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## **Income and Livelihood Issues of Farmers: A Field Study in Uttar Pradesh**

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### **Abstract**

The paper has discussed the income levels and livelihood issues of farmers on the basis of a large field study in Uttar Pradesh. The study has shown that agriculture is not able to provide sustenance to a large number of farmers in this state. The per-day per-capita income from agriculture has been found to be ₹ 15 for marginal farmers, ₹ 31 for small farmers, ₹ 45 for medium farmers and ₹ 84 for large farmers for 2011-12. Thus, all marginal farmers, who constitute over three-fourths of UP farmers, fall below the poverty line of ₹ 22 if they depend solely on agricultural income. Given the inadequacy of agricultural income to meet household expenditure, the small and marginal farmers have to devise livelihood strategy for their survival. The study has suggested a multi-sectoral integrated strategy of promoting agricultural and non-agricultural activities in the rural areas embedded in the local conditions, resources and institutions to meet the challenge of sustainable development in the state.

**Key words:** Livelihood, agricultural income, rural non-farm sector, Uttar Pradesh

**JEL Classification:** Q2, Q12

### **Introduction**

The agrarian structure of India has been undergoing a process of reduction in size of farms and increase in marginalization of holdings for the past several decades. During the period 1960-61 to 2002-03, the proportion of marginal holdings went up (from 39.1% to 69.8%). The proportion of medium and large holdings declined (from 38.3% to 13.8%), the percentage of operated area by marginal farmers increased markedly (from 6.9% to 22.0%) and area under smallholdings increased significantly (from 12.3% to 20.0%) at all-India level. Thus, marginal and small holdings accounted for 42 per cent of the operated holdings in 2002-03. On the other hand, there was a sharp decline in the area operated by medium holdings (from 31.2% in 1960-61 to 23% in 2002-03) and large holdings (from 29.0% to 12.0%). The process of

marginalization of holdings has been witnessed by all the states in the country, though the extent of marginalization varies from state to state. The proportion of marginal holdings is over 75 per cent in the states of Assam, Bihar, Kerala, Odisha, Tamil Nadu, Uttar Pradesh and West Bengal (Singh, 2011).

The above changes in the agrarian structure of India have far reaching implications for agricultural growth and poverty alleviation. The small land base of the Indian farmer is one of the major factors contributing to rural poverty. The analysis of NSS data has shown that rural poverty is related to land ownership. In 2004-05, the poverty ratio for all farmers was estimated to be 15.2 per cent, with 22.0 per cent among landless farmers, 20.0 per cent among sub-marginal farmers, 18.1 per cent among marginal farmers, 14.8 per cent among small farmers and 9.8 per cent among medium and large farmers (Chadha, 2008). The correlation coefficient between the proportion of marginal holdings and rural poverty ratio

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at the state level was 0.41, whereas that between the proportion of marginal and small holdings and rural poverty ratio was 0.46 (Singh, 2011).

The marginal and small holdings, even if having a high productivity levels, are not able to generate sufficient income to sustain the farm households. *The Situation Assessment Survey of Farmers* (NSS, 2003) has found that farm households, on an average, were in deficit, the average monthly expenditure being ₹ 2770 and average income from all sources being ₹ 2115. The net income from all sources of a marginal farmer was ₹ 1659/month and of a small farmer was ₹ 2453/month. The majority of these households are deficit households with expenditure exceeding income (Bhalla, p. 68). Most of these farmers have to take loans for meeting their consumption requirements. The consumption expenditure accounted for 35 per cent of the total loans of farmers. This proportion was 61 per cent for sub-marginal, 43 per cent for marginal farmers, 29 per cent for the small farmers and 20 per cent each for medium and large farmers.

Chand *et al.* (2011) using CSO estimates of agricultural output and input cost have computed the per capita income from agriculture per hectare of land which comes to ₹ 6,655 at 2004-05 prices. According to them, “this income when compared against the Planning Commission norms of poverty line for rural areas shows that a farmer operating less than 0.64 ha area will be under poverty, while as per the Tendulkar Committee norms, a minimum 0.8 ha of land area is needed to keep a farm family above the poverty line, if this family lives only on agricultural income. This implies that 62 per cent of farmers in India, who own less than 0.80 ha of cultivable land, would be under poverty if they do not have an opportunity to earn income outside agriculture” (Chand *et al.*, 2011, p. 10).

The above data provide ample proof that more than one-third of the farming households in India suffer from the vulnerability of livelihoods. Incidence of vulnerability is especially high among marginal farmers and those who live in dry or mountainous regions and tribal regions (Papola, 2010). In short, the issues of sustainability of income and adequacy of livelihood are of primary importance for a large section of our rural population dependent on agriculture.

This paper has analysed the income levels and livelihood issues of farmers on the basis of a large field

study in Uttar Pradesh, where one-fifth of country's farmers live. The discussion has covered the level of income by agro-climatic regions in the state and size category of farmers. The contribution of different sources of income has also been analysed. Finally, a strategy for sustainable livelihood has been outlined.

### Methodology and Sample Design

For the study, sponsored by the Department of Planning, Government of UP, multistage stratified random sample design was adopted. At the first stage, nine agro-climatic zones in the state were taken and five per cent of blocks in each zone were randomly selected. From each block two villages were selected randomly — one near the road and the other an interior village. From each village, 15 per cent farm households were selected randomly representing different farm-size classes. Thus, the total sample consisted of 24 districts, 42 blocks, 84 villages and 3474 farm households. Out of the total farm households surveyed, 60.0 per cent were marginal farmers, 25.0 per cent were small farmers, 11.4 per cent were medium farmers and 4.4 per cent were large farmers.

The details on households, cropping pattern, yield and income from farming and other sources were collected through a field survey conducted during July 2012 to November 2012, the reference year of the study being 2011-12.

The agricultural income was calculated by deducting the operational cost of cultivation (excluding the value of family labour) from the gross value of agricultural output, whether sold or self-consumed. The operational cost of cultivation covered items like cost of ploughing, wages paid for hired labour, cost of machinery, irrigation, fertilisers, seeds, interest on capital, etc. whether purchased or self-supplied but excluded the value of family labour and interest on own capital. Similarly, income from animal husbandry was derived by deducting the cost incurred on maintenance of livestock from the gross value of output of milk and other animal products, whether sold or self-consumed and income from sale of animals. Non-agricultural sources of income included wages, salary and income from business, trade or industry.

### Household Income by Agro-Climatic Zones

The agro-climatic zone-wise annual income of farm households from different sources during 2011-

12 has been shown in Table 1. The total household income for the sample household in U.P. came to ₹ 1,29,775. It varied from ₹ 1,08,524 in Mid-Western Plain to ₹ 1,83,339 in Western Plain region. In terms of annual household income, farmers of Western Plains and Tarai & Bhabhar region are richest, followed by farmers of South-Western Plain and Eastern Zone. The farmers in the remaining five zones have relatively low household income.

The household income from agriculture has been estimated to be ₹ 66,437 for all the sample farmers. Large variations were found across agro-climatic zones in terms of income from agriculture. A farmer in the Vindhyan zone has an annual agricultural income of only ₹ 45,677 as compared to the highest income of ₹ 1,06,798 earned by a farmer in the Western Plain. Agricultural income is relatively higher in Western Plain, Tarai & Bhabhar Zone and South-Western Plain region. The lowest household income from agriculture has been reported in North-East Zone, Eastern Zone and Vindhyan Zone, all falling in Eastern Uttar Pradesh.

The share of income from agriculture was only 37.9 per cent in the Eastern zone and 39.7 per cent in the Vindhyan Zone (Table 2). In North-East Zone also agriculture contributes less than half of family income. On the other hand, agriculture contributed 65.0 per cent to household income in the Tarai & Bhabhar and around 58.2 per cent in Western Plain and 59.4 per cent in Bundelkhand Zone. The share was 55 per cent each in South-Western Plain, Mid-Western Plain and the

Central Zone. Livestock contributed 13.1 per cent to household income on the overall basis. The share of livestock income was higher in the Western Plain, Bundelkhand and Tarai & Bhabhar Zone and lower in North-Eastern, Eastern and Vindhyan Zones.

Services have become the second most important source of income of farmers contributing 16.5 per cent to their household income. The contribution of services to household income is highest in Vidhyan zone (35.6%), followed by Eastern Zone (29.5%). Wage income contributes about 7.5 per cent to household income. Its share is higher in the Central Zone, Mid-Western Zone, Bundelkhand and North-Eastern Zone. Industry and trade contribute only 2 per cent to the household income. About one-tenth income is earned from other sources, including remittances. The share of other sources (including remittances) varied from 4.0 per cent in Bundelkhand to 15.6 per cent in North-East Zone.

#### Household Income by Land-Size Category

The annual income of farm households from different sources by farm-size categories is depicted in Table 3. The annual income from agriculture and allied activities during 2011-12 has been estimated to be ₹ 48,284 for marginal farmers, ₹ 1,03,488 for small farmers, ₹ 1,46,835 for medium farmers and ₹ 2,82,339 for large farmers. The total annual income per farm household from all sources was worked out to be ₹ 92,913, ₹ 1,45,145, ₹ 2,00,027 and ₹ 3,61,520

**Table 1. Agro-climatic zone wise annual household income of farm households by source in Uttar Pradesh: 2011-12**  
(in ₹/annum)

Agro-Climatic Zone	Agriculture	Livestock/ Fisheries	Industry & trade	Wage	Service	Others	Total
Tarai and Bhabhar	99713	25298	0	4876	11200	12247	153334
Western Plain	106798	26096	1697	3464	26280	19115	183449
Mid-Western Plain	58730	15572	1432	12161	9916	11712	109524
South-Western Plain	85217	28131	1339	7604	21716	7058	151066
Central Zone	62319	13470	2377	11672	13594	10060	113492
Bundelkhand	71909	21655	394	11427	10839	4942	121167
North-East Zone	56548	10759	4075	11215	17124	18449	118171
Eastern Zone	51163	14588	4055	9237	39820	16053	134915
Vindhyan Zone	45677	10125	3815	7219	41007	7264	115107
Uttar Pradesh	66437	16959	2534	9687	21366	12792	129775

Source: Field Survey

**Table 2. Agro-climatic zone-wise distribution of household income of farmers in Uttar Pradesh by source: 2011-12**  
(in per cent)

Agro-Climatic Zone	Agriculture	Livestock/ Fisheries	Industry & trade	Wage	Service	Others
Tarai & Bhabar	65.03	16.50	0.00	3.18	7.30	7.99
Western Plain	58.22	14.23	0.93	1.89	14.33	10.42
Mid-Western Plain	53.62	14.22	1.31	11.10	9.05	10.69
South-Western Plain	56.41	18.62	0.89	5.03	14.38	4.67
Central Zone	54.91	11.87	2.09	10.28	11.98	8.86
Bundelkhand	59.35	17.87	0.33	9.43	8.95	4.08
North-East Zone	47.85	9.10	3.45	9.49	14.49	15.61
Eastern Zone	37.92	10.81	3.01	6.85	29.51	11.90
Vindhyan Zone	39.68	8.80	3.31	6.27	35.63	6.31
Uttar Pradesh	51.19	13.07	1.95	7.46	16.46	9.86

Source: Based on Table 1

**Table 3. Land-size wise annual income of farm households by source categories in Uttar Pradesh: 2011-12**  
(in ₹/annum)

Source of income	Marginal farmers	Small farmers	Medium farmers	Large farmers	All farmers
Agriculture	34254	81395	126582	263158	66437
Livestock	14030	22093	20253	19181	16959
Agriculture & allied activities	48284	103488	146835	282339	83396
Industry and trade	1457	3445	6224	2444	2534
Wages	14514	3256	2025	355	9687
Service	18384	20930	25316	54105	21366
Others	10275	14026	19625	22276	12792
Non-agriculture	44630	41657	53191	79181	46379
Total	92913	145145	200027	361520	129775

Source: Field survey

respectively for these four farm-size categories. Thus, the annual income of a medium farmer was more than two-times and of a large farmer was nearly four-times to that of a marginal farmer.

Significant differences have been observed across sources of income in different farm-size categories (Table 4). The marginal farmers have been found to earn only 37 per cent of income from agriculture. This proportion goes up to 56 per cent for small farmers, to 63 per cent for medium farmers and 73 per cent for large farmers. Livestock and fishery contribute 15 per cent of income on marginal and small farms and only 5.3 per cent on large farms. This shows that as land-size increases, agricultural income increases, while livestock income decreases.

Non-agricultural sources contribute about half to the income of marginal farmers. This share reduces with increase in farm size; it is around 28.7 per cent for small farmers, 26.6 per cent for medium farmers and 21.9 per cent for large farmers. Wage earnings also contribute a much larger share of income in case of marginal farmers as compared to the other three categories. The share of income from services is also highest for marginal farmers and lowest for medium farmers. It has also been found that dependence on non-farm income is more in backward and low productivity districts of the state (Singh, 2012).

#### Wage Income

The marginal and small farmers sometimes work as wage labourers on the farms of other farmers. About

**Table 4. Percentage distribution of annual income of farmers by source and land-size categories in Uttar Pradesh: 2011-12**

Source of income	Marginal farmers	Small farmers	Medium farmers	Large farmers	All farmers
Agriculture	36.87	56.08	63.28	72.79	51.19
Livestock	15.10	15.22	10.13	5.31	13.07
Agriculture & allied activities	51.97	71.30	73.41	78.10	64.26
Industry and trade	1.57	2.37	3.11	0.68	1.95
Wages	15.62	2.24	1.01	0.10	7.46
Service	19.79	14.42	12.66	14.97	16.46
Others	11.06	9.66	9.81	6.16	9.86
Non-agriculture	48.03	28.70	26.59	21.90	35.74

Source: Based on Table 3

7.5 per cent of household income was derived as wage income from agricultural or non-agricultural labour. The contribution of wage income was much higher in case of marginal farmers than in other categories of farmers. The analysis of income from wages has revealed that about 80 per cent of wage income was derived from non-agricultural labour and only about 10 per cent was from agricultural labour (Table 5). About 7 per cent wage income was derived from MGNREGS and 3 per cent from other public works. While bulk of non-agricultural wage was earned from work outside the village, most of the agricultural wage was earned within the village.

### Per Capita Household Income

The per capita household income from agriculture and non-agricultural sources for the sample farms has been shown in Table 6. The per-day income from all sources varied from ₹ 255 for marginal farmers to ₹ 990 for large farmers. It was also found that the average family-size increased with the increase in the landholding size. The per-day per-capita income from

all sources was worked out to be ₹ 40 for marginal farmers, ₹ 56 for small farmers, ₹ 70 for medium farmers and ₹ 115 for large farmers.

The rural poverty line was computed at ₹ 22 per day by the Planning Commission for UP in 2009-10. As compared to this, the per-day per-capita income from agriculture came to ₹ 15 for marginal farmers, ₹ 31 for small farmers, ₹ 45 for medium farmers and ₹ 84 for large farmers. Thus, all marginal farmers, constituting over three-fourths of the UP farmers, would fall below the poverty line if they solely depend on agricultural income. Even on including income from animal husbandry, they would remain below the poverty line. However, in the case of all other farm-size categories, agricultural income was sufficient to keep them above the poverty line.

The net income was found to be ₹ 31/acre/day on all sample farms. It ranged from as low as ₹ 17 in Sonbhadra region to ₹ 55 in Tarai & Bhabhar region. With an average family size of 7, a farm family should have at least 5 acres of land for sustainable livelihood

**Table 5. Per household wage income**

Wage income	Annual wage income (₹)	Share in total wage income (%)
Agricultural wages in the village	969	9.73
Agricultural wages out of village	160	1.61
Non-agricultural wages in the village	723	7.26
Non-agricultural wages out of village	7112	71.41
MGNREGS/other public works	709	7.12
Other works	287	2.88
Total	9959	100.00

Source: Field Survey

**Table 6. Per-day and per-capita income of farm households by farm-size in Uttar Pradesh**

(in ₹)

Source of income	Marginal farmers	Small farmers	Medium farmers	Large farmers	All farmers
<b>Per-day household income</b>					
Agriculture	94	223	347	721	182
Livestock	38	61	55	53	46
Agriculture & allied activities	132	284	402	774	228
Non-agriculture	122	114	146	217	127
Total	255	398	548	990	356
<b>Per-capita per-day income</b>					
Agriculture	15	31	45	84	26
Livestock	6	8	7	6	7
Agriculture & allied activities	21	40	52	90	33
Non-Agriculture	19	16	19	25	18
Total	40	56	70	115	52

Source: Field survey

at the present level of productivity. The requirement would, however, range from 3 acres to 9 acres in different zones depending on the productivity levels.

Given the inadequacy of agricultural income to meet the household expenditure, the farmers, particularly the small and marginal farmers, have to devise livelihood strategy for their survival. The livelihood strategies can be classified into three main types (Singh, 2012). The first was working as agricultural labourer or non-agricultural labourer in or outside the village. Migration was another livelihood strategy, particularly in densely populated areas and environmentally fragile regions. Thirdly, farmers take up some non-agricultural activity like starting a small shop or business.

### Sustainable Livelihood Strategies for Farmers

Since the early-1990s, the concept of sustainable livelihood is dominating the issue of rural development. Among the first contribution to this area was by Chambers (1987). The concept of sustainable livelihood has been interpreted in various ways (Ellis, 2000). A commonly acceptable definition of livelihood is as follows:

“A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or

enhance its capabilities and assets, while not undermining the natural resource base.” (Scoones, 1998).

Enhancing income and employment opportunities for farmers and agricultural labourers has always been a major objective of India’s Five-Year Plans since the beginning. A number of strategies have been followed to achieve this objective (*see* Papola, 2010). During the initial phases, the emphasis was on land reforms and agricultural growth. It was later realised that higher agricultural growth by itself would not be sufficient to ensure removal of rural poverty. Therefore, since 1970s, the emphasis shifted to promotion of supplementary economic activities and employment opportunities in the rural areas.

Two broad approaches for poverty eradication have been adopted. One type of programmes aimed at promoting self-employment through programmes like IRDP, SJSY, SHGs, etc. Over the past four decades, these programmes have gone through several changes and improvements, ultimately culminating in the National Rural Security Mission adopted in the Eleventh Five-Year Plan. The other approach consisted of generating additional wage employment in the rural areas through various government programmes like RLEGP, Employment Guarantee Programme, JRY and MGNREGS. Vast literature has cropped up over the years throwing light on the shortcomings of these programmes and their impact.

Ensuring high agricultural growth and livelihood to farmers in the light of the ever decreasing size of holdings and preponderance of marginal and small holdings is a major policy challenge before the nation. The livelihood promotion strategies have to be linked to the local resource base of the communities, which comprise land resources, water resources, forest resources, livestock resources and local human resources. Scientific management of natural resources is essential for ensuring sustainable development of farm and non-farm activities in the rural areas (Singh, 2010). Some suggestions for promoting sustainable livelihood for farmers are offered below.

- (i) Increase in agricultural productivity is the key to improving living conditions of farmers and promoting non-farm activities through forward and backward linkages. The process of agricultural growth has to be geographically widespread with focus on arid land, drylands and mountainous and other disadvantaged areas. The strategy of agricultural development should particularly focus on small and marginal farmers and other disadvantaged farmers. The National Commission on Enterprises in the Unorganised Sector and the Working Group on Disadvantaged Farmers set up for the Twelfth Plan have given useful suggestions in this direction (NCUES, 2008; Planning Commission, 2011).
- (ii) Mixed farming has been traditionally adopted by the Indian farmers to supplement their income. The potential of animal husbandry has not been fully tapped in most of the regions of the country. The dry regions are home to very good local breeds of livestock of different varieties including bovine animals, sheep, goat, camels, etc. Scientific management and development of livestock resources need to be promoted in a big way. It will require proper arrangements for feed and fodder and delivery of good quality veterinary services. Farming systems approach provides a suitable way for promoting livestock development for sustainable livelihood in the rural areas (see Hegde, 2013).
- (iii) A substantial number of agricultural workers has to be moved out of agriculture to other sectors in the rural and urban economy (Singh, 2011).
- (iv) The growth of non-farm activities, especially in the rural areas, must form an important part of the strategy for improving livelihoods of agricultural population (Papola, 2010). The problems that constrain the development of rural non-farm sector (RNFS) have to be addressed properly to exploit the potential of this sector (see Hiremath, 2007). The promotion of the traditional handlooms and handicrafts through upgradation of technology, introduction of new designs and materials and linking them to markets can generate substantial income and employment in these regions (Singh, 2010). Public-private partnership models have to be evolved for the promotion of rural industries. Producers' organizations need to be encouraged as they can play a powerful role in providing technical and marketing support and generate the benefits of economies of scale. A number of NGOs have successfully worked in the field of promoting non-farm livelihoods in the rural areas. These efforts need to be encouraged with greater participation of NGOs in government programmes.
- (v) The demand for services delivery is increasing in the rural areas. Encouragement must be provided for promotion of these services with training of rural youth to take up new and emerging services.
- (vi) Improvement in rural infrastructure in terms of roads, electricity and credit facilities is necessary for the growth of both farm and non-farm sectors.

To conclude, a multi-sectoral integrated strategy of promoting agricultural and non-agricultural activities in the rural areas embedded in the local conditions and institutions has to be adopted to meet the challenge of sustainable development in the rural areas.

## References

- Bhalla, G.S. (2008) *Condition of Indian Peasantry*, National Book Trust, New Delhi.
- Chadha, G.K. (2008) Employment and poverty in rural india: which way to go now, *ILO Asia-Pacific Working Paper Series*, ILO-SRO, New Delhi.
- Chambers, R. (1987) Sustainable rural livelihoods. A strategy for people, environment and development. An overview paper for *Only One Earth: Conference on Sustainable Development*, 28–30 April 1987. IIED, London.



- Chand, Ramesh, Lakshmi Prasanna, P.A. and Singh, Aruna (2011) Farm size and productivity: Understanding the strengths of smallholders and improving their livelihoods, *Economic & Political Weekly Supplement*, **XIVI** (26 & 27).
- Ellis, F. (2000) *Rural Livelihoods and Diversity in Developing Countries*, Oxford University Press, Oxford.
- Hegde, N.G. (2013) Mixed farming for sustainable livelihood of small farmers in india, paper presented at *International Conference on Increasing Agricultural Productivity and Sustainability in India: The Future We Want*, organised by National Institute of Advanced Studies (NIAS), in collaboration with M.S. Swaminathan Foundation, Chennai, Indian Institute of Science Campus, Bangalore. 8-9 Jan.
- Hiremath, B.N. (2007) The changing faces of rural livelihoods in india, Theme Paper, *National Civil Society Conference, What it Takes to Eradicate Poverty*, 4-6 December.
- NCEUS (National Commission on Enterprises in Unorganised Sector) (2008) *A Special Programme for Marginal and Small Farmers*, Government of India, New Delhi.
- NSS (2003) *The Situation Assessment Survey of Farmers*, 59<sup>th</sup> Round, NSSO, New Delhi.
- Papola, T.S. (2010) *Livelihoods in Agriculture: Status, Policies and Prospects*, State of India's Livelihood Report, edited by Sankar Datta and Vipin Sharma ; An ACCESS Publication, Sage Publications, New Delhi.
- Planning Commission (2011) *Twelfth Plan Working Group on Disadvantaged Farmers Including Women: Final Report*, Government of India, New Delhi.
- Scoones, I. (1998) Sustainable rural livelihoods: A framework for analysis, *Working Paper No. 72*, Institute of Development Studies, University of Sussex, Sussex.
- Singh, Ajit Kumar (2010) Livelihood options in non-farm sector in dryland areas In: *Rainfed Agriculture in India: Perspectives and Challenges*, Eds: Surjit Singh and M.S. Rathore. Rawat Publications, Jaipur.
- Singh, Ajit Kumar (2011) Agrarian change, non-farm employment and poverty in India In: *Agriculture for Inclusive Growth*, Ed: Suresh Pal. Indian Agricultural Research Institute, New Delhi.
- Singh, Ajit Kumar (2012) Economic viability and sustainability of small scale farming: A study in the irrigated Gangetic Plains of UP, *Anveshak*, **42** (1 & 2).