

SUSTAINABLE AGRICULTURE FOR FOOD SECURITY IN RURAL AREA: A CASE STUDY OF GODDA DISTRICT OF JHARKHAND

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The present study was conducted in rural masses of Godda District to ascertain the situation of calorie intake and to identify number of food insecure people at household level, and to analyze the factors responsible for food insecurity at household level. The data were collected through field surveys of 450 households from ten villages. Food insecure households account 8.50 per cent and 25 per cent households have access of food less than 1890 and 2400 calories per person a day, 62 per cent of households have the access to safe drinking, and more than 72 per cent households were identified without proper toilets. In spite of having BPL and APL cards, above 22 per cent card holders do not get any food commodity from PDS. Majority of households have the monthly income of less than Rs. 4500. At least 27 per cent households were without holding, and more than 16 per cent households live without keeping livestock. Majority of households belong to backward, scheduled Tribes and scheduled castes and marginal & small category of farmers and have low income with poor purchasing that leads to improper accessibility, stability and absorption of food.

Key words: Crop Production, PDS, Landless and Marginal farmers

INTRODUCTION

It is estimated that once the population in India crosses 1.38 billion in 2025 A.D., the country will have to import about 60 million tons of food grains annually. During this stage, the annual demand for food will have increased to 325 million tons/year, while the production might remain stagnant at 250 million tons/year. Surely that will mark the worst period in economic crisis, when the people might have to move around with begging bowls to ensure food supply for survival. The food insecurity is a gigantic problem in front of the world population. In spite of the reaching horizon of economic development, people are struggling for the survival of their daily life (Ali, 2009) as at least 25,000 die people every day due lack of proper diets. Nearly 852 million people in the world are victims of vicious cycle of maturation and chronic hunger. It was a period of last 30 years when 70 per cent enhance was in the world population, world agriculture produced 17 per cent more calories per person today. (FAO, 2002, 2006). At the global level 33 countries have been recognized most vulnerable where the undernourishment prevalence rate is over 35 per cent. Over 60 per cent of the world's undernourished people live in Asia, and a quarter in Africa. The South Asian region is home to more chronically food insecure people than any other region in the world. Poverty is the main cause of food insecurity and hunger. Poor people in the world do not have sufficient land to grow, or to purchase enough food (FAO, 2006, Roa, 2005). India ranks 94th in the Global Hunger Index of 119 countries and there is paradoxical situation in endemic mass-hunger coexisting with the mounting food grain stocks. The stocks available with the Food Corporation of India (FCI) stand at an all time high of 62 million tonnes against an

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annual requirement of around 20 million tonnes for ensuring food security. Still, about 200 million people are underfed and 50 million on the brink of starvation, resulting in starvation deaths. The paradox lies in the inherent flaws in the existing policy and implementation bottlenecks (Goyal, 2002).

The proportion the rural population consuming less than 2,400 calories per day has fallen in many states where poor are especially more vulnerable because they expand their income mainly for foods. Most states have witnessed a declining poverty ratio but increased calorie deprivation. Swaminathan (2000) argues that on average 44 per cent of households are deficient in calorie intake while malnutrition among women and children is higher. Bhandari and Dubey (2001) arrived at a similar conclusion and argued that the poverty line be recalculated on the basis of calorie requirements. Rising food prices may have caused poorer households to adopt less nutritious diets (Chakraborty, 2005). According to World Food Programme that rise of prices 87 per cent for foodgrains, 58 per cent for dairy products, and 46 per cent for rice created a crisis situation which threatens to plunge more than 100 million people on every continent into hunger is called silent tsunami (WFP, 2008). Hunger, and the malnourishment that accompanies it prevents poor people from escaping poverty because it diminishes their ability to learn, work, and care for themselves and their family members. Food insecurity exists when people are undernourished as a result of the physical unavailability of food, their lack of social or economic access to adequate food, and inadequate food utilization. It may be happened at, individual, household, and regional levels (Masud, 2009, and Swaminathan, 1988). The food insecurity is may occurs of two types, transitory and chronic. The transitory food insecurity may occur due to natural calamities and anthropogenic factors such as flood, drought, earthquake, war, riots, erosion of income sources, price rise and so on. The chronic (hidden) food insecurity refers to a situation in which people consistently consume diets inadequate in calories generally by women, children (particularly scheduled tribes, and scheduled castes) in rural masses (MSSRF, 2003). Food insecurity is responsible for poor health. Ayres and McCalla (1996) have concluded in their study, that nearly 75 per cent of poor and undernourished people live in rural areas where food itself is produced.

Keeping in view the importance of sustainable agriculture for food security in rural area, the study was conducted, which has following objectives: i) To assess the situation of food insecure people at household level, and ii) To identify the factors responsible for food insecurity at household level.

DATA AND METHODOLOGY

The study is based on the primary source of data which were collected through field surveys during the period of 2013-14 from 10 villages of the two blocks of Godda district. Considering on stratified random sampling basis a number 450 households were approached, 45 households from each village were selected with help of a direct questionnaire-respondent method. To be food secure, four dimensions are needed as food availability, food accessibility, food stability and food utilization/absorption. Food availability refers to supply of food that is fulfilled with production/market/PDS, accessibility is related to income and purchasing power, and utilization (absorption) requires good health and sanitation facilities. These dimensions are affected with size of landholdings, PDS, income, drinking water, housing and sanitation conditions and castes. Therefore, the samples of households were stratified based on castes, size of landholdings, income, drinking water, housing and sanitation conditions.

THE STUDY AREA

Godda district is surrounded by Sahebganj & Pakur districts in the east, Bhagalpur and Banka districts of Bihar State in north-west, and Dumka district in south. It is situated between 24°47' to 25°32' northern latitude and between 87°08' to 87°48' eastern longitudes. The total geographical area of the district is 2,110.40 Sq Km, of which cultivated area is 1,31,140 hectare. There are nine blocks, 172 panchayats and 2,310 villages in Godda district. The total number of farmers in the district is 1,62,551 engaged in agriculture and allied activities. For administrative purposes it is divided into 9 development blocks. The per capita availability of land amounts households to 0.12 ha with average yield of crops 22.50 qnts/ha of paddy crop.

RESULTS & DISCUSSION

(i) Caloric Intake

Deficiency in calorie carbohydrate, proteins, fat, iron, and calcium affects growth and development of body and mental. If the lowest level of consumption (less than 1890 Kcal) exists in any individual, family, and household, it creates hunger and starvation that have adverse effects on human health and potential to work of people and cripple children's learning capacity and growth as normal adults. It traps individuals in a vicious cycle of poor health that passes generation to generation next. The damage caused by chronic undernourishment begins at early age and follows people throughout life. (WHO, 2002, Ahmad, 2007). The nutritional status of people in general and women and children in particular is very low. In Jharkhand. According to National Family Health Survey (NFHS) II, during 1998-99, amongst the under-3 age group children, 54.3% were under-weight, 49% were stunted and 25% were wasted (Saran & Neelkanth, 2002-03). The under-nutrition was higher in rural areas, particularly among SC and ST children, which was higher than the national average of 47%, 45.5 and 15.5 respectively and consume less than 2000 Kcal while 49.9 per cent are below poverty line. Keeping the importance of caloric intake, the surveys of selected 450 households have conducted to know the level of nutrition and consumption of food items cereals, vegetables, pulses, milks, meat, fish, and eggs etc. They are converted in the calorie on the basis table of ICMR (Indian Council of Medical Research). To identify hunger, insecure and secure condition of households, total population of household is divided by the total consumed calories and three break ups are made.

**Table: 1: Average Caloric Intake Per Person/Day At Household Level In
Total Selected Villages**

Sl. Nos.	Caloric level (kcal)	Types of Food insecurity	Nos. of HH	% of HH
	Below 1890	Hungry	38	8.5
	1890-2400	Insecure	112	25
	Above 2400	Secure	300	66.5

Table-1., shows the condition of food insecurity in selected villages about 25 per cent of households were food insecure as the people do not get proper diet which is far below to 2400 Kcal. An average of 8.5 per cent households by the category nutritional intake amounts to less than 1890 Kcal/day. Due to low income and non-availability work, unemployment and limited sources of income are the main causes of food insecurity in spite of availability and accessibility to food grains.

(ii) Food, Nutrition and Social Security Schemes

As it is known, the food, nutrition and social security schemes can be divided into four parts namely schemes which guarantees employment and wage payment both in cash and kind, scheme

which gives grains at concessional rate or free of cost like Target Public Distribution System (TPDS), Antodaya and Annapurna, National Social Assistance Programme that includes NOAPS, NMBS, NFBS and nutritional security schemes which includes ICDS and midday meal programme. There is also growing realization that these programmes can only be effectively implemented through the PRIs having effective control of Gram Sabha. TPDS is one of the basic essential components of food security as it makes an easy availability, and accessibility of food at grass root level. Since a large portion of the population continues to be poor food security concerns are great importance. Increasing population spreads demand for food commodities that enhances price raise in market. This why the information regarding of TPDS were taken from field surveys to know the degree and deviation of insecurity. The responsibility for operating the TPDS is shared between the central and state governments. The central government procures, stocks supplies grain and absorbs the costs these operations. During discussion, it shows, PDS shop owner charging higher than stipulated price, Distance of the PDS shop, Non-regular opening of PDS shop, Improper information and Irregular supply of various items in PDS shop are the main poor implementation of targeted public distribution system in the sample villages. The functions of PDS can be measured with the distribution of commodities in prescribed quantity with month wise regularity. It has been observed in all sample villages where 1/3 households do not get TPDS, In spite of having BPL and APL cards. It was due to diversion of grain to the black market, corruption, discrimination at caste and status levels and the limited purchasing of the poor (Meeankshisudaram, 2001).

(iii) Income Level

Income determines accessibility of food and, purchasing power the people (Peet, 2007). It determines the, in the case over India (at least) 30 per cent of poor households, the family income is so low that family income spent on food, the nutritional needs are not met nutritional needs (Masud, 2009). Table-2, shows the income of households. More than 80 per cent households do not have income more than Rs. 5000 per month and as many as 62 per cent reported an income of Rs. 4500 per month. Low income is responsible for food insecurity (Srinivsan and Jha, 1999). Poor income leads to poor conditions in household as well as the region. All sample villages both blocks (Sunderpahadi & Godda) in which most people do not get proper employment. More than 34 per cent of the people in that village were insecure in food accessibility.

Table: 2: Average Income Distribution At Household Level In Selected Villages (2013-14)

Sl. Nos.	Income level	Nos. of HH	% of HH
	Below 4500	279	62
	4500-5000	117	26
	Above 5000	54	12

(iv) Agriculture and Livestock Rearing

Agriculture and livestock rearing are main occupation of more than 80 per cent cultivators and livestock rearers (Birthal and Ali, 2005). Rural population has a strong symbiosis for their income with agriculture and livestock that support the availability and accessibility of foods at household level. Being effective measurements for food insecurity data of livestock and agriculture have been collected from the villages. From the survey it was found that 73.90 per cent households are landowners and out of these 83.70 per cent keep livestock. These villages are located along road route where the main business of the natives is livestock rearing for selling of milk and milk products to the markets in nearby towns. Goats and buffaloes are the mainly rearing animals in the villages.

Table: 3; Land Ownership And Livestock Rearing At Household Level In Selected Villages Of Godda District, 2013-14

Sl. No.	Name of Villages	Name of Block	Land ownerships	Livestock rearers
	Nonmati	Godda	75	84
	Nemotari		82	92
	Belari		62	78
	Simratari		78	68
	Neponiya		82	92
	Bada sidari	Sunderpahadi	60	88
	Sunder more		72	90
	Bansjori		72	75
	Kaudhab		74	82
	Chandana		82	88
Average			73.90	83.70

Source: Based on Field Surveys, 2013-14.

It is depicted from the Table-3: that 83.70 per cent household keep livestock for sustenance and livelihood. The highest proportion of livestock rearers has been noted in all villages where a good numbers of the rearers belong to the social groups, ST, SC, and other caste like Kurmi, Koeri, Yadav, Shaw caste etc. Yadav castes who are traditional rearer of cattle, buffalo are predominant in the region.

(v) Size of Holdings

Agriculture provides 52.1 per cent employment to total employment in the sector per Current Daily Status (Economic Survey, 2008-09). It is main source for availability of food as well as generates income and wealth for household food security and to bring about equity in distribution of, resulting in rapid reduction in poverty levels (Ali, 2009).

Table: 4: Income Distribution at Households Level in Selected Villages 2013-14.

Sl. Nos.	Type of farmers	Size of farmers (in ha)	Nos. of HH	% of HH
	Marginal	Less than 1	198	44
	Small	1-2	162	36
	Medium	2-4	54	12
	Large	More than 4	36	8

Table-4 shows that the share of marginal landholders (with less than 1ha. of land) to be 44 per cent in total households. It is followed by the category of small farmers (36 per cent), medium farmers (12 per cent), and large farmers (8 per cent) respectively. Marginal farmers have an advantage to get work more than 100 work days on their own fields. Lean period compel to work them as agricultural labourers to arrange food for their families at all times. As a result food insecurity is a common phenomenon among them.

(vi) Caste System

The caste system, with its societal stratification and social restrictions continues major impact on food insecurity of the Indian social set. While some barriers are broken in urban settings, many

continue to persist in rural India. Working castes now known as backward class (BC), Schedule Caste (ST) and scheduled castes (SC) were always poor and considered at bottom in the social class and were kept away from opportunities to require food and nutrition. That is why the households belonging to these castes are more food insecure than that of upper castes.

Table: 5; Caste Composition At Household Level In Selected Villages 2013-14

Sl. Nos.	Social Class	Nos. of HH	% of HH	Food insecurity HH	% of HH
1	General	23	5	4	17
2	Other Backward Class	247	55	69	28
3	SC	36	8	12	33
4	ST	144	32	65	45
Total		450		150	

Table:5: shows that the households belonging to General, OBC, SC and ST categories in the order of 5, 55, 8 and 32 per cent respectively. Evidently, a high proportion of food insecurity exists in highest in ST i.e. 45 per cent followed by SC & OBC i.e. 33, & 28 respectively and least 17 per cent for general class. Moreover, income, education, basic amenities and facilities are poor in households belonging to general in all households and particularly, ST and SC categories that affect the access and absorption of food among the people of lower castes (Srinivas, 1994, Jacob, 2009).

(vii) Basic Amenities

The absorption of food is affected by house condition, sanitation, clean drinking water and health care. A person who is not healthy cannot assimilate food even if she or he consumes a balanced diet. One's state of health depends on sanitation, hygiene and the surroundings (MSSRF, 2003). According to UN-ESCAP (2006) 148 million people who struggle daily to obtain safe drinking water live in rural India. Therefore, the data regarding the amenities were collected to the outcome the problems connected safe drinking water that is a basic need for human beings and considered an essential component of human diet.

Table: 5; Basic Amenities at Household Level in Selected Villages 2013-14

Sl. Nos.	Basic Amenities	Nos. of HH	% of HH
1	Toilet	126	28
2	Safe drinking water	279	62
3	Electricity	279	65
4	Pucca House	144	32

It was noted during field surveys of villages that at least 38 per cent of households do not get safe drinking water (Table-5). However two villages are an exception where all sampled households have a provision of safe drinking water. The toilet facilities generally are not satisfactory in the study area, where more than 72 per cent of households do not have any toilet. It is due to high concentration of ST, SC and BC population (Census, 2001) and the village located in a backward blocks of Godda & Sunderpahadi. It was observed that 99 per cent of the households owned homes, which are mainly in the form of huts, *kutcha*, and semi-*pucca* dwellings.

(viii) Sustainable Agriculture To Insure Food Security

Table-3, shows that 74 percent of Households have own land for cultivation and out of that 84 percent HH keep livestock for their livelihood. So, it is necessary to promote sustainable agriculture to safeguard the economic viability of the farmers and insure the food security. Sustainable agriculture is a set of farming practices which can continue to maintain the farm productivity, efficiency and profitability in the long run, without depleting the natural resources and the environment. For ensuring the sustainability of small farmers, it may be useful to encourage the adaptation of indigenous skills, use of internal inputs, preferably from organic sources, least dependence on external inputs, greater emphasis on crop diversity, symbiotic crop rotation and production focused on local needs and easy marketability. Farmers, particularly the small holders need proper orientation to take suitable decisions on crop selection, investment in various inputs, storage and marketing, based on the information on technical developments, government policies and prices of inputs and outputs. Large and elite land holders should also be encouraged to adapt these eco-friendly measures for profitability and environmental safety.

CONCLUSION

Food insecure households account 25 per cent among the households in selected villages with less than 2400 calories per person a day, but for more than 1890 calories the proportion of hunger comes 8.50 per cent. At least 62 per cent of households have the access to safe drinking, and more than 72 per cent households were identified without proper toilets. In spite of having BPL and APL cards, above 22 per cent card holders do not get any food commodity from PDS. Majority of households reported the monthly income of less than Rs. 4500. At least 26 per cent households were without holding, and more than 16 per cent households live without keeping livestock. Proportion of marginal farmers in the total is highest among the landholders, and majority of households belong to backward, scheduled Tribe & scheduled castes. Many of the holders belong to lower caste and are either marginal/small category of farmers and have low income with poor purchasing that leads to improper accessibility, stability and absorption of food. Resulting in poor health, and this vicious cycle continue from one generation to another.

There is an urgent need to provide opportunities for work so that, people belonging to low income can enhance their nutritional intake. However, NREGA is a good step to provide for employment for 100 days in a year. A check is needed on Public Distribution System (PDS) for an effective distribution of essential commodities for poor and needy persons. However, drinking water, sanitation and health facilities for households are needed. As the marginal and small farmers constitute the largest chunk in the society so the livestock rearing should be enhanced to improve employment, nutrition, health, and socio-economic conditions to minimize food insecurity. Besides, to make food secure farmers, pension facilities must be provided for them as they are given to workers in organized sectors. There is need of investments in vital agriculture infrastructure, credit linkages and encouraging the use of latest techniques, motivate each district/ block to achieve local self-sufficiency in food grain production. However, instead of concentrating only on rice, the vegetable crops with a potential in the area must be encouraged. Creation of necessary infrastructure like irrigation facilities will also simulate private investments for food grains production on a sustainable basis to create massive employment and reduce the incidence of poverty (Goyal, 2002) and purchasing power to the people in rural areas.

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