cent of KCC holders availed loan facility during last five years, mainly either due to dues or non- renewal of KCC.

References

Chellian, Raja. J. and Suudarshan, R (1999) Income Poverty and Beyond (Human Development in India), Social Science Press, New Delhi.

Dandekar, V.M. and Nilakantha, Rath (1971) Poverty in India-I, Dimension and Trends, Economic and Political Weekly; 6(1) : 25-48

Kumari, V. (2011) A Poverty and Rural Development: Linkages and Application Himalaya Publishing House, Mumbai

Government of Bihar(2011)Economic Survey,Department of Finance,Patna,Blhar

Kumari, V. and Singh, RKP (2009) Fragile Human Capital Causes Poverty in North-Bihar Some Empirical Evidences, Agricultural Economics Research Review, 22 (1); 99-108.

Mahendra Dev, S(2002) Economic reforms, Poverty, Income Distribution and Employment, Economic and Political Weekly, 35(10):823-835

Pattanaiik, B.K (2003) Property, Poverty and Rural Livelihood, kurukshetra, 51(5); 41-46.

Rath, Nilakantha (1996) Poverty in India revisited, Indian Journal of Agricultural Economics, 51 (1162), 76-108.

Ravallion, Martin and Dutta, G (1996) India's Checkered History in Fight against Poverty (are there lessons for the future), Economic and Political Weekly, 31 (35,36 & 37) 2459-2477)

Tilak, J& B 1946) How free is Free Primary Education in India, Economic and Political Weekly, 31 (4&5) : 275 – 282

Thakur, J., Bose, M, Hussain, M and Janaiah (2000), Rural Income Distribution and Poverty in Bihar: Insights from village studies, Economic and Political Weekly, 35 (10): 4657-4663

Singh, K M; R K P Singh, M S Meena and Abhay Kumar. 2011. Dimensions of Poverty in Bihar. Paper presented in 7th Asian Society of Agricultural Economists (ASAE) Conference in Hanoi, Vietnam. 13-15 October 2011.

Singh, R.K.P. and Singh, K.M..2013. An Overview of Agricultural Credit and Crop Insurance in Bihar. http://dx.doi.org/10.2139/ssrn.2254524

Singh, K.M., Meena, M.S., Kumar, Abhay and Singh, R.K.P.. 2013.An Overview of Gender Issues in Agriculture. http://dx.doi.org/10.2139/ssrn.2237993

Singh, K.M., Singh, R.K.P., Meena, M.S., Kumar, Abhay, Jha, A.K. and Kumar, Anjani. 2013. Determinants of Rural Poverty: An Empirical Study of Socio-Economic Factors in Jharkhand, India. http://dx.doi.org/10.2139/ssrn.2226902

Singh, R.K.P., Singh, K.M. and Jha, A.K. 2012. Effect of Migration on Agricultural Productivity and Women Empowerment in Bihar. http://dx.doi.org/10.2139/ssrn.2111155

Singh, K.M., Meena, M.S., Kumar Abhay and Singh, R.K.P.. Socio-Economic Determinants of Rural Poverty: An Empirical Exploration of Jharkhand State, India http://dx.doi.org/10.2139/ssrn.2017593

Singh, K.M., Meena, M.S., Kumar, Abhay and Singh, R.K.P. 2012. Dimensions of Poverty in Bihar
http://dx.doi.org/10.2139/ssrn.2017506

Appendix-I

Literacy Level by Sex (Above 6 Yrs) in Study Villages , Bihar

Particular	Male	Female	Both(M\F)
Labour	**84(75.7)**	**42(41.6)**	**126(59.4)**
Arap	14(60.9)	10(40)	24(50)
Baghakole	20(83.3)	14(51.9)	34(66.7)
Inai	25(78.1)	5(26.3)	30(58.8)
Susari	25(78.1)	13(43.3)	38(61.3)
Small	**104(91.2)**	**63(58.9)**	**167(75.6)**
Arap	26(100)	17(77.3)	43(89.6)
Baghakole	30(96.8)	17(58.6)	47(78.3)
Inai	20(80)	9(39.1)	29(60.4)
Susari	28(87.5)	20(60.6)	48(73.8)
Medium	**118(95.2)**	**88(70.4)**	**206(82.7)**
Arap	30(93.8)	31(88.6)	61(91)
Baghakole	26(100)	20(83.3)	46(92)
Inai	26(86.7)	16(64)	42(76.4)
Susari	36(100)	21(51.2)	57(74)
Large	**161(95.8)**	**107(77)**	**268(87.3)**
Arap	36(100)	22(75.9)	58(89.2)
Baghakole	52(98.1)	40(97.6)	92(97.9)
Inai	39(92.9)	25(69.4)	64(82.1)
Susari	34(91.9)	20(60.6)	54(77.1)
Total	**467(90.3)**	**300(63.6)**	**767(77.6)**

Figures in parentheses indicate percentage to respective total population.

Appendix—II

Category-Wise Number of Plots Own by Different Households in Study Villages, Bihar

Particular	Less than 5 Plots	5 to 10 Plots	10 to 15 Plots	above 15 Plots	Total
Labour	**8(100)**	**0(0)**	**0(0)**	**0(0)**	**8(100)**
Arap	Nil	Nil	Nil	Nil	Nil
Baghakole	3(100)	0(0)	0(0)	0(0)	3(100)
Inai	1(100)	0(0)	0(0)	0(0)	1(100)
Susari	4(100)	0(0)	0(0)	0(0)	4(100)
Small	**15(38)**	**24(60)**	**1(3)**	**0(0)**	**40(100)**
Arap	2(20)	7(70)	1(10)	0(0)	10(100)
Baghakole	6(60)	4(40)	0(0)	0(0)	10(100)
Inai	1(10)	9(90)	0(0)	0(0)	10(100)
Susari	6(60)	4(40)	0(0)	0(0)	10(100)
Medium	**12(30)**	**21(53)**	**7(18)**	**0(0)**	**40(100)**
Arap	2(20)	4(40)	4(40)	0(0)	10(100)
Baghakole	4(40)	6(60)	0(0)	0(0)	10(100)
Inai	3(30)	5(50)	2(20)	0(0)	10(100)
Susari	3(30)	6(60)	1(10)	0(0)	10(100)
Large	**5(13)**	**14(35)**	**17(43)**	**4(10)**	**40(100)**
Arap	0(0)	3(30)	3(30)	4(40)	10(100)
Baghakole	4(40)	3(30)	3(30)	0(0)	10(100)
Inai	0(0)	2(20)	8(80)	0(0)	10(100)
Susari	1(10)	6(60)	3(30)	0(0)	10(100)
Total	**40(31)**	**59(46)**	**25(20)**	**4(3)**	**128(100)**

Figures in parentheses indicate percentage to respective total population of total no. of plots.

Appendix – III

Size of landholding among different categories of household, Bihar

Particular	of Land of total area	Per Household(acre)	Per Capita(acre)	Total land (acre)
Arap	**115.1(100)**	**2.88**	**0.5**	**115.1**
Labour	0	0	0	0
Small	10.64(9.24)	1.06	0.22	10.64
Medium	25.78(22.4)	2.58	0.38	25.78
Large	78.68(68.36)	7.87	1.21	78.68
Baghakole	**153.38(100)**	**3.83**	**0.6**	**153.38**
Labour	1.5(0.98)	0.15	0.03	1.5
Small	15.83(10.32)	1.58	0.26	15.83
Medium	35.04(22.85)	3.5	0.7	35.04
Large	101.01(65.86)	10.1	1.07	101.01
Inai	**62.19(100)**	**1.55**	**0.27**	**62.19**
Labour	0.4(0.64)	0.04	0.01	0.4
Small	7.65(12.3)	0.77	0.16	7.65
Medium	11.74(18.88)	1.17	0.21	11.74
Large	42.4(68.18)	4.24	0.54	42.4
Susari	**82.9(100)**	**2.07**	**0.3**	**82.9**
Labour	1.5(1.81)	0.15	0.02	1.5
Small	1.5(1.81)	0.88	0.14	8.8
Medium	15.75(19)	1.58	0.2	15.75
Large	56.85(68.58)	5.69	0.81	56.85

Appendix – IV

Category-Wise Number of Plots Own by Different Households in Study Villages, Bihar

Particular	Less than 5 Plots	5 to 10 Plots	10 to 15 Plots	above 15 Plots	Total
Labour	**8(100)**	**0(0)**	**0(0)**	**0(0)**	**8(100)**
Arap	Nil	Nil	Nil	Nil	Nil
Baghakole	3(100)	0(0)	0(0)	0(0)	3(100)
Inai	1(100)	0(0)	0(0)	0(0)	1(100)
Susari	4(100)	0(0)	0(0)	0(0)	4(100)
Small	**15(38)**	**24(60)**	**1(3)**	**0(0)**	**40(100)**
Arap	2(20)	7(70)	1(10)	0(0)	10(100)
Baghakole	6(60)	4(40)	0(0)	0(0)	10(100)
Inai	1(10)	9(90)	0(0)	0(0)	10(100)
Susari	6(60)	4(40)	0(0)	0(0)	10(100)
Medium	**12(30)**	**21(53)**	**7(18)**	**0(0)**	**40(100)**
Arap	2(20)	4(40)	4(40)	0(0)	10(100)
Baghakole	4(40)	6(60)	0(0)	0(0)	10(100)
Inai	3(30)	5(50)	2(20)	0(0)	10(100)
Susari	3(30)	6(60)	1(10)	0(0)	10(100)
Large	**5(13)**	**14(35)**	**17(43)**	**4(10)**	**40(100)**
Arap	0(0)	3(30)	3(30)	4(40)	10(100)
Baghakole	4(40)	3(30)	3(30)	0(0)	10(100)
Inai	0(0)	2(20)	8(80)	0(0)	10(100)
Susari	1(10)	6(60)	3(30)	0(0)	10(100)
Total	**40(31)**	**59(46)**	**25(20)**	**4(3)**	**128(100)**

Figures in parentheses indicate percentage to respective total population of total no. of plots.

Appendix – V

Category-Wise Different Livestock Own By Households in Study Villages , Bihar

Particular	**Cattle**			**Buffalo**	**Goat**	**Others**
	Cow		**Bullock**			
	local/Improved	**Cross-Bred**				
Labour	**6(15)**	**3(7.5)**	**0(0)**	**7(17.5)**	**10(25)**	**1(2.5)**
Arap	3(30)	2(20)	0(0)	0(0)	1(10)	0(0)
Baghakole	0(0)	1(10)	0(0)	5(50)	8(80)	1(10)
Inai	2(20)	0(0)	0(0)	2(20)	0(0)	0(0)
Susari	1(10)	0(0)	0(0)	0(0)	1(10)	0(0)
Small	**17(42.5)**	**2(5)**	**5(12.5)**	**14(35)**	**0(0)**	**0(0)**
Arap	5(50)	0(0)	0(0)	2(20)	0(0)	0(0)
Baghakole	5(50)	2(20)	0(0)	7(70)	0(0)	0(0)
Inai	3(30)	0(0)	5(50)	1(10)	0(0)	0(0)
Susari	4(40)	0(0)	0(0)	4(40)	0(0)	0(0)
Medium	**18(45)**	**11(27.5)**	**5(12.5)**	**6(15)**	**0(0)**	**0(0)**
Arap	8(80)	7(70)	1(10)	0(0)	0(0)	0(0)
Baghakole	5(50)	4(40)	0(0)	1(10)	0(0)	0(0)
Inai	4(40)	0(0)	1(10)	2(20)	0(0)	0(0)
Susari	1(10)	0(0)	3(30)	3(30)	0(0)	0(0)
Large	**22(55)**	**14(35)**	**7(17.5)**	**13(32.5)**	**1(2.5)**	**0(0)**
Arap	7(70)	7(70)	0(0)	4(40)	0(0)	0(0)
Baghakole	6(60)	6(60)	0(0)	0(0)	0(0)	0(0)
Inai	5(50)	1(10)	5(50)	2(20)	1(10)	0(0)
Susari	4(40)	0(0)	2(20)	7(70)	0(0)	0(0)
Total	**63(39.4)**	**30(18.8)**	**17(10.6)**	**40(25)**	**11(6.9)**	**1(0.6)**

Figures in parentheses indicate percentage to respective total no. of households.

Appendix – VI

Category-Wise Population of Livestock Per 100 Households in Study Villages , Bihar

Particular	Cattle			Buffalo	Goat	Others
	Cow		Bullock			
	local/Improved	Cross-Bred				
Labour	**15**	**8**	**0**	**23**	**30**	**3**
Arap	30	20	0	0	10	10
Baghakole	0	10	0	70	100	0
Inai	20	0	0	20	0	0
Susari	10	0	0	0	10	0
Small	**68**	**8**	**15**	**50**	**0**	**0**
Arap	100	0	0	40	0	0
Baghakole	70	30	0	100	0	0
Inai	40	0	60	10	0	0
Susari	60	0	0	50	0	0
Medium	**73**	**43**	**10**	**30**	**0**	**0**
Arap	110	120	0	0	0	0
Baghakole	100	50	0	10	0	0
Inai	50	0	10	20	0	0
Susari	30	0	30	90	0	0
Large	**98**	**70**	**20**	**50**	**3**	**0**
Arap	120	120	0	60	0	0
Baghakole	140	150	0	0	0	0
Inai	60	10	50	30	10	0
Susari	70	0	30	110	0	0
Total	**63**	**32**	**11**	**38**	**8**	**1**

Appendix – VII

Category-Wise Incidence of Migration of Male Members of Households in Villages Under Study , Bihar

Particulars	General				
	Arap	Baghakole	Inai	Susari	Total
Labour	0	0	0	11(61.11)	11(61.11)
Small	3(27.27)	7(36.84)	0	9(47.37)	19(38.78)
Medium	8(32)	5(19.23)	0	14(63.64)	27(36.99)
Large	7(23.33)	25(47.17)	0	8(44.44)	40(39.6)
Total	18(27.27)	37(37.76)	0	42(54.55)	97(40.25)
Particulars	OBC				
	Arap	Baghakole	Inai	Susari	Total
Labour	4(36.36)	4(33.33)	2(33.33)	6(46.15)	16(38.1)
Small	8(53.33)	5(41.67)	5(20)	1(10)	19(30.65)
Medium	4(57.14)	0	11(36.67)	10(71.43)	25(49.02)
Large	3(50)	0	13(30.95)	3(15.79)	19(28.36)
Total	19(48.72)	9(37.5)	31(30.1)	20(35.71)	79(35.59)
Particulars	SC\ST				
	Arap	Baghakole	Inai	Susari	Total
Labour	0(0)	0(0)	2(7.69)	0(0)	2(3.92)
Small	0	0	0	2(66.67)	2(66.67)
Medium	0	0	0	0	0
Large	0	0	0	0	0
Total	0(0)	0(0)	2(7.69)	2(50)	4(7.41)

Appendix – VIII

Category-Wise Extent of Migration of Households in Villages Under Study , Bihar

Particulars	**General**				
	Arap	**Baghakole**	**Inai**	**Susari**	**Total**
Labour	0	0	0	4(100)	4(100)
Small	2(50)	4(57.14)	0	4(100)	10(66.67)
Medium	5(62.5)	3(30)	0	5(71.43)	13(52)
Large	4(44.44)	6(60)	0	4(100)	14(60.87)
Total	11(52.38)	13(48.15)	0	17(89.47)	41(61.19)
	OBC				
	Arap	**Baghakole**	**Inai**	**Susari**	**Total**
Labour	2(50)	3(75)	2(66.67)	5(100)	12(75)
Small	5(83.33)	2(66.67)	5(50)	1(20)	13(54.17)
Medium	2(100)	0	7(70)	3(100)	12(80)
Large	1(100)	0	4(40)	2(33.33)	7(41.18)
Total	10(76.92)	5(71.43)	18(54.55)	11(57.89)	44(61.11)
	SC\ST				
	Arap	**Baghakole**	**Inai**	**Susari**	**Total**
Labour	0(0)	0(0)	2(28.57)	0(0)	2(10)
Small	0	0	0	1(100)	1(100)
Medium	0	0	0	0	0
Large	0	0	0	0	0
Total	0(0)	0(0)	2(28.57)	1(50)	3(14.29)

Appendix – IX

Particular	**Total Worker (in number)**
Labour	**74(34.91%)**
Arap	16(33.33%)
Baghakole	24(47.06%)
Inai	17(33.33%)
Susari	17(27.42%)
Small	**73(33.03%)**
Arap	18(37.5%)
Baghakole	17(28.33%)
Inai	17(35.42%)
Susari	21(32.31%)
Medium	**82(32.93%)**
Arap	23(34.33%)
Baghakole	14(28%)
Inai	22(40%)
Susari	23(29.87%)
Large	**103(33.55%)**
Arap	24(36.92%)
Baghakole	28(29.79%)
Inai	26(33.33%)
Susari	25(35.71%)
Total	**332(33.57%)**

Appendix – X

Particular	Non Farming	Farming	Farm Labour	Total Worker
Labour	**61(82)**	**2(3)**	**11(15)**	**74(100)**
Arap	15(94)	1(6)	0(0)	16(100)
Baghakole	15(63)	0(0)	9(38)	24(100)
Inai	15(88)	0(0)	2(12)	17(100)
Susari	16(94)	1(6)	0(0)	17(100)
Small	**45(62)**	**27(37)**	**1(1)**	**73(100)**
Arap	11(61)	7(39)	0(0)	18(100)
Baghakole	10(59)	7(41)	0(0)	17(100)
Inai	9(53)	7(41)	1(6)	17(100)
Susari	15(71)	6(29)	0(0)	21(100)
Medium	**44(54)**	**37(45)**	**1(1)**	**82(100)**
Arap	11(48)	12(52)	0(0)	23(100)
Baghakole	6(43)	8(57)	0(0)	14(100)
Inai	13(59)	9(41)	0(0)	22(100)
Susari	14(61)	8(35)	1(4)	23(100)
Large	**50(49)**	**53(51)**	**0(0)**	**103(100)**
Arap	10(42)	14(58)	0(0)	24(100)
Baghakole	16(57)	12(43)	0(0)	28(100)
Inai	13(50)	13(50)	0(0)	26(100)
Susari	11(44)	14(56)	0(0)	25(100)
Total	**200(60)**	**119(36)**	**13(4)**	**332(100)**

Figures in parentheses indicate percentage to respective total population of total worker.

Appendix –XI

Per Household Assets Owned by Households(in 1000 Rs) in Bihar

Labour	4725	2570	296.95	281.85	7873.8
Small	89532	7030	667.5	1473.01	98702.51
Medium	136140	10230	569.4	3763.31	150702.71
Large	189410	16000	995.3	10180.82	216586.12
Total	419807	35830	2529.15	15698.99	473865.14

Appendix –XII

Different Categories of Assets hold by Households(in 1000 Rs) in Villages of Bihar

Particular	**Land**	**Building**	**Livestock**	**Others**	**Total**
Labour					
Arap	0	1023	50.5	90.3	1163.8
Baghakole	1725	645	212.15	95.13	2677.28
Inai	1600	518	26	56.32	2200.32
Susari	1400	384	8.3	40.1	1832.4
Small					
Arap	37374	1290	123	540.63	39327.63
Baghakole	14581	2780	334	633.33	18328.33
Inai	25477	1340	118	156.94	27091.94
Susari	12100	1620	92.5	142.11	13954.61
Medium					
Arap	66850	2470	260	2193.13	71773.13
Baghakole	21740	3475	170.1	1093.7	26478.8
Inai	29350	1280	30.3	183.73	30844.03
Susari	18200	3005	109	292.75	21606.75
Large					
Arap	85510	5300	153	5188.8	96151.8
Baghakole	32290	4700	469	2571.65	40030.65
Inai	46040	3400	198	1011.1	50649.1
Susari	25570	2600	175.3	1409.27	29754.57

Appendix –XIII

Category-Wise Assets Ownership of Households in Study Villages , Bihar

Particular	Agriculture Assets	Domestic Assets	Transport Assets	Communication Assets
Labour	**18(45)**	**40(100)**	**28(70)**	**21(53)**
Arap	2(20)	10(100)	9(90)	1(10)
Baghakole	6(60)	10(100)	10(100)	10(100)
Inai	10(100)	10(100)	7(70)	3(30)
Susari	0(0)	10(100)	2(20)	7(70)
Small	**39(98)**	**40(100)**	**29(73)**	**36(90)**
Arap	10(100)	10(100)	7(70)	9(90)
Baghakole	10(100)	10(100)	8(80)	9(90)
Inai	10(100)	10(100)	7(70)	8(80)
Susari	9(90)	10(100)	7(70)	10(100)
Medium	**39(98)**	**40(100)**	**31(78)**	**31(78)**
Arap	9(90)	10(100)	8(80)	8(80)
Baghakole	10(100)	10(100)	9(90)	10(100)
Inai	10(100)	10(100)	6(60)	6(60)
Susari	10(100)	10(100)	8(80)	7(70)
Large	**40(100)**	**40(100)**	**39(98)**	**37(93)**
Arap	10(100)	10(100)	10(100)	10(100)
Baghakole	10(100)	10(100)	10(100)	9(90)
Inai	10(100)	10(100)	9(90)	9(90)
Susari	10(100)	10(100)	10(100)	9(90)
Total	**136(85)**	**157(98)**	**127(79)**	**125(78)**

Figures in parentheses indicate percentage to respective total no. of households