

**IMPACT OF LAND LEASING ON AGRICULTURAL  
EFFICIENCY AND EQUITY: A CASE STUDY OF BIHAR AND  
UTTAR PRADESH**

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# I

## INTRODUCTION

### 1.0 BACKGROUND

The system of agricultural tenancy in which the landowner does not cultivate his land himself, but leases out to others for the purpose of cultivation against payment of rent has always been present in all feudalistic or semi-feudalistic agrarian economies. However, agricultural tenancy has been traditionally been portrayed as an inefficient and exploitative agrarian institution, notwithstanding the fact that empirical evidence and inferences vary widely (Haque 1996; Haque 2001; Haque 2012). At the time of Independence, the overwhelming view of India's policy makers was in favour of elimination of all feudal elements in agriculture and consequently the system of farming by tenants or sub-tenants. The tenancy reform laws adopted by most Indian states since Independence not only aim at conferring ownership or occupancy right on the tenants with respect to tenanted land but also either prohibit or restrict leasing and sub-leasing of land in future. However, the question still remains whether agricultural land leasing has either disappeared or reduced as a result of implementation of restrictive tenancy laws and whether or not the overall impact of restrictive tenancy laws has been positive on tenant security, agricultural efficiency and equity. The present study analyses the nature and impact restrictive land leasing laws in Bihar and Uttar Pradesh.

### 1.1 OBJECTIVES OF THE STUDY

The main objectives of the study are as follows:

- a) To analyze the nature of legal restrictions on agricultural land leasing in Bihar and Uttar Pradesh;
- b) To examine the existing nature and extent of informal land leasing in the selected states and their impact on agricultural efficiency and equity;
- c) To assess the perceptions of various categories of farmers, regarding potential impact of legalization and liberalization of land leasing and
- d) To suggest appropriate amendments, if needed in the tenancy laws of the selected states, for the purpose of enhancing agricultural productivity and equity.

## 1.2 METHODOLOGY

The study is based on both secondary and primary data. Aside from analyzing the tenancy laws of the selected states, the National Sample Survey data of recent years were collected and analyzed. Besides, a farm level survey was conducted in 20 districts, i.e. six districts from the states of Andhra Pradesh and Bihar and eight districts from the state of Uttar Pradesh. The districts were selected from various agro-climatic zones so as to have a clear understanding whether agro-climatic conditions influence the nature and extent of land leasing as well as their impact on agricultural efficiency and equity.

Table-1 shows the list of districts/blocks/villages selected for the field study

**Table- 1: List of Districts Selected for the Primary Survey**

<i>BIHAR</i>	<i>UTTAR PRADESH</i>
<i>NW Alluvial plains</i>	<i>Bundelkhand Region</i>
<i>Siwan</i>	<i>Lalitpur</i>
<i>West Champaran</i>	<i>Chitrakoot</i>
<i>NE Alluvial Plains</i>	<i>Central Region</i>
<i>Khagaria</i>	<i>Unnao</i>
<i>Kishanganj</i>	<i>Fatehpur</i>
<i>South Bihar Alluvial Plains</i>	<i>Eastern Region</i>
<i>Rohtas</i>	<i>Mau</i>
<i>Bhagalpur</i>	<i>Sonbhadra</i>
	<i>Western Region</i>
	<i>Muzaffarnagar</i>

## II

### 2.0 LEGAL STATUS OF LAND LEASING

In the wake of independence, especially in the 1950s, almost all state governments in India enacted legislation for the abolition of intermediaries and consequently about 20 million cultivators were brought into direct contact with the state. However, the law on abolition of intermediaries could end only large intermediaries, while the system of cultivation by tenants, leasing in land from smaller intermediaries continued in most places. Therefore, several state governments either amended their existing tenancy laws or enacted new laws in the 1960s and 1970s, aiming at conferring either ownership or occupancy rights to the tenants. The present legal status of agricultural tenancy in the selected states is discussed below:

#### *2.1 Bihar*

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The Bihar Tenancy act, 1885 as amended in 1970 provides that an underraiyat in continuous possession of land for twelve years can acquire the right of occupancy provided the landowners from whom the land is leased in, owns more than five acres of irrigated or ten acres of other land. Besides, the Bihar Land Reforms (Fixation of Ceiling Area and acquisition of Surplus land) Act, 1961 prohibits creation of future tenancy (Section 19) except by disabled persons, suffering from mental or physical disability or a person in the armed forces or in public service, receiving salary not exceeding Rs. 250 per month.

#### *2.2 Uttar Pradesh*

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The Uttar Pradesh Zamindari Abolition and Land Reform Act, 1950 (Section 156) prohibits leasing out of agricultural land in future, except by a disabled person and to agriculture related educational institution. A disabled person is defined as an unmarried/divorced/separated woman, a widow or a widow, whose husband is incapable of cultivating due to physical or mental infirmity or a minor whose father suffers from infirmity or a person who is a lunatic or an idiot or blind or a student of a recognized educational institution whose age does not exceed 25 years and whose father suffers from infirmity or a serving member of the armed forces or a person under detention or

imprisonment. The law also does not regulate rent or protect tenants against eviction, even though they might have leased in land from the disabled persons, as defined in the Act.

### III

#### 3.0 DE FACTO SITUATION

Despite legal ban or restriction on land leasing, informal tenancy exists in almost all places. According to 59<sup>th</sup> Round of NSSO for the year 2003, about 8.9 per cent of the total area in the kharif season in Bihar and Andhra Pradesh and 10.5 per cent in Uttar Pradesh were under tenancy. Nearly 12.3 per cent rural households in Bihar, 12.8 per cent in Uttar Pradesh and 15.9 per cent in Andhra Pradesh were reported as tenant households. In the country as a whole the percentage of rural households leasing in land was reported as 11.5 per cent, while 6.5 per cent area was under tenancy. However,, in view of the fact that people may fear revealing the facts of informal tenancy due to legal restriction, the incidence of tenancy as reported by NSSO could be underreported. Some independent studies (Sharma: 2005 and LBSNAA: 1992) show that in Bihar incidence of leasing was as high as 25 to 37 per cent.

Some pat field studies throw adequate light why farmers informally lease in and lease out land, despite legal restrictions. First, due to population pressure on land and inadequate non-farm employment opportunities, farmers of all size groups tend to lease in land to make their operational holdings adequate for family subsistence. The considerations of subsistence and family labour use are the major reasons for leasing in (Mani and Pandey: 2004). Second, farmers of all categories who have access to better outside employment opportunities prefer to lease out. This keeps them to maximize family income through both rent by way of leasing out and income by hiring out labour within and outside agriculture. Besides, leasing of land is used as an adjustment device by many in response to change in family labour availability, drought, power, cash resources, debt situation etc. (Sharma: 2004). Third, lease market transfers land to those having less land available for use more ability to use land, more assets to invest, a higher adult workforce and fewer off-farm opportunities (Akter et al: 2006). Thus, economic forces drive land leasing, while ban or restrictions have only reduced the extent of land available in the lease market and reduced the welfare of poor tenants by

forcing them to enter into informal arrangements in contravention of the rules and also by restricting the poor people's access to land through leasing (Haque: 2001, Deiringer: 2005)

### 3.1 RESULTS OF FIELD SURVEY

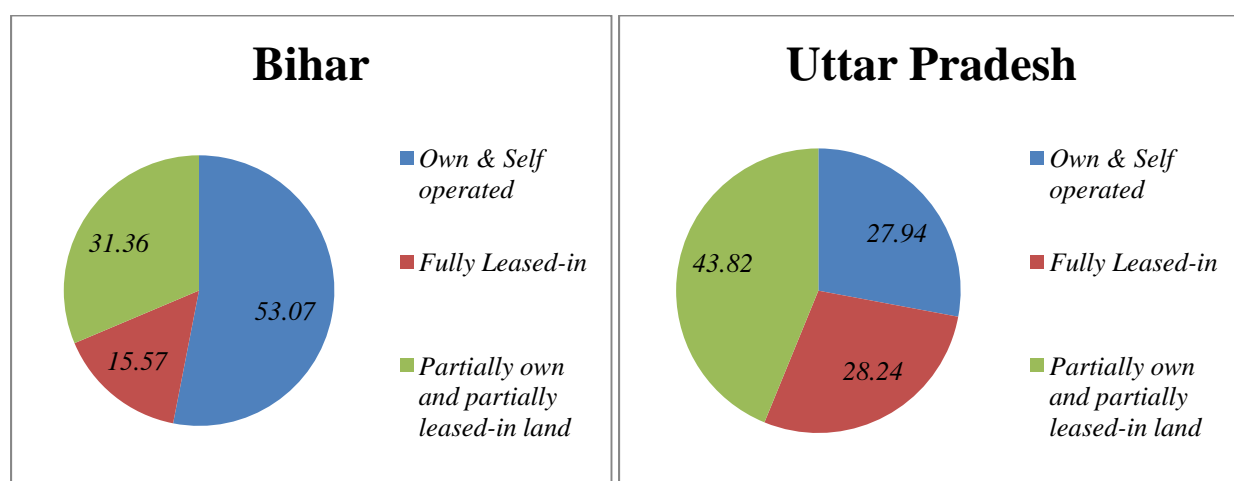
It would be seen from Table – 2(a) that about 15.6 per cent of operational holdings in Bihar and 28.2 per cent in Uttar Pradesh were pure tenant holdings (wholly leased in). The wholly leased in holdings accounted for about 7 per cent of the total operated area in Bihar, while it was 24.6 per cent in Uttar Pradesh (Table – 2b). The partly owned and partly leased in holdings accounted for about 31.4 per cent of total operational holdings in Bihar, 43.8 per cent in Uttar Pradesh and the area shared by such partly owned and partly leased in holdings was 17.3 per cent in Bihar, 34.7 per cent in Uttar Pradesh. The tenancy situation varied widely from district to district. In Bihar, the number of pure tenant holdings or wholly leased in holdings was as high as 21 to 22 per cent in Bhagalpur, Khagaria and Kishanganj, but partly owned and partly leased in holdings was predominant in Rohtas (87.8 per cent) and Siwan (90.4 per cent). The area cultivated by pure tenants or wholly leased in holdings was as high as 18.7 per cent in Rohtas and 14.0 per cent in Bhagalpur, but as low as 4.8 per cent in Khagaria and 7.1 per cent in Kishanganj (Table-2b).

**Table 2(a): Percentage Distribution of Total no. of Operational Holdings**

District	Own & Self operated	Fully Leased-in	Partially own and partially leased-in land	Total leased holdings
Bhagalpur	64.63	20.73	14.63	35.37
Khagaria	75.86	21.84	2.30	24.14
Kishanganj	70.53	22.11	7.37	29.47
Rohtas	0.00	12.20	87.80	100.00
Siwan	0.00	9.59	90.41	100.00
West Champaran	71.79	2.56	25.64	28.21
<b>Bihar</b>	53.07	15.57	31.36	46.93
Chitrakoot	1.30	28.57	70.13	98.70
Fatehpur	59.78	19.57	20.65	40.22
J.P.Nagar	0.00	39.00	61.00	100.00
Lalitpur	1.10	0.00	98.90	98.90

Mau	48.57	51.43	0.00	51.43
Muzaffernagar	50.60	22.89	26.51	49.40
Sonbhadra	52.17	47.83	0.00	47.83
Unnao	19.18	24.66	56.16	80.82
<b>Uttar Pradesh</b>	27.94	28.24	43.82	72.06

**Fig. 1: Percentage distribution of total no. of operational holdings**



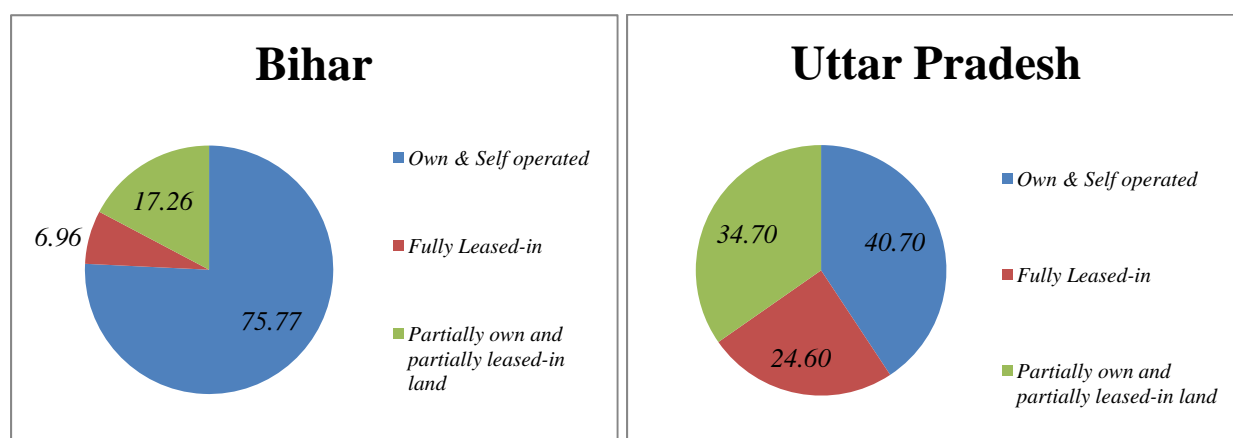
**Table 2(b): Percentage Distribution of Total Operational Area**

District	Own & Self operated	Fully Leased-in	Partially own and partially leased-in land
Bhagalpur	75.99	13.97	10.04
Khagaria	94.65	4.84	0.51
Kishanganj	91.14	7.15	1.70
Rohtas	0.00	18.73	81.27
Siwan	0.00	10.03	89.97
West Champaran	86.32	1.54	12.14
<b>Bihar</b>	75.77	6.96	17.26
Chitrakoot	1.74	20.34	77.92
Fatehpur	61.94	20.00	18.06
J.P.Nagar	0.00	20.17	79.83
Lalitpur	2.00	0.00	98.00
Mau	70.69	29.31	0.00
Muzaffernagar	55.97	27.06	16.97



Sonbhadra	59.25	40.75	0.00
Unnao	28.36	26.12	45.52
<b>Uttar Pradesh</b>	<b>40.70</b>	<b>24.60</b>	<b>34.70</b>

**Fig 2: Percentage distribution of total Operational area**



In Uttar Pradesh, the wholly leased in holdings shared as much as 51.4 per cent in Mau, 47.8 per cent in Sonbhadra, 39.0 per cent in J. P. Nagar and 28.6 per cent in Chitrakoot, while the number of partly own and partly leased in holdings accounted for as much as 98.9 per cent of total operational holdings in Lalitpur, 61.0 per cent in J. P. Nagar and 56.2 per cent in Unnao (2a). The area share of pure tenants was as high as 40.7 per cent in Sonbhadra, 29.3 per cent in Mau, 27.1 per cent in Muzaffarnagar and 26.1 per cent in Unnao (Table – 2b).

It would be seen from Table-3 that leased in area in Bihar constituted as much as 24.6 per cent in Siwan and 11.8 per cent in Bhagalpur and ranged from 15.9 per cent in Lalitpur and 52.0 per cent in J.P. Nagar. In fact, the incidence of tenancy, as measured by the proportion of leased in area was quite high in J. P. Nagar (52.0 per cent), Chitrakoot (39.2 per cent), Fatehpur (29.1 per cent), Muzaffarnagar (26.4 per cent) and Unnao (26.4 per cent).

Table-4 shows the average area leased in by tenant households. The average area leased in per tenant household was 1.08 acre in Bihar and 2.24 acre in Uttar Pradesh. Within Bihar, it varied between 0.62 acre in Khagaria and 1.78 acre in Siwan, while in Uttar Pradesh it ranged between 1.07 acre in Mau and 3.00 acre in Fatehpur district.

**Table 3: Proportion of leased-in area by district**

District/State	Leased-in
Bhagalpur	11.77
Khagaria	3.44
Kishanganj	7.22
Rohtas	10.75
Siwan	24.58
West Champaran	7.28
<b>Bihar</b>	<b>11.26</b>
Chitrakoot	39.24
Fatehpur	29.11
J.P.Nagar	52.05
Lalitpur	15.88
Mau	16.93
Muzaffernagar	26.42
Sonbhadra	22.45
Unnao	26.37
<b>Uttar Pradesh</b>	<b>27.82</b>

**Table 4: Average area leased-in (acre) per tenant household**

District/State	Leased in
Bhagalpur	0.94
Khagaria	0.62
Kishanganj	1.18
Rohtas	0.58
Siwan	1.78
West Champaran	1.03
<b>Bihar</b>	<b>1.08</b>
Chitrakoot	2.29
Fatehpur	3.00
J.P.Nagar	2.88

Lalitpur	1.48
Mau	1.07
Muzaffernagar	4.36
Sonbhadra	1.86
Unnao	1.67
<b>Uttar Pradesh</b>	<b>2.24</b>

### 3.2 TERMS OF LEASE

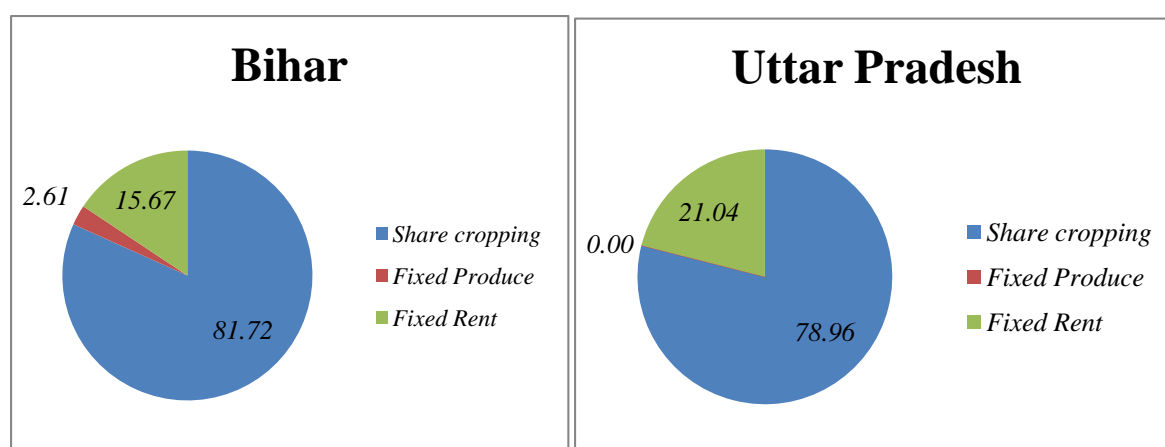
In Bihar about 81.7 per cent of the total leased in land was under sharecropping, followed by fixed rent tenancy (15.7 per cent) and fixed produce tenancy (2.6 per cent). However, in Khagaria district, as much as 45.2 per cent of the total leased in land was under fixed produce tenancy (Table- 5). In Kishanganj and Rohtas districts, nearly 100 per cent of the total leased in land was under sharecropping arrangement, while it was 92.6 per cent in Bhagalpur, 88.8 per cent in Champaran, 70.3 per cent in Siwan and 50.0 per cent in Khagaria. In most cases under sharecropping arrangement, 50 per cent of the produce was shared between the landowner and the tenant. In Uttar Pradesh about 79.0 per cent of the total leased in land was under sharecropping, but it was as much as 100 per cent in Chitrakoot, Mau, Muzaffarnagar, Sonbhadra and Unnao.

**Table 5: Percentage distribution of total leased-in land under different terms**

District	Share Cropping	Fixed Produce	Fixed Rent
Bhagalpur	92.55	0.00	7.45
Khagaria	50.00	45.24	4.76
Kishanganj	100.00	0.00	0.00
Rohtas	100.00	0.00	0.00
Siwan	70.28	0.00	29.72
West Champaran	88.76	0.00	11.24
<b>Bihar</b>	<b>81.72</b>	<b>2.61</b>	<b>15.67</b>
Chitrakoot	100.00	0.00	0.00
Fatehpur	56.40	0.00	43.60
J.P.Nagar	28.87	0.00	71.13
Lalitpur	99.32	0.00	0.68
Mau	100.00	0.00	0.00
Muzaffernagar	100.00	0.00	0.00
Sonbhadra	100.00	0.00	0.00
Unnao	100.00	0.00	0.00

Uttar Pradesh	78.96	0.00	21.04
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**Fig. 3: Percentage distribution of total leased-in land under different terms**



### 3.3 DURATION OF LEASE

Duration of lease is one of the important determinants of the level of tenural security. It would be seen from Table-6 that in Bihar, nearly 76.9 per cent pure tenancy was for less than 2 years period, of which 30.8 per cent was for less than a year. This shows how the landless tenants cultivate leased land without any security of tenure and incentive to farm land properly. In the case of marginal and medium farmers, the duration of lease was for 1 to 2 years and for small and large farmers, it was for 3 to 5 years. In Uttar Pradesh, 1 to 2 years lease period was predominantly found across all size classes and in all the selected districts.

**Table 6: Percentage distribution of leased-in period by land class**

Land Class	Period	Bihar	Uttar Pradesh
<b>Landless</b>	Less Than 1 year	30.77	0.00
	1-2 Years	46.15	83.67
	3-5 Years	23.08	16.33
	Above 5 yrs	0.00	0.00
	Total	100.00	100.00
<b>Marginal</b>	Less Than 1 year	1.72	1.19
	1-2 Years	70.69	61.90
	3-5 Years	27.59	35.71
	Above 5 yrs	0.00	1.19
	Total	100.00	100.00
<b>Small</b>	Less Than 1 year	0.00	0.00
	1-2 Years	30.00	85.19
	3-5 Years	40.00	14.81
	Above 5 yrs	30.00	0.00
	Total	100.00	100.00
<b>Medium</b>	Less Than 1 year	0.00	0.00
	1-2 Years	50.00	94.23
	3-5 Years	33.33	5.77
	Above 5 yrs	16.67	0.00
	Total	100.00	100.00
<b>Large</b>	Less Than 1 year	0.00	0.00
	1-2 Years	0.00	91.30
	3-5 Years	100.00	8.70
	Above 5 yrs	0.00	0.00
	Total	100.00	100.00

### 3.4 SOURCE OF LEASE

In Bihar, about 40.4 per cent of the lessors for medium farmers and 28.1 per cent were large farmers. Absentee landlords shared about 6.2 per cent of the total leased in land. The share of marginal and small farmers in total leased out land was only 5.6 per cent and 5.1 per cent respectively. The migrant workers accounted for nearly 14 per cent of the total leased out land (Table - 7). In Uttar Pradesh 24.5 per cent of the lessors were small farmers, followed by large farmers (23.8 per cent), absentee land lords (17.1 per cent) and medium farmers (14.8 per cent) and marginal farmers (10.2 per cent). However, it varied from district to district. In Fatehpur and Muzaffarnagar the small farmers were the main source of leased in land. Widows who were otherwise legally allowed to lease out land formed only 0.56 per cent in Bihar and 3.93 per cent in Uttar Pradesh.

**Table 7: Percentage distribution of source of leased-in land**

Sources of Lease-in	Bihar							Uttar Pradesh								
	Bhagalpur	Khagaria	Kishanganj	Rohas	Siwan	West Champaran	Bihar	Chitarkoot	Fatehpur	J.P.Nagar	Lalitpur	Maun	Muzaffarnagar	Sonbhadra	Unnao	Uttar Pradesh
Absentee landlord	-	-	3.70	7.69	13.11	-	6.18	13.04	-	-	56.18	18.75	-	28.57	5.77	17.09
Small farmer	-	13.64	18.52	-	3.28	-	5.62	37.68	78.79	23.96	7.87	-	43.90	28.57	-	24.48
Marginal farmer	8.33	4.55	11.11	3.85	3.28	-	5.06	2.90	6.06	13.54	10.11	31.25	2.44	-	13.46	10.16
Medium farmer	50.00	31.82	40.74	73.08	29.51	27.78	40.45	20.29	3.03	19.79	1.12	15.63	29.27	14.29	17.31	14.78
Large farmer	20.83	45.45	25.93	7.69	27.87	50.00	28.09	23.19	12.12	38.54	1.12	12.50	21.95	14.29	55.77	23.79
Migrants	20.83	-	-	7.69	22.95	22.22	14.04	-	-	-	15.73	9.38	-	9.52	1.92	4.62
Widow	-	4.55	-	-	-	-	0.56	-	-	2.08	6.74	12.50	2.44	4.76	5.77	3.93
Other	-	-	-	-	-	-	-	2.90	-	2.08	1.12	-	-	-	-	1.15
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

### 3.5 REASONS FOR LEASING IN LAND

Utilization of family labour, the need to earn additional income for livelihood and repayment of loan and improving the size of holding were some of the reasons given by tenants for leasing in land, in both Bihar and Uttar Pradesh. Nearly 30 per cent tenants in Bihar and 29 per cent in Uttar Pradesh cited utilization of family labour as the main reason. The need to earn additional income was the main reason cited for leasing in land by 50 per cent tenants in Bihar and 57 per cent in Uttar Pradesh. In districts like Siwan in Bihar and J. P. Nagar in Uttar Pradesh, improving the land size for viability was also cited as one of the main reasons for leasing in land.

**Table 8: Percentage distribution of reasons for leasing in**

Reasons of Lease-in	Bihar							Uttar Pradesh								
	Bhagalpur	Khagaria	Kishanganj	Rohas	Siwan	West Champaran	Bihar	Chitrakoot	Fatehpur	J.P.Nagar	Lalitpur	Maun	Muzaffarnagar	Sonbhadra	Unnao	Uttar Pradesh
Additional Income/Livelihood	100.00	71.43	67.86	45.28	36.54	39.53	50.18	50.83	21.21	41.89	91.11	75.00	38.64	72.73	94.23	56.75
Utilization of family labour	-	9.52	28.57	45.28	29.81	37.21	29.67	47.50	27.27	28.38	4.44	25.00	59.09	27.27	5.77	28.62
Improve the size of holding for viability	-	14.29	3.57	3.77	30.77	23.26	17.58	1.67	9.09	20.27	-	-	2.27	-	-	8.29
Payback outstanding loans	-	-	-	5.66	1.92	-	1.83	-	-	0.90	1.11	-	-	-	-	0.49
Other	-	4.76	-	-	0.96	-	0.73	-	42.42	8.56	3.33	-	-	-	-	5.85
<b>Total</b>	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

### 3.6 IMPACT OF LAND LEASING ON AGRICULTURAL EFFICIENCY

Land leasing has been traditionally viewed as an inefficient way of farming, even though there is no clear empirical evidence in this regard. An effort has been made here to find out from the field whether lease farming is really less efficient than self-operated farms in terms of yields, returns and factor productivity. A related question that may need probing is whether a tenant feels secure on tenanted land and make investment in land improvement measures for raising farm productivity. If not, what are the key constraints? Also it needs to be seen whether size of farm matters in influencing the productivity of leased land. Table-9 shows the average yields of crops on own and leased in land by size class of farms.

In Bihar the average yields of both rice and wheat were marginally higher in self-operated land than leased in land, while for maize, mustard and potato the average yields were comparatively higher on leased in land in the case of marginal farms. The yields of wheat, potato and maize in leased in land by landless tenants were higher than that of either leased in or own land operated by marginal farmers. In Uttar Pradesh, the average yield of rice of landless tenants was comparatively higher than that of both own land and leased in land of all size classes of farm. In the case of wheat, the yield of landless tenant operated land was also higher than most other self-operated as well as leased in lands. As a matter of fact, the yields of all other crops in leased lands were either higher or comparable with those of owner operated lands in all size classes of farms.

**Table 9: Average yield of own and leased-in land by size class**

Districts/States	Crops	Landless	Marginal		Small		Medium		Large	
		Leased-in Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land
Bihar	Rice	12.91	12.95	13.50	10.00	12.42	11.28	13.45	11.88	13.23
	Wheat	12.53	11.48	12.46	8.00	12.35	9.03	11.64	9.18	12.22
	Maize	28.15	27.00	26.98	0.00	27.03	8.00	30.10	7.25	32.86
	Masoor	0.00	6.00	6.12	0.00	5.93	6.00	6.84	6.00	5.92
	Moong	0.00	0.00	3.00	0.00	2.50	0.00	3.00	0.00	3.00
	Gram	0.00	0.00	2.13	0.00	4.13	0.00	2.50	0.00	0.00
	Mustard	2.44	3.00	1.35	0.00	0.97	0.00	2.63	0.00	0.70
	Ginger	18.75	0.00	26.33	0.00	22.88	0.00	27.50	0.00	30.40
	Brinjal	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00
	Jute	6.17	5.50	7.10	6.00	7.02	0.00	6.16	0.00	7.13
	Potato	45.00	40.00	34.29	0.00	46.67	0.00	41.33	0.00	0.00
	Sugarcane	0.00	233.33	250.00	300.00	262.31	258.00	225.33	0.00	216.00
	Sunflower	0.00	0.00	8.00	0.00	0.00	0.00	7.75	0.00	8.10
	Tea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	346.67
Tisi	0.00	0.00	0.25	0.00	17.00	0.00	0.00	0.00	0.00	
Turmeric	28.00	0.00	0.00	0.00	30.00	0.00	29.00	0.00	29.50	
Uttar Pradesh	Rice	15.14	15.05	13.96	12.43	14.46	10.33	13.34	14.00	11.30
	Wheat	15.39	15.53	13.58	10.68	13.34	6.28	12.38	5.54	12.45
	Arhar	7.00	6.73	7.25	6.30	6.80	8.00	7.67	0.00	8.00
	Bajra	0.00	6.00	7.00	7.00	6.50	6.00	4.33	4.00	4.25
	Jowar	0.13	0.13	0.13	0.00	0.13	6.00	3.07	0.00	0.50
	Gram	7.90	7.96	7.93	6.67	7.26	3.17	5.60	2.29	3.67
	Groundnut	0.00	0.00	0.00	8.50	8.00	0.00	0.00	0.00	0.00
	Jau	0.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lentil	6.00	8.00	6.00	8.00	0.00	8.00	0.00	6.00	0.00
	Maize	0.00	12.00	0.00	4.00	7.00	3.00	4.88	2.13	4.17
	Masoor	7.00	6.25	7.00	6.33	6.63	0.00	0.00	0.00	0.00
	Pea	0.00	0.00	0.00	28.00	7.00	4.00	10.00	0.00	0.00
	Urad	0.00	0.00	0.00	7.25	0.00	0.00	6.00	0.00	5.00
	Rai	5.00	6.50	0.00	5.00	0.00	0.00	0.00	0.00	0.00
	Mustard	6.11	6.00	3.83	5.67	6.00	7.00	0.00	0.00	0.00
	Til	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00
Bhindi	0.00	30.00	30.00	7.00	7.00	0.00	30.00	0.00	0.00	
Brinjal	0.00	40.00	50.00	0.00	80.00	0.00	0.00	0.00	0.00	



	Cauliflower	0.00	0.00	0.00	10.00	14.00	0.00	0.00	0.00	0.00
	Chilli	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
	Tomato	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
	Potato	0.00	122.00	50.00	134.17	0.00	124.44	100.00	125.00	0.00
	Sugarcane	252.83	210.83	131.43	203.57	201.25	243.13	290.00	277.50	232.06
	Mentha	2.83	0.23	2.58	0.25	0.24	0.24	0.26	0.00	0.29

### 3.7 NET RETURNS AND OUTPUT-INPUT RATIO

It is interesting to note that in Bihar net returns per acre was higher in leased land than own land for rice, wheat, jute and potato in the case of marginal farmers and rice and sugarcane on small farms. But in the case of medium and large farms, leased land yielded lower returns in most crops. In Uttar Pradesh also, the marginal farmers received higher returns in leased land than in own land in the case of rice, wheat, gram, lentil, mustard, potato and sugarcane. In the case of sugarcane, even small and large farmers received comparatively higher returns in leased land. The pure landless tenants also received reasonable and comparable returns from the cultivation of land on lease. It would be further seen from Table – 11 that output-input ratio in leased land was either more or comparable with that in owner-operated land in several cases, thus, based on yields, net returns over operating cost and output-input ratio, it cannot be said that lease farming is an inefficient system of farming. This is so largely because the land owners closely monitor the farming operation of his tenants and also shares input cost in most cases.

**Table 10: Net Return (Rs. /acre) over operating cost**

Districts/States	Crops	Landless	Marginal		Small		Medium		Large	
		Leased-in Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land
Bihar	Rice	1644	7159	5349	3375	3210	1278	3271	-270	964
	Wheat	4660	6787	5760	3268	5228	1803	4386	1166	4162
	Maize	16204	18611	16098		16436	-118	19830	-1096	22052
	Masoor		15945	15903		15547	15180	17663	15050	14814
	Moong			4255		5519		6029		6095
	Gram			1381		6715		3537		
	Mustard	3967	6070	2152		163		5440		-1037
	Ginger	15094		31164		24139		33525		38002
	Brinjal					67906				
	Jute	2216	1657	4784	4470	5149		2785		5501
	Potato	28350	25301	14293		27832		24578		
	Sugarcane		42166	45909	57772	48189	45448	38393		37305
	Sunflower			5562				6180		8592
	Tea									263628

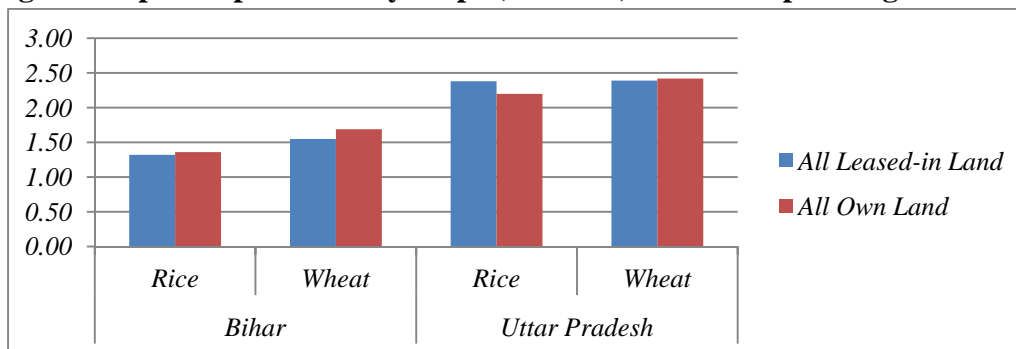
	Tisi				-2503		37665				
	Turmeric	-427					3042		-1078		533
<b>Uttar Pradesh</b>	Rice	11716	8996	7980	8687	10069	5385	9366	10712		6515
	Wheat	10230	8937	7199	7080	8520	4221	8109	3315		9138
	Arhar	18674	16924	18362	15656	17060	22474	20679			21940
	Bajra		5652	7346	10011	8064	8727	6535	4771		5731
	Jowar	-2427	-1703	-3466		-3049	10759	3728			-1340
	Gram	22300	21470	21255	18171	19174	8653	16025	5118		9902
	Groundnut				20828	20871					
	Lentil	13493	21815	16810	16376		23261		16461		
	Maize		8902		2898	6372	2030	4016	1506		3847
	Masoor	12634	12269	13687	12531	13189					
	Pea				45549	10789	4653	16155			
	Urad				16123			16462			13153
	Rai	8887	13630		10494						
	Mustard	14571	15118	7714	14132	14397	18377				
	Til							10566			
	Potato		45496	7862	51420		47848	41350	48083		
	Sugarcane	48187	35866	21878	37940	35983	48279	57410	54384		42057
	Mentha	-4070	-9383	-3509	-5377	-7127	-6035	-6881			-5320

**Table 11: Output - Input Ratio by crops (Per acre) based on operating cost**

Crops	Landless	Marginal		Small		Medium		Large		All	
	Leased-in Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land
<b>Bihar</b>											
Rice	1.16	2.51	1.76	1.58	1.39	1.14	1.36	0.98	1.09	1.32	1.36
Wheat	1.60	2.49	1.88	1.71	1.75	1.25	1.62	1.15	1.53	1.55	1.69
Maize	2.75	4.21	2.94		3.06	0.98	3.69	0.86	3.88	2.12	3.38
Masoor		8.14	7.05		7.45	6.06	6.77	5.81	5.73	6.52	6.69
Moong			1.41		1.83		1.70		1.71		1.64
Gram			1.30		2.37		2.01				1.89
Mustard	1.91	2.45	1.88		1.05		2.53		0.70	2.18	1.53
Ginger	1.77		2.78		2.33		2.94		3.09	1.77	2.78
Brinjal					6.61						6.61
Jute	1.18	1.15	1.40	1.46	1.45		1.24		1.48	1.25	1.39
Potato	4.96	5.04	2.12		4.10		4.06			5.00	3.24
Sugarcane		6.12	6.67	9.22	6.69	5.42	4.74		4.99	6.69	5.69
Sunflower			1.37				1.45		1.71		1.50
Tea									20.23		20.23
Tisi			0.19		13.01						6.64
Turmeric	0.95				1.51		0.89		1.06	0.95	1.10
<b>Uttar Pradesh</b>											
Rice	2.95	2.04	1.95	2.48	2.47	1.80	2.50	2.89	1.97	2.38	2.20
Wheat	2.57	2.13	1.95	2.56	2.42	2.62	2.52	2.23	3.08	2.39	2.42
Arhar	5.95	4.62	4.76	4.44	4.59	8.06	6.29		6.90	5.56	5.52
Bajra		2.15	2.48	5.34	3.39	5.76	6.99	3.10	4.28	3.58	3.47
Jowar	0.09	0.13	0.07		0.08	13.73	2.70		0.42	2.21	0.64
Gram	6.41	5.17	5.04	5.40	4.74	5.46	6.92	3.02	5.19	5.24	5.29
Groundnut				5.46	7.67					5.46	7.67
Lentil	2.95	5.05	5.68	2.51		6.91		5.18		3.95	5.68
Maize		2.59		2.50	4.05	2.27	3.14	2.42	4.23	2.50	3.76
Masoor	2.89	3.46	3.43	3.53	3.59					3.25	3.50
Pea				6.60	5.10	2.54	6.36			5.51	5.77
Urad				4.86			49.70		16.53	4.86	25.99
Rai	2.68	3.84		3.85						3.40	
Mustard	4.13	5.02	2.78	4.82	4.21	6.04				4.95	3.51
Til							5.73				5.73

Potato		2.87	1.38	3.03		3.05	3.61	3.05		3.00	2.34
Sugarcane	6.38	4.04	3.80	5.70	4.79	8.24	8.06	7.53	5.05	6.13	5.39
Mentha	0.49	0.03	0.50	0.06	0.04	0.05	0.05		0.07	0.16	0.17

**Fig. 4: Output: Input Ratio by crops (Per acre) based on operating cost**



### 3.8 AVERAGE PER ACRE RENT PAID UNDER DIFFERENT FORMS OF LEASING

On average, the rent paid under sharecropping arrangement was found to be low as compared to that under either fixed rent or fixed produce leasing in both Bihar and Uttar Pradesh. Therefore, it may not be fair to say that sharecropping arrangements are always more exploitative than other forms of leasing as traditionally believed (Table - 12).

**Table 12: Average rent paid under different forms of Tenancy (Rs. /acre)**

	Landless			Marginal			Small			Medium			Large		
	Fixed Rent	Output Share (Rent)	Fixed Produce (Rent)	Fixed Rent	Output Share (Rent)	Fixed Produce (Rent)	Fixed Rent	Output Share (Rent)	Fixed Produce (Rent)	Fixed Rent	Output Share (Rent)	Fixed Produce (Rent)	Fixed Rent	Output Share (Rent)	Fixed Produce (Rent)
Bhagalpur	-	985	-	950	627	-	900	-	-	-	-	-	-	-	-
Khagaria	-	1068	8512	1000	-	-	-	-	-	-	-	-	-	-	-
Kishanganj	-	2608	-	-	3746	-	-	6138	-	-	-	-	-	-	-
Rohtas	-	2110	-	-	7908	-	-	13150	-	-	-	-	-	-	-
Siwan	-	7829	-	6094	4115	-	6900	3420	-	5667	5531	-	-	6470	-
West Champaran	-	2425	-	5500	5509	-	-	3117	-	-	-	-	-	-	-
<b>Bihar</b>	-	2453	8512	6318	5494	-	7833	3665	-	5667	4810	-	-	6470	-
Chitrakot	-	4640	-	-	6840	-	-	5171	-	-	14395	-	-	7722	-
Fatehpur	6000	4359	-	6000	4185	-	6000	3328	-	-	5508	-	-	-	-

J.P.Nagar	10000	5840	-	10125	2253	-	10621	-	-	10133	-	-	10000	-	-
Lalitpur	-	-	-	10000	2889	-	-	3359	-	-	2813	-	-	2520	-
Mau	-	9115	-	-	-	-	-	-	-	-	-	-	-	-	-
Muzaffarnagar	-	2449	-	-	1875	-	-	956	-	-	1583	-	-	2068	-
Sonbhadra	-	4485	-	-	-	-	-	-	-	-	-	-	-	-	-
Unnao	-	6250	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Uttar Pradesh</b>	6500	5484	-	9267	3445	-	10323	3025	-	10133	2367	-	10000	2070	-

### 3.9 INPUT USE PATTERNS

The input use patterns vary to some extent between leased in land and owner operated land. It would be seen from Table – 13 that in the cultivation of rice and wheat in both Bihar and Uttar Pradesh, the relative share of family labour, seed and machine labour in total operational cost was comparatively higher in leased in land, while the share of fertilizers, manure, pesticides, hired labour and irrigation cost was higher in owner operated lands. In Uttar Pradesh the share of seed, fertilizer, manure, pesticides, hired labour and irrigation cost was higher in owner operated lands. This finding substantiates the fact that landless labourer and marginal farmers lease in land mainly in order to utilize their family labour optimally. This was observed also in the case of other crops, in both Bihar and Uttar Pradesh.

**Table 13: Percent share of various Inputs in Total Cost**

District/States		Seed Cost	Fertilizer Cost	Manure (FYM) COST	Pesticide Cost	Family Labour Cost	Hired Labour Cost	Irrigation Cost	Machine Labour Cost
		Rice							
Bihar	Leased-in Land	5.30	13.64	1.11	0.35	33.28	14.33	20.07	11.93
	Own Land	4.45	14.06	2.03	0.56	18.31	30.34	23.31	6.94
Uttar Pradesh	Leased-in Land	10.40	19.09	0.15	0.00	13.26	24.14	20.51	12.47
	Own Land	8.43	15.93	0.11	0.00	6.08	39.95	17.22	12.27
		Wheat							
Bihar	Leased-in Land	20.10	18.36	0.19	0.02	12.93	7.99	24.35	16.05
	Own Land	16.69	18.27	0.28	0.08	11.36	19.71	23.65	9.96
Uttar Pradesh	Leased-in Land	14.13	20.89	0.16	0.00	11.28	14.93	21.46	17.15
	Own Land	12.48	21.23	0.24	0.00	6.54	22.18	21.45	15.89

		Sugarcane							
Bihar	Leased-in Land	65.55	11.26	0.00	0.00	4.02	3.07	11.34	4.76
	Own Land	52.70	13.91	0.09	0.08	4.01	11.02	16.33	1.76
Uttar Pradesh	Leased-in Land	20.54	31.57	0.25	0.00	4.60	13.50	18.06	11.48
	Own Land	21.39	28.74	0.00	0.00	4.53	14.45	21.17	9.53
		Potato							
Bihar	Leased-in Land	36.60	7.50	0.00	0.00	7.10	23.38	8.48	16.94
	Own Land	47.23	10.21	0.00	0.71	6.15	12.21	8.65	14.83
Uttar Pradesh	Leased-in Land	55.73	13.89	0.00	0.12	0.99	22.79	5.16	1.43
	Own Land	52.63	12.68	0.00	0.00	0.97	13.27	7.44	12.98

### 3.10 IMPACT OF LAND LEASING ON EQUITY

From the point of view of equity, first of all, one needs to find out whether the existing land leasing patterns are size neutral or tilted in favour of either landless and semi-landless poor, or large farmers. Second, do women benefit equally or more by way of leasing in land? Third, does land leasing represent an exploitative institution and keeps the land owner to exploit tenants by way of either charging high rent on leased land or high interest on capital borrowed from him or payment of low wages for the work done on his field?

### 3.11 DISTRIBUTION OF TENANT FARMERS BY SIZE CLASS

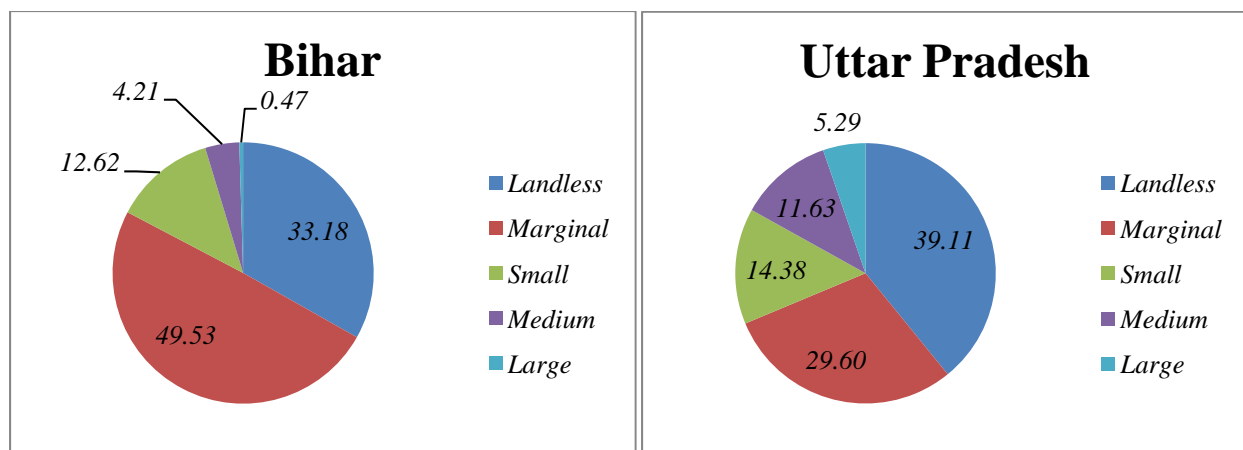
It would be seen from Table-14 that landless and marginal farmers constituted about 82.7 per cent of the total number of tenant farmers in Bihar and 68.7 per cent of those in Uttar Pradesh. Hardly 0.5 per cent of tenants in Bihar and 5.3 per cent in Uttar Pradesh were large farmers. Also the large farmers lease out more than they lease in. Further Table – 15 shows the distribution of leased in area by size class of farm. Nearly 70 per cent of the leased in area was operated by landless and marginal labourers. The existing land lease market, even though largely informal, improves the land access of landless and marginal farmers by way of leasing and hence, looks more pro-poor in practice. On average, landless farmers leased in 1.55 acre of land in Bihar and 3.10 acre in Uttar Pradesh, while marginal farmers improved their land size through leasing by about 2.6 acre in

**Bihar and 2.59 acre in Uttar Pradesh (Table - 16). In fact, the rural poor's access to land is critical for their livelihood security.**

**Table 14: Percentage Distribution of Tenant farmers by size class**

	<b>Landless</b>	<b>Marginal</b>	<b>Small</b>	<b>Medium</b>	<b>Large</b>	<b>Total</b>
Bhagalpur	58.62	31.03	6.90	3.45	0.00	100.00
Khagaria	90.48	9.52	0.00	0.00	0.00	100.00
Kishanganj	75.00	21.43	3.57	0.00	0.00	100.00
Rohtas	12.20	85.37	2.44	0.00	0.00	100.00
Siwan	9.59	47.95	30.14	10.96	1.37	100.00
West Champaran	9.09	86.36	4.55	0.00	0.00	100.00
<b>Bihar</b>	<b>33.18</b>	<b>49.53</b>	<b>12.62</b>	<b>4.21</b>	<b>0.47</b>	<b>100.00</b>
Chitrakoot	28.57	49.35	19.48	1.30	1.30	100.00
Fatehpur	48.65	37.84	10.81	2.70	0.00	100.00
J.P.Nagar	39.00	32.00	10.00	13.00	6.00	100.00
Lalitpur	0.00	8.89	32.22	41.11	17.78	100.00
Mau	100.00	0.00	0.00	0.00	0.00	100.00
Muzaffernagar	46.34	24.39	17.07	7.32	4.88	100.00
Sonbhadra	100.00	0.00	0.00	0.00	0.00	100.00
Unnao	30.51	64.41	5.08	0.00	0.00	100.00
<b>Uttar Pradesh</b>	<b>39.11</b>	<b>29.60</b>	<b>14.38</b>	<b>11.63</b>	<b>5.29</b>	<b>100.00</b>
<b>Total</b>	<b>37.26</b>	<b>35.81</b>	<b>13.83</b>	<b>9.32</b>	<b>3.78</b>	<b>100.00</b>

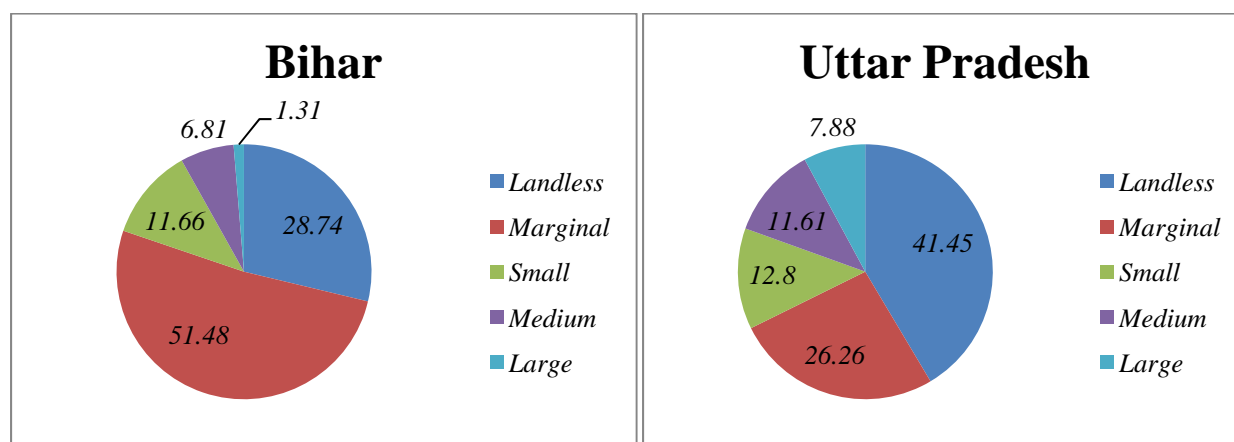
**Fig. 5: Percentage Distribution of Tenant farmers by size class**



**Table 15: Percentage distribution of Leased-in area by size class**

District/State	Landless	Marginal	Small	Medium	Large	Total
Bhagalpur	58.19	28.25	9.04	4.52	0.00	100.00
Khagaria	90.48	9.52	0.00	0.00	0.00	100.00
Kishanganj	80.77	16.67	2.56	0.00	0.00	100.00
Rohtas	18.73	80.41	0.86	0.00	0.00	100.00
Siwan	10.03	52.15	21.20	13.75	2.87	100.00
West Champaran	11.24	84.27	4.49	0.00	0.00	100.00
<b>Bihar</b>	<b>28.74</b>	<b>51.48</b>	<b>11.66</b>	<b>6.81</b>	<b>1.31</b>	<b>100.00</b>
Chitrakoot	20.60	43.66	20.52	4.19	11.03	100.00
Fatehpur	52.55	42.64	4.07	0.74	0.00	100.00
J.P.Nagar	20.17	28.00	14.61	23.65	13.57	100.00
Lalitpur	0.00	5.78	27.21	43.88	23.13	100.00
Mau	100.00	0.00	0.00	0.00	0.00	100.00
Muzaffernagar	61.46	15.42	11.86	6.92	4.35	100.00
Sonbhadra	100.00	0.00	0.00	0.00	0.00	100.00
Unnao	36.46	54.51	9.03	0.00	0.00	100.00
<b>Uttar Pradesh</b>	<b>41.45</b>	<b>26.26</b>	<b>12.80</b>	<b>11.61</b>	<b>7.88</b>	<b>100.00</b>
<b>Total</b>	<b>38.70</b>	<b>31.71</b>	<b>12.55</b>	<b>10.57</b>	<b>6.46</b>	<b>100.00</b>

**Fig. 6: Percentage distribution of Leased-in area by size class**



**Table 16: Average area Leased-in (in acre) by size class**

District/State	Landless	Marginal	Small	Medium	Large
Bhagalpur	1.51	1.39	2.00	2.00	-
Khagaria	1.00	1.00	-	-	-
Kishanganj	1.50	1.08	1.00	-	-
Rohtas	2.19	1.34	0.50	-	-
Siwan	2.50	2.60	1.68	3.00	5.00
West Champaran	2.50	1.97	2.00	-	-
<b>Bihar</b>	1.55	1.85	1.65	2.89	5.00
Chitrakoot	2.12	2.60	3.10	9.50	25.00
Fatehpur	3.94	4.11	1.38	1.00	-
J.P.Nagar	1.49	2.52	4.20	5.23	6.50
Lalitpur	-	1.06	1.38	1.74	2.13
Mau	1.96	-	-	-	-
Muzaffernagar	8.18	3.90	4.29	5.83	5.50
Sonbhadra	3.61	-	-	-	-
Unnao	2.92	2.07	4.33	-	-
<b>Uttar Pradesh</b>	3.10	2.59	2.60	2.92	4.36
<b>Total</b>	2.32	2.22	2.13	2.90	4.68



### 3.12 DISTRIBUTION OF LESSEES AND LESSORS BY SOCIAL GROUPS (CASTE)

The distribution pattern of pure tenants by social group (Table - 17) indicates that scheduled castes and scheduled tribes who are on the lowest socio-economic ladder shared about 33 per cent of the total leased in land in Bihar and 48 per cent in Uttar Pradesh. In Bihar, OBCs and others were more among the pure tenants and OBCs & STs among the owner cum tenants. In Uttar Pradesh also OBCs and STs constituted the majority of tenant household. In both Bihar and Uttar Pradesh, OBCs and other high caste people were in majority who leased out land (Table - 18).

**Table 17: Percentage distribution of Lessees by Caste**

District/State	BC	OBC	SC	ST	Other
Bhagalpur	0.00	5.88	64.71	5.88	23.53
Khagaria	0.00	57.89	0.00	15.79	26.32
Kishanganj	0.00	4.76	0.00	0.00	95.24
Rohtas	0.00	60.00	0.00	40.00	0.00
Siwan	0.00	44.44	0.00	55.56	0.00
West Champaran	0.00	0.00	0.00	100.00	0.00
<b>Bihar</b>	0.00	27.40	15.07	17.81	39.73
Chitrakoot	0.00	59.09	0.00	31.82	9.09
Fatehpur	5.56	38.89	5.56	16.67	33.33
J.P.Nagar	2.56	10.26	0.00	84.62	2.56
Lalitpur	0.00	0.00	0.00	0.00	0.00
Mau	13.89	30.56	25.00	25.00	5.56
Muzaffernagar	0.00	42.11	0.00	57.89	0.00
Sonbhadra	30.30	12.12	21.21	9.09	27.27
Unnao	22.22	33.33	11.11	16.67	16.67
<b>Uttar Pradesh</b>	11.35	28.65	10.27	37.30	12.43

**Table 18: Percentage distribution of Lessors by Caste**

District/State	BC	OBC	SC	ST	Other
Bhagalpur	0.00	9.86	53.52	7.04	29.58
Khagaria	0.00	48.10	0.00	5.06	46.84
Kishanganj	0.00	8.33	0.00	0.00	91.67
Rohtas	1.69	23.73	0.00	0.00	74.58
Siwan	0.00	12.00	0.00	0.00	88.00
West Champaran	3.85	43.59	0.00	5.13	47.44
<b>Bihar</b>	1.04	26.56	9.90	3.39	59.11
Chitrakoot	4.17	8.33	0.00	20.83	66.67
Fatehpur	0.00	39.68	0.00	12.70	47.62
J.P.Nagar	0.00	0.00	0.00	0.00	0.00
Lalitpur	20.00	50.00	0.00	10.00	20.00
Mau	7.81	25.00	0.00	4.69	62.50
Muzaffernagar	3.39	38.98	0.00	55.93	1.69
Sonbhadra	14.93	23.88	1.49	1.49	58.21
Unnao	9.76	29.27	0.00	7.32	53.66
<b>Uttar Pradesh</b>	7.32	30.18	0.30	16.46	45.73

### 3.13 INTER-LINKAGES BETWEEN LAND, LABOUR AND CREDIT MARKETS

In Bihar hardly any tenant worked for wage in the land of his landlord and therefore, the question of exploitation through inter-linked land and labour markets did not arise. However, in Uttar Pradesh, 9.7 per cent of the landless tenants, 17.4 per cent of marginal tenants and 13.0 per cent of small tenants worked for wage on the land of their land owners (Table - 19). However, the wages paid were according to market rates and hence no exploitation was involved. Regarding the inter-linkage between land and credit markets about 2.7 per cent landless tenants and 4.6 per cent marginal farmers in Bihar borrowed money from their landowners, the average rate of interest being 12.5 per cent for the landless and 8.5 per cent for the marginal farmers. In Uttar Pradesh tenants of all size classes borrowed money from their landowners, the rates of interest being as high as 23 to 24 per cent for small and medium farmers cum tenants (Table - 20). Nevertheless, there was no feeling of getting exploited by the landowner on this account, as they do not have any other access to credit.

**Table 19: Percentage distribution of tenants who work for wages in the land of land owner by land size class**

District/State	Landless	Marginal	Small	Medium	Large
Bhagalpur	0.00	0.00	0.00	0.00	0.00

Khagaria	0.00	0.00	0.00	0.00	0.00
Kishanganj	0.00	0.00	0.00	0.00	0.00
Rohtas	0.00	0.00	23.08	0.00	0.00
Siwan	0.00	0.00	0.00	0.00	0.00
West Champaran	0.00	0.00	6.06	0.00	0.00
<b>Bihar</b>	<b>0.00</b>	<b>0.00</b>	<b>5.10</b>	<b>0.00</b>	<b>0.00</b>
Chitrakoot	81.82	81.82	82.61	0.00	0.00
Fatehpur	0.00	0.00	0.00	0.00	0.00
J.P.Nagar	0.00	0.00	0.00	0.00	0.00
Lalitpur	0.00	30.00	19.35	2.56	0.00
Mau	0.00	0.00	0.00	0.00	0.00
Muzaffernagar	0.00	6.90	4.76	0.00	0.00
Sonbhadra	0.00	0.00	0.00	0.00	0.00
Unnao	0.00	0.00	0.00	0.00	0.00
<b>Uttar Pradesh</b>	<b>9.73</b>	<b>17.37</b>	<b>13.00</b>	<b>0.00</b>	<b>0.00</b>

**Table 20: Percentage distribution of tenant farmers who borrowed money from land owner by different Land size class (Figures in bracket indicate the rate of interest on loan)**

District/State	Landless	Marginal	Small	Medium	Large
Bhagalpur	0.00	0.00	0.00	0.00	0.00
Khagaria	0.00	0.00	0.00	0.00	0.00
Kishanganj	4.76 (12.5)	0.00	0.00	0.00	0.00
Rohtas	0.00	7.14 (15.0)	0.00	0.00	0.00
Siwan	0.00	0.00	0.00	0.00	0.00
West Champaran	50.00 (2.0)	17.65 (2.0)	0.00	0.00	0.00
<b>Bihar</b>	<b>2.74</b>	<b>4.55</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Chitrakoot	0.00	0.00	0.00	0.00	0.00
Fatehpur	0.00	0.00	0.00	0.00	0.00
J.P.Nagar	7.69 (2.7)	3.13 (2.0)	0.00	0.00	0.00
Lalitpur	0.00	10.00 (24.0)	12.90 (23.0)	2.56 (24.0)	0.00
Mau	0.00	0.00	0.00	0.00	0.00
Muzaffernagar	5.26 (5.0)	0.00	0.00	0.00	7.14 (5.0)

Sonbhadra	0.00	0.00	0.00	0.00	0.00
Unnao	0.00	0.00	0.00	0.00	0.00
<b>Uttar Pradesh</b>	<b>2.16</b>	<b>0.85</b>	<b>2.00</b>	<b>0.79</b>	<b>1.92</b>

### 3.14 DO LESSORS TEND TO EXPLOIT THE LESSEES?

The overwhelming percentage of the tenants of all size class expressed a view that there is no exploitation as such in the existing tenancy relationship. Both lessors and the lessees agree on rent to be paid and the duration of lease. In both Bihar and Uttar Pradesh, majority of the tenants however, feel that leasing should be made legal and formal, so that they could access at least short-term bank credit based on lease agreement. Similarly, the lessors feel that legalization of land leasing would help remove fears from their mind that they would lose land if lease out for a long period. This would result in a sustainable relationship with the tenant for better farming.

## IV

### 4.0 LAND LEASING BY WOMEN

Women constituted nearly 3.3 per cent of total number of tenants in Bihar and 3.2 per cent in Uttar Pradesh. However, this varied from district to district. The proportion of women leasing in land was as high as 9.5 per cent in Khagaria and 7.1 per cent in Kishanganj in Bihar and 13.5 per cent in Fatehpur district in Uttar Pradesh (Table - 21). However, the yields of crops were found to be generally lower in leased in land than that of own land in women headed households in most of the selected districts (Table - 22). This could be largely attributed to lack of credit access by women tenants and consequently low input use. The net returns per acre as well as the output-input ratio were lower in leased land than own land of women farmers (Table – 23 and 24).

**Table 21: Percent of women tenants in total number of farmers**

District/States	Leased-in
Bhagalpur	0.00
Khagaria	9.52
Kishanganj	7.14
Rohtas	4.88

Siwan	1.37
West Champaran	0.00
<b>Bihar</b>	<b>3.27</b>
Chitrakoot	3.90
Fatehpur	13.51
J.P.Nagar	2.00
Lalitpur	4.44
Mau	0.00
Muzaffernagar	2.44
Sonbhadra	0.00
Unnao	0.00
<b>Uttar Pradesh</b>	<b>3.17</b>

**Table 22: Average yield by crops of Women headed households (Qtl/acre)**

Districts	Crop	Leased-in Land	Own Land
<b>Bihar</b>	Rice	11.00	15.40
	Wheat	10.00	11.75
	Maize	32.00	40.00
	Moong		3.00
	Sunflower		8.00
	Mustard		2.00
	Sugarcane		250.00
	Jute	6.00	
<b>Uttar Pradesh</b>	Rice	13.02	11.96
	Wheat	13.99	13.67
	Arhar	5.00	5.00
	Gram	8.00	8.00
	Lentil	8.00	-
	Mustard	5.00	3.00
	Sugarcane	235.00	235.00

**Table 23: Net Return per acre in own and leased land of women farmers**

State/Districts	Crop	Leased-in Land	Own Land
<b>Bihar</b>	Rice	-3278	874
	Wheat	2073	3251
	Maize	18854	30544
	Moong	-	4094
	Sunflower	-	6742
	Mustard	-	6378
	Sugarcane	-	42770
	Jute	119	-
	Sugarcane	-	43270
<b>Uttar Pradesh</b>	Rice	8372	7505
	Wheat	9376	9325
	Arhar	10400	10847
	Gram	27089	26069
	Lentil	21552	-
	Mustard	13690	8080
	Sugarcane	35830	45385

**Table 24: Output-Input Ratio in own and leased in land of women farmers**

Districts	Crop	Leased-in Land	Own Land
<b>Bihar</b>	Rice	0.73	1.07
	Wheat	1.26	1.38
	Maize	2.40	4.11
	Moong	-	1.39
	Sunflower	-	1.49
	Mustard	-	5.95
	Sugarcane	-	4.55
	Jute	1.01	-
<b>Uttar Pradesh</b>	Rice	2.69	2.59
	Wheat	2.45	2.52
	Arhar	2.85	3.09
	Gram	8.26	6.49
	Lentil	4.82	0.00
	Mustard	5.38	5.02
	Sugarcane	3.07	6.88

## V

### 5.0 RESULTS OF PRODUCTIVITY FUNCTION IN OWN AND LEASED IN LAND

The following productivity functions were estimated for rice and wheat in own and leased land by using the following equation:

$$Y = f^{x_1 \beta_1 x_2 \beta_2 x_3 \beta_3 x_n \beta_n} e^u$$

Where  $y$  is yield of crop and  $x_1$  to  $X_n$  represents per acre use of inputs. The elasticity co-efficients, i.e.  $\beta$ 's indicate the factor use efficiency in influencing crop yields in owner operated and leased land. It would be seen from Table-25 that elasticity co-efficient of labour use in rice cultivation was positive, albeit statistically non-significant in leased in land in three out of six districts studied in Bihar, while this was positive and statistically significant in one district and negative, but statistically non-significant in two districts. In Uttar Pradesh, the relationship between labour use and rice yield was positive and statistically significant in two districts, while it was positive and

statistically non-significant in three districts and negative and statistically non-significant in three districts. In the case of owner operated land in Bihar (Table – 26), the relationship between labour use and rice yield was positive and statistically significant in two districts, and negative and statistically non-significant in three districts and positive and statistically non-significant in one district. In the case of won land in Uttar Pradesh, it was positive, but statistically non-significant in six districts and negative and statistically non-significant in two districts. As regards fertilizer use, in leased in land in Bihar, the elasticity co-efficient was negative, but statistically non-significant in three out of six districts and positive and statistically non-significant in three other districts. In owner operated land the relationship between fertilizer use and rice yield was positive and statistically significant in two out of six districts, while it was negative an statistically significant in two districts and positive, but statistically non-significant in two other districts. Similarly, in Uttar Pradesh, the elasticity co-efficient of fertilizer use in leased inland was negative and statistically non-significant in two districts and positive, but statistically non-significant in six districts. In owner-operated land, it was positive but statistically non-significant in five districts and negative, but statistically non-significant in three other districts.

On the whole, there is no clear evidence that input use efficiency was greater in owner operated land than leased in land.

**Table 25: Elasticity co-efficients of inputs influencing the yields of rice in leased in land**

State	District	Elasticity co-efficients of			
		Seed	Fertilizer	Labour	Irrigation
Bihar	Siwan	0.13***	-0.16	-0.02***	0.002
	Rohtas	0.01	-0.02	0.01	-0.001
	Khagaria	0.08	0.10	0.90***	0.007***
	Kishangunj	0.25***	0.02	-0.01	-0.003
	West Champaran	0.12	-0.18	0.01	0.17
	Bhagalpur	0.22	0.01	0.36	0.004
Uttar Pradesh	J. P. Nagar	-0.06	0.03	0.02	-0.05
	Lalitpur	0.06	0.04	0.79**	0.01
	Unnao	-0.001	-0.06	0.12***	0.002
	Mau	-0.31	-0.25	-0.04***	-0.01
	Sonbhadra	-0.06	-0.78	-0.003	-0.006
	Chitrakoot	-0.02	0.09	-0.004	0.17*
	Fatehpur	0.02	0.01	-0.004	0.03



	Muzaffarnagar	0.01	0.10	-0.62	0.01
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*\*indicates statistically significant at 10 per cent level \*\*indicates statistically significant at 5 per cent level  
\*\*\*indicates statistically significant at 1 per cent level*

**Table 26: Elasticity co-efficients of various Inputs influencing yields of rice in owner operated land**

State	District	Elasticity co-efficients of			
		Seed	Fertilizer	Labour	Irrigation
Bihar	Siwan	0.42	-0.15**	-0.01**	-0.01
	Rohtas	0.03	0.03***	0.05**	0.01
	Khagaria	0.55***	0.28***	0.43***	0.01***
	Kishangunj	0.57***	0.06	0.57***	0.004*
	West Champaran	0.07	-0.15	-0.07	0.015
	Bhagalpur	-0.01	0.02	-0.03	-0.001
Uttar Pradesh	J. P. Nagar	-0.08	-0.02	0.01	-0.08
	Lalitpur	0.14	0.01*	0.01	-0.001
	Unnao	0.12	0.21*	0.004	-0.005
	Mau	0.60	0.53	0.005	0.10
	Sonbhadra	-0.61	0.79	0.11	-0.004
	Chitrakoot	0.72	-0.98	0.52	0.18
	Fatehpur	0.03	0.01	0.01	0.01
	Muzaffarnagar	0.47	-0.01	-0.33	0.22

*\*indicates statistically significant at 10 per cent level \*\*indicates statistically significant at 5 per cent level  
\*\*\*indicates statistically significant at 1 per cent level*

## VI

### 6.0 SUMMARY AND CONCLUSION

Leasing out of agricultural land is prohibited by law in Bihar and Uttar Pradesh excepting for certain disabled categories of people. However, despite legal restrictions, informal land leasing takes place in both Bihar and Uttar Pradesh. The results of our field survey indicate that leased in area ranged between 24.6 per cent in Siwan and 1.8 per cent in Bhagalpur in the state of Bihar and between 52 per cent in J.P. Nagar and 15.9 per cent in Lalitpur in Uttar Pradesh. The pure tenant holdings were as such as 21 to 22 per cent in Bhagalpur, Khagaria and Kishangunj districts of Bihar and 29 to 51 per cent in Chitrakoot, J.P. Nagar, Sonbhadra and Mau districts or Uttar Pradesh. The party owned and partly leased in holdings constituted nearly 88 per cent to 90 per cent of the total operational holdings in Rohtas and Siwan districts of Bihar and 56 to 99 per cent of that in Unnao, J.P. Nagar and Lalitpur district of Uttar Pradesh. On average, the area leased in by tenant household was 1.08 acre in Bihar and 2.24 acre in Uttar Pradesh. The duration of lease, however, in most cases was short, less than 2 years in both Bihar and Uttar Pradesh, confirming the

fact that informal tenants do not have much security of tenure which is essential for incentivizing them to invest in land improvement. Nearly 68.5 per cent of the lessors in Bihar were medium and large farmers, but in Uttar Pradesh, lessors were evenly distributed among all size classes of land owners. Absentee landlords constituted about 17.1 per cent of the total leased out land in Uttar Pradesh and 6.2 per cent in Bihar. The main reasons for leasing in land included (i) full utilization of available family labour and (ii) need for additional income for livelihood security as well as repayment of loan and (iii) improvement in size of land holding for viability and social status.

#### **6.1 IMPACT ON AGRICULTURAL EFFICIENCY**

Measured in terms of yields, net returns and output-input ratio, the level of agricultural efficiency of leased land was as good as that of owner operated land. In some cases, the yields, net return and output ratio of leased land was higher than owner operated land. This could be largely attributed to close monitoring of farm operations by resident landowners, more intensive cultivation of land by the tenants for improving their income and status and sharing of farm inputs by land owners in some cases. In fact, legalization or formalization of land leasing may further lead to improvement inland productivity and net returns of tenant farmers, especially, if it is supported by increased security of tenure, access to bank credit and investment in modern inputs. Majority of the tenants as well as landowners expressed a view that legalization of land leasing would help improve land productivity as well as much needed occupational mobility of the people.

#### **6.2 IMPACT OF LAND LEASING ON EQUITY**

Our field survey clearly brings out that majority of tenants in both Bihar and Uttar Pradesh was landless and marginal and small farmers. Only 0.5 per cent of tenants in Bihar and 5.3 per cent in Uttar Pradesh were large farmers. The lease market, even though informal, helped improve the rural poor's access to land, income and social status. Although there were inter-linkages between land leasing, labour and credit markets, in some places in both Bihar and Uttar Pradesh, there was no exploitation involved in the relationship, as generally believed. Both landowners and tenants benefitted from it, as expressed by them during the course of field survey. Also the average rent paid by sharecroppers was much less, as compared to that under either fixed rent or fixed produce leasing, thereby disproving the fact that sharecropping arrangements are always more exploitative than other forms of leasing.

### **6.3 WOMEN'S ACCESS TO LEASED LAND**

**Hardly 3.3 per cent of tenants in Bihar and 3.2 per cent in Uttar Pradesh were women. The yields as well as net returns of crops were found to be lower in leased in land than that of own land in women headed households in most of the districts studied, due to their lower access to institutional credit and also low investment in modern inputs in leased land.**

## **VII**

### **7.0 POLICY IMPLICATIONS**

**In view of the facts that land leasing helps improve the land access by landless workers and marginal and small farmers, thereby enabling them to improve their food and livelihood security as well as social status, without adversely impacting agricultural efficiency, the policy recommendations are as follows:**

- i. The legal restrictions on land leasing should be removed and leasing in and leasing out of agricultural land for agriculture by agriculturalists should be legally allowed. This would activate the land lease market and improve the rural poor's access to land for their increased food and livelihood security.**

- ii. As majority of those who lease in land are landless, marginal and small farmers and also the rent paid by them is mutually agreed upon, even formalization of land leasing would help promote inclusive agricultural growth.
- iii. Since utilization of surplus family labour is one of the important reasons for leasing in land, an active, albeit formal land lease market would result in better utilization of land and labour.
- iv. Growth of active land lease market may also facilitate occupational mobility of the people, as landowners would freely move out of agriculture if they do not have any fear of losing land in case they lease out.

As a matter of fact, India's planners have been emphasizing the need for removing legal restrictions on land leasing for the last several years. As pointed out in the Mid-Term Appraisal of the Tenth Five Year Plan. 'the country's tenancy laws are highly restrictive. ....The restrictive tenancy laws have prevented optimum allocation of land resources and denied the rural poor access to land. They have also led to concealed tenancy in which cases the tenant has no protection. The fear of reverse tenancy is also unfounded as small and marginal farmers account for over 80 per cent of the total leased in land in the country. In any case, the existing ceiling laws can be leveraged to prevent reverse tenancy by stipulating that operational holdings could not exceed those prescribed under the ceiling laws' (Govt. of India: 2005). The Twelfth Five Year Plan (Govt. of India: 2013) points out that 'there is a strong case for legalization of tenancy and allowing leasing in and leasing out of agricultural land with adequate safeguard to protect the interests of small and marginal farmers.' Unfortunately, the state governments are not yet moved to amend their tenancy laws which would have served the interests of economic growth as well as equity better.

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## APPENDIX

### Appendix 1: List of Districts Selected for the Primary Survey

	District	Block	Village
<b>Bihar</b>			
<b>NW Alluvial</b>	Siwan	Jiradei	Chainpur , Rajaram, Titra

<b>Plains</b>		Siswan	Mubarakpur, Thepaha
	West Champanan	Bagha-2	Dhum Nagar, Pathkaula
		Narkatiyaganj	Dhum Nagar
<b>NE Alluvial Plains</b>	Khagaria	Alauil	Maurikahi Tola
		Prabatta	Mehdipur
	Kishanganj	Kochadahman	Talbari
		Thakurganj	Kazi Basti
<b>South Bihar Alluvial Plains</b>	Bhagalpur	Goradhi	Raipura
		Senoula	Belsar
	Rohtas	karahgar	Akorai
		Karakat	Amaura
<b>Uttar Pradesh</b>			
<b>Bundelkhand Region</b>	Chitrakoot	Karvi	Ragauli
		Ramnagar	Bandhi
	Lalitpur	Bar	Bar, Bhamari Tahana, Motikhana, Neem Khana, Radhapur, Semra Bujurg, Todi, Turka
		Birdha	Birari
<b>Central Region</b>	Fatehpur	Asothar	Begati Pur, Chunkajhal, Pratappur, Ranipur, Sujanpur
		Malwa	Aamora, Barura, Chhakki, Jagdeshpur, Sora
	Unnao	Ashoha	Alapur, Daukhera, Gurbar Khera, Kewni, Pathakpur, Tainapur
		Fatehpur	Husain Nagar, Jagdishpur, Shakurabad
<b>Eastern Region</b>	Mau	Fatehpur	Dubari, Lakhimpur
		Ghosi	Kurthi Jabarpur, Lakni Mubarakpur
	Sonbhadra	Muairpur	Dubhaa, Patee
		Roberganj	Jamghai, Barkara
<b>Western Region</b>	J.P.Nagar	Dhanaura	Mohiuddinpur
		Joya	Sarkari Aziz
	Muzaffernagar	Charthawal	Guniya Jodi
		Purkazi	Sharpur

### Appendix 2: Sample size by and class

District	Landless	Marginal	Small	Medium	Large	Total
Bhagalpur	17	46	26	9	2	100
Khagaria	19	21	20	20	20	100
Kishanganj	21	20	21	21	17	100
Rohtas	5	42	26	25	2	100

Siwan	9	35	31	19	6	100
West Champaran	2	34	33	25	6	100
<b>Bihar</b>	<b>73</b>	<b>198</b>	<b>157</b>	<b>119</b>	<b>53</b>	<b>600</b>
Chitrakoot	22	44	23	8	3	100
Fatehpur	18	40	19	20	3	100
J.P.Nagar	39	32	10	13	6	100
Lalitpur		10	31	39	20	100
Mau	36	24	29	9	2	100
Muzaffernagar	19	29	21	17	14	100
Sonbhadra	33	12	39	16		100
Unnao	18	45	28	5	4	100
<b>Uttar Pradesh</b>	<b>185</b>	<b>236</b>	<b>200</b>	<b>127</b>	<b>52</b>	<b>800</b>
<b>Total</b>	<b>258</b>	<b>434</b>	<b>357</b>	<b>246</b>	<b>105</b>	<b>1400</b>

### Appendix 3: Cropping Pattern: per cent area under various crops

District/State	Rice	Wheat	Bajra	Jowar	Maize	Jau	Arhar	Gram	Masoor	Pea	Urad	Lentil	Groundnut	Moong	Mustard	Rai	Sunflower	Til
Bhagalpur	18.49	41.41	-	-	28.21	-	-	4.16	-	-	-	-	-	-	2.29	-	-	-
Khagaria	39.23	25.90	-	-	32.88	-	-	-	-	-	-	-	-	0.47	-	-	1.52	-
Kishanganj	48.77	6.13	-	-	3.42	-	-	-	-	-	-	-	-	-	1.53	-	-	-
Rohtas	47.64	44.54	-	-	-	-	-	-	3.96	-	-	-	-	-	0.30	-	-	-
Siwan	45.50	40.35	-	-	-	-	-	-	5.42	-	-	-	-	-	-	-	-	-
West Champaran	45.32	39.98	-	-	0.13	-	-	-	5.47	-	-	-	-	-	-	-	-	-
<b>Bihar</b>	42.66	30.46	-	-	11.45	-	-	0.32	2.35	-	-	-	-	0.12	0.51	-	0.40	-
Chitrakoot	14.74	33.32	2.23	3.96	-	-	15.38	18.31	4.13	-	-	3.01	-	-	3.13	0.56	-	0.11
Fatehpur	48.68	50.62	-	-	-	0.28	-	-	-	-	-	-	-	-	-	-	-	-
J.P.Nagar	15.08	27.51	1.99	-	0.10	-	-	-	-	0.31	-	-	-	-	2.05	-	-	-
Lalitpur	10.88	52.32	4.34	0.66	13.47	-	-	13.87	-	0.92	1.45	-	0.33	-	-	-	-	-
Mau	49.60	50.40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Muzaffernagar	8.05	29.79	-	3.46	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sonbhadra	50.00	50.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unnao	47.90	46.34	-	-	-	-	-	-	-	-	-	-	-	-	5.76	-	-	-
<b>Uttar Pradesh</b>	26.00	43.01	1.60	0.91	3.48	0.04	1.16	4.94	0.31	0.29	0.37	0.23	0.08	-	0.97	0.04	-	0.01

District/State	Tisi	Potato	Bhindi	Brinjal	Cauliflower	Chilli	Ginger	Turmeric	Sugarcan	Jute	Mentha	Tea	Tomato	Fodder	Bajra/Fodder	Bajra/Jowar	Barshim
Bhagalpur	0.86	4.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Khagaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kishanganj	-	-	-	0.01	-	-	2.17	2.10	-	35.06	-	0.80	-	-	-	-	-
Rohtas	-	0.30	-	-	-	-	-	-	3.26	-	-	-	-	-	-	-	-
Siwan	-	-	-	-	-	-	-	-	8.73	-	-	-	-	-	-	-	-
West Champaran	-	0.13	-	-	-	-	-	-	8.97	-	-	-	-	-	-	-	-
<b>Bihar</b>	0.07	0.41	-	0.00	-	-	0.42	0.41	3.43	6.82	-	0.15	-	-	-	-	-
Chitrakoot	-	-	-	-	-	-	-	-	1.12	-	-	-	-	-	-	-	-
Fatehpur	-	0.42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
J.P.Nagar	-	10.96	-	-	-	-	-	-	18.22	-	18.57	-	-	3.06	0.21	1.94	-
Lalitpur	-	-	0.59	0.39	0.20	0.07	-	-	-	-	-	-	0.53	-	-	-	-
Mau	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Muzaffernagar	-	-	-	-	-	-	-	-	58.58	-	-	-	-	-	-	-	0.13
Sonbhadra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Unnao	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Uttar Pradesh</b>	-	1.82	0.15	0.10	0.05	0.02	-	-	10.45	-	2.99	-	0.13	0.49	0.03	0.31	0.02



**Appendix 4(a): Percentage distribution of Own Irrigated & unirrigated land by Land Class**

District/State	Marginal		Small		Medium		Large	
	Irrigated	Unirrigated	Irrigated	Unirrigated	Irrigated	Unirrigated	Irrigated	Unirrigated
Bhagalpur	100.00	-	100.00	-	100.00	-	100.00	-
Khagaria	93.55	6.45	87.70	12.30	89.82	10.18	87.18	12.82
Kishanganj	65.79	34.21	59.56	40.44	62.59	37.41	65.52	34.48
Rohtas	98.99	1.01	99.20	0.80	89.41	10.59	93.33	6.67
Siwan	100.00	-	100.00	-	97.26	2.74	96.77	3.23
West Champanan	100.00	-	100.00	-	97.96	2.04	96.77	3.23
<b>Bihar</b>	95.48	4.52	93.76	6.24	89.35	10.65	83.27	16.73
Chitrakoot	56.00	44.00	60.34	39.66	55.74	44.26	47.06	52.94
Fatehpur	100.00	-	97.27	2.73	96.00	4.00	100.00	-
J.P.Nagar	79.31	20.69	93.51	6.49	90.32	9.68	76.74	23.26
Lalitpur	91.89	8.11	62.70	37.30	65.13	34.87	46.53	53.47
Mau	100.00	-	100.00	-	100.00	-	91.67	8.33
Muzaffernagar	100.00	-	87.20	12.80	89.97	10.03	94.73	5.27
Sonbhadra	100.00	-	100.00	-	100.00	-	-	-
Unnao	100.00	-	100.00	-	100.00	-	100.00	-
<b>Uttar Pradesh</b>	89.45	10.55	88.05	11.95	82.43	17.57	74.24	25.76

**Appendix 4(b): Percentage distribution of Leased-in Irrigated & unirrigated land by Land Class**

District/State	Landless		Marginal		Small		Medium		Large	
	Irrigated	Unirrigated	Irrigated	Unirrigated	Irrigated	Unirrigated	Irrigated	Unirrigated	Irrigated	Unirrigated
Bhagalpur	100.00	-	100.00	-	100.00	-	100.00	-	-	-
Khagaria	73.68	26.32	50.00	50.00	-	-	-	-	-	-
Kishanganj	57.14	42.86	15.38	84.62	100.00	-	-	-	-	-
Rohtas	95.89	4.11	98.94	1.06	100.00	-	-	-	-	-
Siwan	100.00	-	100.00	-	100.00	-	100.00	-	100.00	-
West Champanan	100.00	-	100.00	-	100.00	-	-	-	-	-
<b>Bihar</b>	82.73	17.27	96.44	3.56	100.00	-	100.00	-	100.00	-
Chitrakoot	58.24	41.76	49.72	50.28	44.09	55.91	84.21	15.79	32.00	68.00
Fatehpur	99.86	0.14	100.00	-	100.00	-	100.00	-	-	-
J.P.Nagar	98.28	1.72	97.52	2.48	95.24	4.76	100.00	-	100.00	-
Lalitpur	-	-	94.12	5.88	17.50	82.50	3.10	96.90	-	100.00
Mau	100.00	-	-	-	-	-	-	-	-	-
Muzaffernagar	97.11	2.89	100.00	-	100.00	-	100.00	-	100.00	-
Sonbhadra	100.00	-	-	-	-	-	-	-	-	-
Unnao	100.00	-	100.00	-	100.00	-	-	-	-	-
<b>Uttar Pradesh</b>	95.62	4.38	85.61	14.39	65.54	34.46	60.12	39.88	53.21	46.79

## Appendix 5: Per cent area under Irrigated by land class

District/State	Landless		Marginal		Small		Medium		Large	
	Own	Leased-in	Own	Leased-in	Own	Leased-in	Own	Leased-in	Own	Leased-in
Bhagalpur	-	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	-
Khagaria	-	73.68	93.55	50.00	87.70	-	89.82	-	87.18	-
Kishanganj	-	57.14	65.79	15.38	59.56	100.00	62.59	-	65.52	-
Rohtas	-	95.89	98.99	98.94	99.20	100.00	89.41	-	93.33	-
Siwan	-	100.00	100.00	100.00	100.00	100.00	97.26	100.00	96.77	100.00
West Champaran	-	100.00	100.00	100.00	100.00	100.00	97.26	-	96.77	-
<b>Bihar</b>	-	82.73	95.48	96.44	93.76	100.00	89.35	100.00	83.27	100.00
Chitrakoot	-	58.24	56.00	49.72	60.34	44.09	55.74	84.21	47.06	32.00
Fatehpur	-	99.86	100.00	100.00	97.27	100.00	96.00	100.00	100.00	-
J.P.Nagar	-	98.28	75.48	97.52	88.89	95.24	86.60	100.00	76.74	100.00
Lalitpur	-	-	91.89	94.12	62.70	17.50	65.13	3.10	46.53	-
Mau	-	100.00	100.00	-	100.00	-	100.00	-	91.67	-
Muzaffernagar	-	97.11	100.00	100.00	87.20	100.00	89.97	100.00	94.73	100.00
Sonbhadra	-	100.00	100.00	-	100.00	-	100.00	-	-	-
Unnao	-	100.00	100.00	100.00	100.00	100.00	100.00	-	100.00	-
<b>Uttar Pradesh</b>	-	95.62	88.95	85.61	87.83	65.54	82.09	60.12	74.24	23.21

## Appendix 6: Fertilizer use per acre

District/States		Rice				Wheat				Maize			
		N	P2O5	K2O	(N+P+K)	N	P2O5	K2O	(N+P+K)	N	P2O5	K2O	(N+P+K)
Bhagalpur	Leased-in Land	28.05	20.24	11.60	59.89	51.06	20.27	8.70	80.03	28.95	18.73	14.50	62.18
	Own Land	25.27	16.95	12.78	55.00	37.29	16.18	11.46	64.93	25.89	14.98	12.49	53.36
Khagaria	Leased-in Land	35.61	17.48	21.95	75.04	41.53	22.31	13.34	77.18	32.74	40.41	24.09	97.24
	Own Land	37.06	18.05	18.00	73.12	55.29	23.09	20.09	98.47	36.43	42.76	33.50	112.69
Kishanganj	Leased-in Land	16.47	9.94	8.21	34.62	12.23	9.20	0.00	21.43	14.60	13.80	0.00	28.40
	Own Land	17.95	10.51	9.58	38.04	12.64	8.79	6.34	27.77	13.08	10.45	8.12	31.66
Rohtas	Leased-in Land	29.27	18.53	22.60	70.40	29.48	19.24	23.38	72.09	0.00	0.00	0.00	0.00
	Own Land	33.55	20.51	25.71	79.76	31.43	19.29	23.83	74.55	0.00	0.00	0.00	0.00
Siwan	Leased-in Land	17.40	13.61	16.24	47.25	16.14	13.65	16.76	46.54	0.00	0.00	0.00	0.00
	Own Land	22.74	14.19	16.62	53.55	23.43	15.96	18.02	57.41	0.00	0.00	0.00	0.00
West Champaran	Leased-in Land	17.60	13.17	15.66	46.43	16.86	14.53	17.40	48.79	0.00	0.00	0.00	0.00
	Own Land	21.73	13.94	18.25	53.92	22.71	15.78	18.85	57.34	11.90	6.90	0.00	18.80
<b>Bihar</b>	Leased-in Land	23.12	14.98	18.76	56.86	26.04	17.12	19.55	62.72	31.13	32.30	23.41	86.84
	Own Land	26.34	15.67	17.93	59.95	31.75	17.32	18.73	67.80	30.49	29.66	28.88	89.03
Chitrakoot	Leased-in Land	47.96	31.68	0.00	79.64	28.59	20.62	0.00	49.21	0.00	0.00	0.00	0.00
	Own Land	49.35	32.20	0.00	81.55	28.55	20.57	0.00	49.13	0.00	0.00	0.00	0.00
Fatehpur	Leased-in Land	47.37	20.41	5.80	73.58	40.65	21.05	5.80	67.50	0.00	0.00	0.00	0.00
	Own Land	37.81	21.75	7.73	67.29	32.71	18.65	7.73	59.09	0.00	0.00	0.00	0.00
J.P.Nagar	Leased-in Land	41.18	30.67	0.00	71.85	50.75	34.95	0.00	85.70	22.40	16.10	0.00	38.50
	Own Land	43.62	27.51	0.00	71.14	51.03	34.96	43.50	129.49	0.00	0.00	0.00	0.00
Lalitpur	Leased-in Land	28.09	23.58	0.00	51.66	27.03	22.04	0.00	49.07	29.24	23.00	0.00	52.24
	Own Land	27.78	24.64	0.00	52.42	28.26	22.24	0.00	50.50	26.46	19.93	0.00	46.39
Mau	Leased-in Land	20.80	7.97	14.32	43.09	14.90	16.15	17.40	48.45	0.00	0.00	0.00	0.00
	Own Land	18.95	8.43	16.21	43.59	15.93	17.49	17.40	50.82	0.00	0.00	0.00	0.00
Muzaffernagar	Leased-in Land	72.40	32.20	0.00	104.60	59.77	28.65	0.00	88.41	0.00	0.00	0.00	0.00
	Own Land	82.05	33.35	8.70	124.10	60.41	27.60	17.40	105.41	0.00	0.00	0.00	0.00
Sonbhadra	Leased-in Land	18.51	8.13	16.42	43.06	15.08	16.10	0.00	31.18	0.00	0.00	0.00	0.00
	Own Land	19.34	8.27	17.03	44.63	15.77	16.78	0.00	32.54	0.00	0.00	0.00	0.00
Unnao	Leased-in Land	32.41	21.43	16.08	69.93	21.92	20.26	0.00	42.18	0.00	0.00	0.00	0.00
	Own Land	36.98	25.07	16.72	78.77	35.13	25.25	0.00	60.38	0.00	0.00	0.00	0.00
<b>Uttar Pradesh</b>	Leased-in Land	34.16	19.65	20.65	74.47	30.77	21.71	204.93	257.42	27.65	20.70	0.00	48.35
	Own Land	35.80	20.99	20.99	77.79	33.92	22.29	99.01	155.23	26.46	19.93	0.00	46.39

District/States		Sugarcane				Potato			
		N	P2O5	K2O	(N+P+K)	N	P2O5	K2O	(N+P+K)
Bhagalpur	Leased-in Land	0.00	0.00	0.00	0.00	20.50	23.00	0.00	43.50
	Own Land	0.00	0.00	0.00	0.00	24.06	19.03	14.50	57.58
Khagaria	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kishanganj	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rohtas	Leased-in Land	25.95	17.83	20.30	64.08	0.00	0.00	0.00	0.00
	Own Land	38.18	22.62	30.16	90.95	23.90	19.93	20.30	64.13
Siwan	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	29.73	18.47	20.97	69.17	0.00	0.00	0.00	0.00
West Champaran	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	27.58	18.37	20.66	66.61	17.40	9.20	11.60	38.20
<b>Bihar</b>	Leased-in Land	25.95	17.83	20.30	64.08	20.50	23.00	0.00	43.50
	Own Land	30.55	19.27	23.20	73.02	23.54	18.55	15.59	57.68
Chitrakoot	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	73.20	46.00	0.00	119.20	0.00	0.00	0.00	0.00
Fatehpur	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	0.00	0.00	0.00	0.00	45.40	69.00	0.00	114.40
J.P.Nagar	Leased-in Land	83.63	34.68	18.99	137.30	56.71	40.46	13.53	110.70
	Own Land	77.57	36.96	19.33	133.87	64.00	46.00	8.70	118.70
Lalitpur	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mau	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Muzaffernagar	Leased-in Land	94.17	47.70	0.00	141.87	0.00	0.00	0.00	0.00
	Own Land	75.79	40.75	1.16	117.70	0.00	0.00	0.00	0.00
Sonbhadra	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unnao	Leased-in Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Own Land	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Uttar Pradesh</b>	Leased-in Land	88.04	40.01	18.99	147.03	56.71	40.46	13.53	110.70
	Own Land	76.23	39.92	16.74	132.89	50.10	57.50	8.70	116.30

### Appendix 7: Percentage distribution of leased-in period by land class

Land Class	Period	Bihar							Uttar Pradesh								
		Bhagalpur	Khagaria	Kishanganj	Rohtas	Siwan	West Champaran	Bihar	Chittra-koot	Fatehpur	J.P.Nagar	Lalitpur	Mau	Muzaffe-rnagar	Sonbh-adra	Unnao	Uttar Pradesh
Landless	Less Than 1 year	9.09	58.82	29.41	0.00	0.00	0.00	30.77	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1-2 Years	0.00	35.29	70.59	100.00	75.00	100.00	46.15	18.75	100.00	74.36	0.00	100.00	94.44	100.00	100.00	83.67
	3-5 Years	90.91	5.88	0.00	0.00	25.00	0.00	23.08	81.25	0.00	25.64	0.00	0.00	5.56	0.00	0.00	16.33
	Above 5 yrs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00	100.00	100.00	100.00
Marginal	Less Than 1 year	0.00	50.00	0.00	0.00	0.00	0.00	1.72	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19
	1-2 Years	20.00	50.00	100.00	100.00	50.00	85.71	70.69	21.43	100.00	68.75	100.00	0.00	100.00	0.00	0.00	61.90
	3-5 Years	80.00	0.00	0.00	0.00	50.00	14.29	27.59	71.43	0.00	31.25	0.00	0.00	0.00	0.00	0.00	35.71
	Above 5 yrs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.19
	Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00	0.00	0.00
Small	Less Than 1 year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1-2 Years	0.00	0.00	0.00	0.00	33.33	0.00	30.00	40.00	100.00	77.78	100.00	0.00	100.00	0.00	0.00	85.19
	3-5 Years	100.00	0.00	0.00	0.00	33.33	0.00	40.00	60.00	0.00	22.22	0.00	0.00	0.00	0.00	0.00	14.81
	Above 5 yrs	0.00	0.00	0.00	0.00	33.33	0.00	30.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	100.00	0.00	0.00	0.00	100.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00	0.00	0.00
Medium	Less Than 1 year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1-2 Years	0.00	0.00	0.00	0.00	50.00	0.00	50.00	100.00	0.00	76.92	100.00	0.00	100.00	0.00	0.00	94.23
	3-5 Years	0.00	0.00	0.00	0.00	33.33	0.00	33.33	0.00	0.00	23.08	0.00	0.00	0.00	0.00	0.00	5.77
	Above 5 yrs	0.00	0.00	0.00	0.00	16.67	0.00	16.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.00	0.00	0.00	0.00	100.00	0.00	100.00	100.00	0.00	100.00	100.00	100.00	0.00	100.00	0.00	0.00
Large	Less Than 1 year	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1-2 Years	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.33	100.00	0.00	100.00	0.00	0.00	91.30
	3-5 Years	0.00	0.00	0.00	0.00	100.00	0.00	100.00	100.00	0.00	16.67	0.00	0.00	0.00	0.00	0.00	8.70
	Above 5 yrs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	0.00	0.00	0.00	0.00	100.00	0.00	100.00	100.00	0.00	100.00	100.00	0.00	100.00	0.00	0.00	100.00

### Appendix 8: Average yield of own and leased-in land by size class

Districts/States	Crops	Landless	Marginal		Small		Medium		Large	
		Leased-in Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land
Bhagalpur	Rice	13.90	12.67	13.90	0.00	13.17	0.00	12.83	0.00	14.00
	Wheat	14.38	13.67	14.19	0.00	13.76	0.00	13.25	0.00	15.00
	Gram	0.00	0.00	2.13	0.00	4.13	0.00	2.50	0.00	0.00
	Maize	19.46	24.83	19.88	0.00	16.88	0.00	20.29	0.00	16.50
	Mustard	0.60	0.00	0.60	0.00	0.60	0.00	0.00	0.00	0.55
	Potato	45.00	40.00	33.33	0.00	50.00	0.00	37.00	0.00	0.00
	Tisi	0.00	0.00	0.25	0.00	17.00	0.00	0.00	0.00	0.00
Khagaria	Rice	13.75	13.00	14.69	0.00	14.05	0.00	14.47	0.00	14.58
	Wheat	11.50	10.00	13.95	0.00	12.87	0.00	13.66	0.00	13.78
	Maize	38.38	40.00	39.30	0.00	38.61	0.00	40.06	0.00	39.87
	Moong	0.00	0.00	3.00	0.00	2.50	0.00	3.00	0.00	3.00
	Sunflower	0.00	0.00	8.00	0.00	0.00	0.00	7.75	0.00	8.10
Kishanganj	Rice	12.43	12.00	12.85	12.00	12.79	13.05	13.01	13.25	13.29
	Wheat	8.33	0.00	6.00	6.00	6.75	7.00	6.83	7.25	7.33
	Maize	8.00	0.00	8.00	0.00	8.00	8.00	8.00	7.25	7.75
	Mustard	3.67	3.00	4.00	0.00	0.00	0.00	4.00	0.00	0.00
	Ginger	18.75	0.00	26.33	0.00	22.88	0.00	27.50	0.00	30.40
	Jute	6.17	5.50	7.10	6.00	7.02	6.50	6.16	7.20	7.13
	Tea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	346.67
	Turmeric	28.00	0.00	0.00	0.00	30.00	0.00	29.00	0.00	29.50
	Brinjal	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00
Rohtas	Rice	15.75	15.75	15.62	0.00	16.63	0.00	16.27	0.00	16.00
	Wheat	11.50	10.97	11.18	0.00	11.84	0.00	11.23	0.00	10.00
	Masoor	0.00	6.00	6.78	0.00	6.86	0.00	7.20	0.00	7.00
	Mustard	0.00	0.00	1.17	0.00	3.00	0.00	3.50	0.00	1.00
	Sugarcane	0.00	233.33	300.00	300.00	300.00	258.00	257.50	0.00	0.00
	Potato	0.00	0.00	40.00	0.00	30.00	0.00	50.00	0.00	0.00
Siwan	Rice	9.50	10.78	12.27	0.00	9.89	0.00	11.27	0.00	10.42
	Wheat	12.50	11.72	11.63	0.00	12.18	0.00	11.45	0.00	11.00
	Masoor	0.00	0.00	5.78	0.00	5.60	0.00	6.67	0.00	5.83
	Mustard	0.00	0.00	0.80	0.00	0.50	0.00	0.40	0.00	0.00
	Sugarcane	0.00	0.00	250.00	0.00	240.00	0.00	206.25	0.00	216.00
West Champaran	Rice	12.00	10.63	11.61	8.00	10.30	9.50	10.82	10.50	10.42
	Wheat	12.50	11.79	11.86	10.00	12.16	11.05	11.35	11.10	11.00
	Maize	0.00	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00
	Masoor	0.00	0.00	5.75	0.00	5.60	6.00	6.56	6.00	5.83
	Mustard	0.00	0.00	0.80	0.00	0.50	0.00	0.40	0.00	0.00
	Sugarcane	0.00	0.00	237.50	0.00	262.00	0.00	217.86	0.00	216.00
	Potato	0.00	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00
Bihar	Rice	12.91	12.95	13.50	10.00	12.42	11.28	13.45	11.88	13.23
	Wheat	12.53	11.48	12.46	8.00	12.35	9.03	11.64	9.18	12.22
	Maize	28.15	27.00	26.98	0.00	27.03	8.00	30.10	7.25	32.86
	Masoor	0.00	6.00	6.12	0.00	5.93	6.00	6.84	6.00	5.92
	Moong	0.00	0.00	3.00	0.00	2.50	0.00	3.00	0.00	3.00
	Gram	0.00	0.00	2.13	0.00	4.13	0.00	2.50	0.00	0.00
	Mustard	2.44	3.00	1.35	0.00	0.97	0.00	2.63	0.00	0.70
	Ginger	18.75	0.00	26.33	0.00	22.88	0.00	27.50	0.00	30.40
	Brinjal	0.00	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00
	Jute	6.17	5.50	7.10	6.00	7.02	0.00	6.16	0.00	7.13
	Potato	45.00	40.00	34.29	0.00	46.67	0.00	41.33	0.00	0.00
	Sugarcane	0.00	233.33	250.00	300.00	262.31	258.00	225.33	0.00	216.00
	Sunflower	0.00	0.00	8.00	0.00	0.00	0.00	7.75	0.00	8.10

	Tea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	346.67
	Tisi	0.00	0.00	0.25	0.00	17.00	0.00	0.00	0.00	0.00
	Turmeric	28.00	0.00	0.00	0.00	30.00	0.00	29.00	0.00	29.50
Chitrakoot	Rice	15.50	14.20	14.00	14.00	14.00	14.00	14.00	14.00	14.00
	Wheat	16.53	16.36	16.44	16.44	16.42	16.00	16.00	16.00	16.00
	Bajra	0.00	0.00	7.00	7.00	7.00	0.00	7.00	0.00	0.00
	Jowar	0.13	0.13	0.13	0.00	0.13	0.00	0.13	0.00	0.00
	Arhar	7.00	6.73	7.25	6.30	6.80	8.00	7.67	0.00	8.00
	Gram	7.90	7.96	7.93	8.00	8.00	0.00	7.67	6.00	0.00
	Masoor	7.00	6.25	7.00	6.33	6.63	0.00	0.00	0.00	0.00
	Lentil	6.00	8.00	6.00	8.00	0.00	8.00	0.00	6.00	0.00
	Mustard	5.00	7.20	4.00	5.20	6.00	0.00	0.00	0.00	0.00
	Rai	5.00	6.50	0.00	5.00	0.00	0.00	0.00	0.00	0.00
	Til	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00
	Sugarcane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	165.00
Fatehpur	Rice	13.33	14.96	12.74	12.50	12.92	13.00	16.24	0.00	8.65
	Wheat	13.88	11.67	10.28	11.00	13.14	10.00	11.71	0.00	8.83
	Jau	0.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
	Potato	0.00	0.00	50.00	0.00	0.00	0.00	80.00	0.00	0.00
J.P.Nagar	Rice	18.22	17.00	18.93	18.00	17.60	17.00	17.71	0.00	16.33
	Wheat	22.85	22.65	23.45	25.00	24.30	25.00	24.38	0.00	26.17
	Bajra	0.00	6.00	0.00	0.00	0.00	7.00	0.00	8.00	0.00
	Maize	0.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Pea	0.00	0.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00
	Mustard	7.00	7.00	6.33	8.00	0.00	7.00	0.00	0.00	0.00
	Sugarcane	236.11	217.65	230.00	238.33	229.00	240.83	227.00	248.75	251.00
	Potato	0.00	122.00	0.00	134.17	0.00	124.44	120.00	125.00	0.00
	Mentha	2.83	0.23	2.58	0.25	0.24	0.24	0.26	0.00	0.29
Lalitpur	Rice	0.00	9.83	8.29	9.25	9.09	4.00	8.39	0.00	8.50
	Wheat	0.00	9.71	9.33	6.28	9.91	5.16	8.89	4.67	7.58
	Bajra	0.00	0.00	0.00	0.00	5.00	5.00	3.00	3.00	4.25
	Jowar	0.00	0.00	0.00	0.00	0.00	6.00	6.00	0.00	0.00
	Maize	0.00	0.00	0.00	4.00	7.00	3.00	4.88	2.13	4.17
	Gram	0.00	0.00	0.00	2.67	4.50	3.17	4.71	1.67	3.67
	Groundnut	0.00	0.00	0.00	8.50	8.00	0.00	0.00	0.00	0.00
	Urad	0.00	0.00	0.00	7.25	0.00	0.00	6.00	0.00	5.00
	Pea	0.00	0.00	0.00	6.00	7.00	4.00	10.00	0.00	0.00
	Bhindi	0.00	30.00	30.00	7.00	7.00	0.00	30.00	0.00	0.00
	Brinjal	0.00	40.00	50.00	0.00	80.00	0.00	0.00	0.00	0.00
	Cauliflower	0.00	0.00	0.00	10.00	14.00	0.00	0.00	0.00	0.00
	Chilli	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
	Tomato	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
Mau	Rice	14.25	0.00	14.06	0.00	14.96	0.00	12.75	0.00	12.50
	Wheat	12.87	0.00	12.14	0.00	12.67	0.00	11.88	0.00	11.50
Muzaffernagar	Rice	13.50	10.00	9.25	10.00	11.50	10.00	0.00	0.00	9.57
	Wheat	12.90	10.00	8.00	12.25	12.25	10.00	10.67	0.00	14.08
	Jowar	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.50
	Sugarcane	263.57	194.29	123.85	177.50	181.43	250.00	312.50	335.00	229.55
Sonbhadra	Rice	14.52	16.14	14.94	15.50	15.17	0.00	0.00	0.00	0.00
	Wheat	12.12	14.07	13.44	13.50	12.33	0.00	0.00	0.00	0.00
Unnao	Rice	15.19	0.00	12.50	0.00	18.06	0.00	13.85	0.00	0.00
	Wheat	12.00	0.00	12.00	0.00	12.00	0.00	12.08	0.00	0.00
	Mustard	3.00	4.67	3.17	0.00	0.00	0.00	0.00	0.00	0.00
Uttar Pradesh	Rice	15.14	15.05	13.96	12.43	14.46	10.33	13.34	14.00	11.30
	Wheat	15.39	15.53	13.58	10.68	13.34	6.28	12.38	5.54	12.45
	Arhar	7.00	6.73	7.25	6.30	6.80	8.00	7.67	0.00	8.00

	Bajra	0.00	6.00	7.00	7.00	6.50	6.00	4.33	4.00	4.25
	Jowar	0.13	0.13	0.13	0.00	0.13	6.00	3.07	0.00	0.50
	Gram	7.90	7.96	7.93	6.67	7.26	3.17	5.60	2.29	3.67
	Groundnut	0.00	0.00	0.00	8.50	8.00	0.00	0.00	0.00	0.00
	Jau	0.00	3.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00
	Lentil	6.00	8.00	6.00	8.00	0.00	8.00	0.00	6.00	0.00
	Maize	0.00	12.00	0.00	4.00	7.00	3.00	4.88	2.13	4.17
	Masoor	7.00	6.25	7.00	6.33	6.63	0.00	0.00	0.00	0.00
	Pea	0.00	0.00	0.00	28.00	7.00	4.00	10.00	0.00	0.00
	Urad	0.00	0.00	0.00	7.25	0.00	0.00	6.00	0.00	5.00
	Rai	5.00	6.50	0.00	5.00	0.00	0.00	0.00	0.00	0.00
	Mustard	6.11	6.00	3.83	5.67	6.00	7.00	0.00	0.00	0.00
	Til	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00
	Bhindi	0.00	30.00	30.00	7.00	7.00	0.00	30.00	0.00	0.00
	Brinjal	0.00	40.00	50.00	0.00	80.00	0.00	0.00	0.00	0.00
	Cauliflower	0.00	0.00	0.00	10.00	14.00	0.00	0.00	0.00	0.00
	Chilli	0.00	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00
	Tomato	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00
	Potato	0.00	122.00	50.00	134.17	0.00	124.44	100.00	125.00	0.00
	Sugarcane	252.83	210.83	131.43	203.57	201.25	243.13	290.00	277.50	232.06
	Mentha	2.83	0.23	2.58	0.25	0.24	0.24	0.26	0.00	0.29

### Appendix 9: Net Return (Rs./acre) over Operating Cost

Districts/States	Crops	Landless	Marginal		Small		Medium		Large	
		Leased-in Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land
<b>Bhagalpur</b>	Rice	9846	7868	7516		7499		7858		10502
	Wheat	7100	5129	5441		5865		5801		9064
	Gram			1381		6716		3537		
	Maize	10180	15047	9365		7308		10524		8153
	Mustard	-1324		-2829		-3099				-2322
	Potato	18135	16221	5473		18428		14050		
	Tisi			-2503		37665				
<b>Khagaria</b>	Rice	-3969	-2330	-5330		-3199		-2433		-1945
	Wheat	-679	-1357	2439		1861		4611		4513
	Maize	25661	31143	28969		29070		31679		31523
	Moong			4256		5520		6030		6096
	Sunflower			5562				6180		8592
<b>Kishanganj</b>	Rice	-2385	-1594	-2182	1856	-927	-623	-687	-1711	-1650
	Wheat	679		-3144	683	-1480	6491	-1792	6723	-104
	Maize	2523		1656		3103	7933	3565	7190	3867
	Mustard	3588	3068	4671				4604		
	Ginger	15094		31164		24139		33525		38002
	Jute	2216	1657	4784	4470	5149	3646	2785	6054	5501
	Tea									263628
	Turmeric	-439				3029		-1091		520
<b>Rohtas</b>	Brinjal					67906				
	Rice	11475	10406	10116		8994		8092		7658
	Wheat	7683	6564	6668		5643		4833		3555
	Masoor		16299	17708		18048		18497		17498
	Mustard			3146		10012		11261		1302
	Sugarcane		40766	55238	55972	52698	43780	43675		
	Potato			12919		7268		17720		
<b>Siwan</b>	Rice	4155	5862	6595		3311		3509		2946
	Wheat	7841	7770	6907		6421		5417		5038
	Masoor			15169		14635		17347		14499
	Mustard			1638		370		-1506		
	Sugarcane			48036		45581		34769		38229

<b>West Champaran</b>	Rice	6390	5268	5843	3378	3298	2346	3434	3086	2951
	Wheat	8197	7250	6900	5577	6145	5027	5322	5177	5085
	Maize					5057				
	Masoor			14779		14654	15425	17088	14900	14400
	Mustard			1933		670				
	Sugarcane			42891		48644		37594		37800
	Potato					14496				
<b>Bihar</b>	Rice	1644	7159	5349	3375	3210	1278	3271	-270	964
	Wheat	4660	6787	5760	3268	5228	1803	4386	1166	4162
	Maize	16204	18611	16098		16436	-118	19830	-1096	22052
	Masoor		15945	15903		15547	15180	17663	15050	14814
	Moong			4255		5519		6029		6095
	Gram			1381		6715		3537		
	Mustard	3967	6070	2152		163		5440		-1037
	Ginger	15094		31164		24139		33525		38002
	Brinjal					67906				
	Jute	2216	1657	4784	4470	5149		2785		5501
	Potato	28350	25301	14293		27832		24578		
	Sugarcane		42166	45909	57772	48189	45448	38393		37305
	Sunflower			5562				6180		8592
	Tea									263628
	Tisi			-2503		37665				
	Turmeric	-427				3042		-1078		533
<b>Chitrakoot</b>	Rice	7807	7226	6917	8307	7673	8978	7878	9472	8476
	Wheat	14336	14540	14255	15231	13935	16179	14723	16509	16184
	Bajra			-270	2395	959		2951		
	Jowar	-2574	-1850	-3602		-3351		-1901		
	Arhar	18675	16925	18363	15657	17061	22475	20680		21941
	Gram	26307	25506	25277	26067	25118		25619	19194	
	Masoor	12634	12269	13687	12531	13189				
	Lentil	13493	21815	16810	16376		23261		16461	
	Mustard	14523	20471	10222	13950	15702				
	Rai	8887	13630		10494					
	Til							10566		
<b>Fatehpur</b>	Rice	6077	9818	5484	6557	8247	-1350	8495		5307
	Wheat	8886	8501	4522	7584	9646	-684	5766		6861
	Potato			11262				43214		
<b>J.P.Nagar</b>	Rice	21648	19043	21871	21190	20787	19854	22006		20266
	Wheat	14370	12572	14619	19363	15054	18547	17444		20829
	Maize		5794							
	Pea				11030					
	Mustard	19100	20967	16214	23895		21178			
	Sugarcane	44476	37072	36839	46005	40044	49755	43626	50439	50975
	Potato		37281		42386		39469	36845	39666	
	Mentha	-4069	-9383	-3508	-5377	-7127	-6035	-6881		-5319
<b>Lalitpur</b>	Rice		8084	6393	7215	7308	1302	6802		5189
	Wheat		6692	6428	3344	6417	3313	6538	2230	4784
	Bajra					11968	12465	7671	6836	10352
	Jowar						14155	13875		
	Maize				3935	8186	2807	5279	2057	4927
	Gram				5302	9817	7043	11185	2432	8039
	Groundnut				20828	20871				
	Urad				16123			16462		13153
	Pea				17715	20703	10318	30318		
<b>Mau</b>	Rice	9320		5000		6329		4112		4176
	Wheat	7342		5101		5800		5381		5372
<b>Muzaffernagar</b>	Rice	13844	6813	7572	7543	10461	10324			6599
	Wheat	10193	5853	3362	9641	9209	7050	6497		12027
	Jowar					-2631				-1057
	Sugarcane	49480	35797	19742	31828	32849	47904	60166	63562	38870
<b>Sonbhadra</b>	Rice	10509	16139	5852	15500	6499				
	Wheat	7652	14071	6687	13500	5828				
<b>Unnao</b>	Rice	10631		2472		8971		14059		



	Wheat	7799		2868		5083		12520		
	Mustard	4628	8068	3861						
<b>Uttar Pradesh</b>	Rice	11716	8996	7980	8687	10069	5385	9366	10712	6515
	Wheat	10230	8937	7199	7080	8520	4221	8109	3315	9138
	Arhar	18674	16924	18362	15656	17060	22474	20679		21940
	Bajra		5652	7346	10011	8064	8727	6535	4771	5731
	Jowar	-2427	-1703	-3466		-3049	10759	3728		-1340
	Gram	22300	21470	21255	18171	19174	8653	16025	5118	9902
	Groundnut				20828	20871				
	Lentil	13493	21815	16810	16376		23261		16461	
	Maize		8902		2898	6372	2030	4016	1506	3847
	Masoor	12634	12269	13687	12531	13189				
	Pea				45549	10789	4653	16155		
	Urad				16123			16462		13153
	Rai	8887	13630		10494					
	Mustard	14571	15118	7714	14132	14397	18377			
	Til							10566		
	Potato		45496	7862	51420		47848	41350	48083	
	Sugarcane	48187	35866	21878	37940	35983	48279	57410	54384	42057
	Mentha	-4070	-9383	-3509	-5377	-7127	-6035	-6881		-5320

### Appendix 10: Output : Input Ratio by crops (Per acre) based on Operating Cost

Districts/States	Crops	Landless	Marginal		Small		Medium		Large	
		Leased-in Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land	Leased-in Land	Own Land
<b>Bhagalpur</b>	Rice	2.44	2.07	1.82		1.90		2.04		2.67
	Wheat	2.07	1.65	1.67		1.81		1.85		2.72
	Gram			1.30		2.37		2.01		
	Maize	2.78	3.88	2.37		2.13		2.74		2.53
	Mustard	0.56		0.37		0.35				0.40
	Potato	3.53	3.59	1.41		2.91		3.08		
	Tisi			0.19		13.01				
<b>Khagaria</b>	Rice	0.74	0.82	0.70		0.79		0.83		0.86
	Wheat	0.95	0.89	1.20		1.16		1.47		1.45
	Maize	2.96	4.38	3.71		3.94		4.62		4.62
	Moong			1.41		1.83		1.70		1.71
	Sunflower			1.37				1.45		1.71
<b>Kishanganj</b>	Rice	0.81	0.86	0.83	1.23	0.92	0.94	0.94	0.86	0.87
	Wheat	1.10		0.64	1.14	0.81		0.78		0.98
	Maize	1.47		1.26		1.64		1.82		2.01
	Mustard	1.68	1.73	1.94				1.91		
	Ginger	1.77		2.78		2.33		2.94		3.09
	Jute	1.18	1.15	1.40	1.46	1.45	1.31	1.24	1.55	1.48
	Tea									20.23
	Turmeric	0.95				1.50		0.89		1.06
	Brinjal					6.61				
<b>Rohtas</b>	Rice	5.41	3.83	3.63		2.53		2.25		2.15
	Wheat	3.01	2.49	2.47		1.91		1.75		1.55
	Masoor		8.29	6.49		6.76		5.94		5.24
	Mustard			3.37		7.73		6.22		1.51
	Sugarcane		5.95	8.12	8.96	6.12	5.21	5.20		
	Potato			2.33		1.75		2.67		
<b>Siwan</b>	Rice	1.97	2.58	2.53		1.60		1.54		1.47
	Wheat	2.72	3.02	2.49		2.14		1.91		1.86
	Masoor			8.01		7.76		7.54		5.83
	Mustard			2.05		1.23		0.52		
	Sugarcane			7.90		7.31		4.28		5.11
<b>West Champaran</b>	Rice	2.49	2.26	2.30	1.90	1.56	1.38	1.55	1.49	1.47
	Wheat	2.93	2.62	2.41	2.27	2.03	1.84	1.89	1.88	1.87
	Maize					2.72				
	Masoor			6.98		7.83	6.99	7.63	5.81	5.65

	Mustard			2.53		1.50				
	Sugarcane			5.76		6.64		4.75		5.02
	Potato					3.63				
<b>Bihar</b>	Rice	1.16	2.51	1.76	1.58	1.39	1.14	1.36	0.98	1.09
	Wheat	1.60	2.49	1.88	1.71	1.75	1.25	1.62	1.15	1.53
	Maize	2.75	4.21	2.94		3.06	0.98	3.69	0.86	3.88
	Masoor		8.14	7.05		7.45	6.06	6.77	5.81	5.73
	Moong			1.41		1.83		1.70		1.71
	Gram			1.30		2.37		2.01		
	Mustard	1.91	2.45	1.88		1.05		2.53		0.70
	Ginger	1.77		2.78		2.33		2.94		3.09
	Brinjal					6.61				
	Jute	1.18	1.15	1.40	1.46	1.45		1.24		1.48
	Potato	4.96	5.04	2.12		4.10		4.06		
	Sugarcane		6.12	6.67	9.22	6.69	5.42	4.74		4.99
	Sunflower			1.37				1.45		1.71
	Tea									20.23
	Tisi			0.19		13.01				
	Turmeric	0.95				1.51		0.89		1.06
<b>Chitrakoot</b>	Rice	1.87	1.89	1.84	2.21	2.03	2.45	2.08	2.67	2.27
	Wheat	3.08	3.25	3.08	3.59	2.95	4.71	3.53	5.09	4.71
	Bajra			0.95	2.04	1.26		2.68		
	Jowar	0.04	0.05	0.03		0.03		0.05		
	Arhar	5.95	4.62	4.76	4.44	4.59	8.06	6.29		6.90
	Gram	7.38	5.96	5.80	6.49	5.41		7.54	5.90	
	Masoor	2.89	3.46	3.43	3.53	3.59				
	Lentil	2.95	5.05	5.68	2.51		6.91		5.18	
	Mustard	7.33	6.47	4.16	4.94	4.51				
	Rai	2.68	3.84		3.85					
	Til							5.73		
<b>Fatehpur</b>	Rice	1.92	3.23	1.83	2.23	3.04	0.90	2.22		2.82
	Wheat	2.62	3.38	1.74	3.00	3.44	0.94	1.91		4.01
	Potato			1.54				6.41		
<b>J.P.Nagar</b>	Rice	3.20	2.84	3.01	3.13	3.15	3.08	3.55		3.54
	Wheat	2.38	2.05	2.35	3.49	2.33	3.16	2.93		3.75
	Maize		2.03							
	Pea				1.79					
	Mustard	4.34	6.44	3.60	6.34		6.81			
	Sugarcane	5.06	3.64	3.15	5.62	3.92	8.33	5.51	7.33	7.40
	Potato		2.53		2.67		2.69	2.55	2.69	
	Mentha	0.49	0.03	0.50	0.06	0.04	0.05	0.05		0.07
<b>Lalitpur</b>	Rice		4.84	3.92	4.04	4.46	1.46	4.60		2.43
	Wheat		3.00	3.00	2.06	2.68	2.64	3.46	1.86	2.57
	Bajra					6.27	8.03	9.81	5.01	6.92
	Jowar						17.75	13.33		
	Maize				3.03	4.91	2.76	3.81	2.94	5.14
	Gram				3.34	4.33	4.63	6.11	2.06	4.40
	Groundnut				5.46	7.67				
	Urad				4.86			49.70		16.53
	Pea				8.75	8.87	4.42	11.06		
<b>Mau</b>	Rice	2.89		1.55		1.73		1.48		1.50
	Wheat	2.33		1.72		1.84		1.83		1.88
<b>Muzaffernagar</b>	Rice	2.95	1.78	2.12	1.95	2.42	2.99			1.80
	Wheat	2.83	1.92	1.52	2.81	2.60	2.36	1.99		3.32
	Jowar					0.12				0.54
	Sugarcane	7.46	6.66	3.78	5.79	6.07	8.61	8.94	8.01	4.57
<b>Sonbhadra</b>	Rice	3.62		1.64		1.75				
	Wheat	2.71		1.99		1.90				
<b>Unnao</b>	Rice	3.22		1.24		1.96				
	Wheat	2.68		1.30		1.69				
	Mustard	2.56	3.16	1.93						
<b>Uttar Pradesh</b>	Rice	2.95	2.04	1.95	2.48	2.47	1.80	2.50	2.89	1.97
	Wheat	2.57	2.13	1.95	2.56	2.42	2.62	2.52	2.23	3.08

	Arhar	5.95	4.62	4.76	4.44	4.59	8.06	6.29		6.90
	Bajra		2.15	2.48	5.34	3.39	5.76	6.99	3.10	4.28
	Jowar	0.09	0.13	0.07		0.08	13.73	2.70		0.42
	Gram	6.41	5.17	5.04	5.40	4.74	5.46	6.92	3.02	5.19
	Groundnut				5.46	7.67				
	Lentil	2.95	5.05	5.68	2.51		6.91		5.18	
	Maize		2.59		2.50	4.05	2.27	3.14	2.42	4.23
	Masoor	2.89	3.46	3.43	3.53	3.59				
	Pea				6.60	5.10	2.54	6.36		
	Urad				4.86			49.70		16.53
	Rai	2.68	3.84		3.85					
	Mustard	4.13	5.02	2.78	4.82	4.21	6.04			
	Til							5.73		
	Potato		2.87	1.38	3.03		3.05	3.61	3.05	
	Sugarcane	6.38	4.04	3.80	5.70	4.79	8.24	8.06	7.53	5.05
	Mentha	0.49	0.03	0.50	0.06	0.04	0.05	0.05		0.07

### Appendix 11: Percent share of various Inputs in Total Cost

District/States		Rice							
		Seed Cost	Fertilizer Cost	Manure (FYM) COST	Pesticide Cost	Family Labour Cost	Hired Labour Cost	Irrigation Cost	Mechine Labour Cost
Bhagalpur	Leased-in Land	8.64	8.04	0.00	0.00	16.06	25.62	26.79	14.85
	Own Land	7.71	12.48	0.00	0.00	14.91	22.93	24.06	17.90
Khagaria	Leased-in Land	3.07	7.88	0.26	1.16	49.66	6.32	13.58	18.06
	Own Land	3.43	8.19	2.62	0.70	22.59	36.96	19.10	6.41
Kishanganj	Leased-in Land	5.05	4.61	3.01	0.24	45.45	22.94	6.34	12.36
	Own Land	4.98	5.70	4.68	1.39	29.11	41.46	6.07	6.61
Rohtas	Leased-in Land	8.38	26.34	0.00	0.00	18.66	2.04	34.73	9.85
	Own Land	7.41	20.75	0.56	0.00	10.33	14.90	40.09	5.96
Siwan	Leased-in Land	5.36	32.91	0.00	0.00	6.90	12.18	39.67	2.99
	Own Land	2.70	28.54	0.00	0.00	5.67	21.40	37.35	4.33
West Champaran	Leased-in Land	3.86	29.98	0.00	0.00	13.09	9.65	39.44	3.99
	Own Land	2.30	26.31	0.00	0.00	8.02	20.23	38.94	4.21
Bihar	Leased-in Land	5.30	13.64	1.11	0.35	33.28	14.33	20.07	11.93
	Own Land	4.45	14.06	2.03	0.56	18.31	30.34	23.31	6.94
Chitrakoot	Leased-in Land	17.24	24.88	0.72	0.00	4.80	0.25	34.85	17.27
	Own Land	21.03	27.40	0.78	0.00	6.77	0.52	29.82	13.69
Fatehpur	Leased-in Land	7.20	17.47	0.00	0.00	3.30	11.97	42.50	17.58
	Own Land	5.39	15.19	0.00	0.00	2.67	11.87	29.05	35.82
J.P.Nagar	Leased-in Land	20.75	22.35	0.27	0.00	4.11	14.10	21.98	16.43
	Own Land	22.27	20.85	0.00	0.00	3.20	16.52	32.14	5.01
Lalitpur	Leased-in Land	17.11	41.92	0.00	0.00	28.32	5.94	0.00	6.72
	Own Land	15.45	28.68	1.22	0.00	30.87	13.27	2.34	8.17
Mau	Leased-in Land	6.96	13.27	0.00	0.00	24.56	21.43	18.58	15.20
	Own Land	4.31	7.25	0.00	0.00	0.00	76.45	7.09	4.90
Muzaffernagar	Leased-in Land	10.81	30.27	0.00	0.00	12.09	22.48	15.79	8.56
	Own Land	10.42	23.41	0.00	0.00	10.69	21.33	25.11	9.04
Sonbhadra	Leased-in Land	8.92	15.48	0.00	0.00	32.53	23.19	11.36	8.52
	Own Land	4.25	7.53	0.00	0.00	0.00	80.86	4.12	3.24
Unnao	Leased-in Land	2.36	15.91	0.00	0.00	17.15	50.48	8.31	5.78
	Own Land	1.64	15.94	0.00	0.00	13.38	57.64	6.89	4.51
Uttar Pradesh	Leased-in Land	10.40	19.09	0.15	0.00	13.26	24.14	20.51	12.47
	Own Land	8.43	15.93	0.11	0.00	6.08	39.95	17.22	12.27

District/States		Wheat							
		Seed Cost	Fertilizer Cost	Manure (FYM) COST	Pesticide Cost	Family Labour Cost	Hired Labour Cost	Irrigation Cost	Mechine Labour Cost
Bhagalpur	Leased-in Land	16.30	14.98	0.00	0.00	8.08	21.10	23.03	16.51
	Own Land	12.74	15.57	0.00	0.00	8.39	18.24	23.01	22.05
Khagaria	Leased-in Land	5.75	8.78	0.00	0.00	15.89	6.48	25.30	37.80
	Own Land	7.53	11.93	0.59	0.00	18.06	32.32	19.17	10.39
Kishanganj	Leased-in Land	11.24	7.88	4.73	0.58	35.54	15.95	8.47	15.62
	Own Land	9.80	6.87	2.43	0.83	25.41	38.11	9.52	7.03
Rohtas	Leased-in Land	32.26	21.06	0.00	0.00	15.61	0.56	22.29	8.21
	Own Land	29.91	17.93	0.00	0.20	9.38	9.75	27.42	5.41
Siwan	Leased-in Land	27.62	29.41	0.00	0.00	5.14	6.41	28.55	2.87
	Own Land	21.88	28.45	0.00	0.00	4.97	12.95	27.48	4.28
West Champaran	Leased-in Land	25.94	26.81	0.00	0.00	11.99	3.83	27.70	3.74
	Own Land	21.03	26.47	0.00	0.00	7.87	11.51	29.01	4.12
Bihar	Leased-in Land	20.10	18.36	0.19	0.02	12.93	7.99	24.35	16.05
	Own Land	16.69	18.27	0.28	0.08	11.36	19.71	23.65	9.96
Chitrakoot	Leased-in Land	14.20	19.76	0.90	0.00	4.78	0.51	34.13	25.72
	Own Land	13.60	18.53	0.89	0.00	5.85	1.40	33.89	25.84
Fatehpur	Leased-in Land	6.58	24.57	0.00	0.00	3.58	4.37	39.26	21.65
	Own Land	8.77	19.85	0.00	0.00	2.91	4.42	24.17	39.89
J.P.Nagar	Leased-in Land	13.90	21.32	0.00	0.00	4.10	10.03	27.84	22.81
	Own Land	15.72	24.07	0.00	0.00	2.93	13.47	37.19	6.62
Lalitpur	Leased-in Land	26.88	28.73	0.05	0.00	20.11	1.72	8.69	13.82
	Own Land	21.55	28.47	1.10	0.00	18.79	6.19	10.27	13.64
Mau	Leased-in Land	14.80	16.60	0.00	0.00	19.72	21.11	13.38	14.39
	Own Land	12.52	14.66	0.00	0.00	0.00	59.71	6.83	6.29
Muzaffernagar	Leased-in Land	9.37	31.94	0.00	0.00	9.76	12.40	24.52	12.01
	Own Land	8.05	27.33	0.00	0.00	7.56	8.37	32.31	16.38
Sonbhadra	Leased-in Land	18.63	20.82	0.00	0.00	30.14	14.64	7.89	7.88
	Own Land	13.02	15.41	0.00	0.00	0.00	63.17	4.10	4.30
Unnao	Leased-in Land	10.99	15.62	0.00	0.00	17.23	45.00	5.70	5.46
	Own Land	7.47	18.49	0.00	0.00	13.29	49.91	5.78	5.07
Uttar Pradesh	Leased-in Land	14.13	20.89	0.16	0.00	11.28	14.93	21.46	17.15
	Own Land	12.48	21.23	0.24	0.00	6.54	22.18	21.45	15.89

District/States		Sugarcane							
		Seed Cost	Fertilizer Cost	Manure (FYM) COST	Pesticide Cost	Family Labour Cost	Hired Labour Cost	Irrigation Cost	Mechine Labour Cost
Bhagalpur	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Khagaria	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Kishanganj	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Rohtas	Leased-in Land	65.55	11.26	0.00	0.00	4.02	3.07	11.34	4.76
	Own Land	53.58	13.05	0.00	0.13	4.37	12.49	14.53	1.84
Siwan	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	53.51	14.70	0.13	0.00	2.77	10.52	16.80	1.58
West Champaran	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	51.66	13.67	0.11	0.11	5.06	10.74	16.79	1.87
<b>Bihar</b>	Leased-in Land	65.55	11.26	0.00	0.00	4.02	3.07	11.34	4.76
	Own Land	52.70	13.91	0.09	0.08	4.01	11.02	16.33	1.76
Chitrakoot	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	67.79	17.48	0.00	0.00	6.91	3.53	2.14	2.14
Fatehpur	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
J.P.Nagar	Leased-in Land	23.34	25.65	0.36	0.00	3.48	13.97	20.15	13.05
	Own Land	17.68	24.46	0.00	0.00	1.84	20.79	31.25	3.98
Lalitpur	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Mau	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Muzaffernagar	Leased-in Land	14.65	44.05	0.00	0.00	6.98	12.49	13.65	8.18
	Own Land	21.00	31.25	0.00	0.00	5.98	11.98	17.32	12.47
Sonbhadra	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Unnao	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
<b>Uttar Pradesh</b>	Leased-in Land	20.54	31.57	0.25	0.00	4.60	13.50	18.06	11.48
	Own Land	21.39	28.74	0.00	0.00	4.53	14.45	21.17	9.53

District/States		Potato							
		Seed Cost	Fertilizer Cost	Manure (FYM) COST	Pesticide Cost	Family Labour Cost	Hired Labour Cost	Irrigation Cost	Mechine Labour Cost
Bhagalpur	Leased-in Land	36.60	7.50	0.00	0.00	7.10	23.38	8.48	16.94
	Own Land	41.85	10.71	0.00	0.00	6.11	14.67	8.57	18.09
Khagaria	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Kishanganj	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Rohtas	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	71.12	5.39	0.01	3.95	4.75	3.71	8.17	2.91
Siwan	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
West Champaran	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	45.43	24.72	0.00	0.00	14.72	0.00	13.12	2.02
<b>Bihar</b>	Leased-in Land	36.60	7.50	0.00	0.00	7.10	23.38	8.48	16.94
	Own Land	47.23	10.21	0.00	0.71	6.15	12.21	8.65	14.83
Chitrakoot	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Fatehpur	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	52.22	12.36	0.00	0.00	1.39	3.34	8.09	22.59
J.P.Nagar	Leased-in Land	55.73	13.89	0.00	0.12	0.87	22.79	5.16	1.43
	Own Land	53.13	13.07	0.00	0.00	0.51	25.30	6.66	1.33
Lalitpur	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Mau	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Muzaffernagar	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Sonbhadra	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
Unnao	Leased-in Land	-	-	-	-	-	-	-	-
	Own Land	-	-	-	-	-	-	-	-
<b>Uttar Pradesh</b>	Leased-in Land	55.73	13.89	0.00	0.12	0.99	22.79	5.16	1.43
	Own Land	52.63	12.68	0.00	0.00	0.97	13.27	7.44	12.98

**Appendix 12: Average yield by crops of Women headed households (Qtl/acre)**

Districts	Crop	Leased-in Land	Own Land
Khagaria	Rice	10.00	15.40
	Wheat	8.00	16.00
	Maize	32.00	40.00
	Moong	-	3.00
	Sunflower	-	8.00
Kishanganj	Rice	12.00	-
	Jute	6.00	-
Rohtas	Rice	16.00	16.00
	Wheat	12.00	11.00
	Mustard	-	2.00
Siwan	Rice	-	15.00
	Wheat	-	10.00
	Sugarcane	-	250.00
West Champaran	Rice	-	15.00
	Wheat	-	10.00
	Sugarcane	-	250.00
Bihar	Rice	11.00	15.40
	Wheat	10.00	11.75
	Maize	32.00	40.00
	Moong		3.00
	Sunflower		8.00
	Mustard		2.00
	Sugarcane		250.00
	Jute	6.00	
Chitrakoot	Rice	14.00	-
	Wheat	16.67	17.00
	Arhar	5.00	5.00
	Gram	8.00	8.00
	Lentil	8.00	-
	Mustard	5.00	3.00
Fatehpur	Rice	14.40	15.31
	Wheat	12.60	12.67
J.P.Nagar	Wheat	20.00	20.00
	Sugarcane	235.00	-
Lalitpur	Rice	10.67	8.60
	Wheat	10.67	9.20
Muzaffernagar	Wheat	10.00	9.50
	Sugarcane	-	235.00
Uttar Pradesh	Rice	13.02	11.96
	Wheat	13.99	13.67
	Arhar	5.00	5.00
	Gram	8.00	8.00
	Lentil	8.00	-
	Mustard	5.00	3.00
	Sugarcane	235.00	235.00

**Appendix 13: Net Return per acre in own and leased land of women farmers**

State/Districts	Crop	Leased-in Land	Own Land
Khagaria	Rice	-8497	-3360
	Wheat	-5067	6035
	Maize	18856	30547
	Moong	-	4095
	Sunflower	-	6742
Kishanganj	Rice	-5327	-
	Jute	119	-
Rohtas	Rice	9210	9415
	Wheat	6716	6053
	Mustard	-	6379
Siwan	Rice	-	3388
	Wheat	-	534
	Sugarcane	-	42069
West Champaran	Rice	-	7726
	Wheat	-	3516
	Sugarcane	-	43472
Bihar	Rice	-3278	874
	Wheat	2073	3251
	Maize	18854	30544
	Moong	-	4094
	Sunflower	-	6742
	Mustard	-	6378
	Sugarcane	-	42770
	Jute	119	-
Chitrakoot	Rice	6129	-
	Wheat	14714	15123
	Arhar	10401	10847
	Gram	27089	26069
	Lentil	21552	-
	Mustard	13690	8080
Fatehpur	Rice	8213	8117
	Wheat	8598	7971
J.P.Nagar	Wheat	2664	-3035
	Sugarcane	37945	-
Lalitpur	Rice	8336	6926
	Wheat	7670	6196
Muzaffernagar	Wheat	6020	4110
	Sugarcane	-	43270
Uttar Pradesh	Rice	8372	7505
	Wheat	9376	9325
	Arhar	10400	10847
	Gram	27089	26069
	Lentil	21552	-
	Mustard	13690	8080
	Sugarcane	35830	45385



**Appendix 14: Output-Input Ratio in own and leased in land of women farmers**

Districts	Crop	Leased-in Land	Own Land
<b>Khagaria</b>	Rice	0.50	0.79
	Wheat	0.62	1.56
	Maize	2.40	4.11
	Moong	-	1.39
	Sunflower	-	1.49
<b>Kishanganj</b>	Rice	0.65	-
	Jute	1.01	-
<b>Rohtas</b>	Rice	2.81	2.93
	Wheat	2.27	2.22
	Mustard	-	5.95
<b>Siwan</b>	Rice	-	1.34
	Wheat	-	1.06
	Sugarcane	-	4.25
<b>West Champaran</b>	Rice	-	2.38
	Wheat	-	1.55
	Sugarcane	-	4.89
<b>Bihar</b>	Rice	0.73	1.07
	Wheat	1.26	1.38
	Maize	2.40	4.11
	Moong	-	1.39
	Sunflower	-	1.49
	Mustard	-	5.95
	Sugarcane	-	4.55
	Jute	1.01	-
<b>Chitrakoot</b>	Rice	1.68	-
	Wheat	3.20	3.26
	Arhar	2.85	3.09
	Gram	8.26	6.49
	Lentil	4.82	0.00
	Mustard	5.38	5.02
<b>Fatehpur</b>	Rice	2.50	2.26
	Wheat	2.93	2.55
<b>J.P.Nagar</b>	Wheat	1.14	0.88
	Sugarcane	3.20	-
<b>Lalitpur</b>	Rice	4.07	4.49
	Wheat	3.29	2.87
<b>Muzaffernagar</b>	Wheat	1.97	1.55
	Sugarcane	-	6.60
<b>Uttar Pradesh</b>	Rice	2.69	2.59
	Wheat	2.45	2.52
	Arhar	2.85	3.09
	Gram	8.26	6.49
	Lentil	4.82	0.00
	Mustard	5.38	5.02
	Sugarcane	3.07	6.88