STATUS OF TENANCY AND CHILD WELL-BEING IN BIHAR

A STUDY ON AGRICULTURAL TENANCY PRACTICE AND ITS IMPACT ON CHILDREN

Ujjwal Kumar | Dhiraj Kumar Singh | Rohan Kumar Raman | Kamal Sarma | B P Bhatt
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PREFACE

Tenant farming is an agricultural production system in which landowners leased-out their land to others, either on rent or free of cost without transferring the title of land. As per NSSO Report, tenancy increased from 6.6 percent to 10.4 percent in India during 2003-13. Andhra Pradesh (35.7 %), Bihar (22.7%), Haryana (14.8 %), Odisha (16.9 %), Tamil Nadu (13.5 %) and West Bengal (14.7 %) are leading states in terms of acreage under tenancy. Majority of state governments in India including Bihar restricted agricultural land leasing that forced insecure and informal tenancy without any legal sanctity. These tenant farmers are mostly marginal farmers and landless labourers who face a lot of problems during cultivation to natural disaster like flood and drought. Even most of them unable to undertake benefit of subsidies and agricultural insurance which require land ownership documents.

With land being a scarce resource and increasing urbanization, tenancy based agriculture is likely to increase in future. With these facts, it is imperative to understand the ground realities on the status of tenant farming in Bihar and its impact on productivity and income of agricultural household. In this context, a collaborative study was conducted on **"Status of Tenancy and Child Well-being in Bihar"** by the ICAR Research Complex for Eastern Region, Patna and World Vision India. The study was primarily focused in three districts of Bihar, namely Bhojpur, Muzaffarpur and Vaishali capturing specific best practices, policy adaptation analysis and gaps in tenancy farming. Present report is an outcome of this study which is based on extensive survey of 600 farmers, focussed group discussion with various stakeholders and personal observation by a team of scientists in study area. The report includes current status of agriculture practices used by farmers; extent of adoption of different forms of tenancy *viz*. fix cash, fix produce and sharing of produce; income and expenditure pattern of tenant farmers and impact of interventions made by World Vision India in adopted villages. It also included future challenges faced by tenant farmers and possible strategies in the form of recommendations to overcome these challenges.

We hope that this report would provide researchers, planners and policy makers first-hand information on the prevailing tenancy farming practices in Bihar. This would further enable them to revisit and consolidate the concepts of tenant farming for future policy framework and guideline.

We are also grateful for the valuable assistance and support of Mr. Satya

Prakash Pramanik, Mr. Sieti Banu Immanuel, Mr. Benjamin Khasouso, Mr. Asosii Loli, Mr. Smruti Ranjan Nayak, Mr. Subharanshu Nayak, Mr Shivjee, Ms Rashmi, Ms Vidya Bharti, and World Vision India Area Development Programmes (Vaishali, Muzafarpur and Bhojpur) who have worked very hard for preparation of this report.

Authors

Patna
15th June 2020

FOREWORD

भारतीय कृषि अनुसंधान परिषद का पूर्वी अनुसंधान परिसर
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Dr. B.P. Bhatt, FNIE & FNAAS
Director

FOREWORD

Leasing out of land to cultivators by land owners is a common agricultural practice in India. Tenancy based farming is also popular in Bihar with nearly one fourth of operational area leased in for cultivation by tenants. The proportion of marginal farmers having less than 1 ha of land is more than 90 per cent in the state. Therefore, most of the tenant farmers either belong to marginal or small farmers category or they are landless peasants, cultivating land of large farmers. Many studies suggested that these tenant farmers had to face many difficulties in sustaining their livelihoods. Even Government supports are not available to them.

Keeping these facts in view, it was necessary to have a systematic and comprehensive study on the current status and prevailing practices of tenant farming in Bihar. The present document on Status of **Tenancy and Child Wellbeing in Bihar** is an outcome based on extensive survey of tenants farmers made by the ICAR Research Complex for Eastern Region (ICAR-RCER), Patna in collaboration of World Vision India. The report gives a clear picture about the different types of tenancy practised in the state where agriculture is the mainstay of economy. It provides details of cash based or produce sharing based arrangement between tenants and land owner in districts covered under the study, i.e., Bhojpur, Muzaffarpur and Vaishali.

I am happy that useful and informative report on tenancy system in Bihar has been prepared. This publication would help researchers especially working in social sectors, teachers, students, policy planners, NGOs and various other stakeholders in understanding present scenario of tenancy in the state. Publication will also help in formulation and implementation of future policies and strategies for upliftment of tenant farmers of Bihar in general and of the selected districts in particular. Also, tenancy based farming is likely to increase in future which underlines the importance and timeliness of current study.

I would like to compliment the team of World Vision India and ICAR- RCER, Patna, for bringing out such an important publication which will be helpful to all the stakeholders involved in agricultural development in the state.

Date: 04.06.2020

(B. P. Bhatt)

FOREWORD

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Madhav Bellamkonda

Foreword

I applaud the efforts of the ICAR, State of Bihar and World Vision India who have come together to do a study on tenant farming system which we believe will help the tenant farmers to get benefits and entitlements provided by the Government.

As a child focussed organisation, everything we do is centred around child well-being, and so this report will help understand broadly the traditional agricultural practices, explain expenditure patterns and how the income is being used to provide for the child's education, health and protection and a detail impact assessment of the technologies implemented in the World Vision India's operational area

I trust this report will be useful to address the tenant farmer's issues, and improve child well-being

I wish the tenant farmers the very best in their endeavour to own their development and strive to build a nation fit for Children.

Madhav Bellamkonda
CEO & National Director

June 15, 2020

CONTENTS

1 INTRODUCTION

1.1 Background

Agriculture sector is still regarded as the mainstay of Indian economy, since more than half of the Indian population depends on agriculture for their livelihood. Agriculture and allied sectors, contributes around 17 percent to the country's Gross Value Added (GVA). Since independence, the population of India has reached from a mere 36 crores in 1951 to 122 crores during year 2010-11. However, the percentage of rural population decreased steadily from 82.7 percent to 68.9 percent. As per recent information, out of total working population, the country has 54.6 percent agricultural workers and most of the rural population is directly or indirectly depend on agriculture.

Table 1. Share of agricultural workers in total working population of India (in Million)

Year	Total popula-tion	Rural popula-tion	Total workers	Agricultural workers		
				Cultiva-tors	Agril. labours	Total
1951	361.1	298.6	139.5	69.9 (71.9)	27.3 (28.1)	97.2 (69.7)
1961	439.2	360.3	188.7	99.6 (76.0)	31.5 (24.0)	131.1 (69.5)
1971	548.2	439	180.4	78.2 (62.2)	47.5 (37.8)	125.7 (69.7)
1981	683.3	525.6	244.6	92.5 (62.5)	55.5 (37.5)	148.0 (60.5)
1991	846.4	630.6	314.1	110.7 (59.7)	74.6 (40.3)	185.3 (59.0)
2001	1028.7	742.6	402.2	127.3 (54.4)	106.8 (45.6)	234.1 (58.2)
2011	1210.9	833.7	481.9	118.8 (45.1)	144.3 (54.9)	263.1 (54.6)

Source: Agricultural Statistics at a Glance (2018), Ministry of Agriculture and Farmers Welfare, Dept. of Agriculture, Cooperation and Farmers Welfare, Govt. of India.

Note: 1. Figures in parentheses for cultivators and agril. labours are percentage of total agri. workers 2. Figures in parentheses for total Agri. workers are percentage of total workers

The share of agricultural workers in total working population of India is being illustrated in the Table 1. It is recorded that during 2011, out of 263.1 million total agricultural workers, agricultural labours represents 54.9% of the total agricultural workers and rest 45.1 percent by cultivators engaged in farming. Moreover, out of these, 95.8 million cultivators have farming as the main occupation (Sainath, 2013). There has been a decline in cultivator's share also from 50 percent in 1951 to 24 percent in 2011 (Salve, 2014). As per the figures of Agricultural Census 2015-16, there are 146.45 million farm holdings recorded in India, of which marginal (<1 ha) and small (1-2 ha) holdings contributed 86.1 percent of total farm holdings. The average size of operational holding in India has also declined to 1.08 ha in 2015-16 as compared to 1.15 ha in 2010-11. These small and marginal farmers don't have enough land for maintenance of better livelihood throughout the year. On the other hand, many large farmers cannot cultivate their owned land by themselves either due to large holdings or distant location from their home. In such cases, they lease-out their land to other farmers or agricultural labours. Many times, landless farmers cultivate the land owned by others and pay rent in exchange in the form of cash or a share of produce (*i.e.*, for enjoying the right to use land), and those who cultivate land of others against rent payment are called tenant farmers or simply tenants.

1.2 Agricultural tenancy in India

Tenancy is one of the oldest agrarian institutional devices evolved over a period of time to distribute the operational holdings in an equitable manner as compared to distribution of ownership of holdings and thus, contributes to a better distribution of income (Srivastava, 1989). Traditionally, tenancy is viewed as an institution in which small farmers, in general, intend to leased-in land, while the large farmers are involved in leased-out operation. This temporary transfer of land via tenancy is evolved to facilitate adjustment and interlinked transactions in agriculture (Bardhan and Rudra, 1978). In a rapidly changing development based economy, some people involved in agriculture switch on to non-farm activities or migrate to urban areas for jobs. They themselves are unable to cultivate their land and therefore willing to leased-out their land to tenants. Leasing out of land to cultivators by land owners is a common agricultural practice in India. Conferring right of using a piece of land to others, either on rent or free of cost, by the owner without transferring the title is termed as lease of land. Such agreements, even when made orally,

are considered as lease contracts (NSSO, 2015). Thus tenant farming is a mode of farming system in agriculture where landowners provide their land, and/or operating capital and management process; while tenant farmers contribute their labour along with necessary capital and management as per the agreement.

Agriculture being a state subject, laws related to tenancy farming are different in different states. Many of the states even do not recognise these types of farming system. This forced tenancy farming to be more informal, insecure and inefficient. Informal tenants do not have legal sanctity and access to institutional credit, insurance and other support services. Restrictions on land leasing have discouraged many landowners who have interest and ability to take up employment outside agriculture and yet are forced to stay in agriculture due to the fear of losing land if they lease out and migrate. Legal ban or restrictions on land leasing have led to conceal tenancy in almost all parts of the country. Informal tenants are most insecure, as they either have short duration oral leases or get rotated from plot to plot each year so that they cannot prove continuous possession of any particular piece of land for any specified period which could give them occupancy right, according to the law of a state. According to 59th round of NSSO, about 36 percent of the tenant farmers are landless, while nearly 56 percent of the tenant households are marginal land owners, having less than one hectare land.

1.3 State wise status of tenancy in India

As per NSSO survey, the major states having higher percentage of leased-in households are from Andhra Pradesh (37.21%), Himachal Pradesh (21.17%), Odisha (19.28%), Bihar (18.72%) and West Bengal (17.8%) with all India average of 13.65 percent. In case of households leasing out land, Karnataka (6.02%) registered the highest, followed by Haryana (5.48%), Punjab (5.25%) and Rajasthan (5.22%). As per as, average leased in area per household is concerned, Rajasthan tops the list with 1.242 ha area, followed by Punjab (1.157 ha) and Madhya Pradesh (1.081 ha). This may be due to the fact that average landholdings in those states are higher than most of the other states. The average landholding size in Punjab (3.62 ha), Rajasthan (2.73 ha) and Madhya Pradesh (1.57 ha) are very high as compared to all India average of 1.08 ha. Kerala has the lowest average landholding size of 0.18 ha while in Bihar this figure stands at 0.39 ha (Agriculture Census, 2015-16). When we check the extent of tenancy in the form of leased in area as percentage of

total area owned by household, Andhra Pradesh (59%), Bihar (30.7%), Punjab (29.1%) and Odisha (20.47%) have the maximum area under tenancy.

Table 2. State wise incidence of tenancy

Major states/UTs	Household reporting		Average area leased in per household	Leased in area as % of total area owned
	Leased out land%	Leased in land%		
Andhra Pradesh	4.64	37.21	0.779	59.03
Assam	1.78	7.04	0.397	4.50
Bihar	**3.11**	**18.72**	**0.395**	**30.71**
Chhattisgarh	3.46	13.66	0.537	9.30
Gujarat	2.1	6.15	0.833	6.38
Haryana	5.48	12.94	0.963	16.38
Himachal Pradesh	4.91	21.17	0.102	5.47
Jammu & Kashmir	0.52	3.03	0.034	0.24
Jharkhand	2.64	5.90	0.178	2.18
Karnataka	6.02	8.64	0.687	6.99
Kerala	2.01	14.29	0.148	10.26
Madhya Pradesh	2.14	5.61	1.081	5.41
Maharashtra	0.90	8.41	0.383	3.60
Odisha	4.82	19.28	0.403	20.47
Punjab	5.25	15.77	1.157	29.10
Rajasthan	5.22	7.56	1.242	6.36
Tamil Nadu	1.91	13.16	0.40	15.03
Telangana	1.20	16.45	0.793	18.59
Uttar Pradesh	3.90	10.64	0.394	8.61
West Bengal	3.57	17.80	0.167	17.29
N. E. States	**2.62**	**12.65**	**0.227**	**4.08**
Group of UTs	**1**	**27.53**	**0.282**	**54.52**
All India	**3.26**	**13.65**	**0.501**	**11.62**

Source: Agriculture Census, 2015-16

Most of the lease contracts can be categorized into **fixed money and share cropping tenancy**. A fixed money lease is a rental agreement in which the landowner receives predetermined cash per unit area of land from the tenant irrespective of crop yields or product prices. The tenant produces crops on the land and claim entire quantity of produce. In case of sharecropping tenancy, the landlord provides land while tenant provides labour. Each of them claim a portion of the output which may be fixed quantity or sharing in different proportion. The ratio varies in different parts of the India, with the tenant's share typically ranging from 40 to 60 percent of the output.

Table 3. Percentage distribution of area leased-out by terms of lease for major states during 2013

Major states	Terms of lease (%)			
	Fixed money	Fixed produce	Share of produce	Others
Andhra Pradesh	55	34	3	8
Assam	10	24	52	14
Bihar	**4**	**8**	**84**	**4**
Chhattisgarh	0	26	46	28
Gujarat	75	0	21	4
Haryana	93	0	1	6
Himachal Pradesh	6	2	28	64
Jammu & Kashmir	2	0	4	94
Jharkhand	1	2	96	2
Karnataka	26	13	59	3
Kerala	16	2	19	64
Madhya Pradesh	53	15	23	9
Maharashtra	52	12	28	9
Odisha	12	3	65	19
Punjab	78	11	3	7
Rajasthan	3	5	41	50
Tamil Nadu	73	10	4	13
Telangana	52	10	25	13
Uttar Pradesh	16	21	32	31
West Bengal	55	5	28	12

N. E. States	**26**	**4**	**58**	**11**
Group of UTs	**19**	**0**	**4**	**77**
All India	**28**	**12**	**38**	**22**

Source: NSSO, 2015

1.4 Proposed study on Tenant Farming in Bihar

With this background, it can be observed that tenancy based farming is very popular in Bihar state with more than 30 percent of cultivated area is leased-in from other farmers. Many reports have suggested that these tenant farmers are mostly marginal farmers and landless labourers who face a lot of problems during cultivation. Without ownership of land, they don't get benefits from government schemes in case of crop failure due to natural disaster like flood and drought. They cannot take benefit of subsidies also due to lack of ownership documents. Agricultural insurance is also very difficult for tenants. Therefore, it was necessary to have a systematic and comprehensive study on the status and prevailing practices of tenant farming in Bihar and its impact on productivity and overall income of agricultural household. In this context, a collaborative research programme was initiated on "Status of Tenancy and Child Well-being in Bihar" by World Vision India and ICAR Research Complex for ER, Patna. The research was primarily focused in Bihar capturing specific best practices, policy adaptation analysis and gaps in tenancy farming. For the present study, three districts namely Bhojpur, Muzaffarpur and Vaishali were selected and one block of each district was selected and four panchayats from each block were selected for conducting survey during this study. Moreover, to have a comparative analysis of the impact or influence of World Vision India, two panchayats where activities of World Vision India are going on and categorised as World Vision India Operational areas and another two panchayats of same block where no activities of World Vision India is going on and categorised as non-operational area were selected. Thus, one blocks from each district and four panchayats from each block were selected for conducting survey during this study (Table 4).

Table 4. Selection of study area in Bihar

Name of districts	Name of blocks	WV India Operational Gram panchyats	Non-operational Gram panchayats
Bhojpur	Barhara	Sinha (25.719951 N, 84.58967 E) and Saraiya (25.668992 N, 84.675862 E)	Bakhorapur (25.671477 N; 84.69823 E) and Pakri (25.662112 N; 84.59943 E)
Muzaffarpur	Maravan	Bhatauna (26.084768 N, 85.270299 E) and Mohammadpur Khaje (26.085382 N, 85.250782 E)	Barka Gaon (26.126082 N, 85.21942 E) and Rupwara (26.124459 N, 85.317074 E)
Vaishali	Desari	Jafrabad (25.676809 N; 85.410891 E), Ufraul (25.68798 N; 85.412799 E),	Ajampur (25.629837 N, 85.415875 E), Dharmpur Ramrai (25.639433 N, 85.410813 E),

1.5 Objectives of the study

The major objectives of the proposed research study are as follows:

- To record and understand the traditional agricultural practices, gaps and challenges in farming system
- To study the current practices and magnitude of incidence of tenancy system in Bihar
- To analyzing the investment pattern, productivity, profitability and viability of tenant farming
- To study the expenditure pattern from tenant income towards child's education, health and other important areas.
- To have a detail impact assessment of the technologies implemented in the World Vision Operational areas

The study was aimed to understand the relationship between real tillers and landowners in terms of investments in agricultural activities and profit sharing in tenancy based farming. It also attempted to find out the cost involved in agriculture, its productivity and profitability of farmers in both operational and non-operational area. The income and expenditure pattern of households were also studied with special reference to child health and education. The study also assessed policy level needs in favour of agricultural labourers, tenants and marginal farmers.

Fig 1. FGD at Pakri village, Bhojpur

Fig 2. Field visit by the research team at Vaishali

2

RESEARCH METHODOLOGY

This study was conducted during August, 2019 to February, 2020. For detailed analysis of interpretations, primary and secondary data were collected using various tools and techniques. The research methods and techniques used were based on the objectives set forth in this study. Methodological details are illustrated under the following section heads.

Research Design

The present research programme was designed in order to enable the researchers to answer research questions with validity, objectivity and accuracy. The study was conducted with an aim of understanding the tenancy based agricultural production system in Bihar and its impact on productivity and profitability of tenant farmers. For this purpose, *Ex post facto* research design was used. According to Kerlinger (1964), an *Ex post facto* research is a systematic empirical enquiry in which the researcher does not have direct control over the variables because their manifestations have already occurred or because they are inherently not manipulable. The *ex-post facto* research design is a type of "after-only with control group" design where both the experimental and control groups are selected after the experimental variable is introduced. As the name suggests, data is collected after the respondents are exposed to experimental variables.

Selection and description of study area

A joint study of World Vision India and ICAR-RCER, Patna has been initiated in the state of Bihar where the incidence of tenancy is second highest in terms of leased in area as percentage of total area owned. Andhra Pradesh has the maximum area to the extent of 59 percent followed by Bihar having 30.7 percent leased in area out of total area owned. Bhojpur, Muzaffarpur and Vaishali districts of Bihar were randomly selected for this study where there is relatively higher number of tenant farmers.

Agriculture in Bihar: An Overview

Bihar is an agricultural state located in the eastern part of India. It has an area of 93.6 lakh hectares, accounting for nearly 3 percent of the country's

total geographical area. Around 74 percent of the workforce in Bihar depends on agricultural and allied activities for their livelihood (Hoda et al, 2017) contributing almost 20 percent of the state's GSDP.

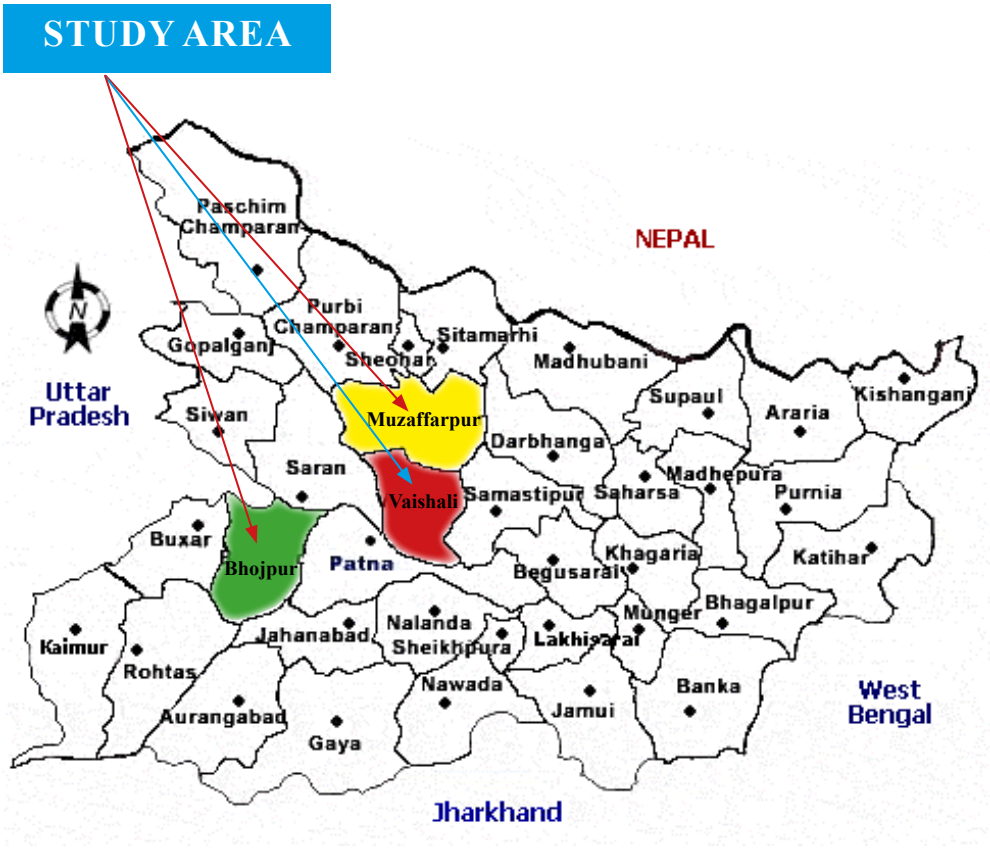


Fig. 3. Map of Bihar showing study areas

The agricultural economy of Bihar is highly diversified with cereals, pulses, oilseeds, sugarcane, fruits and vegetables as its important crops. Kharif, Rabi and Zaid (Summer) are the three agricultural seasons in Bihar, with main crops being rice, wheat and maize, along with various horticultural crops. The river Ganges divides Bihar into two halves. Northern Bihar receives water from the Himalayan Rivers and is highly flood prone. The south of Bihar benefits from the rivers of central India, but it is prone to drought. Bihar's agriculture is mainly rainfed, drawing its water resources from south-west monsoons and only around 57 percent of the cultivated area in the state is irrigated. The state

is divided into three agroclimatic zones namely North West Alluvial Plain, North East Alluvial Plain and South Bihar Alluvial Plain having diverse soil type and climatic conditions (Table 5).

Table 5. Agro-climatic Zones of Bihar

Zones	Soil type	Mean rainfall (mms)	Temperature (degree celsius)	Major crops	Districts
North West Alluvial Plain Zone I	Medium acidic, heavy textured, sandy loam to clay loam, flood prone	1235	Max: 36.6 Min: 7.7	Rice, Wheat, Maize, Potato, Sugarcane, Mango, Litchi	West Champaran, East Champaran, Siwan, Saran, Sitamarhi, Sheohar, **Muzaffarpur**, **Vaishali**, Madhubani, Darbhanga, Samastipur, Gopalganj, Begusarai
North East Alluvial Plain Zone II	Light to medium textured, slightly acidic, sandy to silty loam	1382	Max: 33.8 Min: 8.8	Maize, Jute, Pineapple	Purnea, Katihar, Saharsa, Supaul, Madhepura, Khagaria, Araria, Kishanganj
South Bihar Alluvial Plain Zone III	Alluvial to sandy loam	1102	Max: 37.1 Min: 7.8	Rice, Wheat, Potato, Gram, Mango, Guava	Sheikhpura, Munger, Jamui, Lakhisarai, Bhagalpur, Banka, Rohtas, **Bhojpur**, Buxar, Bhabhua, Arwal, Patna, Nalanda, Nawada, Jehanabad, Aurangabad, Gaya

Source: Govt. of Bihar, 2019

Bihar faces a major challenge of fragmentation of landholding. Because of this, the status of farm mechanization is very poor in the state. As per Agriculture Census, 2015-16, Bihar has nearly 97 percent of operational holdings under marginal and small categories (Table 6). This state is also having low crop productivity as compared to many other states despite having rich fertile Indo-Gangetic plains. Out of total area, about 56.55 percent of the land was under cultivation in Bihar with cropping intensity of 145 percent (2016-17). It is primarily a cereal crop-based farming, with more than 85 percent of its gross cropped area under cereals cultivation. However, the productivity of cereals in the state is 28.39 quintal per hectare which is lower as compared to many Indian states. Among horticultural crops, Bihar produced 148.12 lakh tonnes of vegetables and 42.29 lakh tonnes of fruits during 2017-18. The state is also rich in terms of livestock population. Bihar's milk production stood at 92.41 lakh tonnes in 2017-18, increasing from 71.97 lakh tonnes in 2013-14. The major source of milk production in the state are cows which accounted for nearly 58.6 percent of the total milk production, followed by buffaloes (39.2%) and goat (2.2%). The abundant fresh water resources in the state provide impetus for development of fisheries also. The fish production in the state steadily increased from 4.32 lakh tonnes in 2013- 14 to 5.87 lakh tonnes during 2017-18, registering a growth rate of 7.0 percent.

Table 6. Distribution of number of operational holdings in Bihar and India (%)

Category of farmers	Bihar		India	
	2010-11	2015-16	2010-11	2015-16
Marginal	91.06	91.21	67.1	68.45
Small	5.86	5.75	17.91	17.62
Semi-medium	2.56	2.52	10.04	9.55
Medium	0.5	0.5	4.25	3.8
Large	0.02	0.02	0.7	0.63

2.1 Agriculture scenario in selected districts

Land utilization pattern of selected study area is given in Table 7. Among selected districts, Muzaffarpur has the largest geographical area followed by Bhojpur and Vaishali. Net sown area in Bhojpur was 72.4 percent of total geographical area while Vaishali and Muzaffarpur have almost equal net sown area under cultivation to the extent of 60 percent of their respective geographical area. The cropping Intensity was highest in Muzaffarpur (150.8%) followed by Vaishali and Bhojpur. Bhojpur has very low cropping intensity (121%) even compared to state average of 145.5 percent. The reason may be lesser area under cultivation during rabi season due to excess moisture.

Table 7. Land utilization pattern of the study area (2015-16)

District	Geo-graphical area	Total uncultiva-ble land	Net sown area	Gross cropped area	Cropping intensity(%)
Bhojpur	237.3	65.5 (27.6)	171.9 (72.4)	209.2 (88.1)	121.7
Muzaffarpur	315.4	124.2 (39.4)	191.1 (60.6)	288.2 (91.4)	150.8
Vaishali	201.5	81.8 (40.6)	119.7 (59.4)	176.5 (87.6)	147.4
Other districts	8605.4	3883.2 (45.1)	4722.2 (54.9)	6898.5 (80.1)	146.1
Bihar Total	**9359.6**	**4154.7 (44.4)**	**5204.9 (55.6)**	**7572.4 (80.9)**	**145.5**

Note : Figures in the parentheses presents percentage of total geographical areas

Rice, wheat and maize are the major crops grown in study districts. Cultivation of pulses like arhar, chick pea and lentil are also popular among farmers. The area, production and productivity of major crops in selected districts and Bihar are given in Table 8. It is interesting to note that Bhojpur has the highest yield of rice (4 t/ha) which is 65 percent higher than the average production of Bihar. Among selected districts, Bhojpur ranked 1st in rice production, while Muzaffarpur in the wheat production. In case of Maize, Vaishali ranked first followed by Muzaffarpur and Bhojpur. In case of pulse production, Muzaffarpur has the highest area and production followed by Bhojpur, but Vaishali had the highest productivity.

Table 8. Area, production and yield of major crops in selected districts of Bihar

(Area in '000 ha, production in '000 tonnes, yield in kg/ha)

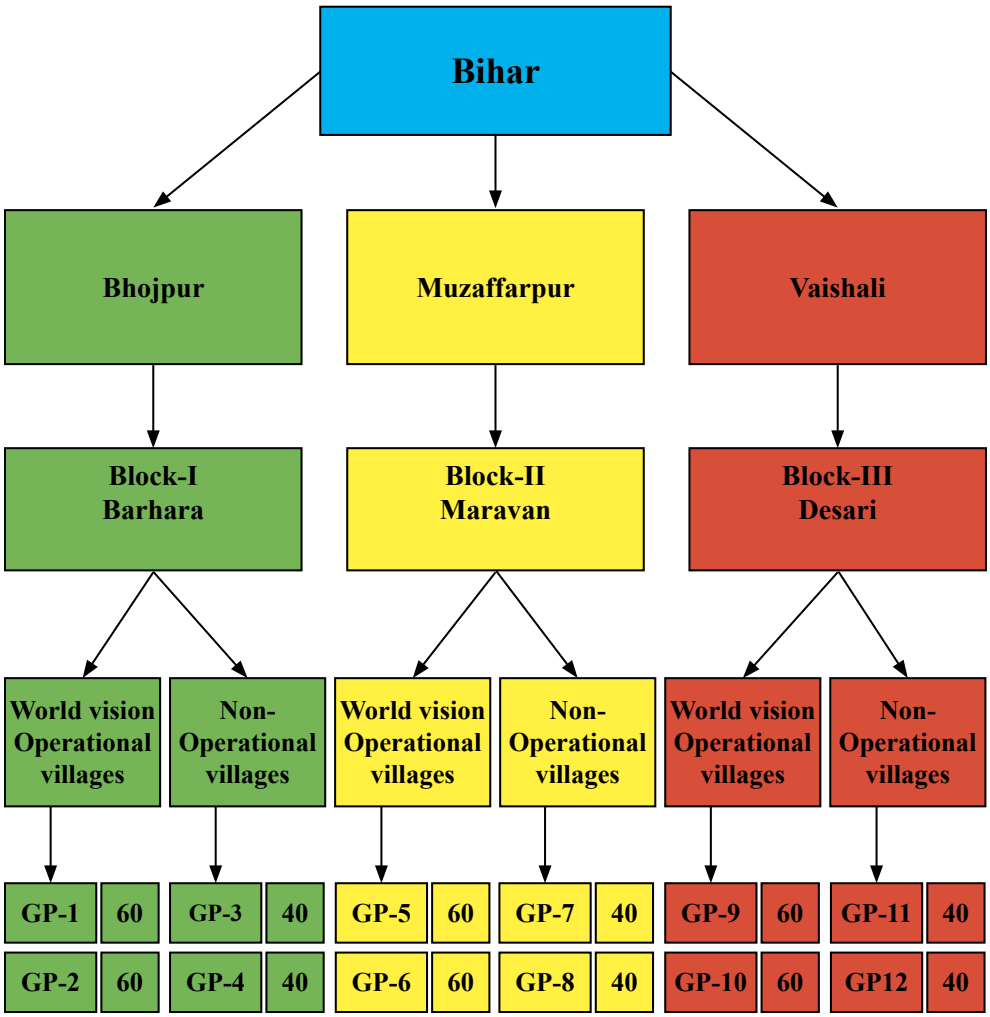
Selected crops		Name of the districts			
	Particulars	Bhojpur	Muzaffarpur	Vaishali	Total
Rice	Area	97.11	122.74	42.03	3306.9
	Production	393.67	162.92	89.26	8093.16
	Yield	4054	1327	2124	2447
Wheat	Area	71.5	91.87	40.75	2101.31
	Production	213.08	258.18	132.67	6104.3
	Yield	2980	2810	3256	2905
Maize	Area	2.11	35.04	32.18	677.44
	Production	5.24	54.01	105.22	3120.77
	Yield	2482	1542	3269	4607
Pulses	Area	12.8	27.71	8.64	476
	Production	13.76	15.74	13.19	454.17
	Yield	1076	568	1526	954

Source : Bihar Statistical Handbook-2016, Directorate of Economics and Statistics, GOB

2.2 Sampling Technique

The study of tenancy was planned in Bhojpur, Muzaffarpur and Vaishali districts of Bihar. World Vision India has its presence in some adopted villages of those districts. Three blocks, one from each district were selected purposively since WV India has implemented their activities in these blocks. Two Operational

Gram Panchayats (GPs) and two non-operational Gram Panchayats were selected from each block as experimental and control group for this study. Altogether 60 farmers from each operational Gram Panchayat and 40 farmers from non-operational Gram Panchayats were selected for the present study. Thus, a total of 360 respondents (60 each from 6 operational GPs) acted as experimental group and 240 respondents (40 each from 6 Non-operational GP) acted as control group making a total sample size of 600.



GP= Gram Panchayat

Fig 4 Sampling Diagram

2.3 Data Collection and Analysis

Observation, Survey and Focussed Group Discussion methods were implemented. Interview schedule was developed and pretested in the field before final administration to farmers. Data was collected from selected respondents using a structured interview schedule focused on tenancy system prevalent among the farmers. Before collection of data, orientation programme was organized for all the local enumerators involved in collection of data. To validate the findings of survey, focused group discussion (FGDs) was also organized in one operational and one non-operational village in each of three districts. Thus, a total of six FGDs were organized in which scientists from ICAR Research Complex for Eastern Region, Patna and WV India representatives interacted with farmers on issues related to tenancy and problems faced by farmers. Several suggestions were received from the farmers during the discussion and were recorded and compiled. Secondary data was also collected from various sources on tenancy situation in Bihar as well as whole country. Data collected from different sources were tabulated and analyzed using suitable statistical tools and techniques.

3

SALIENT FINDINGS OF THE STUDY

3.1 Socio-personal profile of respondents

The survey data regarding socio-personal profile of farmers from 12 Gram panchayats of Bhojpur, Vaishali and Muzaffarpur districts under this study were analyzed using simple descriptive statistics. For the purpose of better understanding, data from operational villages of World Vision India projects were compared with non-beneficiary villages (Table 9). A sample of 360 farmers from beneficiary villages and 240 from non-beneficiary villages were studied in terms of their age, education, caste, family size and social participation. It was found that more than half of the respondents belonged to middle age group i.e 35-50 years in both beneficiary and non-beneficiary villages. Regarding education level of head of household, the majority of the respondents were illiterate in both the intervention (46.4%) and non-intervention areas (32.2%). Moreover, illiterate and primary school together represents around 60 percent of the total respondents. Higher percentage of illiterate in operational villages may be due to the fact that World Vision India (WV India) works mostly in remote villages and with poor people. However, in both the groups, graduate farmers were very few i.e. less than 5 percent. This indicates that there is a need for strengthening the education system in those areas in mission mode. The data also revealed that majority of population of both the selected areas are of Other Backward Castes (OBC, 58-64%) and Schedule Caste category (30-38%). The ST population represents a negligible population in the study areas. Similar patterns were also recorded in case of family size of WV India operational and non-operational area. Two third (65-70%) of sampled farmers had more than 5 family members. Social participation in both beneficiary and non-beneficiary villages was almost equal to the extent of 60 percentage, which indicated that the farmers were aware of benefits of group formation.

Table 9. Distribution of farmers based on their Socio-personal characteristics for beneficiary and non-beneficiary group of farmers

Socio-personal variables	Categories	WV India operational area (n = 360) frequency (%)	Non-operational area (n = 240) frequency (%)
Age of household head	Young (<35 Years)	49 (13.61)	41 (17.08)
	Middle (35-50 Years)	183 (50.83)	137 (57.08)
	Old (> 50 Years)	128 (35.56)	62(25.83)
Education level	Illiterate	166 (46.11)	76 (31.67)
	Primary (upto 5th Class)	55 (15.28)	72 (30)
	Middle (6th-9th)	67 (18.61)	51 (21.25)
	High School (Upto 12th)	56 (15.56)	32 (13.33)
	Graduation and above	16 (4.4)	9 (3.75)
Caste	General	10 (2.78)	10 (4.17)
	OBC	230 (63.89)	138 (57.5)
	SC	108 (30)	92 (38.33)
	ST	12 (3.3)	0 (0)
Family size	Up to 3 members	33 (9.17)	23 (9.58)
	4 to 5 members	94 (26.11)	50 (20.83)
	> 5 members	233 (64.72)	167 (69.58)
Social participation	Group membership	213 (59.17)	144 (60)
	No membership	147 (40.83)	96 (40)

3.2 Socio- economic characteristics of sampled farmers

The economic condition of farmers from both the study areas were assessed based on selected indicators and results is presented in Table 10. Poverty line is a good indicator for economic status of a family. It was observed that 61.4 percent of respondents in non-intervention villages were below poverty line while in case of the WV India operational area, 53.6 percent were below poverty line. This may be due to different poverty allevation programmes undertaken by WV India in their operational areas and there by income of the beneficiaries have been elevated. However, there has been a lower economic

status of farmers in the study area since, more than half of respondents belonged to Below Poverty Line (BPL) category. As far as housing is concerned, only 52.5 percent of farmers had pucca house in WV India operational villages, which was much higher in the WV India operational areas.

Table 10. Socio-Economic indicators of respondents in beneficiary and non-beneficiary villages

Socio-personal characters	Categories	WV India operational area (n= 360) Frequency (%)	Non-operational area (n= 240) Frequency (%)
Poverty level	BPL	193 (53.61)	148 (61.67)
	APL	167 (46.4)	92 (38.33)
Housing (Own House)	Kuchcha	171 (47.5)	74 (30.83)
	Pucca	189 (52.5)	166 (69.17)
Landholding	Landless	80 (22.22)	30 (12.5)
	<2.5 acre (Marginal)	232 (64.44)	201 (83.75)
	2.5-5 acre (Small)	38 (10.56)	9 (3.75)
	5-10 acre (Semi-medium)	6 (1.67)	0 (0.0)
	10-25 acre (Medium)	3 (0.83)	0 (0.0)
	> 25 acre (Large)	1 (0.28)	0 (0.0)
Primary Occupation	Agriculture	290 (80.56)	160 (69.55)
	Animal Husbandry	2 (0.56)	13 (5.91)
	Govt. or private Job	1 (0.28)	0 (0.0)
	Business	2 (0.56)	2 (0.91)
	Wage (Labour)	54 (15)	49 (21.82)
	Others	11 (3.06)	4 (1.82)
Livestock inventory (% houses with animals)	Cow	149 (41.38)	85 (35.41)
	Buffalo	60 (16.66)	24 (10)
	Goat	144 (40)	86 (35.83)
	Poultry	7 (1.94)	9 (3.75)
	Piggery	0 (0.0)	1 (0.4)
Average Annual Income (Rs)		83,468	76,090

Landholding is also a good indicator of socio-economic status (Fig 5). It was observed that 18.3 percent of total tenant farmers (600) were landless and 72.10 percent belonged to the marginal category having less than 1 ha landholding; while only 7.95 percent were small farmers (1-2 ha). Presence of medium and large farmers was almost negligible in both the study areas.

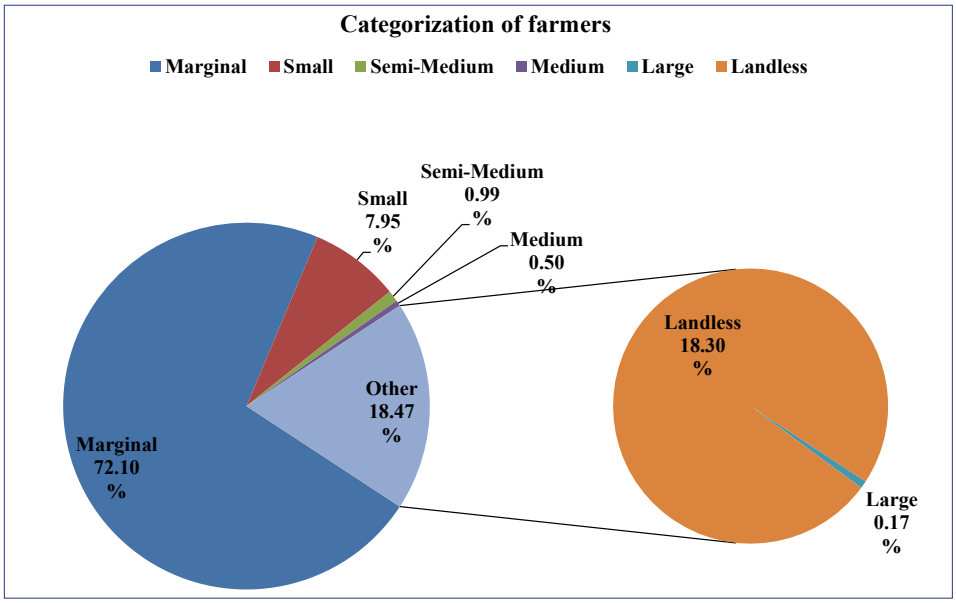


Fig 5. Distribution of farmers based on size of landholdings

Hence it can be assumed that smaller landholdings in those areas may be one of the reasons for tenancy-based farming prevailing in study regions. The same findings were observed during FGDs with the farmers of selected villages, as majority of farmers reported to be marginal and landless. Occupation level of the farmers in both the WV India operational and non- operational villages was also analyzed in the present study (Fig 7). As expected, 41percent of respondents expressed agriculture as their major occupation, followed by other wage labour (28%). Livestock is the integral part of agriculture in India. Therefore, livestock wealth of farmers was also studied (Table 11). It was found that the majority of farmers in WV India operational village maintained cow as major livestock followed by goat and buffalo while in non-operational villages goat stood first followed by cow and buffalo. Very few incidences of rearing of pigs were observed in the study area during the study.

Fig 6. Village level discussion with women farmers

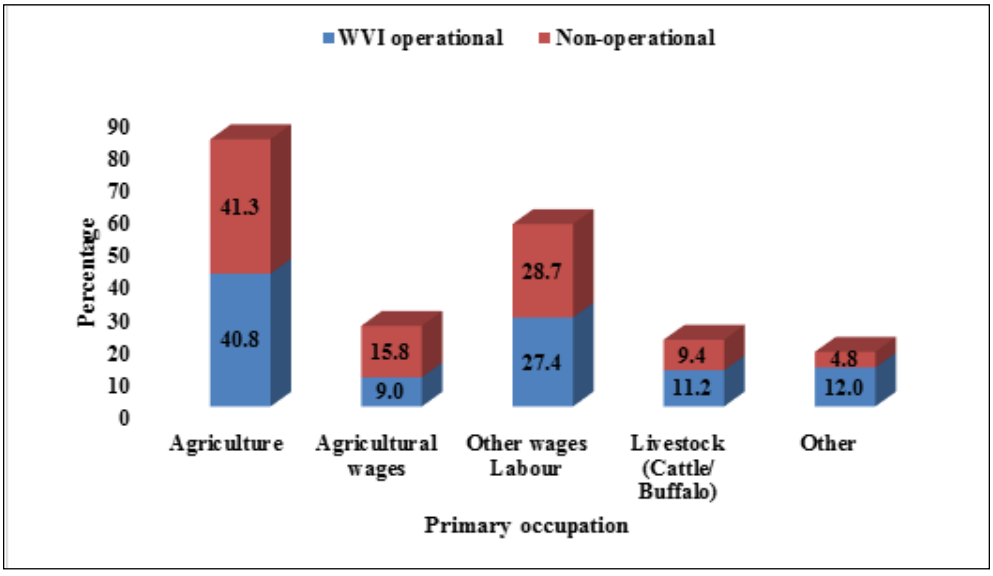


Fig 7. Primary occupation of the tenant households

As far as annual income is concerned (Table 11), total income per household per year was found to be higher (Rs 83,468/-) in beneficiary villages which was almost 10 percent higher than that of non-beneficiary villages (Rs 76,090/-). From the table, it is also revealed that agriculture and labour work contributed the lion's share to the total income of farmers. This indicates that economically WV India adopted villages are in better position compared to the non-operational villages.

Table 11. Average annual income of households of the study areas

Heads	WV India operational area		Non-operational area	
	Income (Rs)	% contribution	Income (Rs)	% contribution
Agriculture	34,078	40.8	31,405	41.3
Agricultural wages	7,479	9	12,043	15.8
MNREGA	792	0.9	397	0.5
Other wages Labour	22,840	27.4	21,824	28.7
Livestock (Cattle/ Buffalo)	9,312	11.2	7,134	9.4
Other	8,967	10.7	3,287	4.3
Total	**83,468**	**100**	**76,090**	**100**

3.3 Cropping system followed by farmers

The cropping system was also studied and analysed in the present investigation, and percentage of major crops grown by the tenant farmers during the study period are illustrated in the Fig.8 and major crops grown during different seasons are illustrated in Table 12. It has been found that various crops are grown during kharif, rabi and summer seasons and cultivation mostly depends on availability of irrigation water specifically for summer season crops. The analyses revealed that majority of farmers in selected districts were growing paddy (90%) during kharif season and wheat (76%) during rabi season (Fig.8). The proportion of maize growing farmers was merely 20 percent. During summer, pulses, especially green gram was grown by farmers due to low water requirement. During discussion with farmers, it was found that irrigation facility was available; however, rate of hiring is very high *i.e* Rs 100-120 per hour. Among oilseeds, mustard was most popular among farmers. In Vaishali district, many farmers were cultivating seasonal vegetables as cash crops like

tomato, chilly, brinjal, cucumber etc. throughout the year. In Muzaffarpur, a sizable proportion of farmers had mango and litchi orchards also in addition to cereals and pulses as major crops.

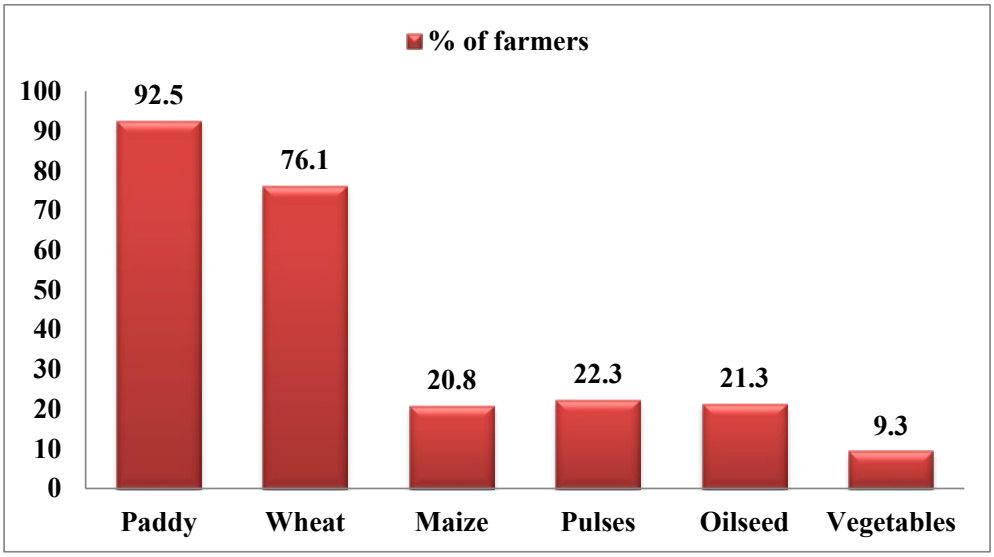


Fig 8. Major crops grown by the tenant farmers (%)

Table 12. Major crops grown during different seasons

Sl No.	Seasons	Main crops of selected area
1	Kharif	Paddy, Sugarcane, Bitter gourd, Brinjal, Sponge gourd (Nenua)
2	Rabi	Wheat, Potato, Onion, Mustard, Lentil, Pea
3	Summer	Moong, Maize, Parwal, Cucurbits

3.4 Current agricultural practices of farmers in the study area

Varieties and production technologies are major factors which determine farm productivity. In all major crops, majority of farmers do not use seeds of new varieties of wheat and rice. Rather, they continue to grow 30-40 years old varieties of both wheat and rice. Moreover, new methods of irrigation like drip and sprinkler system are also available, but farmers hardly used any new

techniques, rather than flood irrigation, mostly through foldable PVC pipes which result in loss of water and poor irrigation efficiency. In order to study the present varietal adoption pattern and prevalent agricultural practices, survey was conducted in the study area along with six focussed group discussions that revealed following facts.

Varietal adoption pattern of rice

Rice was the major crop grown by 88.4 percent of total tenant household surveyed, indicating its importance. Generally, rice is grown during Kharif season since it requires abundant water for its growth and development. It was observed during the survey that paddy seeds of DuPont Pioneer of a private Multi National Company were very popular among farmers in both WV India operational as well as non-operational area (Table 13). As evident from the table, Pioneer 27P37 was having maximum adoption by farmers (22.5%) of operational areas followed by PNR-381. In case of non-operational areas, PHB-71, released during 1997 by Pioneer Overseas Corporation, Hyderabad was most prominent (19% adoption), followed by Arize 6444. The Arize 6444 is a high yielding hybrid rice from Bayer Crop Science, a private company. Pioneer 28P67, Pioneer 27P31, Prabhat and Sugandha-5 were other popular varieties in WV India operational areas. Sugandha-5 is a scented rice variety which fetched more market price than others. In non-operational areas also Pioneer 27P31, Pioneer 27P37 hybrids and Rajendra Bhagwati were popular varieties of Rice. Rajendra Bhagwati is a scented short duration rice variety, developed by Dr.RPCAU, Pusa, Samastipur during 2010 and is becoming popular in Bihar.

Table 13. Adoption of different rice varieties and hybrids in study area

Sl No.	Name of the rice varieties/hybrids	Adoption in WV India operational area (%)	Adoption non-operational area (%)
1	Pioneer 27P31	6.3	9.4
2	Pioneer 27P37	22.5	6.3
3	Arize 6444	8.8	10.6
4	Pioneer 28P67	9.5	3.8

5	PHB-71	6.7	18.8
6	PNR-381	10.5	10
7	Sugandha-5	6	0
8	Prabhat	6.3	0
9	Rajendra Bhagwati	0	7.5
10	Others	23.5	34.4

Varietal adoption pattern of wheat

Rice-Wheat cropping system is most prevalent in the study area. The adoption of different varieties of wheat was also studied in selected districts. Percentage of farmers growing different cultivars were studied in WV India operational and non-operational areas of selected districts and results are presented in Table 14. In WV India operational areas, PBW-343 was the most popular wheat variety grown by 21 percent of farmers. It is a high yielding variety released by the Panjab Agricultural University, Ludhiana in the year 1996. UP-262, a very old variety released by GBPUA & T, Pantanagar in 1978 is also prevalent among farmers due to its suitability to both timely and late sown condition. Results showed that a relatively new high yielding wheat variety, HD-2967, is also grown by nearly one fifth of total farmers in WV India operational area. This indicates that the seeds of improved varieties given by World Vision India had a good adoption rate in operational area. PBW-154, released in 1988 by PAU, Ludhiana was also having significant adoption at farmers' field with 19.45 percent farmers using it regularly. In case of non-operational area, still one third of farmers were using UP-262, a very old variety, despite the release of many new improved varieties by various organizations. Unlike operational area, here adoption of HD-2967 was only 8.6 percent, while PBW-154 was adopted by 17.65 percent of farmers. Kundan (DL153-2) wheat variety, released by IARI, New Delhi in the year 1985 was also grown by 6-7 percent farmers in both WV India operational and non-operational areas. Thus, in the non-operational areas, adoption rate of high yielding new varieties are poor and therefore new varieties should be popularised using various extension methods.

Table 14. Adoption of different wheat varieties in the study area

Sl No.	Name of the varieties	WV India operational area (%)	Non-operational area (%)
1	UP-262	19.1	34.8
2	HD-2967	18.5	8.6
3	PBW-343	21	10.5
4	PBW-154	19.4	17.6
5	Kundan	6.2	7.1
6	Others	15.7	21.4

3.5 Prevalent traditional agricultural practices in selected districts

To study the traditional agricultural practices in selected districts, a total of six Focussed Group Discussions (FGDs), two in each of Bhojpur, Muzaffarpur and Vaishali districts were conducted. One FGD was conducted in WV India operational village and another in non-operational village in each district. Major points regarding current agricultural practices and gaps emerged during discussion were as follows:

Bhojpur

Barhara block was selected and FGD was conducted in WV India operational village, *Sinha* and non-operational village, *Pakri*. Fixed cash system of tenancy was more popular in both the village. The average rate of tenancy was Rs 12,000 to 13,000 per acre per year in operational village, *Sinha* while it was lower at Rs 10,000 to 11,000 per acre in *Pakri*. The difference was mainly due to vegetable-based farming system in *Sinha* where paddy was not primarily grown and cash crops like pea, bitter gourd, brinjal, snake gourd and other vegetables were grown, which fetches much higher price than cereals. In *Pakri* village, paddy and maize were grown during Kharif and wheat and Mustard were main crops in Rabi. Farmers in *Sinha* took pea (Variety Haribhajan and Kashi Nandini) during November-December and therefore, late sowing of wheat was done up to January month. For sowing of wheat, World Vision India has helped farmers in providing seed drilling machine on hire basis @ Rs 640/acre in *Sinha*. Farmers of both the villages reported yield of wheat at

13-14 quintal/acre. In addition, average lease of land was also higher in *Sinha* (2.5-7 acre) as compared to *Pakri* (1-3 acre).Interestingly, in *Pakri* village it was observed that land owner provide half of the cost borne by tenant farmer on fertilizers and irrigation. Farmers of both the villages reported that Blue bulls (Neel Gai) and wild pigs cause extensive damages to their cultivable crops and requested for an urgent solution of that problem.

Muzaffarpur

In this district, *Bhatauna* village of Marwan block was selected for FGD in WV India operational area while in non-operational area, FGD was conducted in Bahaura village. In *Bhatauna* and *Bahaura*, 50:50 sharing of the farm produced was the most prevalent system of tenancy. However, there was no sharing of any cost with the land owner. In cash system, lease rate in operational village, *Bhatauna* was almost similar to *Bahaura* at Rs 9000 per acre. In *Bahaura* village, paddy crop was not grown due to shortage of water and therefore vegetables like lady's finger, bitter gourd and sponge gourd were grown by the farmers. While in *Bhatauna*, paddy was the main Kharif crop but late transplanting was reported by many farmers due to insufficient and delayed rainfall in those areas for last 9-10 years. Mango and Litchi orchards were also observed in the operational village of *Bhatauna*. HD-2967, a high yielding new wheat variety was more popular in WV India operational village *Bhatauna*, while in non-operational area old wheat variety, PBW-343 was grown by farmers. The average yield of wheat in Muzaffarpur was 10-11 quintal per acre which was lower than Bhojpur. The reason may be the line sowing of wheat in Bhojpur using machineries while majority of farmers practised broadcasting in Muzaffarpur district. Some of the experienced farmers also reported that earlier land owner used to share the cost of cultivation but now they don't pay anything to tenant farmers for farming. In Muzaffarpur district also, Blue bulls and wild pigs caused significant damage to the crop.

Vaishali

Jafrabad and *Azampur* were selected villages for FGDs in Desri block of Vaishali district for WV India operational and non-operational area respectively. In both the villages, paddy in Kharif and wheat, mustard and potato in Rabi were the main crops. But in summer, maize was grown in *Azampur* while moong was the major crop in Jafrabad. Lease rate varied from Rs 11,000 to 12,000 per acre in *Azampur* while in *Jafrabad*, farmers reported that no

cash systems exist in the village and all farmers took lease in 50:50 produce sharing basis. In Jafrabad, some farmers adopted new wheat varieties, like HD-2967 due to interventions of World Vision India while others mostly used old varieties like UP-262 and PBW-343. However, no farmer in non-operational area adopted HD-2967. It was interesting to note that farmers in Azampur used high yielding hybrids of maize i.e Shaktiman and Ganga Safed. It is also interesting to note that farmers were aware about the benefit of micronutrients and hence, they were also applying zinc in Rice –Wheat. In case of wheat, it was observed that mostly broadcasting method was used for seed planting in both the villages resulting in an average yield of 11.5 quintals per acre which was lower than Bhojpur but at par with an average wheat yield of Muzaffarpur

3.6 Major systems of tenancy

Tenancy based agriculture is very popular among farmers in Bihar. The reason may be large number of marginal and small landholding distributed among farmers. Three major types of tenancy were found to be prevalent in the study area *i.e* fixed cash, fixed produce and sharing of produce in some proportion. These three types of tenancy practice are explained below.

i. Annual fixed produce (*Manni*):

In this type of arrangement, land owner does not share any cost of cultivation and the entire expenditure on farming *viz* seed, fertilizers, pesticides, irrigation, etc. is borne by the tenant. If the tenant takes one acre land for one year, in return, as rent he has to provide 10-12 quintal of paddy or wheat to the landowner. This quantity has to be paid irrespective of total production or loss of production due to some problem. Majority of landowners will be adamant on taking fixed quantity and if tenants are not able to pay, they give the land to other tenants in next year.

ii. Annual fixed cash system ('*Theka*' or *Patta*):

A tenant borrows agricultural land for a period on fixed cash as rent and does not have to share any produce with the owner. The prevailing rent ranges from Rs. 12,000 to 18000 per acre as per the quality of land. More fertile land has higher rent as compared to poor quality of land. In this system also, if tenant failed to pay required amount of money every year, they will lose the piece of land next year to other tenants.

iii. Share cropping (*Bataidari*):

In this system, landowner may or may not share the cost of some inputs like seed, fertilizers, irrigation, etc. with tenants but tenant farmer has to share 50 percent of the total produce. If the land is fertile, landowners generally prefer *bataidari* system and if it is less productive they use *manni* or *patta* system.

Trends in tenancy farming

Tenancy based agriculture is not new. For many decades, there had been an arrangement between landowners and real cultivators for agriculture as well as livestock, based on some terms and condition. Comparison of proportion of leased operated areas in Bihar and India is illustrated in the Table 15. Based on secondary data from various NSSO reports it can be observed that at all India level, tenancy based agriculture has continuously decreased from 20.65 percent in 1953-54 to less than 10 percent during 1981-82 to 2002-03. However, it was marginally increased to 10.4 percent during 2012-13. In case of Bihar, altogether different trend was observed over time. The proportion of leased in area in Bihar was 12.4 percent during 1953-54, which was increased slightly to 14.55 percent during seventies. Later on share decreased to only 3.9 percent (1992-93) afterwards steadily increased to 11.7 percent during the 1st decade of twenty first century and 22.67 percent of total operated area during 2012-13. Thus, in Bihar, tenant farming based issues like duration of tenancy, rental value of agriculture land, agreement between tenant and land owners, etc. are very important from agriculture point of view and need to be addressed by policy makers in a comprehensive manner.

Table 15. Comparison of leased operated areas in Bihar and India

Year	Percentage leased in area in Bihar	Percentage leased in area in India
1953-54	12.4	20.6
1972-73	14.5	10.6
1981-82	10.3	7.2
1992-93	3.9	8.3
2002-03	11.76	6.6
2012-13	22.67	10.41

Source: Gyanendra Mani (2016) Model Agricultural Land Leasing Act, 2016: Some observations, Economic and Political Weekly, 51(42).

3.7 Popular forms of tenancy in sampled districts

Sharing of produce in 50:50 proportions was overall the most popular form of tenancy (41%) system prevailed in Bihar (Table 16). The second most popular system was fixed cash system (33%) in which tenant farmers took a piece of land on lease and paid a fixed amount of money to the land owner. Nearly one third of total respondents reported to use fixed cash system. A fixed quantity of produce was also found to be popular (16 %) among of sampled households in which tenants had to pay a certain quantity of produce (rice, wheat, maize etc.) per unit area to land owners. It was observed during the FGDs that in case of crop failure during any season, the tenant farmers still had to pay the mutually agreed quantity of the produce to land owners in the next season/year. In majority of the cases, if the tenant farmers are unable to give the produce they have to leave the land. In other words, the decision is based on the mutual understanding between the tenant and the land owner.

Table 16. District wise variation in system of tenancy in Bihar

Major types of tenancy	Vaishali (n=200)	Muzaffarpur (n= 200)	Bhojpur (n= 200)	Overall (N=600)
	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
Fixed cash	8 (4)	43 (21.5)	148 (74.0)	199 (33.3)
Fixed quantity of crop	68 (34)	18 (9)	9 (4.5)	95 (15.7)
Sharing of produce	111 (55.5)	125 (62.5)	9 (4.5)	245 (40.9)
Others	13 (6.5)	14 (7)	34 (17.0)	61 (10.1)

District wise analysis of the tenancy system revealed that sharing of produce was most popular in Muzaffarpur (62.3%) and Vaishali district (55.5%). However, in Bhojpur, only 5 per cent tenants had sharing of produce. The fixed cash system was most popular in Bhojpur with nearly three fourth (74 %) of farmers in district using it. The fixed cash system was also the second most important in Muzaffarpur district with 22 percent farmers using this system. During focussed group discussion with farmers, it was observed that earlier land owners were demanding produce only for leasing out their land. But

in recent times, fixed cash system is becoming very popular which can also be seen through analysis of data. The reason behind this shift may be that landowners don't want to take risk of crop loss due to frequent monsoon failure as well as diseases and pest attack on crop.

3.8 Profitability and viability of tenant farming

Rice and wheat are the major crops of the selected districts. Maize, pulses and mustard are also grown in the area. The average productivity of rice, wheat and maize are 16.0, 12.0 and 20.5 quintal per acre respectively in WV India operational area (Table 17). Whereas, in non-operational area, the average productivity of rice, wheat and maize is 14.9, 10.6 and 21.9 quintal per acre respectively (Table 17); which is lower in case of rice and wheat, but higher in maize in comparison to operational area. The average productivity of rice, wheat and maize in Bihar is 7.8, 12.0, 19.1 quintal per acre respectively (Govt of Bihar, 2019). In both operational and non-operational villages, average yield of rice as well as maize was higher than the state average. However, in case of wheat it was observed that yield level was lower in non-operational area, when compared with state average. Thus, a yield gap of 11.6 percent was observed in non-operational villages which may be due to lesser adoption of improved varieties of wheat in comparison to operational area.

From the Table 17, it appears that in case of rice, higher profit (20.4%) was obtained by the farmers from WV India operational compared to non-operational one. The main reason is due to higher productivity (7.4% higher) and lower cost of production (2.7%) of W V India operational area compared to non operational area. In case of wheat also higher profit (28.3%) was obtained by the farmers from WV India operational compared to non operational one. Higher profitability in this case was mainly due to higher productivity of wheat (main commodity and by-product) in WV India operational area (13.2%) compared to non operational area.

The cost of cultivation or input cost of rice, wheat and maize in WV India operational area is Rs 14,783, Rs 10,756 and Rs 9,752 respectively. Similarly, cost of cultivation is Rs 15,188, Rs 9,960 and Rs 10,796 per acre for rice, wheat and maize respectively in non-operational areas. There is no significant difference in cost of cultivation for rice, wheat and maize crops between adopted and non-adopted villages. However, it is interesting to note that in spite of having higher cost of cultivation in the non-operational areas, total profit

achieved from maize and pulse and oil seed was higher than the WV India operational area. This is mainly due to higher productivity of non-operational are as compared to WV India operational areas and higher sell price.

Table 17. Cost of cultivation of major crops in WV India operational and non-operational area

Item wise expenditure details per acre	Paddy		Wheat		Maize		Major Pulses and Oilseed	
	Operational	Non operational	Operational	Non operational	Operational	Non operational	Operational	Non operational
Field preparation (ploughing)	2,190	2,130	1,929	1,859	1,572	1,404	1,070	834
Seed cost	1,391	1,156	1,593	1,374	1,008	1,038	906	854
Labour expenses in sowing	1,740	1,836	224	206	225	221	150	152
Compost or farm yard manure	1,206	1,036	980	725	500	540	500	200
Chemical fertilizer (NPK)	1,396	1,707	1,355	1,196	1,366	1,392	819	783
Other micro nutrients	348	360	397	394	258	382	416	398
Weed management	1,141	1,368	351	417	381	438	358	450
Plant protection (disease and pest management)	380	452	339	328	368	391	311	439

Irrigation expenses	2,474	2,810	1,224	1,419	1,221	1,509	1,005	1,041
Harvesting cost	2,517	2,333	2,363	2,044	2,852	3,482	1,505	2,203
Total cost per acre	14,783	15, 188	10,756	9, 960	9,752	10,796	7,038	7, 354
Main product (qt)	16	14.9	12	10.6	20.5	21.9	4.7	4.8
Sale price of main product (Rs per qt)	1578	1,565	1865	1,832	1180	1,205	3200	3,240
Price of main product (Rs)	25,171	23,329	23,635	19,378	24,190	26,390	15,048	15,552
By-product(qt)	16	14.9	12	10.6	-	-	-	-
Sale price of by-product (Rs per qt)	300	300	500	500	-	-	-	-
Price of by-product product (Rs)	4,800	4,470	6,000	5,300	-		-	
Profit (Output - input)	15,188	12,611	18,879	14,718	14,438	15,594	8,010	8,190

3.9 Constraints in tenant farming

During Focussed Group Discussions (FGDs) with tenant farmers in Bhojpur, Muzaffarpur and Vaishali districts, farmers reported many constraints of tenant farming. Some important constraints as perceived by tenant farmers are discussed below.

i. Oral agreement: In all the districts, 98-99 percent of tenant farming do not have any written agreement. Land owner rented his agricultural land to tenant with the oral agreement in both cash or produce based tenancy. So, the tenant always felt a fear of losing the land next year because of no legal sanctity. Moreover, no irrigation facility can be created by

cultivator on others land and therefore they are forced to get irrigation water on hiring basis at higher cost.

ii. **Failure to get agricultural input/subsidy of Govt. agency:** Almost all the tenant farmers reported that they are not getting any input support or subsidy benefits from Govt. agencies due to lack of ownership or tenancy agreement of land they use for cultivation. Since, all the required documents for getting benefits are with land owner, they take all the benefits, like supply of inputs, subsidy etc. while real tenant farmers are not getting any benefits from the government supported schemes like input supply, crop insurance or minimum support price etc.

iii. **Lack of compensation due to loss caused by natural calamities:** In many parts of Bihar, flood is a recurring phenomenon. Many times, it caused heavy loss to paddy crop in study area. The loss is assessed by Govt. agencies and compensation is given to landowner and not the tenant farmers who actually cultivate the land and bear the loss. In case of drought or flood, Govt. requires land documents to assess the loss and to release benefits and hence, compensation etc directly transferred to the land owner's account. It is the major bottleneck of the tenant farming system.

iv. **Increasing rate of land leased in by tenants:** In case of cash-based system, land owner demand Rs. 10,000-15,000 per acre from tenant for one year, based on quality of land. This rate is not fixed and keeps increasing every year by the land owners. With the increase in the cost of agricultural inputs like seed, fertilizers, pesticides etc., net benefit of the tenant farmer from farming is dwelling day-by-day. Many tenant farmers during FGD, reported that they had to sell the produce, immediately after harvest to pay the rent which fetches them much lower price due to glut in the market.

v. **Forced payment of cash/produce despite loss of crop:** In all the districts tenant farmers mentioned that they had to pay either cash or pre agreed quantity or produce to land owner even if the crop was damaged due to drought, flood or insect pest attack. Land owner knows that farmer has lost his produce; still he will be adamant to get money or produce. Otherwise, tenants will lose his land for next year. Many times land owner charges interest on the payment due, to tenant.

vi. **Lack of input cost sharing by land owner:** Tenant farmers were of the view that cost of inputs should be borne by both land owner and tenant farmers. It was observed that land owner does not share any input cost for seed, fertilizers and irrigation. Only some farmers in Bhojpur district reported that land owner shared cost of irrigation and fertilizer. In other districts, all the cost of cultivation is borne by tenants while he also has to share 50 percent of produce to the owner. Tenants are mostly marginal or landless farmers who had a minimum resource. Therefore, input cost should be shared by land owner also which will not only give a moral help the farmer but will also help in achieving higher productivity of the unit area.

vii. **Breaching of trust by land owner:** Many farmers reported that land owner gave waste and infertile land for tenancy and once it is cleaned and cultivated by the tenant, the owner took it back. Tenants are of the opinion that once cleaned, land should be with them for at least five years. Taking back the prepared land after one year of cultivation led to exploitation of tenants.

The constraints discussed above are the problems faced by the tenant farmers during the tenancy process. Apart from the damage caused by blue bulls and wild pigs, lack of credit facilities from financial institutions, increasing cost of agricultural inputs etc. are the general problems constantly creating disadvantageous situations to the tenant farmers. Many farmers in few villages used nets around their field to protect the crop from blue bulls and wild pigs which was successful to a great extent but costing additional price in the production process.

Suggestions were also sought from tenant farmers during FGDs to overcome the constraints of tenancy. Following major suggestions emerged from discussion.

1. Government should provide inputs and subsidy to real cultivator and not the land owner.
2. Duration of lease should be a minimum of 3 to 5 years.
3. A written agreement between land owner and cultivator should be made mandatory by the government agencies.
4. In case of flood/drought, compensation for loss of crops must be given to cultivator rather than land owner.

5. In case of sharing of produce, cost of agriculture inputs should be shared also by land owner too
6. Government should initiate necessary preventive measures to protect crops and cultivable areas from wild pigs and blue bulls which cause heavy losses to crops Benefits of crop insurance should also be extended to tenant farmers. MSP system should also be followed in the tenant farming systems, so that farmers get maximum benefit

3.10 Expenditure pattern of the tenant farmers in World Vision India (WV India) operational area and non-operational area in selected area of Bihar

The average annual expenditure in different heads (food, clothing, education, health, festival and agricultural input) and total annual expenditure of the tenant farmers in World Vision India (WV India) operational area and non-operational area in selected villages of Bihar is presented in Table 18 and graphically represented in Fig.9. The average annual expenditure on food in operational area and non-operational area was Rs.33,459.3 and Rs.36,547.7 respectively. The minimum expenditure of operational area on food was Rs.3,600 and maximum Rs.96,000. While in non-operational area, minimum expenditure was Rs.5,000 and maximum Rs.96,000. The expenditure of Rs.4,289.3 on clothing in operational area was observed to be at par with the non-operational area (Rs.4,226.7). The minimum expenditure on clothing in operational area was Rs.200 and maximum Rs.25,000; while in non-operational area, minimum and maximum expenditure was Rs.200 and Rs.24,000 respectively. The expenditure on children's education in non-operational area was Rs.8,104.8 which was observed to be significantly ($p<0.05$) higher than the operational area that was Rs.7,014.3. The minimum expenditure on children's education in operational area was Rs.500 and maximum Rs.30,000 while in non-operational area minimum and maximum was Rs.200 and Rs.30,000 respectively. The expenditure of Rs.4,566.8 on health in operational area was observed to be significantly ($p<0.01$) higher than the non-operational area which was Rs.3,446.1. It means people are more concerned on health in WV India operational area. The minimum expenditure on health in operational area was Rs.200 and maximum Rs.10,000; while in non-operational area, minimum and maximum expenditure on health was Rs.400 and Rs.10,000 respectively. The expenditure on festival and social activities in the operational area and

non-operational area was Rs.7,186.5 and Rs.9,951.8 respectively and this difference was observed to be significantly ($p<0.02$) different. The minimum expenditure on festival and social activities in operational area was Rs.500 and maximum Rs.80,000; while in non-operational area, minimum and maximum expenditure was Rs.200 Rs. 80,000 respectively. The expenditure of Rs.8,596.8 on agricultural input in operational area was observed to be higher than the non-operational area that was Rs.8,313.8. The minimum and maximum expenditure on agricultural input in operational area was Rs.400 and Rs.50,000 respectively. Similarly, minimum and maximum expenditure on agricultural input in operational area was Rs.100 and Rs.45,000 respectively.

The percentage expenditure on different heads in WV India operational and non-operational area is shown in Fig.10 and 11. In WV India operational area (Fig.10), the percentage expenditure on food was highest (49.66%), followed by on agricultural input (12.76%), festival and social activities (10.67%), children education (10.41%), health (6.78%), clothing (6.37%) and others (3.36 %). This reveals the importance of agricultural inputs in WV India operational area after food. On the other hand, in non-operational area (Figure 11), expenditure on food was observed to be highest (50.04%), followed by on festival and social activities (13.62%), agricultural input (11.38%) children's education (11.10%), clothing (5.79 %), health (4.72%) and others (3.35%). Total expenditure (Rs.73,041.2) in non-operational area was observed to be significantly ($p<0.05$) higher than the total expenditure (Rs.67,373.5) in WV India operational area. The minimum total expenditure in non-operational area was Rs.15,400 and maximum Rs. 1,49,900; while in operational area, minimum and maximum expenditure was Rs.5,479 and Rs. 1,45,640 respectively.

Table 18. Average annual expenditure of the tenant farmers in WV India operational and non-operational area of Bihar

Items	Tenants category	Mean (Rs)	p values
Food	WV India operational area	33459.3±1242.8	0.11
	Non-operational area	36547.7±1483.4	
Clothing	WV India operational area	4289.3±207.2	0.85
	Non-operational area	4226.7±291.5	

Items	Tenants category	Mean (Rs)	p values
Children education	WV India operational area	7014.3±314.1	0.05
	Non-operational area	8104.8±522.2	
Health	WV India operational area	4566.8±155.4	0.01
	Non-operational area	3446.1±210.5	
Festival and social activities	WV India operational area	7186.5±643.1	0.02
	Non-operational area	9951.8±1128.6	
Agricultural input	WV India operational area	8596.8±466.1	0.7
	Non-operational area	8313.8±605.9	
Total expenditure	WV India operational area	67373.5±1709.5	0.06
	Non-operational area	73041.2±2678.5	

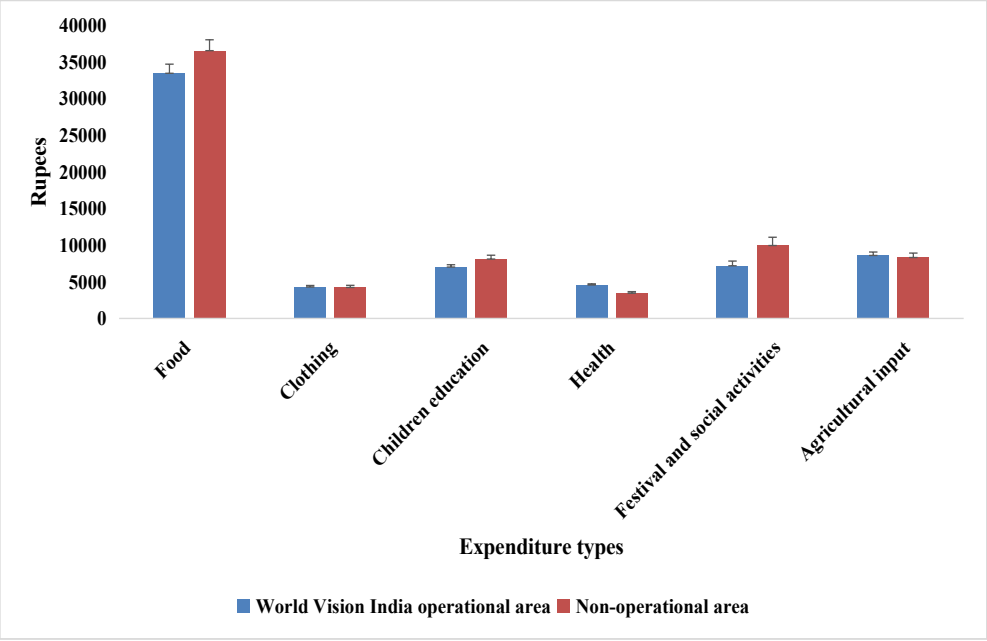


Fig 9. Annual expenditure of tenant farmers in W V India operational area and non-operational area

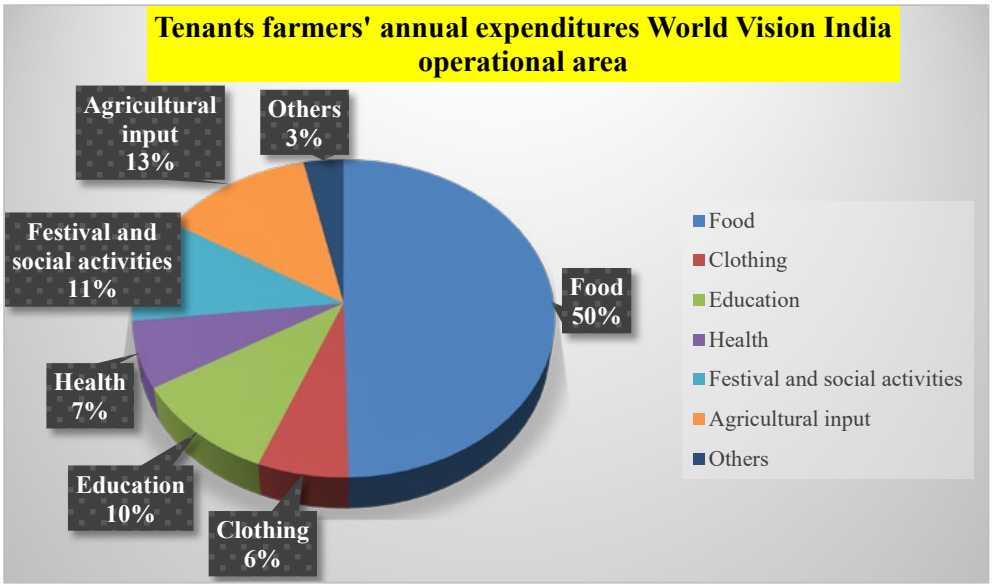


Fig 10. Annual average expenditure (percentage) of tenant farmers in WV India operational areas

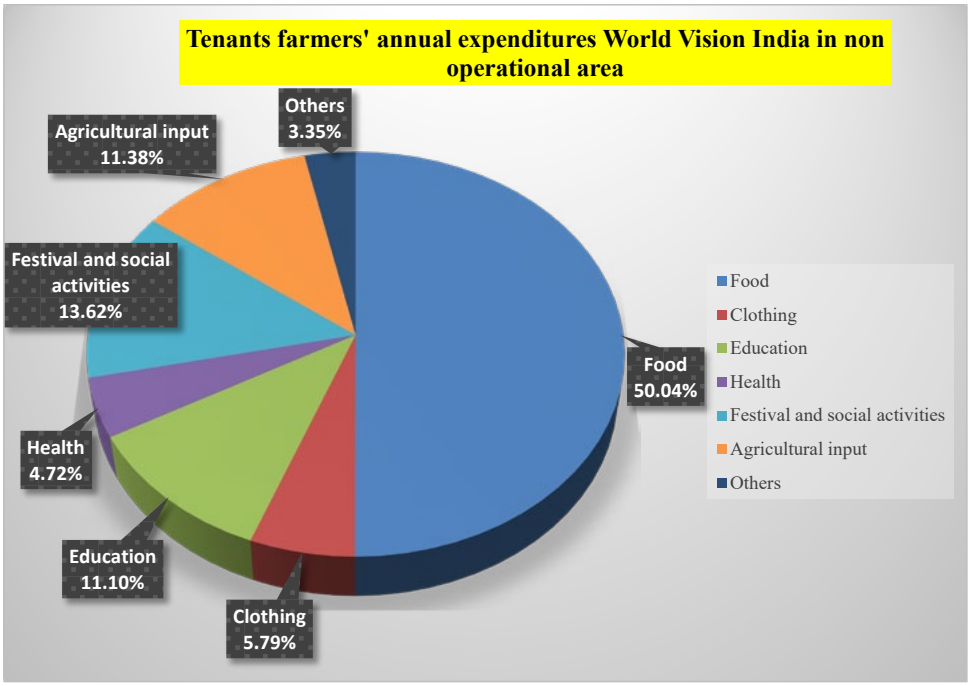


Fig 11. Annual average expenditure (percentage) of tenant farmers in non-operational area of Bihar

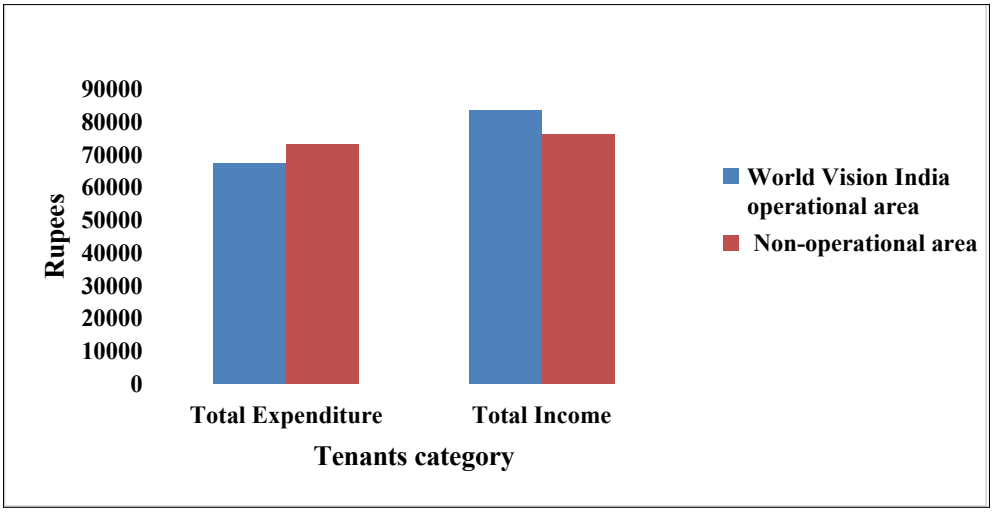


Fig 12. Annual income and expenditure of tenant farmers

3.11 Additional information derived during the investigation

i. Composition of house hold head in World Vision India operational and non-operational area of Bihar

The total sample population of tenant farmers in World Vision India operational area and non-operational area was 360 and 240 respectively. The female headed household percentage in the World Vision India operational area was found to be 5.8 percent where as in non-operational area it was 6.25 percent.

ii. Relationship between total land of the tenant farmers in World Vision India operational and non-operational area

The correlation between total owned land and total income of tenants farmers in World Vision India operational area and non-operational area is 0.07 and 0.06 respectively which

showed the negligible correlation in the surveyed area, however the correlation between agricultural income and total income in operational area and non-operational area was positive *i.e.*, 0.36 and 0.49 respectively.

3.12 Impact assessment of the technologies implemented in the World Vision India Operational areas

The World Vision India is working in the field of community and agricultural development in Bhojpur, Muzaffarpur and Vaishali district of Bihar since year 2017.

Bhojpur

Barhara Block is WV India operational area which has more number of landless, small and marginal tenant Farmers. Initially, tenant farmers did not have proper knowledge on soil health management, improved crop management and no access to improved farming methodologies and practices. Mostly, they were using old and traditional crop varieties of seeds. Tenant farmers take the land on rent from the land owner on fixed cash. These farmers faced great challenges in case of crop failure.

WV India provided trainings on improved crop production techniques including zero tillage, improved seeds of pea (Harbhajan, Arkel) and wheat (HD 2967), use of bio-fertilizers and bio-pesticides to these tenant farmers. Gender Sensitization and credit access through SHGs

were also done. These interventions resulted higher yield of wheat (13-14 q/acre) and lesser infestation of disease and pest in pea crop.

Muzaffarpur

Marwan Block of Muzafarpur district has been selected as one of the operational areas by WV India. Paddy, Wheat, Mustard and Green gram are the major crops grown by the tenant farmers. Sharing of produce in 50:50 ratio was the most prevalent system of tenancy however, fixed cash is also practiced. Tenant farmers did not have proper knowledge on soil health management, improved crop management and no access to improved farming methodologies and practices. Mostly, they were using old and traditional crop varieties of seeds. These farmers faced great challenges in case of crop failure. WV India provided trainings on improved crop production techniques, improved seeds of rice (PNR 381), wheat (HD 2967) and green gram (Pusa Vishal), use of bio-fertilizers and bio-pesticides to these tenant farmers. Gender Sensitization and credit access through SHGs were also done. These interventions resulted adoption of improved variety of wheat (HD 2967), balance use of fertilizers and Bio Fertilizer (Azotobactor, Rhizobium, etc).

Vaishali

Desari Block is one of the operational areas of WV India. Initially, tenant farmers did not have proper knowledge on soil health management and no access to improved farming methodologies and practices. Mostly, they were using old and traditional crop varieties of seeds. Tenant farmers take the land on 50:50 produce sharing basis or on fixed cash rent from the land owner. WV India provided trainings on improved crop production techniques including zero tillage, improved seeds of paddy (Rajendra Bhagwati) and wheat (HD 2967), to these tenant farmers. Gender Sensitization and credit access through SHGs were also done.

4

SUMMARY AND RECOMMENDATIONS

Tenant farming is a common agricultural practice in India. Agriculture being a state subject, different states has different legal provision/restrictions for tenant farming. Hence, informal tenant farming is more prevalent. Informal tenants do not have access to institutional credit, insurance, agricultural schemes and other support services, which affect productivity of land cultivated by them. In Bihar, leasing is prohibited except by certain categories of land owners, such as those suffering from physical or mental disability, widows, unmarried, separated or divorced women, members of armed forces etc. Keeping these facts in mind, present study on "Tenant Farming and Child Well-being in Bihar" was planned by ICAR-RCER, Patna and World Vision India to find out the current tenancy practices and its impact on tenant farmers. The study was conducted in Bhojpur, Vaishali and Muzaffarpur district of Bihar using various tools of social sciences research viz. survey method using structured interview schedule, focussed group discussion and personal observation by team of experts. Following major outcomes were observed:

- Out of total area owned by household, around 31 per cent area was leased in which suggested that tenant based agriculture is a prevalent practice in study area with nearly one third of area under tenancy.
- More than 85 per cent tenant farmers of the study area of Bihar were either landless or marginal. This was indeed a major problem since, fragmentation of landholding is a hindrance to commercial farming as well as mechanization of agriculture.
- Average income of surveyed households varied from Rs 83,468 to Rs 76,090 for World Vision India operational and non-operational area respectively.
- It was observed that World Vision India has significant presence in some of the studied villages since they were working since last three years. Interventions made by World Vision India included supply of seeds of high yielding wheat and paddy varieties, vermicompost, providing training to farmers etc which resulted in more income in operational area.
- Three major types of tenancy were found to be prevalent in the study area

i.e fixed cash, fixed produce and sharing of produce in some proportion.

- Sharing of produce (50:50) or Bataidari system was more prevalent in Bihar followed by fixed cash system. In case of cash-based system, land owner demanded Rs. 10,000-15,000 per acre from tenant for one year, based on quality of land. All the leasing was based on verbal consensus between land owner and tenant farmers.

Many land owners prefer to keep their lands fallow due to the fear of losing land right if they lease out. Keeping the land fallow results in underutilization of land and loss of agricultural output. Legalization/ formalization of land leasing would certainly improve tenant farmers' access to credit, insurance and input use and consequently productivity of leased in land. The lifting of ban or restrictions on leasing in such cases will result in better utilization of the available land and labour and increased farm output. The landless and marginal farmers would improve their economic viability and social status. The rural poor would maximize their family income by way of farming on lease, along with access to other farm, off-farm activities. Due to frequent migration, there is need to legally allow farmers to lease out without any fear of losing land ownership right and provide support for their upward occupational mobility by way of access to either self-employment or wage employment. The terms and conditions of lease to be determined mutually by the land owner and the tenant without any fear on the part of the landowner of losing land right or undue expectation on the part of the tenant of acquiring occupancy right for continuous possession of leased land for any fixed period. The tenant farmers are exposed to vulnerabilities and lacks adaptive capacity in terms of safety nets as the tenant farmers lack ownership of land or no right to benefits from Govt schemes and subsidies. The tenant farmers have to pay either cash or pre agreed quantity or produce to land owner even if damages to crop due to drought, flood or insect pest attack. This will expose the economic vulnerability of farmers and demotivate farmers for adopting tenancy.

Based on the survey results, group discussion with farmers and other stakeholders and personal observation by the team of scientists in study area, following major recommendations have been made which will benefit researchers, planner and policy makers and other stakeholders for the overall development of tenant farming.

- The state Government should protect the rights of tenant farmers, since,

as per findings of this study they were more vulnerable group who can be evacuated from the land by owner at any time without giving any reason. Nearly cent per cent tenant farmers reported oral agreement with land owners, which denied them any right to oppose land owners exploitative strategy.

- It is high time for state government to amend present rules and legalize tenancy across the state. Provision for a lease document or Tenant Card can be made which can act as legal document in absence of ownership of land. This document can be utilized by poor tenants for access to government schemes like subsidy on inputs *viz*. seed, fertilizers, tools and implements; credit, crop insurance, compensation of loss caused by flood/drought/diseases/pests etc; minimum support price etc. Legal land rights of owner must be protected. Furthermore, a database of all the tenant farmers and tenant card holders should be created for providing direct benefit to those eligible tenant farmers.
- Tenure of lease must be fixed at the time of preparation of lease document which can range from minimum 5 to 10 years. This will ensure that tenants do farming with all modern practices and technologies in that land which will enhance the productivity of leased land. Both tenant and land owner will be benefited from this provision.
- Many times, land owner migrate to other places for job and may return back if job is lost or he is retired, he may want to do farming. Therefore, if land owner decides to cultivate his land by himself or by his family members, provision should be made for the same too in the law.
- Rental value of lease or proportion of produce share is a matter of concern and can be fixed with the mutual consensus with both land owner and tenant farmers. They can fix some value in the lease document in the form of cash or quantity of produce based on fertility/quality of land, period of tenure and demand for land in that area.
- During this study, some tenants reported that actual area of land was found lesser than land allotted to them. Because of which they had to pay higher rent for smaller piece of land. To rectify this ambiguity, digitization of all land may be done in the state with details of owner and their area. This way, tenants can check these land records and accordingly fix a rental value for it.

- Lack of technology adoption, less improved operational practices, higher input costs and services reduces the productivity, that effects the viability of tenant farming system. Hence, these has to be addressed in a mission mode. The average farmer's age as well as the literacy rate are delimiting factors for enforcing the plan. Hence agriculture has to be promoted among the youth and their literacy rate.

Tenancy based farming is becoming very popular in Bihar state and large a number of people are being engaged in these practices. The present study was aimed to understand the relationship between real cultivators and landowners in terms of investments in agricultural activities and profit-sharing in tenancy based farming. After through deliberation, the above recommendations have been made specifically for the poor and underprivileged tenant farmers of Bihar. With the implementations of these recommendations along with the government support, there will be a significant change in the status of poor marginal farmers and landless peasants in terms of higher productivity of various crops grown by farmers like rice, wheat, maize, pulses, oilseeds, vegetables etc which in turn shall improve the income and livelihood of these poor tenant farmers

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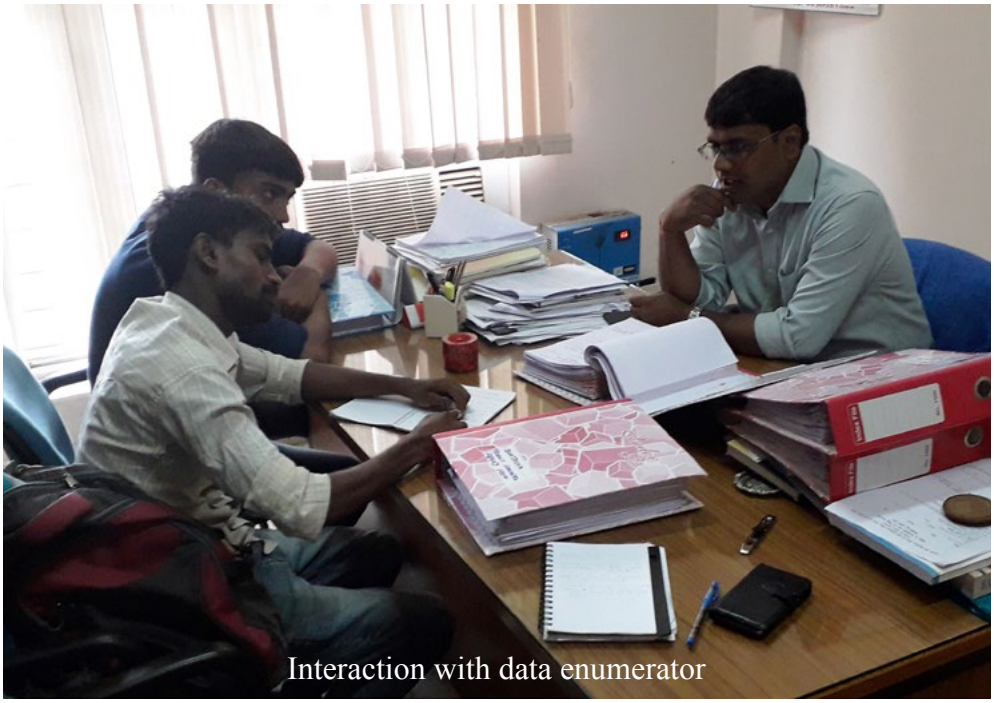
Survey with tenant farmer of Vaishali District


Interaction with data enumerator

Field visit in Bhojpur

Training of data enumerators

Training of tenant farmers

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