An Overview on Changing Agricultural Land Use in Jaunpur District, Uttar Pradesh

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Abstract: This research article examines the changing land use pattern in Jaunpur District, Uttar Pradesh, India, from 2000 to 2021. Land use data from district statistics handbook were analyzed to understand the pattern and trends of land use change over the years. The study revealed that there has been a significant increase in urbanization, agriculture, and water bodies, while forest cover has decreased over the years. The findings of the study highlight the need for sustainable land use planning and management to ensure the efficient and effective use of natural resources while preserving the environment. The research article provides essential information and insights for policymakers for sustainable land use management and addressing the challenges of climate change in the region.

Keywords: land use, pattern, planning, development, sustainable, utility, economic resource, management.

Introduction:

Agriculture is the backbone of the economy in India, and its land use pattern has been changing over time due to various factors such as population growth, urbanization, infrastructure development, and climate change. In this research article, we will focus on the changing agricultural land use pattern in Gorakhpur district from 2010 to 2021, Uttar Pradesh, India. Gorakhpur district is situated in the eastern part of Uttar Pradesh, and the agricultural sector is the most significant contributor to the local economy. The effects of numerous factors on India's shifting agricultural land use patterns have been noted in prior research. For instance, Chandran et al. (2016) discovered that urbanization was a key contributor in the transformation of agricultural land into non-agricultural land. A reduction in agricultural land has also been attributed to the expansion of infrastructure such roads, motorways, and airports (Nimanda et al., 2017). Due to its impact on crop yield and suitability for cultivation, climate change has also been proven to be a key determinant in changing the pattern of agricultural land use (Kumar et al., 2018). Ever since the origin of life on earth and the process of its development started, the discussion and research has started in the context of availability and importance of land, this is why the utility of land is absolute in nature instead of its relative form (Tiwari, R. C., 2014). Same when the utility of land is discussed then its human context becomes important because the man has been the major factor of changing the land use pattern. Land is the basis for the development of civilization and culture of any nation and this development is ensured by the availability of valuable land. To what extent the culture and civilization of any nation can be developed is based on the availability of the land. Land as a natural resource is a universally accessible resource for all living beings. Same when talking about human context then it becomes even more important for the economic development of society. According to Foxx

1956, 'Use of an area with actual purpose, depending on the characteristics of the designated land, is called Land Use.

India's economy has always been based mostly on agriculture, which supports millions of people's livelihoods and ensures the country's growing population has access to food. However, a number of socioeconomic and environmental reasons are causing a substantial upheaval in India's agricultural landscape. India's shifting agricultural land use patterns have a significant impact on rural livelihoods, food production, and environmental sustainability. India has experienced tremendous population growth, industrialization, and urbanization over the past few decades, which has raised demand for land for uses other than agriculture. Consequently, there has been demand to convert agricultural property into commercial, industrial, and residential uses. Agriculture has long been a key component of India's economic and social fabric, firmly ingrained in the nation's history and character. But the agricultural sector is seeing a significant change in land use patterns as India experiences swift economic and demographic changes. This study explores the complex processes of this transition with the goal of providing a thorough analysis of Jaunpur's shifting pattern of agricultural land usage. India's agricultural environment has changed significantly over the last several decades, with changes observed in land allocation, cropping patterns, and agricultural techniques. A multitude of interrelated variables, including economic globalization, technical improvements, regulatory interventions, environmental shifts, and changing consumer tastes, are driving this transition. Policymakers, scholars, and stakeholders must all comprehend the nuances of these shifts since they have significant effects on rural livelihoods, food security, and sustainable development.

The goal of this study is to identify the fundamental patterns that are causing Jaunpur's agricultural land usage to change. This study wants to investigate the socio-economic, environmental, and policy aspects that contribute to this changing landscape by utilizing a multidisciplinary approach. This study aims to identify the major factors influencing the future course of Indian agriculture by shedding light on the regional and temporal variability in land use patterns via rigorous data analysis and interpretation. Furthermore, the study will examine how numerous aspects of the Indian economy, society, and environment are affected by shifting agricultural land usage. Evaluating the impact of these changes on productivity, income distribution, and the general well-being of rural communities is crucial. To assess the sustainability of existing trends, the ecological effects of modified land use patterns such as modifications in water consumption, soil health, and biodiversity will also be looked at. Understanding and adjusting to the changing dynamics of research aims to not only record and evaluate the current state of affairs but also to offer insights into possible future scenarios, especially as India positions itself as a significant actor in the global economy. Stakeholders may encourage resilience, inclusiveness, and sustainability in the agricultural sector by making informed decisions by projecting the trajectory of changing land use patterns.

In order to provide a thorough grasp of the topic, the study combines quantitative and qualitative research approaches with statistical modeling, case studies, and geographic analysis. To map and display the geographical distribution of shifting land use patterns throughout India's various regions, GIS tools will be used. With the passage of time, the nature of these purposes keeps on changing, due to which changes are also seen in the land use pattern. In the initial phase of human economic development, land was used for carrying out the essential activities of human beings i.e. agriculture, for clothes and for shelters. As the human population increased with the passage of time, the demand for land also increased, due to which the pressure on the land increased relatively (Khatri, Harish Kumar 2020). Other factors affecting

the land use pattern are the fertility of the soil, relief of the area, climatic factors, socio-economic factors have played an important role. Economic development, infrastructural projects such as four lane roads, buildings, water resource management through digging lakes on the land, market spread of the district, availability of economic resources have influenced the market for change in land use pattern in Gorakhpur district.

Research Area:

Jaunpur District is situated in Eastern Uttar Pradesh in the middle Ganga Plain in North India. It extends from 25° 24' N to 26° 12' N latitude and 82° 7' to 83° 05' East longitude (Nevill, 1908). The district is bounded to the north and east by Azamgarh, to the east by Ghazipur, to the north and west by Pratapgarh and Sultanpur, and to the south and west by Allahabad. The region is 2,611 feet above mean sea level and covers 4,038 square kilometers. The district is 85 km long and 90 km wide, measured from north to south. The district is divided into six tahsils: Jaunpur, Shahganj, Machhlishahar, Mariahu, Kerakat, and Badlapur. These are further subdivided into 21 Development Blocks namely, Suithakala, Shahganj, Khuthan, Badlapur, Mahrajganj, Baksha, Sujanganj, Mogra Badshahpur, Machhlishahr, Mariahu, Ramnagar, Barsathi, Rampur, Sikrara, Karanjakala, Dharampur, Sirkoni, Muftiganj, Jalalpur, Kerakat, and Dobhi.

The district is in 4038.0 km² in total, of which 60.3 square kilometers are urban and 3977.7 square kilometers are rural. The district consists of 3381 Revenue villages and 1514 Gram Panchayats, of which 3287 are inhabited settlements, as well as 94 vacant villages (DCHB, 2011). There are five Census Towns and eight Statutory Towns in the metropolitan region. Three Nagar Palika Parishad and five Nagar Panchayats are Statutory Towns. Geographically, the region is a flat plain with some slight alterations brought about by the valleys the rivers have created. The area mostly slopes from north-west to south-east. The district may be separated into two main physiological units: the Lowland Region and the Upland Region. From east to west, the district's height rises. It ranges in elevation from 60 meters in the east to 95 meters in the west above mean sea level. The district's alluvial soil, which is mostly composed of sand, silt, and clay in different amounts, is transported. The tahsils of Jaunpur, Kerakat, and a portion of Shahganj Tahsil south of the Gomti all have the loam. Some parts of Shahganj, including the low-lying sections and depressions in the tahsils of Machhlishahr and Jaunpur, as well as much of Kerekat, have clay soil.
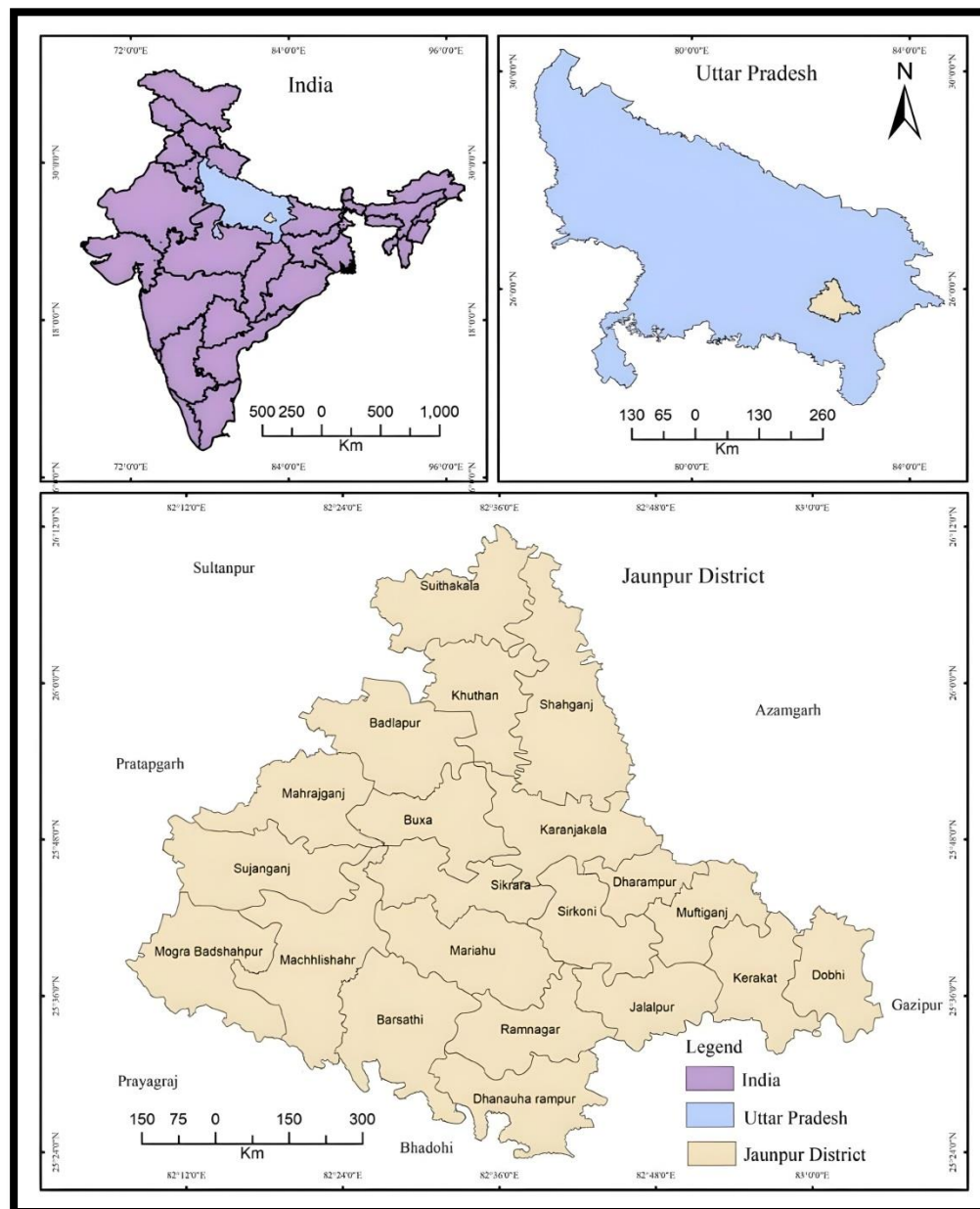
Fig: 1 - Location of the study area

Aims and Objectives:

1. Investigate and analyze the factors that have brought about changes in the agricultural land use pattern of Jaunpur District.
2. Article will be aiming to explore the trends in land use changes and their socio-economic and environmental impacts.
3. Identify the drivers and implications of these changes, and suggest strategies to address the challenges posed by altering agricultural land use patterns in the region.

Additionally, the article will aim to contribute to the understanding of broader issues related to agriculture, land use, and development in the context of India.

Methodology:

The source of the data is Secondary which is acquired from government database, such as District Census Handbook, agriculture science center, SPIDER Reports, and Government of India Census website. Various tables, maps and data are used to analyze and illustrate the

pattern of agricultural land use and understand it properly. This research article is based on analytical and descriptive method of research.

Table No. 1: Land Use Pattern of Jaunpur District (Year 2001, 2011 and 2021)

S.No.	Land use type	Year 2001 (in Hectare)	Year 2011 (in Hectare)	Year 2021 (in Hectare)	Variation 2001-2011(in %)	Variation 2011-2021(in %)
1.	Total Reported Area	399713	399713	399713	00	00
2.	Forest	63	63	429	00	580.95
3.	Agricultural waste land	8086	7870	10035	-02.67	27.50
4.	Current Fallow	25212	34232	26527	35.78	-22.51
5.	Other Fallow	16829	20128	24192	19.60	20.19
6.	Barren and Uncultivable Land	7074	6808	6893	-03.76	01.24
7.	Land for use other than Agriculture	44217	46088	52574	04.23	14.07
8.	Pasture	1496	1377	1431	-07.95	03.92
9.	Area of Trees and Shrubs	5433	4649	2854	-14.43	-38.61
10.	Net Sown Area	291303	278538	274778	-04.38	-01.55
11.	Net Irrigated Area	227559	242505	240924	6.57	-00.65

Source: District Census Handbook, Jaunpur District

Table No. 2: Land Use Pattern of Jaunpur District (Year 2001)

S. No.	Blocks	Total Reported Area	Forest	Agriculture waste land	Current Fallow	Other Fallow	Barren and Uncultivable Land	Land for use other than Agriculture	Pasture	Area of Trees and Shrubs	Net Sown Area	Net Irrigated Area
1.	Suithakala	20659	14	358	1311	751	340	2202	121	252	15310	11901
2.	Shahganj	29693	00	387	3685	842	420	3760	185	260	20154	16663
3.	Khuthan	19610	05	322	1141	820	307	2316	132	272	14295	11380
4.	Karanjakala	17627	00	450	518	444	280	2226	136	260	13313	12064
5.	Badlapur	21302	00	371	923	731	259	2022	36	391	16569	11757
6.	Mahrajganj	18599	00	358	1348	820	263	1872	53	311	13574	11640
7.	Baksha	16954	06	213	890	660	180	2014	19	260	12712	11320

8.	Sujanganj	22611	00	448	1056	1418	308	2592	70	246	16473	11705
9.	Mungra Badshahpur	23154	00	602	1254	731	736	2875	62	204	16690	11311
10.	Machhli Shahar	27626	08	736	2440	955	751	3192	110	171	19263	12242
11.	Mariyahu	22734	01	671	1509	880	638	1860	73	241	16861	11847
12.	Barasathi	22489	11	522	1230	1240	281	3242	100	304	15559	10520
13.	Sikarara	15731	05	679	1113	595	200	1310	48	224	11857	10700
14.	Dharmapur	10113	00	208	755	601	189	1174	09	230	6947	6595
15.	Ramnagar	14410	00	360	625	749	378	1372	27	309	10590	9247
16.	Rampur	20680	09	414	900	1011	300	1622	78	312	16034	9160
17.	Muftiganj	13269	04	262	921	644	225	1408	69	245	9491	8507
18.	Jalalpur	15139	00	236	980	634	267	1666	25	208	11123	9004
19.	Kerakat	16174	00	216	990	760	227	1672	43	257	12009	10231
20.	Dobhi	14653	00	210	680	742	216	1465	60	216	11064	9272
21.	Sirkoni	13758	00	357	739	761	276	1632	40	245	9708	9089
Total Rural		396985	63	8080	25008	16789	7041	43494	1496	5418	289596	226155
Total Urban		2728	0	6	204	40	33	723	0	15	1707	1404
Total-		399713	63	8086	25212	16829	7074	44217	1496	5433	201303	227559

Source: District Census Handbook, Jaunpur District

Agricultural land use pattern in 2001:

In 2001, of the Total reported area of the district, Shahganj block has the highest percentage of area under it while Dharampur block has lowest area of it. Largest Forest area was seen under Suithakala block itself while Shahganj, Karanjakala, Badlapur, Maharajganj, Sujanganj, Mungra Badshah Dharampur, Ramnagar, Jalalpur, Kerakat and Dobhi blocks have less than 1 hecatare of land under forest area whereas Khuthan, Baksha, Machhli Shahar, Mariyahu, Sikrara, Rampur and Muftiganj has niminal areas of forest cover.

Machhli Shahar has the highest area under agricultural waste land Dharampur has lowest of it. Block Shahganj has highest land under current fallow land and Karanjakala has lowest land under current fallow area. Sujanganj block has highest land area under other fallow land and Karajakala has lowest of it. Machhli Shahar block has highest land that is not suitable for agriculture while Baksha block has lowest of it. Shahganj block has highest land that is used for other than agriculture and Dharampur has lowest area that is used for the purpose other than agriculture. Shahganj block having highest Pasture land under it while Dharampur has less than 10 ha. land under Pasture. Area of Trees and Shrubs are found highest in Badlapur block and Machhli Shahar has lowest i.e. 171 hectare of land under it. The highest Net sown area is found
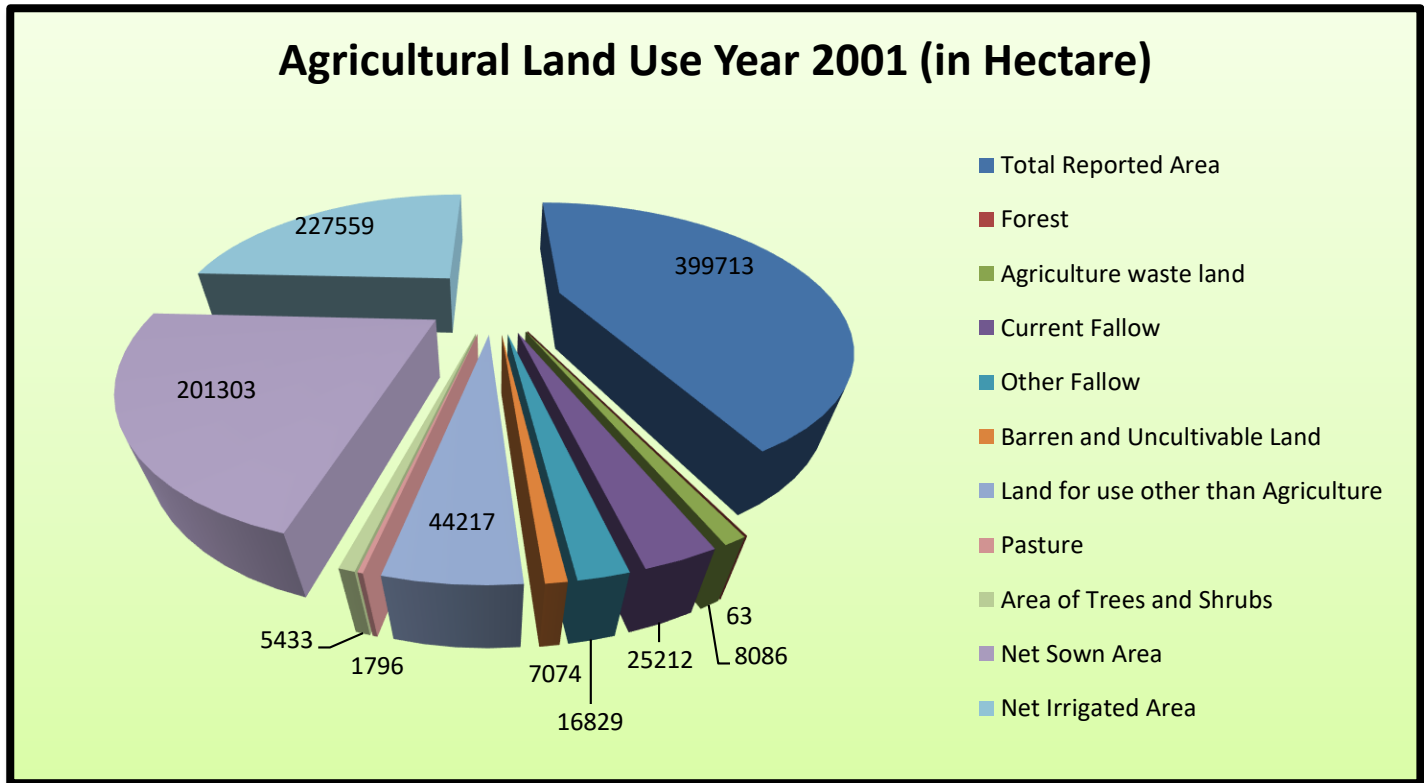
Agricultural Land Use Year 2001 (in Hectare)

- Total Reported Area
- Forest
- Agriculture waste land
- Current Fallow
- Other Fallow
- Barren and Uncultivable Land
- Land for use other than Agriculture
- Pasture
- Area of Trees and Shrubs
- Net Sown Area
- Net Irrigated Area

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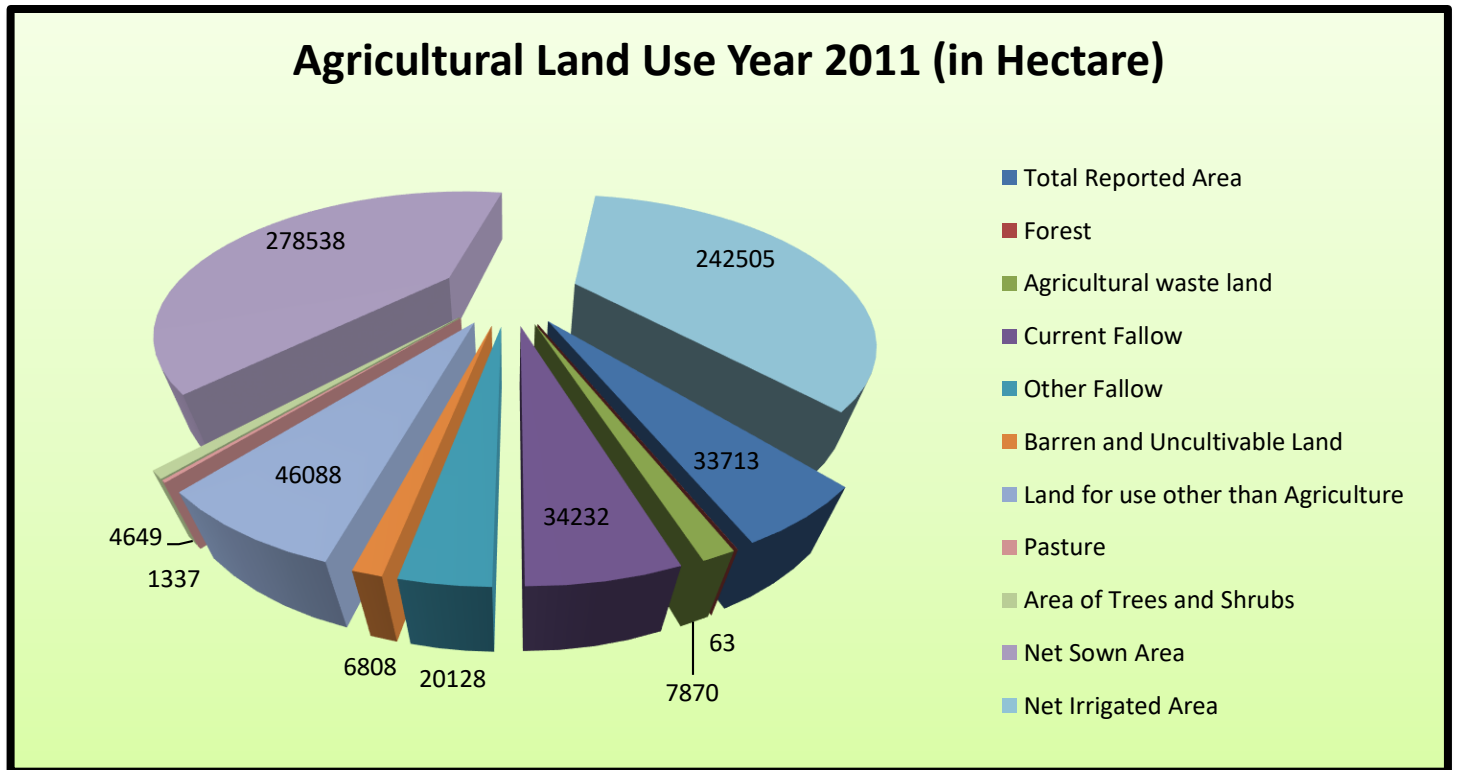201303
44217
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in the Shahganj block and lowest under Dharampur block, however Net irrigated area is highest in Shahganj and lowest under Dharampur block.

Table No. 3: Land Use Pattern of Jaunpur District (Year 2011)

S. No.	Blocks	Total Reported Area	Forest	Agriculture waste land	Current Fallow	Other Fallow	Barren and Uncultivable Land	Land for use other than Agriculture	Pasture	Area of Trees and Shrubs	Net Sown Area	Net Irrigated Area
1.	Suithakala	20611	05	430	1218	3367	275	2658	98	160	12391	11535
2.	Shahganj	29843	02	710	1950	4017	459	3990	190	50	18475	16978
3.	Khuthan	19524	01	469	1930	1076	240	3074	95	275	12364	9443
4.	Karanjakala	17665	00	440	815	302	271	2158	130	195	13354	13233
5.	Badlapur	21293	00	470	1280	690	208	2032	36	622	15955	12614
6.	Mahrajganj	18786	04	312	1700	1050	218	2030	43	155	13274	10740
7.	Baksha	16800	02	170	937	140	116	2028	09	355	13043	9419
8.	Sujanganj	22593	04	382	1715	1040	270	2909	63	342	15868	13837
9.	Mungra Badshahpur	23347	00	235	1779	628	910	3010	57	45	16683	16140
10.	Machhli Shahar	26021	00	409	1867	1430	843	2718	140	118	18496	17675
11.	Mariyahu	21299	02	499	1587	1329	396	2062	90	165	15169	13893
12.	Barasathi	21818	07	686	1830	1379	502	2418	43	96	14857	12902
13.	Sikarara	14653	05	288	1404	52	201	1379	34	350	10941	9687
14.	Dharmapur	8782	00	198	531	35	93	906	04	260	6755	5897
15.	Ramnagar	18383	04	534	1394	1344	442	862	39	145	12619	11092
16.	Rampur	20287	07	579	2927	696	262	2185	48	195	13388	10895
17.	Muftiganj	13051	03	186	1445	190	192	1349	99	75	9512	8504
18.	Jalalpur	14719	03	195	1480	93	282	1605	17	325	10719	9347
19.	Kerakat	16111	05	287	1592	330	189	1816	32	170	11690	10186
20.	Dobhi	14644	03	169	1556	415	230	1048	70	190	10963	9429
21.	Sirkoni	16764	06	217	2830	68	199	2030	00	340	10674	7895
	Total Rural	396994	63	7865	33766	20080	6798	45267	1337	4628	277190	241348
	Total Urban	2719	0	5	466	48	10	821	0	21	1348	1157
	Total-	399713	63	7870	34232	20128	6808	46088	1337	4649	278538	242505

<u>Source</u>: District Census Handbook, Jaunpur District

Agricultural Land Use Year 2011 (in Hectare)

Legend:
- Total Reported Area
- Forest
- Agricultural waste land
- Current Fallow
- Other Fallow
- Barren and Uncultivable Land
- Land for use other than Agriculture
- Pasture
- Area of Trees and Shrubs
- Net Sown Area
- Net Irrigated Area

Values shown: 278538, 242505, 46088, 4649, 1337, 6808, 20128, 33713, 34232, 63, 7870

Agricultural Land use pattern in 2011:

In 2011, of the Total reported area of the district, Shahganj block has the highest percentage of area under it while Dharampur block has lowest area of it. Largest Forest area was seen under Barasathi block itself while Karanjakala, Badlapur, Mungra Badshah, Machli Shahar, Dharampur, blocks have less than 1 hecatare of land under forest area whereas Shahganj, Khuthan, Baksha and Mariyahu has niminal areas of forest cover.

Shahganj has the highest area under agricultural waste land Dobhi has lowest of it. Block Sukoni has highest land under current fallow land and Dharampur has lowest land under current fallow area. Shahganj block has highest land area under other fallow land and Dhararmpur has lowest of it. Mungra Badshah block has highest land that is not suitable for agriculture while Dharampur block has lowest of it. Shahganj block has highest land that is used for other than agriculture and Rampur has lowest area that is used for the purpose other than agriculture. Shahganj block having highest Pasture land under it while Sirkoni has no land under pasture. Area of Trees and Shrubs are found highest in Badlapur block and Mungra Badshah has lowest i.e. 45 hectare of land under it. The highest Net sown area is found in the Machli Shahar block and lowest under Dharampur block, however Net irrigated area is highest in Machli Shahar and lowest under Dharampur block.

**Table No. 4: Land Use Pattern of Jaunpur District (Year 2021)**

S. No.	Blocks	Total Reported Area	Forest	Agriculture waste land	Current Fallow	Other Fallow	Barren and Uncultivable Land	Land for use other than Agriculture	Pasture	Area of Trees and Shrubs	Net Sown Area	Net Irrigated Area
1.	Suithakala	20690	21	625	1172	3132	276	2968	99	161	12236	11681
2.	Shahganj	28076	05	703	837	3412	459	4086	190	55	18329	13693
3.	Khuthan	19187	04	653	835	1413	241	3552	103	176	12210	9599
4.	Karanjakala	17803	00	436	793	513	272	2253	130	196	13210	13239
5.	Badlapur	21003	00	466	1244	891	209	2127	36	225	15805	12059
6.	Mahrajganj	18531	11	336	1379	1158	219	2126	43	156	13103	11108
7.	Baksha	17238	06	365	911	456	131	2416	09	157	12787	9417
8.	Sujanganj	20768	11	481	528	1139	282	3005	63	144	15115	14413
9.	Mungra Badshahpur	23482	00	436	1630	963	881	3146	147	145	16134	15932
10.	Machhli Shahar	24926	13	509	774	1315	843	2936	135	119	18282	16909
11.	Mariyahu	21370	05	593	1582	1179	411	2606	90	146	14758	14012
12.	Barasathi	20571	77	772	688	1227	498	2527	43	98	14641	13276
13.	Sikarara	15977	13	489	1364	364	203	2474	34	152	10884	9971
14.	Dharmapur	10871	13	399	590	327	116	1440	04	62	7920	6169
15.	Ramnagar	18646	11	632	1355	1491	443	1957	39	146	12572	11283
16.	Rampur	19790	37	677	1757	1298	263	2280	48	97	13333	10069
17.	Muftiganj	14825	66	186	1405	790	211	2444	99	76	9548	8688
18.	Jalalpur	15280	13	295	1431	742	283	1700	17	127	10664	9772
19.	Kerakat	16282	13	389	1547	437	199	1911	32	118	11636	10286
20.	Dobhi	15610	08	269	1512	915	233	1562	70	134	10907	9809
21.	Sirkoni	15965	102	318	2731	982	203	2127	00	142	9360	8192
	Total Rural	396891	429	10029	26073	24144	6876	51643	1431	2832	273434	235577
	Total Urban	2822	0	6	454	48	17	931	0	22	1344	1347
	Total-	399713	429	10035	26527	24192	6893	52574	1431	2854	274778	240924

Source: District Census Handbook, Jaunpur District

Agricultural Land use pattern in 2021:

In 2021, of the Total reported area of the district, Shahganj block has the highest percentage of area under it while Dharampur block has lowest area of it. Largest Forest area was seen under Suithakala block itself while Karanjakala and Badlapur has zero cover of forests, while Shahganj, Khuthan, Baksha, Mariyahu, Dobhi has less than 10 ha. of forest cover.

Barasathi has the highest area under agricultural waste land Muftiganj has lowest of it. Block Sirkoni has highest land under current fallow land and Sujanganj has lowest land under current fallow area. Shahganj block has highest land area under other fallow land and Dharmapur has lowest of it. Mungra Badshah block has highest land that is not suitable for agriculture while Dharmapur block has lowest of it. Shahganj block has highest land that is used for other than agriculture and Dharampur has lowest area that is used for the purpose other than agriculture. Shahganj block having highest Pasture land under it while Sirkoni has less than 1 ha. land under Pasture. Area of Trees and Shrubs are found highest in Badlapur block

Agricultural Land Use Year 2021(in Hectare)
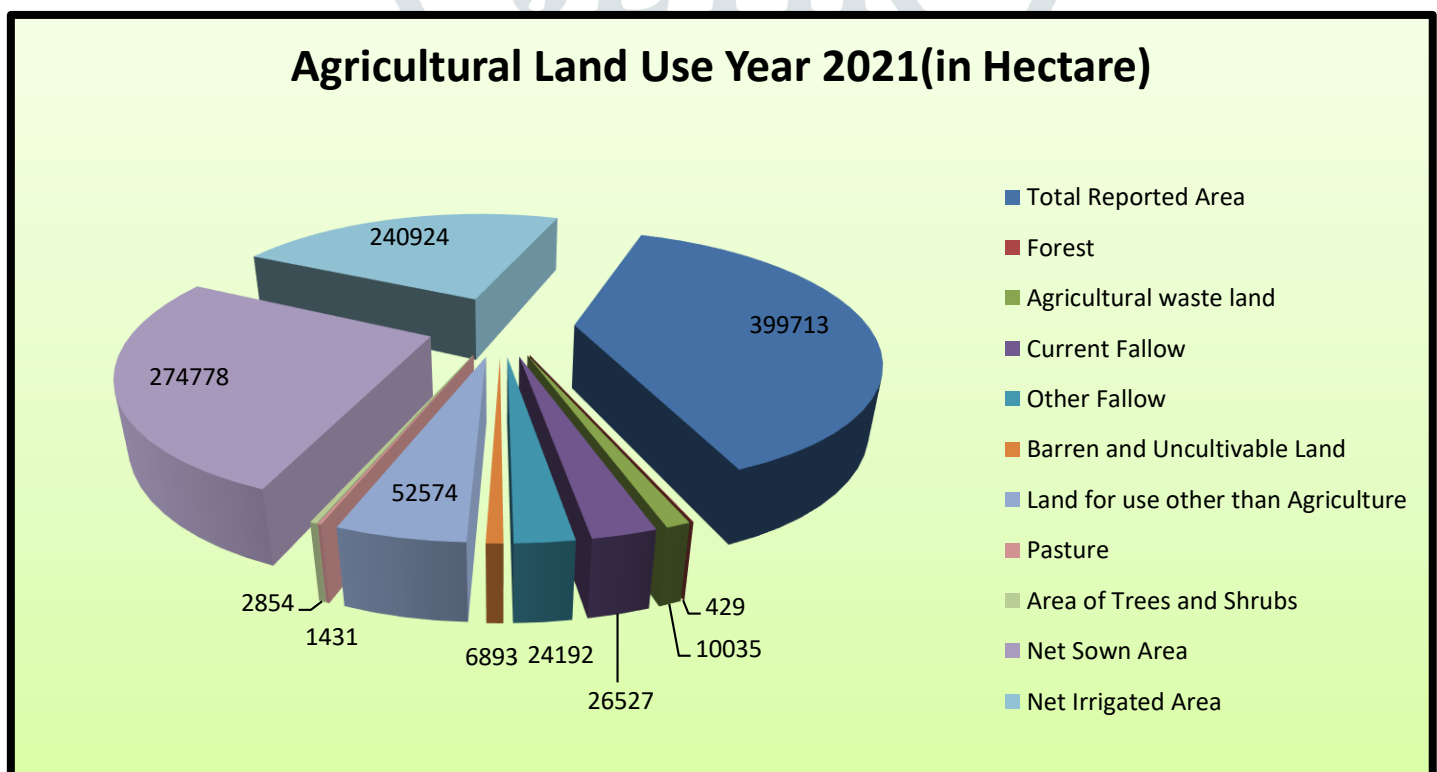
and Shahganj has lowest i.e. 55 hectare of land under it. The highest Net sown area is found in the Shahganj block and lowest under Dharampur block, however Net irrigated area is highest in Machli Shahar and lowest under Dharampur block.

Temporal Change of Agricultural Land Use from 2001 to 2011:

From 2001 to 2011 the reported area and forest cover were remained intact, there were no surplus or deficit seen. The Agricultural waste land was decreased by 2.67% due to proper implementaion of land use techniques while. The area under Current fallow land in 2011 was decreased by 35.78% that is approximately one-third of that in 2001 , while on the other hand Other fallow land was increased by 19.60% that of in 2001. In comparison to 2001 the Barren and uncultivable land in 2011 was decreased by only 3.76% and Land used for other than

agriculture was increased by 4.23% in 2011. The area under Pasture was decreased by 10.63% from 2001 due to decreased intrest in animal husbandary of the farmers and incresed other use of lands. The area under Trees and shrubs in 2011 was decreased by 14.43% in 2001. Net sown area of the district was seen decreasing by 4.38% while the Net irigated area increased by 6.57% in 2011.

Temporal Change of Agricultural Land Use from 2011 to 2021:

From 2011 to 2021 the reported area was remained intact. The Forest area was increased by 580.99% and Agricultural waste land was increased by 27.51. The area under Current fallow land in 2011 was decreased by 22.51% that is approximately one-fourth of that in 2001 to, while on the other hand Other fallow land was decreased by 20.19% that of in 2001. In comparison to 2001 the Barren and uncultivable land was decreased by only 1.25% and Land used for other than agriculture was increased by 14.07% in 2011. The area under Pasture was increased by 7.03% from 2001 due to increased intrest in animal husbandary of the farmers. The area under Trees and shrubs in 2011 was decreased by 38.61% i.e. more than one-third of in 2001. Net sown area of the district was seen decreasing by 1.35% while the Net irigated area increased by 0.65% in 2011.

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