

Agro-Economic Policy Briefs

Aiding the Future of India's Farmers and Agriculture



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For kind attention of:

The Hon'ble Prime Minister's Office,
the Ministry of Agriculture and Farmers' Welfare,
and all others interested

On Critical Policy Issues in India's Agricultural Economy

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Baseline Survey of Sohian Village in Ludhiana

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Introduction

- As the smallest units of inhabitation, villages are considered as appropriate testing grounds to study developmental schemes and policies. One such baseline survey was conducted in Sohian village of Ludhiana district in Punjab to gauge and document the pattern and pace of changes taking place across parameters such as demography, livelihood, infrastructure availability, income and expenditure, agrarian status, and access to development policies and schemes.
- This study is based on primary surveys of 300 households (82 farm households and 218 non-farm households) as well as focused group discussions and meetings conducted with the inhabitants of the village. The primary survey analyzed the overall status of the village in terms of its historical, cultural and demographic profile, livelihood/employment, the status of agriculture, infrastructure, developmental institutions, and other amenities.
- At the household level, the survey collected information pertaining to various socio-economic parameters like caste, religion, family type, occupation structure, family size and composition, education profiles, socio-economic status, access to public welfare schemes, etc. Group meetings were organized in order to capture the temporal changes in various spheres such as water table, fertilizer and pesticide usage by cultivators, varieties of crops cultivated, and the general perception of villagers on the changes taking place in the village.

Findings

- Sohian village, located in the central agro-climatic zone of Punjab, has a humid sub-tropical climate with combination soil. The average rainfall is around 587 millimeters per

annum. The village covers an area of around 588 hectares with only 2714 inhabitants, 46 percent of which are males. As of 2019, more households belonged to the general category (48%) than the scheduled caste category (45%). In terms of religion, 96 percent of the villagers were Sikhs. Around 82 percent of the population was literate in the village.

- The primary survey revealed that the family size of households was 4.71 on an average. Around 12 percent of the members were found to be illiterate, while 31 percent had attended school up to secondary level. Around 67 percent of the students had enrolled in government schools. Employment availability per annum was found to be 227 days among the sample households where majority of them were engaged in non-farm activities and only 36 percent were engaged in farm and allied activities.
- About 86 percent of the village area was under paddy (kharif season), wheat, and potato (rabi season) cultivation. Average size of operational holding amongst the sampled farm households was 7.45 acres with a high proportion of leased-in land. Crop income was found to be the major component of household income for farm households, while wage earning was the major source of income for non-farm households. Both income and expenditure was higher in case of farm households vis-a-vis non-farm households.
- Majority of the agricultural operations were mechanized but custom hiring of machinery and implements was commonly practiced. Only 39 percent of the farm households owned tractors. Their sole livestock enterprise was dairy; buffaloes and crossbred Holstein Friesians (HF) cows were reared by the households in the village. However, there was an observable decline in dairy over the years. There were two milk societies in the village, and the Primary

Agricultural Credit Society (PACS) was located in the adjoining village.

- Various group discussions revealed that ground water table was depleting over the years in the village. The rainfall pattern had also become erratic over time. While fertilizer usage in crops was found to have increased over time, pesticide application had remained almost stagnant. Farmers were mainly growing the Punjab Agricultural University (PAU) recommended crop varieties in the village.
- In terms of infrastructure, it was observed that there was a post office, scheduled commercial bank, medical sub-center, water tank with piped RO water supply, ration depot under Public Distribution System (PDS) in the village itself. The communication and transport connectivity of the village was found to be good. All the sampled households had access to metered electricity supply, piped drinking water, and toilets. Liquefied Petroleum Gas (LPG) was the mode of cooking for almost all sampled households.
- Several welfare schemes launched by the central/state governments namely Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Pradhan Mantri Kisan Samman Nidhi (PM-Kisan), Old-age Pension, Widow Pension, Mid-Day Meal, and Anganwadi service schemes, etc., were operational in the village. About 66 percent of the sampled households were Above Poverty Line (APL) card holders and beneficiaries under the Public Distribution Scheme (PDS) while 82 percent of farm households had a Kisan Credit Card (KCC) account. No food security issues were observed. As far as non-farm households were concerned, 31 percent were MGNREGA card holders, and almost all had bank accounts.
- About 58 percent of the studied households ranked their status as 'medium' in the village power structure since they relied mainly on family and friends for decision making. This can be due to deteriorating economic condition of

households due to stagnancy in agricultural income. Two major prevalent issues in the village were (a) addiction to drugs/alcohol for which they arranged various lectures, and (b) the menace of stray animals for which they hired private enterprises. As a whole, there wasn't much perceivable improvement in their economic or agricultural condition over a decade.

Conclusion and Recommendations

- The study revealed that a majority of households depended on non-farm activities for their livelihood and households engaged in agriculture have witnessed a stagnancy in agricultural income livelihood. There is a noticeable predominance of service sector compared to self-employment. In the wake of large scale unemployment/disguised unemployment, there is a need to promote self-employment opportunities by imparting skill training to the rural youth.
- The baseline study has highlighted the general trend of mono-culture in terms of cropping pattern prevailing in the state with respect to paddy and wheat as the major crops. Given the drastic decline in water table, higher application of chemical fertilizers as compared to PAU recommendations, increased resistance of pests to pesticides, etc., crop diversification has become necessary. Further, suitable measures must be undertaken to promote development of High Yielding Varieties (HYV's) and facilitative marketing of other crops.
- Given that the water table is depleting and there is erratic rainfall, there is a need to adopt water-saving and conservation technologies on a large scale. For example, micro-irrigation can be intensified and expanded to more horticulture and agriculture crops, and watershed development programmes can be undertaken.
- The survey has brought out the decreasing trend of livestock activity, mainly dairy in the village. This can be attributed to the high cost

of rearing smaller herds of cattle, lack of proper management, and menace of stray cattle causing damage to the crops. With eroding profitability in crop cultivation and increasing demand for milk and milk products, there is a need to strengthen the dairy enterprise in the rural areas. Necessary steps must be taken by the government in this direction.

- A major problem cited by the villagers was the prevalence of drug menace and alcoholism, especially among the youth. Despite the concerted efforts that are being taken up by the state government to eradicate this issue,

there is a need to strengthen awareness and rehabilitation efforts in the region on the village level by increasing the number of de-addiction and rehabilitation centers, and establishing appropriate linkages between health workers, community leaders, teachers and other stakeholders to ensure that prevention measures and rehabilitation strategies are based on the local context.

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Promotion of Nutri-Cereals: Need of the Hour

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Introduction

- The United Nations General Assembly recently adopted a resolution declaring 2023 as the 'International Year of Millets' in order to increase awareness about the health benefits of millets and highlighted their suitability for cultivation under changing climatic conditions. India is one of the important consumers and producer of millets in the world. Millets in India constitute a group of crops such as (a) Sorghum (Jowar), (b) Pearl Millet (Bajra), (c) Finger Millet (Ragi/Mandua), and (d) Small Millets including Little Millet (Kutki), Kodo Millet (Kodo), Barnyard Millet (Sawa/Jhangora), Foxtail Millet (Kangni/Kakun), and Proso Millet (Cheena).
- Millets are also called 'Nutri-cereals' due to their high nutritive value. Nutri-cereals are gluten-free, highly nutritious, and rich in dietary fiber and micronutrients including calcium, iron, phosphorus, etc. They are also low in Glycemic Index (GI), and the dietary fiber in millets acts as a detoxifying agent in the body. Nutri-cereals

also have characteristics like drought tolerance, photo-insensitivity, and resilience to climate change.

- Nutri-cereals were extensively grown in India prior to Green Revolution with a higher area coverage and production than crops such as wheat and rice. With the Green Revolution, there was a focus on food security and high yielding varieties of rice and wheat; as a consequence, there was an increase in irrigated area and production of rice and wheat. This has been illustrated in Table 1.
- As per data from the Directorate of Economics and Statistics, in the period 1966-2020, the area and production of Nutri-cereals decreased by 177.41 percent and 13.68 percent respectively, with an increase in area and production of rice and wheat by 17.43 & 69.03 and 51.52 percent & 85.04 percent respectively (see Table 1). However, the yield of Nutri-cereals, rice, and wheat witnessed an increase of more than 50 percent after the Green Revolution.

Table1: Change in Area, Production, and Yield of Nutri-Cereals as Compared to Rice and Wheat in India (1966-2020)

Nutri-Cereals	India		
	Area ('000 ha)	Production ('000 tonnes)	Yield (kg/ha)
Before Green Revaluation (TE* Average up to 1965-66)			
Sorghum (Jowar)	18403	9692	527
Pearl millet (Bajra)	12146	4485	369
Small Millets	4729	1733	366
Finger millet (Ragi/Mandua)	2282	2054	900
Total Nutri-cereals	37559	17964	478
Rice	36218	35937	992
Wheat	14598	15528	1064
After Green Revaluation (TE Average up to 2019-20)			
Sorghum (Jowar)	4647	4350	936
Pearl millet (Bajra)	7376	9412	1276
Small Millets	486	381	784
Finger millet (Ragi/Mandua)	1030	1660	1611
Total Nutri-cereals	13539	15803	1167
Rice	43864	116035	2645
Wheat	30109	103775	3447
Relative Change (%)			
Sorghum (Jowar)	-296.00	-122.79	43.74
Pearl millet (Bajra),	-64.66	52.35	71.06
Small Millets	-872.82	-354.97	53.23
Finger millet (Ragi/Mandua)	-121.54	-23.78	44.13
Total Nutri-cereals	-177.41	-13.68	59.02
Rice	17.43	69.03	62.49
Wheat	51.52	85.04	69.14

Source: Directorate of Economics & Statistics

*TE=Triennium Ending

- At present, Nutri-cereals are grown in resource poor agro-climatic regions, hilly, and tribal areas of the country in rain-fed conditions. They are grown in arid and semi-arid tracts characterized by low rainfall (200-600 mm) conditions, in areas wherein fine cereals like wheat and rice cannot be grown profitably (Ministry of Agriculture and Farmers Welfare, 2021¹).

Findings

- A study was undertaken by AERC, Jabalpur to specifically examine the prospects of small millets and analyze the issues associated with their cultivation in Chhindwara, Mandala and

Dindori districts of Madhya Pradesh. The study focused on small millets such as 'Kodo' & 'Kutki'.

- The study found that a majority (95%) of farmers were growing Kodo and Kutki. Some of the farmers were also growing small millets like Sama, Kangna, and Jagni. These crops were grown in marginal land using traditional methods of cultivation. The farmers had not adopted improved crop production practices due to a lack of knowledge about Recommended Packages and Practices (RPP) in cultivation of these crops.

¹<https://nutricereals.dac.gov.in/>

- The study documented a number of issues in cultivation of small millets; unavailability of high yielding variety seeds, lack of suitable extension and development support for production, paucity of research on genetic improvement in comparison to other crops. Furthermore, the absence of a minimum support price for small millets led to farmers' distress selling at low prices. All these factors had contributed to a wide yield gap (a difference of more than 50 percent between potential and actual yield) and resultant low incomes for the farmers.
- The value addition of small millets was not found to take place on a commercial scale. A majority of the tribal population in the selected regions were preparing products associated with small millets only for their home consumption. Very few of them were observed to be selling the value added products in the weekly (haat) bazar.
- Small millets have been found to be respond better to small doses of fertilizers and crop management practices such as optimum spacing and improved cultivation technologies. These can be promoted to ensure that the large yield gap is reduced.
- The value addition in small millets needs to be upscaled by establishing micro/small level industries and promoting entrepreneurship development in food processing and product development. Geographical indicator based small millet products may be prepared in alignment with international norms/ standards to popularize their uptake at a global level.
- There can be concentrated efforts and collaborative endeavors taken by the private and public sector to incentivize production, improve market linkages, and raise farmer awareness for RPP, and consumer awareness for consumption of small millets.

Conclusion and Recommendations

- Given that 90 percent of small millets are grown under rain-fed conditions, the conservation of rain water to raise productivity can be promoted. In this context, compartmental bunding and in-situ moisture conservation technologies that harvest rain water are a prerequisite for millets production. A pre-season tillage can greatly help in conserving the early showers, thereby ensuring timely sowing and the quick establishment of millets crop. Such technologies should also be extended to other millet crops for sustaining the yield under rain-fed conditions.
- The government has already initiated schemes to increase the area, production and yield of Nutri-cereals and align the cultivation with the local topography and natural resources. It can further ensure a rational fixation of minimum support price for the small millets to ensure that farmers growing these crops can get a fair price for their produce.

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Direct Benefit Transfer (DBT) in Fertilizer at Retail Points in Gujarat

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Introduction

- India is one of the major producers as well as consumers of chemical fertilizers in the world. In 2017, India held the second rank in the production of Nitrogen and Phosphorus (P_2O_5) fertilizers production globally (18.16 million tonnes) and accounted for 10.35 percent of the world's production. In terms of total fertilizer consumption, India also held the second rank with an amount of 26.59 million tonnes, accounting for 13.8 percent of the total fertilizer consumption in the world.
- In comparison to other countries, the average

intensity of fertilizer use in India is much lower; it is highly skewed, with wide inter-regional, inter-state, and inter-district variations. For example, during the period 2018-19, the fertilizer consumption was 223.6 kg/ha in Punjab, 53.4 kg/ha in Rajasthan and 25 kg/ha in Tripura. The variability in the consumption of fertilizers can be attributed to different cultivation methods, types of crops, and subsidies on fertilizers. Further, the consumption of fertilizers has also varied across farm size groups with the highest amount of consumption recorded among a group of small farmers. India's fertilizer subsidies have been the subject of much scrutiny for some time.

- Fertilizer subsidies in India currently account for the second-largest government transfer, with estimated outlays of over 700 billion rupees (USD 10 billion) projected for the 2018-19 fiscal year. Given that the provision of fertilizer subsidies has been prone to several issues such as leakages, and arbitrage opportunities (whereby subsidized fertilizer supplies from India are smuggled across porous borders into Nepal and Bangladesh and sold in so-called 'grey markets'). The Government of India has taken various steps to increase transparency in the fertilizer distribution system and its management through technological interventions such as the Fertilizer Management System in 2007, Neem Coating of Urea in 2008, the Mobile Fertilizer Monitoring System in 2012, and the Integrated Fertilizer Monitoring System in 2016.
- The fertilizer subsidy was brought under the Direct Benefit Transfer (DBT) system with effect from 1st October 2016 in 17 pilot districts, with pan India rollout by March 2018. Under the DBT mode, the government remits a subsidy amount to fertilizer companies after fertilizer retailers have sold fertilizer to farmers through electronic-Point of Sale (e-PoS) machines through biometric authentication. Any farmer can purchase any required quantity of subsidized fertilizer regardless of the land size availed to him at a subsidized rate. The DBT system entails 100 percent payment of subsidy to the

fertilizer manufacturing companies based on actual sales by the retailer to the beneficiary.

- This study was conducted in order to evaluate the implementation of DBT in fertilizer; assess the ease of usage of the e-PoS system by farmers, seek their opinion regarding the functioning of the system, and analyze the degree of variation among various sources of data at the retailer level in Gujarat, given that evidence suggests that the information regarding opening stock, daily/weekly/monthly sales and closing stocks of fertilizers at retail points does not match from various sources. The study is based on a primary survey and secondary data analysis. The primary survey sample consisted of 60 retailers, 100 top twenty buyers, 50 most frequent buyers, and 100 random walk buyers in Anand (irrigated area) and Botad district (rain-fed/dry land area), Gujarat.

Findings

- The total fertilizer consumption in Gujarat has increased from 17.2 thousand tonnes in 1962-63 to 538.5 thousand tonnes in 2002-03 and then to 1681.5 thousand tonnes in 2018-19. Gujarat has reported per hectare consumption of fertilizer (133.7 kg/ha) close to the national average of 134.18 kg/ha in 2018-19, which was the highest across the states in the western zone of India. The per-hectare use of total fertilizer has increased from 1.7 kg/ha in TE 1962-63 to 76.9 kg/ha in 2002-03 and 133.7 kg/ha in 2018-19. The ratio of fertilizers nutrients has been in favour of nitrogen and it was estimated at 9.5:2.9:1 in 2019-20.
- Across the districts, the highest quantity of fertilizer use is reported in Banaskantha district followed by Rajkot, Surat, Surendranagar, Kheda, Ahmedabad, Anand, Sabarkantha, Kutch, and Bhavnagar. These top ten selected districts together accounted for 52 percent of total fertilizer consumption in the State during 2018-19. The intensity of use of fertilizer across districts of Gujarat was found the highest in Surat district (332 kg/ha) and the lowest was in Dang district (16 kg/ha). Out of total fertilizer

use across the districts of Gujarat, 52 percent was used in Kharif season and the rest was used in Rabi season.

- Out of the selected retailers in the primary survey, 31.6 percent were private retailers, 23.3 percent were company-owned depot/retailers, and the remaining 45 percent were cooperatives-PACS. All the retailers had the PoS Machine for entry of purchase and sell of the fertilizers at their outlets, and had undergone training on the operation of the PoS machine. A majority of the retailers (98.3%) had PoS machines from the company and the rest had 'Analogic' company machines.
- All the retailers have faced problems in handling the PoS machine. Around 90 percent of retailers had faced some issues related to software (frequent logout, session expired, etc.) and authentication issues, one-third of total retailers had faced hardware issues (such as print issues, easy drain of battery, more time for charging) and 82 percent of retailers had faced issues associated with network coverage. Around 38 percent of retailers had faced stock issues; a mismatch between physical stock and PoS stock due to heavy rush of farmer during peak season period, lower internet connectivity, gaps in the back-end stock updation process, the problem of authentication of Aadhaar number of the farmers; poor maintenance of PoS machine, the farmer not possessing an Aadhaar card at the time of purchasing of fertilizers (farmers generally directly come from the farm). The difference of sales as per PoS and the manual record was the highest in the case of data entry of Urea fertilizers, which had the highest sales, for all three types of selected retailers. The retailers also reported that the management of stock and sale information through multiple systems of book-keeping/computer-operated systems/PoS had increased their workload enormously.
- The issues faced by the retailers were reported to the State DBT coordinator, fertilizer company representatives, and department officials. All the issues raised by the retailers were rectified

by the Fertilizer company representatives and PoS company representatives. The majority of retailers have reported that issues were addressed immediately and services offered by the POS staff were reported as being satisfactory

- Among all categories of fertilizer buyers, the highest percentage of buyers (40.8 percent) purchased fertilizers from cooperative societies due to the availability of PACS at the village level. About 19 percent of buyers had purchased fertilizers from private dealers followed by 3.2 percent of buyers purchasing from company-owned shops. About 37 percent of buyers had purchased fertilizers from all these three sources. While 93 percent of buyers reported that they had received a receipt for their purchase, around 80 percent of them had received manual handwritten receipts. Only 6.03 percent of buyers had received a PoS generated receipt.
- The major challenges faced by buyers in terms of purchasing fertilizers through POS devices were biometric authentication related issues like failure of authentication, Aadhaar authentication concerns, network-related issues, low awareness.
- The buyers were probed regarding whether it would be possible to fix the requirement of fertilizers looking at the size of operational holdings, cropping pattern, and soil test report. A significant amount of buyers did not think this would be feasible given that some buyers were not willing to reveal details of their land holdings, some buyers were tenants/ owner cum tenants and were not the actual cultivators, lack of ownership proof of land, and change in crops/varieties as per weather conditions.

Conclusions and Recommendations

- DBT in fertilizers has increased the overall accountability of stakeholders, including wholesalers and retailers, besides enhancing the transparency with improved tracking of physical movement of fertilizer in the district or state. However, the implementation can be strengthened in various ways.

- Given that all retailers have faced operational problems while using the PoS machine, e-Pos should be made compatible with the desktop or laptop maintained by the retailers/wholesalers. Furthermore, network connectivity needs to be strengthened. The PoS device should also have the option of displaying the local/State language. Also, the measurement of quantity can be in terms of per bag in the PoS, instead of per tonne or per quintal so that it is easily understood both by retailers as well as farmers.
- One of the pertinent problems reported by retailers was that after receiving the stock from the fertilizer company, they need to update the stock in the stock invoice to generate online receipt records. Therefore, there should be automatic updation by the fertilizer company once the delivery of the stock is dispatched, which can be confirmed by the retailers through a receipt of the same.
- More than 98 percent of farmers did not attend any training organized by any government officials or fertilizer companies. There is a need to organize village training camps on the same line as that of retailers training camps that have been organized by fertilizer companies.
- Farmers have reported that the availability of fertilizers based on the operational holding, cropping pattern, and soil health card is not favorable for farmers. Also, fixing up requirements based on soil health cards may not work. Therefore, a robust methodology needs to be developed to deliver the fertilizers as per crop requirements.

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Village Survey: Bargachha Hariyari, Jharkhand

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Introduction

- A baseline survey of the village 'Bargachha Hariyari' in Poreyahat tehsil, Godda district, Jharkhand was conducted during the period 2019-20. The village is located in the Central and North-Eastern Plateau (Sub-Zone-IV) of the state with a total geographical area of 7.19 square kilometers. The village falls in the rain shadow of Santhal Pargana Plateau with an average annual precipitation of 850 mm. The climate is warm and temperate. The soil of the village is mostly acidic, red and yellow; light textured and highly permeable with poor water holding capacity.
- As per the 2011 census, Bargachha Hariyari had 481 households and the total population was 2189, constituting about 59 percent scheduled tribes (mainly Santal & Sauria Paharia) followed by other backward castes (34%) and scheduled castes (6%). The literacy rate and sex ratio were 54.14 percent and 988 females per 1000 men respectively. Of the total population, the

working population was 47.74 percent. Out of these, 56.65 percent were cultivators, followed by agricultural labourers (43.35%). The Human Development Index (HDI) of Godda district was low (0.258) in 2018.

- The study draws from a sample of 300 households and Focused Group Discussions (FGDs) in the village to understand the socio-economic and development status of the inhabitants.

Findings

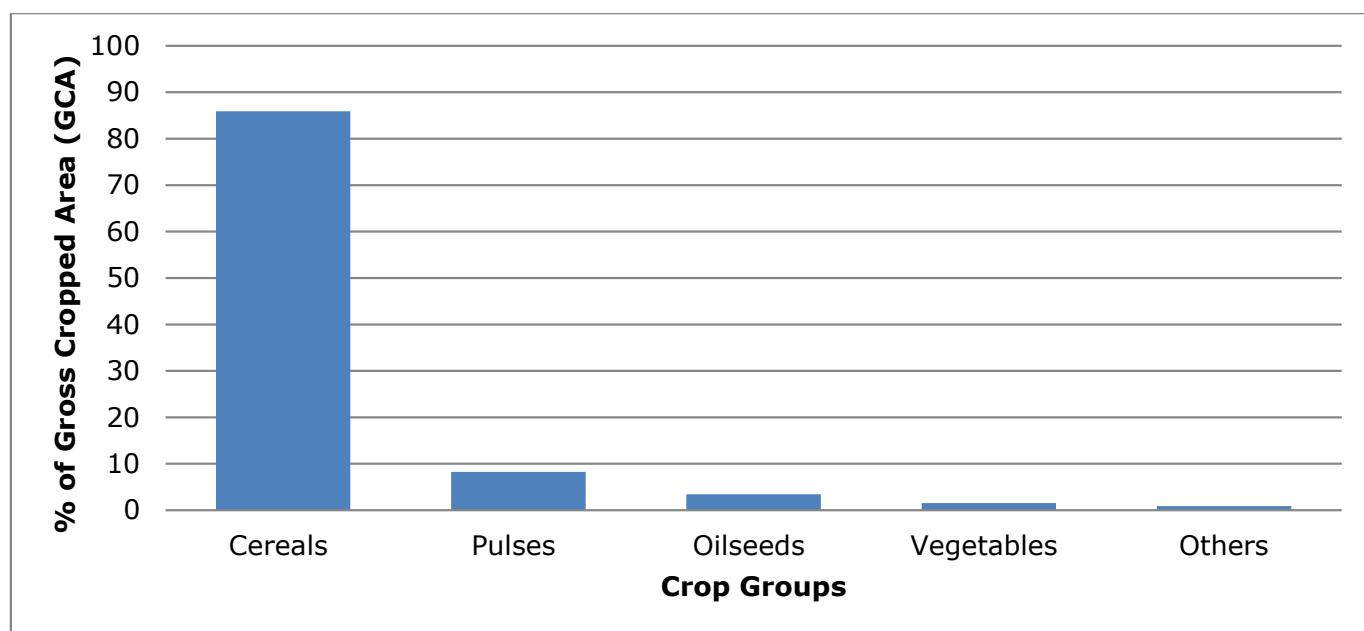
- Of the 300 surveyed households, the total population was 1574. Nearly 78.78 percent of the households belonged to STs followed by OBCs (14.29%) and SCs (6.93%). In terms of religion, 47.20 percent were Christian STs, 31.58 percent were Sarna-Dharm STs, 14.29 percent were OBCs and 6.93 percent were SCs, who were followers of the Hindu Sanatan Dharam.

- The total enrollment in schools was 181; 52.43 percent of children were enrolled in government schools and 47.53 percent in private schools. There were 38 dropouts; out of which 60 percent were girls. As per the Annual Status of Education (ASER) test (Std. – II Level), 64.15 percent of boys and 48.93 percent girls were able to read paragraphs among the children enrolled in school. The overall level of reading competency in government schools was 21.63 percent, while in private schools, it was 74.60 percent. Around 49.07 percent boys and 31.91 percent girls had arithmetic competency among boys and girls. The overall level of arithmetic competency in government schools was only 13.89 percent, while in private schools, it was 56.25 percent.
- In terms of occupational composition, 52.86 percent of the sample were engaged in employment, and of the total workers, 62.79 percent were cultivators, 32.65 percent were agricultural labourers (32.65%), 6 percent were government salaried employees, 2.74 percent were workers in household industries (2.74%) and 1.82 percent were other workers. It was

observed that due to lack of employment opportunities and the practice of subsistence agriculture, there was seasonal migration of 48 persons in order to avail better opportunities elsewhere.

- Of the total geographical areas occupied by the households, nearly 34 percent was cultivable and the net sown area was about 28 percent. Cropping intensity was 121 percent and area under irrigation was 47.80 percent. The sample households constituted 85.67 percent marginal farmers who occupied 66.67 percent of the total operated area, and 14.33 percent of small farmers, who occupied 33.33 percent of the total operated area. The average size of holdings was found to be 0.71 acres against the state's average of 4.23 acres. The cropping pattern mainly pertained to paddy (76.75% of Gross Cropped Area (GCA)) in kharif season and wheat (9.13% of GCA) in rabi season, apart from pulses (8.26% of GCA), oilseeds (3.43% of GCA) etc. (Figure 1). The overall per capita annual income was estimated to be Rs. 18937 that has resulted in low savings and high borrowings during the last five years.

Figure 1: Trends in Cropping Pattern in Bargachha Hariyari



Source: Field Survey

- The village had open forest, where more than 5000 plants were reported to be present.

Further, diverse rocks of different ages were present in and around in the village. An

excellent repository of groundwater (10-25 metres) was reported. Despite that, the overall state of groundwater development in the village was found to be 25 percent against the district's average of 38.68 percent (Central Ground Water Board (CGWB), 2013)².

- The village had good connectivity in terms of road, electricity and mobile networks. In terms of access to development schemes, the coverage under agricultural development and other social security schemes was found to be low due to a number of factors; these included apathy displayed by local functionaries, the presence of middlemen, etc. About 72 percent of households were classified in the Below Poverty Line (BPL) category. With regard to food security in the village, the responses revealed that none of the households had issues associated with food insecurity.

Conclusions and Recommendations

- Due to subsistence and low profitable agriculture, nearly 36 percent of the cultivable land in the village remained fallow, which can be targeted to be developed as cropped area under the 'Conversion of Fallow Land into Cropped Area Scheme,' which is already being implemented under the State Plan.
- NH-133 passes through the village, so there is scope for making the village a model village by adoption of a cluster approach in agricultural marketing, building of handicrafts clusters and other skill development initiatives.
- In consonance with the emerging need for

holistic development in the villages, the Gram Panchayat of the surveyed village had not submitted its Gram Panchayat Development Plan (GPDP). So, it is of paramount importance that the village panchayat makes a comprehensive plan based on a participatory process, in convergence with the schemes of all departments containing 29 subjects listed in the 11th schedule of the Indian Constitution. A social audit can be conducted to improve accountability.

- The Jharkhand Tribal Empowerment and Livelihoods Project (JTELP) and the International Fund for Agricultural Development (IFAD), supported by the Jharkhand Tribal Development Project (JTDP) which forwards the welfare of tribal and backward communities in villages where the ST population is more than 50 percent can be implemented in this village to reduce the vulnerabilities of the tribal population. The implementation of social security schemes needs to be bolstered.
- To combat the extreme environment/weather eventualities, a macro shocker strategy comprising drought mitigation measures, promotion for cultivation of rain-fed crops, solar irrigation pump, tap water supply for drinking, agro-forestry, land leveling, plantation of horticultural crops etc., may be drawn.

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² Central Ground Water Board, Ministry of Water Resources (2013). Ground Water Information Booklet. 2013.



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