

NAVIGATING THE TERRAIN: LAND ACQUISITION CHALLENGES AND AGRICULTURAL ISSUES" IN ROHTAK CITY

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Abstract

This research paper examines the implications of land acquisition for development projects on agricultural and food production in a specific area. The study finds that the acquisition of agricultural land has had significant economic repercussions, particularly affecting agricultural production and food security. The loss of fertile land with good irrigation conditions has strained agricultural output and livestock fodder production. Furthermore, changes in cropping patterns resulting from land acquisition have led to a decrease in the cultivation of various crops, indicating a decline in crop diversification. This reduction in crop diversity may weaken the region's resilience to environmental and market fluctuations. The continuous acquisition of agricultural land, especially fertile areas, poses a risk to the region's position in national food grain production and can undermine agricultural infrastructure. The paper underscores the importance of careful planning and consideration of the long-term effects of land use decisions on agricultural productivity and food security.

Keywords: Land Acquisition, Agricultural Production, Food Security, Crop Diversity, Development Projects.

INTRODUCTION

Land serves as a fundamental resource essential for human progress, supporting habitation, flora, and wildlife (United Nations, 2020). Its significance lies in facilitating various activities crucial for sustenance and advancement, including agriculture, which is a primary global food source (FAO, 2018).

However, escalating population growth and urban expansion, coupled with increased industrial and service sector demands, have driven a surge in land acquisition, particularly in countries like India (Deininger & Byerlee, 2011). This trend has strained agricultural tracts, diminishing available land for farming purposes and threatening food security (Deininger & Byerlee, 2011).

Various mega-projects such as special economic zones (SEZs) and industrial townships frequently encroach on agricultural land, often sparking protests from affected farmers (Nath, 2016).

This shift in land use reflects a global trend, propelled by evolving societal needs. In India, rapid infrastructure development exacerbates land scarcity, evidenced by statistics indicating a decline in agricultural land alongside a rise in non-agricultural usage (Narayanamoorthy & Sahu, 2017).

Agriculture remains vital to India's economy, contributing significantly to GDP and supporting a large portion of the population (Gulati & Saini, 2016).

The conversion of agricultural land to other uses poses challenges like unemployment and food insecurity, particularly affecting rural and unskilled workers (Parikh & Das, 2019).

The prevailing economic climate prioritizes industrial and infrastructure projects over agriculture, driving extensive acquisition of agricultural properties to fulfill project requirements (Roy, 2018). Concerns raised by scholars, planners, and policymakers highlight the implications of this shift on food security, livelihoods, and environmental sustainability (Kumar & Kumar, 2017).

Moreover, land alteration raises issues concerning property rights. While India's Constitution guarantees the right to property ownership, land acquisition for development projects can disrupt existing ownership rights, necessitating compensation and relocation measures (Basu, 2019).

Governments endeavor to address the socio-economic impacts of land acquisition through regulations, striving for equitable outcomes for all stakeholders involved (Singh & Singh, 2018).

The Land Acquisition, Rehabilitation, and Resettlement Act of 2013, amended in 2015, introduced five land use categories: defense, rural infrastructure, affordable housing, industrial corridors, and PPP projects where the central government retains land ownership (Gupta & Sharma, 2019).

Private projects need eighty percent landholder consent, while PPP projects require seventy percent (Pandey & Bhatia, 2018). Social impact assessments are mandatory, and restrictions exist on acquiring certain agricultural lands (Bhattacharya, 2017).

Liberalization policies since the 1990s accelerated land acquisition, particularly for private sector infrastructure projects (Kohli, 2016). However, compliance with acquisition laws has been lacking, with concerns raised about acquiring productive agricultural land without proper assessment, not only in the study area but also nationwide (Goswami & Mukherjee, 2018).

Numerous obstacles have historically impeded agricultural land acquisition, profoundly affecting rural societies and agriculture. This has led to output declines and livelihood losses. If unchecked, continued land purchasing without proper planning and policies could exacerbate various agricultural and societal problems, including:

1. **Loss of Agricultural Productivity:** Acquisition reduces overall agricultural production, diminishing available fertile land and worsening food security, poverty, and hunger.
2. **Displacement of Farming Communities:** Land acquisition displaces farming communities, disrupting their traditional lifestyle and forcing them to seek alternative livelihoods, potentially leading to social instability, loss of cultural heritage, and psychological distress.

3. **Environmental Deterioration:** Converting agricultural land for non-agricultural purposes contributes to environmental degradation, including biodiversity loss, deforestation, and soil erosion, with long-term impacts on ecosystem health and resilience.
4. **Food Insecurity:** Reduced agricultural land availability decreases local food production, increasing reliance on imports and exacerbating sensitivity to food price fluctuations and supply chain disruptions.
5. **Migration to Urban Areas:** Land acquisition drives rural-urban migration as displaced farmers seek employment in cities, straining urban infrastructure, worsening poverty, unemployment, and contributing to social tensions and conflicts.
6. **Erosion of Livelihoods:** Loss of agricultural land deprives farming communities of their primary source of income, leading to economic hardship and social marginalization as farmers struggle to find alternative livelihoods.

To effectively address the challenges of large-scale land acquisition, a comprehensive strategy is imperative. This strategy must prioritize transparency and participation in acquisition processes, promote sustainable land management practices, and invest in alternative livelihood opportunities for affected communities.

Robust legal frameworks and administrative processes are also essential to protect landowners' rights and ensure equitable compensation and relocation measures. By addressing these issues holistically, governments can mitigate the negative impacts of land acquisition on agriculture and rural societies, fostering inclusive and sustainable development.

Recent large-scale land acquisitions in Haryana have significantly reduced agriculture's contribution to the state's GDP, accompanied by changes in cropping patterns and a decrease in cultivated land area, as reported by the Economic Survey of Haryana (2017-18). This trend raises concerns in an economy where agriculture provides vital employment opportunities.

The selected research area reflects this trend, with fertile agricultural lands increasingly acquired for urban development projects, exacerbating regional challenges. Through interactions with villagers and meticulous event monitoring, the deteriorating situation has become evident.

Table 1.1: Data Records of Land Acquired and Purchased During 2001-13 (Area in Hectares)

Name of Villages	Total Geographical. Area (2001)	Total Loss of Land (2001-13)	Acquired by Government	Purchased by Private Builders	Percentage to Total Loss of land
Baliana	1453	699.76	699.76 (100%)	-	35.10
Bohar	1617	400.08	335.41 (83.84%)	64.67 (16.16%)	20.07
Garhi Bohar	732	348.32	317.33 (91.10%)	30.99 (8.90%)	17.47
Kanheli	244	92.301	92.30 (100%)	-	4.6
Kherisadh	799	391.44	385.01 (98.36%)	6.43 (1.64%)	19.63
Sunari Kalan	104	49.29	49.290 (65.99%)	32.53 (34.01%)	2.47
Sunari Khurd	993	12.690	12.690 (100%)	-	991
Total	6878	1993.890	1875.02 (94.04%)	118.86 (5.96%)	100

Source: Based on data provided by Department of Land Acquisition, Rohtak

Table 1.1 provides a detailed breakdown of land dynamics in several villages from 2001 to 2013, focusing on land acquisition and purchase. It begins by listing the names of the villages examined in the study. The subsequent columns offer insights into the changes occurring in each village over the specified period.

1. ****Total Geographical Area (2001):**** this column presents the initial size of each village's land area in hectares as of the year 2001, serving as a baseline for comparison.
2. ****Total Loss of Land (2001-13):**** this column delineates the total area of land lost by each village during the 12-year span. This loss of land may stem from various factors such as governmental acquisition or private purchase.
3. ****Acquired by Government: **** this column outlines the portion of land that was acquired by the government in each village during the specified period.
4. ****Purchased by Private Builders: **** conversely, this column delineates the portion of land that was bought by private developers.
5. ****Percentage to Total Loss of Land: **** This column contextualizes these acquisitions and purchases by illustrating their proportion relative to the total land lost by each village. This percentage breakdown offers insights into the dominance of either governmental acquisition or private purchases in contributing to the overall land loss.

The town of Rohtak, situated on a fertile alluvial plain, has historically relied on agriculture and animal husbandry as its primary sources of income, supported by a well-developed

irrigation system. The merger of nine rural communities into Rohtak city's municipal borders in 2010 expanded the city's jurisdiction, encompassing villages.

These villages, primarily located in the eastern and southern areas along National Highway leading to Delhi and Rohtak-Jhajjar Road, have witnessed significant urban development projects, leading to the conversion of over two thousand hectares from agricultural to non-agricultural use. Particularly affected areas include Baliana, Kherisadh, and Garhi Bohar, accounting for over 72 percent of the total land purchased for these projects. This land acquisition has occurred across various locations within these communities.

Between 2001 and 2018, approximately 29 percent of the total land area of these communities, totaling 1994 hectares, has been acquired for various real estate development projects. The government has acquired slightly more than 94 percent of this land.

The locations of rural communities acquired or purchased by both private and public real estate developers for various development projects are illustrated in Figure 4.1. These developers have acquired or purchased land for a range of projects, indicating a significant transformation of agricultural land for urban development purposes.

"The evaluation of land quality was conducted through field surveys in Garhi Bohar, Kherisadh, and Baliana, which collectively represent a substantial portion of the acquired lands. These areas, accounting for approximately 45 to 50 percent of their total geographical area, have witnessed either private builder purchases or government acquisitions. This process has impacted around 1710 farmers and resulted in the acquisition of roughly 130 hectares of fertile agricultural land. A random sample of 180 farmers was surveyed for the assessment."

During the rabi, kharif, and zaid seasons, the acquired land was predominantly utilized for agricultural purposes, supporting various crops. Key crops during the kharif season included paddy, bajra, jowar, and guar, while wheat, sugarcane, berseem, and mustard were significant during the post-harvest season. Additionally, crops like mung (Green Gram), dhaincha (*Sesbania aculeata* Pers), cucumber, lauki (Bottle Gourd), muskmelon, and others were grown after the rabi crops were harvested. Field surveys revealed that the acquired lands were highly fertile and well irrigated, with over ninety-five percent of the land, approximately 130 hectares, having adequate irrigation.

Both canal and tube well irrigation technologies were utilized, each contributing around 15 percent to the total irrigated area. A combination of canals and tube wells was used to irrigate over 67 percent of the land, highlighting the significance of irrigation infrastructure in the region. More than 78% of the land acquired was classified as extremely fertile agricultural land, contributing to high yields.

However, the agricultural sector has been suffering a significant loss due to the acquisition of fertile land. The reduction in the total area of land dedicated to cultivation for each crop has led to potential problems such as decreased agricultural production and inadequate

food supply, highlighting the negative impact of land acquisition on the agricultural industry.

Table 1.2: Basic Statistics of Acquired Land

Total number Surveyed Farmers		180
Total lands acquired from Farmers contacted for survey		127.44 Hec
Status of Irrigation	Irrigated	99.55%
	Non- Irrigated	4.45%
Mode of Irrigation	Only by Canal	15.95%
	Only by Tube well	16.74%
	By Both	67.31%
Land Quality	Well Fertile	78.50%
	Average	16.25%
	Low Fertile	5.25%

Source: Based on Field Survey, conducted in June and July, 2022

Table 1.2 provides fundamental statistics regarding land acquisition, offering insights into several key aspects of the acquired land. The data reveals that a total of 180 farmers were surveyed in the context of land acquisition, with a resulting acquisition of 127.44 hectares from these surveyed farmers. Regarding the irrigation status of the acquired land, the majority, accounting for 99.55%, is categorized as irrigated, while a smaller portion, comprising 4.45%, is non-irrigated. Furthermore, the mode of irrigation for the acquired land is delineated, with 15.95% exclusively irrigated by canal, 16.74% solely by tube well, and 67.31% utilizing both canal and tube well irrigation methods. Additionally, the data sheds light on the quality of the acquired land, indicating that 78.50% of the land is classified as well fertile, 16.25% as average, and 5.25% as low fertile. These statistics provide a comprehensive overview of the characteristics of the acquired land, including its irrigation status, mode of irrigation, and quality, which are crucial factors in assessing its suitability

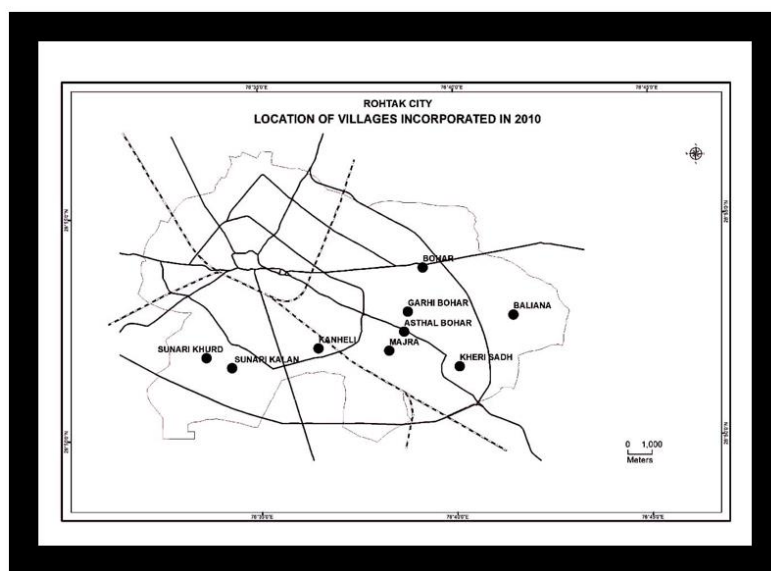


Figure 1.1: GIS Map of Villages Incorporated in 2011

Table 1.3: Yield of Major Crops (Kilogrammes/Hectare)

Area	Major Crops							
	Wheat	Rice	Barley	Jowar	Bajra	Cotton	Sugarcane	Mustard
Haryana*	3860	3606	3358	533	1606	338	65090	1342
Rohtak District**	4590	3174	3655	541	1931	431	74760	1655
Study area***	5500	6260	4250	675	2560	528	78150	1900

Sources: * Economic Survey of Haryana 2022-23, **Statistical Abstracts of Haryana (2022-23)

***Field Survey conducted in June and July, 2022

Table 1.4: Changes in Total Cultivated Area (Area in Hectares)

Village	Rabi Crops				Kharif Crops			
	2004-06	2015-17	Change	% Change	2004-06	2015-17	Change	% Change
Bohar	1068	810	258	24.16	770	523	247	32.07
Garhi Bohar	273	157	116	42.49	253	104	149	58.89
Kherisadh	620	533	87	14.03	620	273	347	55.97
Baliana	889	433	456	51.29	1121	549	572	51.03
Kanheli	270	134	136	50.37	169	105	64	37.87
Sunari Khurd	582	563	20	3.11	684	525	157	23.13
Sunari Kalan	532	440	92	17.42	755	400	354	47.08
Total	4234	3070	1165	27.51	4372	2479	1890	43.29

Source: Based on Village Jeanswar

The significant reduction in the area for cultivation of rabi and kharif crops because of acquisition of land under agriculture has been a serious consequence, as shown in Table 1.4. Between the years 2004-2005 and 2015-2017, there has been a noticeable decline in the overall cultivated area. The overall area of rabi crops decreased from 4,234 hectares in 2004-06 to 3,070 hectares by 2015-17, representing a decline of nearly 28 percent. This decline resulted in a reduction of 1,164 hectares in the area under rabi crops.

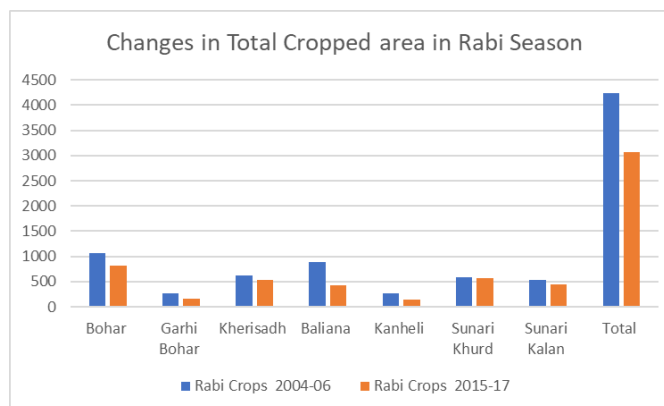


Figure 1.2: Graph indicating Changes in Total Cropped area in Rabi Season

The area under cultivation for kharif crops has experienced a significant decrease of 43% due to land acquisition, with a total of 1,892 hectares of land being removed from cultivation for this season.

Kharif crops typically require a greater amount of water, and prior to the adjustment of municipal limits, almost all of the lands used for kharif crops were irrigated. The significant decrease in the area for production of kharif crops suggests that a substantial amount of intensively irrigated land may have been lost to agriculture as a result of land acquisition..

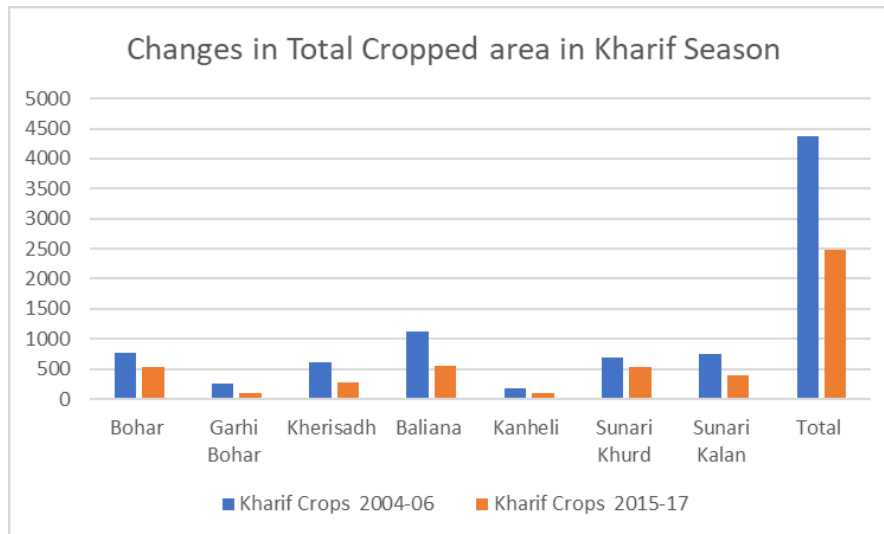


Figure 1.3: Graph indicating Changes in Total Cropped area in Rabi Season

Due to the significance of wheat, berseem (Egyptian clover), and mustard during the rabi season, as indicated in Table 1.4b, these are the primary crops grown in the region. Before the acquisition of agricultural land, these crops were cultivated over a total area of 4,086 hectares, accounting for more than 96 percent of the entire cropped area.

However, due to the acquisition of agricultural land, the area used for wheat cultivation has decreased by more than 26 percent, resulting in a net loss of 976 hectares.

Similarly, mustard, the third most important rabi crop, experienced a fifty percent decrease in cultivation area during the same period. The village of Sunari Kalan saw the greatest loss with over 80 percent decrease in mustard cultivation.

Interestingly, this decrease in mustard cultivation was partially offset by increases in wheat and berseem cultivation. Villages like Kherisadh and Garhi Bohar also witnessed significant declines of fifty to fifty-five percent in mustard farming.

During this period, cultivation of chick pea/gram completely disappeared, and the area used for vegetable production decreased by over sixty percent. However, minor increases in cultivation area were observed for crops like jae and barley.

Table 1.5: Change in Area under Rabi Crops 2004-06 to 2015-17(Area in Hectares)

Villages	2004-06	2015-17	Change	Change in Percentage	2004-06	2015-17	Change	Change in Percentage
	Wheat				Barseem			
Bohar	942	740	202	-21.44	72	34	38	-52.78
Garhi Bohar	196	115	81	-41.33	38	21	17	-44.74
Kherisadh	545	497	48	-8.81	10	8	2	-20.00
Baliana	852	379	473	-55.52	12	12	No change	No change
Kanheli	207	116	91	-43.96	23	8	15	-65.22
Sunari Khurd	524	497	27	-5.15	12	18	-6	50.00
Sunari Kalan	439	385	54	-12.3	46	20	26	-56.52
Total	3705	2729	976	-26.34	213	121	92	-43.19
	Mustard				Vegetable			
Bohar	28	21	7	-25.00	11	5	6	-54.55
Garhi Bohar	34	16	18	-52.94	1	1	No change	No change
Kherisadh	22	10	12	-54.55	10	0	10	-100
Baliana	17	12	5	-29.41	5	4	1	-20
Kanheli	16	3	13	-81.25	5	0	5	-100
Sunari Khurd	14	15	-1	7.14	0	0	No change	No change
Sunari Kalan	37	7	30	-81.08	0	2	-2	100
Total	168	84	84	-50.00	32	12	20	-62.50
	Jae				Barley			
Bohar	5	7	-2	40	8	2	6	-75.00
Garhi Bohar	4	2	2	-50	5	1	4	-80.00
Kherisadh	0	4	-4	100	6	11	-5	83.33
Baliana	4	9	-5	125	0	17	-17	100
Kanheli	13	0	13	-100	6	2	4	-66.67
Sunari Khurd	12	13	-1	8.33	16	19	-3	18.75
Sunari Kalan	8	15	-7	87.5	1	10	-9	900
Total	46	50	-4	8.7	42	62	-20	47.62
	Gram				Others Crops*			
Bohar	2	0	2	100	0	0	0	0
Garhi Bohar	0	0	0	No change	0.5	1	-0.5	100
Kherisadh	8	0	8	100	0.5	3	-2.5	500
Baliana	0	0	0	No change	1	1	0	No Change
Kanheli	0	0	0	No change	2	0	2	-100
Sunari Khurd	0	0	0	No change	2	2	0	No Change
Sunari Kalan	3	0	3	100	2	2	0	No Change
Total	13	0	13	100	8	9	1	12.5

Source: Based on Village Jeanswar

The area under cultivation of kharif crops has been impacted by the conversion of crop land to non-agricultural activities. According to the data in Table 1.5, the total area under paddy cultivation increased by 16.59 percent between the years 2004-2006 and 2015-2017. The area used for paddy farming was 1,087 hectares in the 2004-2006 crop year, but by the 2015-2017 crop year, it had increased to 1,267.3 hectares. This increase in paddy cultivation can be attributed to the higher return on investment of rice compared to other crops, leading to a significant shift away from crops like jowar towards paddy in terms of cropping patterns.

Table 1.6: Change in Area utilized for production of Kharif Crops (Area in Hectares)

Villages	2004-06	2015-17	Change	Change (%)	2004-06	2015-17	Change	Change (%)
	Rice				Jawar			
Bohar	461	314	147	-31.89	203	153	50	-24.63
Garhi Bohar	76	21	55	-71.97	130	67	63	-48.46
Kherisadh	264	228	36	-13.64	261	37	224	-85.82
Baliana	27	259	-232	859.26	341	196	145	-42.52
Kanheli	94	59	35	-37.23	68	43	25	-36.76
Sunari Khurd	150	186	-36	24.00	206	191	15	-7.28
Sunari Kalan	15	200	-185	1233.33	274	95	179	-65.33
Total	1087	1267	-180	16.56	1483	782	701	-47.27
	Cotton				Sugarcane			
Bohar	-	-	-	-	17	19	-2	-11.76
Garhi Bohar	-	-	-	-	1	0	1	100
Kherisadh	7	0	7	7	8	1	7	87.50
Baliana	132	29	103	78.03	78	46	32	-41.03
Kanheli	-	-	-	-	-	-	-	-
Sunari Khurd	46	37	9	19.57	39	7	32	82.05
Sunari Kalan	11	1	10	90.91	15	6	9	60.00
Total	196	67	129	65.31	158	79	79	50.00
	Bajra				Maize			
Bohar	65	24	41	63.08	3	0	3	100
Garhi Bohar	33	11	22	66.67	0	1	1	100
Kherisadh	76	3	73	96.05	2	1	1	-50.00
Baliana	254	12	242	95.28	3	6	-3	-100
Kanheli	-	-	-	-	3	-	3	100
Sunari Khurd	172	98	74	43.02	9	0	9	100
Sunari Kalan	203	71	132	65.02	21	17	4	19.05
Total	803	219	584	72.73	41	25	16	39.02
	Vegetable				Others Crops*			
Bohar	0	7	-7	100	21	5	16	-76.19
Garhi Bohar	1	3	-2	200	13	1	12	-92.31

Kherisadh	1	0	1	-100	1	3	-2	200
Baliana	7	0	7	-100	279	1	278	-99.64
Kanheli	2	0	2	-100	2	3	-1	50.00
Sunari Khurd	3	0	3	-100	57	5	52	-91.23
Sunari Kalan	12	0	12	-100	203	9	194	-95.57
Total	26	10	16	61.54	576	27	549	95.31

Source: Based on Village Jeanswar

*Other crops: Arhar (Pigeon Pea), Guar (Cluster Beans), Jute, Jantar/ Dhaincha and Baag (Orchard) etc.

The transition to paddy agriculture has been facilitated by the expansion of irrigation into previously non-watered regions in villages like Sunari Kalan, Baliana, and Sunari Khurd. However, these communities have collectively seen 453 hectares of land, formerly used for paddy farming, being acquired. Conversely, land purchases by organizations like HUDA and HSIIDC, as well as real estate developers, have led to a significant decrease in paddy cultivation in villages such as Garhi Bohar, Kanheli, and Bohar.

Before land acquisition, jowar (sorghum) was the predominant crop in these communities, cultivated over 1,483 hectares, accounting for 35 percent of the total cultivated area. However, between 2015-2017, jowar cultivation saw a drastic 47.26 percent decrease, now occupying only 782 hectares, or 31.55 percent of the total farmed area.

Similarly, bajra cultivation has decreased, particularly in regions like Chahi and Brani due to poor irrigation. Bajra, grown over 803 hectares during the 2004-2006 cropping season, representing 19 percent of the overall planted area during the kharif season, experienced the greatest decreases in settlements like Kherisadh and Baliana, with the total area shrinking to only 213 hectares by 2015-2017, a reduction of approximately 73 percent.

Cotton farming, which occupied 196 hectares in 2004-2006, primarily in Baliana and Sunari Kalan, decreased by 65.81 percent to only 67 hectares by 2015-17.

In the period from 2004 to 2006, the total gross area that is cropped of the study villages was 8,603 hectares. Agricultural crops dominated, covering over half of the total cultivated area. Coarse cereals and cash crops followed as the second and third most cultivated crops, respectively. Fodder crops ranked second, with wheat being the primary crop covering more than forty percent of the cultivated area, followed by jowar, paddy, bajra, and berseem.

The period from 2015 to 2017 witnessed a significant shift in cropping patterns in the area under investigation. Food crops became even more predominant, covering over 70 percent of the total cultivated land. Rice replaced jowar as the second-largest crop, while wheat remained the primary crop for food production. Gram cultivation was completely discontinued during this period.

The cultivation of food and fodder crops expanded significantly, encompassing over 90 percent of the gross cropped area in 2015-17, compared to 76.53 percent in 2004-06. This indicates a notable increase in the cultivation of food crops over the years.

Conversely, the cultivation of cash crops and coarse grains decreased during this period. Previously significant crops like Arhar (Pigeon Pea), Guar (Cluster Beans), Jute, Jantar/Dhaincha, and Baag (Orchard) lost their significance by 2015-17.

Overall, the cropping pattern became less diversified after land acquisition, with farmers focusing on a limited number of crops such as wheat, rice, jowar, and berseem. This shift in cropping patterns can be attributed to the impact of land acquisition on agricultural practices in the region.

Table 1.7: Data of land under various crops during 2004-06 and 2015-17

Years		Area	Food			Fodder			Cereals			Cash			Other	
		Gross Cropped Area	Wheat	Rice	Bar ley	Jowar	Ber seem	Jai	Bajra	Maize	Gram	Cot ton	Sugar cane	Must ard	Vege table	
2004-06	Absolut e Area (Hec)	8604	3705	1087	42	1483	213	46	803	41	13	196	158	168	58	591
	%	100	43.06	12.63	0.49	17.24	2.48	0.53	9.33	48	15	2.28	84	1.95	0.67	6.87
2015-17	Absolut e Area (Hec)	5548	2729	1267	62	782	121	50	219	25	0	67	79	84	22	41
	%	100	49.19	22.83	1.11	14.12	2.18	0.9	3.95	45	0	1.21	42	1.51	0.39	0.74

Source: Based on Village Jeanswar,

In 2013, the municipal boundary of the city expanded, increasing the city's total area to 13,881.15 hectares. Between 2001 and 2018, the city's geographical area grew by 10,269.15 hectares, with roughly 38 percent of this increase attributed to land acquisition for megadevelopment projects. This significant land purchase has disrupted the equilibrium between population growth and availability of land for agriculture.

Failure to develop the acquired land raises concerns about food security, as well as the social and economic well-being of affected communities. Inefficient use of compensation money could negatively impact livelihoods, while unused acquired land could hinder overall regional development objectives.

The inability to develop the acquired land has resulted in missed opportunities to increase agricultural output and create employment. Discussions regarding the potential productivity of the acquired land indicate significant missed potential, particularly for wheat and paddy cultivation.

The acquisition of 1,994 hectares of land had the potential to significantly contribute to agricultural production, particularly wheat and paddy. Based on current yield levels, this land could have produced an additional 10,967 tonnes of wheat and 12,463 tonnes of paddy annually, providing sufficient food for over two lakh people in terms of wheat and over 2.2 lakhs of people in terms of rice annually, effectively feeding the populus of Rohtak city for an entire year.

However, the ramifications of land acquisition extend beyond the farming practices of wheat and paddy. The decline of agricultural land also negatively impacted the production of crops especially fodder and cash crops. It has been estimated that the acquired land could have produced roughly 6,333.34 tons of food grains yearly if it had been planted according to the existing cropping pattern, based on estimations of yield per hectare.

This highlights a significant loss in agricultural production and food security due to the failure to utilize the acquired land for its intended agricultural purposes. Additionally, the local population has been deprived of potential employment opportunities that could have been generated through agricultural operations on this land.

Table 1.8: Record of Estimated food Production and Per capita Consumption

Crops	Estimated/ year loss of production in tons	Per capita/ year consumption	No. of Persons can be fed/year
Wheat	10967	49.8	204991
Rice	12463	64.14	220506

Source: Self calculated based on field survey and NSSO 68th round data

Note: Average per capita consumption has been calculated (urban + rural)

It is true that there is a significant possibility of a decrease in Crop productivity as a result of the inability to make use of the land that was acquired. Not only are there substantial losses in terms of coarse cereals as well as cash crops, but there are also significant

losses in terms of the significant quantities of wheat and paddy that could have been produced.

The loss of around 545.18 tons of coarse cereals, which includes bajra, maize, and gram, is a notable contribution to the food supply in the local area. Additionally, the loss of 3,108 tonnes in cash crops such as sugarcane, mustard, and cotton shows wasted chances for economic expansion and diversification in agricultural production. These opportunities should have been taken advantage of.

Furthermore, the economic value that could have been gained from the development of these crops is highlighted by the potential money that could have been generated from fodder crops alone, which is projected to be 1.56 crore every individual year.

Table 1.9: cropping pattern under various crops durin 2004-06

Categories	Food			Fodder			Coarse			Cash				Other
	Wheat	Rice	Barley	Jowar	Berseem	Jai	Bajra	Maize	Gram	Cotton	Sugar cane	Mustard	Vegetable	
Area under each Crop	3705	1087	41	1483	213	46	803	41	13	196	158	168	58	584
Cropping Pattern 2004-06	43.1	12.64	0.48	17.35	2.49	0.64	9.36	0.44	0.16	2.24	1.85	1.96	0.66	6.78
Expected land under different crops (hectare)	859.26	252.12	9.78	343	49.6	10.78	186.13	9.58	2.98	45.4	36.69	38.78	13.45	135.49
Expected production/Year	4726.47	1576.125	31.751	12041000	3403127	161500	512.232	20.758	3.328	62.662	2861.14	184.88	NA	NA

In general, the failure to use the land that was acquired for agricultural purposes constitutes a big missed opportunity, not only in terms of the production of food, but also in terms of the economic development and prospects for livelihood for the community that is located in the area

In the absence of particular data on the production of vegetables and certain other crops, it is indeed difficult to produce accurate estimates nearly of the contribution that these crops make to the overall output of agriculture and the economic worth of agriculture. In addition, the estimating procedure is made more difficult by the wide variety of vegetable crops and the fluctuating market prices of those products.

Similarly, when it comes to other crops like jute, Arhar (Pigeon Pea), Guar (Cluster Beans), Jantar/Dhaincha, and Baag (Orchard), Guar (Cluster Beans), it is difficult to evaluate their production levels and the impact they have on the economy because there is a dearth of specific statistics on cultivation areas and yields.

Assuming that the total area utilized under other crops is distributed evenly across the various types of crops is one method that might be utilized to assess the contribution that they make. However, this method is very dependent on assumptions, and it is possible

that it does not precisely reflect the real production levels and economic value of each crop.

In conclusion, it is difficult to completely evaluate the contribution that vegetables and other crops make to output of agriculture and economic activity in the area under investigation since there is a absence of comprehensive data on the production of vegetables and other crops. It would be needed to collect extensive information on crop cultivation practices and yields in order to conduct a more precise assessment of the impact that each of these factors has.

CONCLUSION

The acquisition of land under agriculture for financing development projects in the investigated area has undoubtedly had significant implications for the economy under agricultural and food production. The deficit of highly fertile land having good irrigation conditions has strained agricultural production and food security in the region. This loss not only affects food production but also impacts fodder production, which is crucial for cattle raising.

Furthermore, the change in cropping patterns resulting from land acquisition has led to a shift toward food crops, resulting in a decrease in the cultivation of other crops such as arhar, guar, jute, and dhaincha. The discontinuation of gram cultivation signifies a decline in crop diversification in the region. This reduction in the cultivation of a huge variety of crops indicates a less diversified agricultural landscape, which may have adverse effects on the region's resilience to environmental shifts and market fluctuations.

Overall, the continuous acquisition of agricultural land, especially fertile land, poses a risk to Haryana's position in national food grain production and can impair the state's agricultural infrastructure. This underscores the importance of careful planning and considering the long-term effects of land use decisions on agricultural productivity and food security

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