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GEOLOGY

LAND USE PLANNING IN WESTERN UTTAR PRADESH: ISSUES AND CHALLENGES

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Abstract
Western Uttar Pradesh is a part of gangetic plain. Agriculture is the prime occupation of the people here. Population of the region has grown up because of easy availability of fertile land and water. Unplanned development of agriculture has produced critical issues such as decreasing size of agricultural land holding, soil degradation and lowering of underground water level.

Keywords: Agriculture land holding, Planning

Introduction
Western Uttar Pradesh is a study area, which is a part of India's fifth largest and most populous state. It covers highly fertile Rohilkhand plain, upper, middle and part of lower Ganga Yamuna doab. It shares border with Nepal and Uttarakhand to the north, Haryana, Delhi and Rajasthan to the west, Madhya Pradesh to the south and central part of Uttar Pradesh to the east[1].

Area and extent
Coordinates of Western Uttar Pradesh are as following:

- Latitudinal extent - 29° 58' 12" N to 26° 28' 12" N
- Longitudinal extent - 77° 35' 0" E to 80° 6' 0" E

The area and population of Western Uttar Pradesh in Uttar Pradesh is given the following table:

Table 1 - Western Uttar Pradesh –Area and Population

Particulars	*U.P*	*Western U.P.*	
		In numbers	Percent of U.P.
Area (Sq km-2001)	243,290	79,803	32.80
Population (2001)	166,052,859	607,380,90	36.57

Data Source: up.nic.in

Climate
The climate of the region is tropical monsoon, but variations exist because of difference in altitudes. The average temperature varies from 3 to 4 °C in January to 43 to 45 °C in May and June. There are three distinct seasons - winter from October to February, summer from March to mid-June, and the rainy season from June to September.

Tropical Monsoon Climate Marked By Three Distinct Seasons
1. Summer (March-June): Hot & dry (temperatures rise to 45 °C, sometimes 47-48 °C); low relative humidity (20%); dust laden winds.
2. Monsoon (June-September): 85% of average annual rainfall of 990 mm. Fall in temperature 40-45° on rainy days.
3. Winter (October-February): Cold (temperatures drop to 3-4 °C,); clear skies; foggy conditions in some tracts.

Rainfall ranges from 600 to 1,000 mm (24–39 in) in the western Uttar Pradesh. About 90 percent of the rainfall occurs during the southwest Monsoon, lasting from about June to September. With most of the rainfall concentrated during these four-months period, floods are a recurring problem and cause heavy damage to

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crops, life, and property, particularly in Rohilkand region of the state. Periodic failure of monsoons results in drought conditions and crop failure [1-5].

Rohilkand: Socio – Political Divisions

Western Uttar Pradesh consists of twenty six districts, which are grouped into eighteen divisions as following:

Agra Division, Aligarh Division, Bareilly Division, Meerut Division, Mirzapur Division, Moradabad Division, Saharanpur Division and Kanpur Division (excluding districts Kanpur Nagar and Kanpur Dehat).

The largest district in terms of area is Badaun. The largest district in terms of population is Moradabad (Census 2001).

Table 2 - Western Uttar Pradesh

Natural Region	*division*	Districts	Area	Population Density	Population 2001
UPPER DOAB	*Saharanpur division*	Saharanpur	3,689	772	2549458
		Muzaffarnagar	4,008	884	3541952
	Meerut division	Meerut	2,522	1,190	3001636
		Baghpath	1,345	866	1164388
		Ghaziabad	1,956	1,682	3289540
		G.B.Nagar	1,269	939	1191263
MIDDLE DOAB	*Aligarh Division*	Bulandshahar	3,719	786	2923290
		Aligarh	3,747	798	2990388
		Etah	4,446	627	2788270
		Hathras	1,752	761	1333372
	Agra Division	Agra	4,027	897	3611301
		Firozabad	2,361	866	2045737
		Mainpuri	2,760	577	1592875
LOWER DOAB	*Kanpur division*	Mathura	3,333	621	2069578
		Farrukhabad	2,279	692	1577237
		Kannauj	1,993	695	1385227
		Aauraiya	2,051	575	1179496
		Etawah	2,287	586	1340031
ROHILKHAND PLAINS	*Moradabad division*	Bijnor	4,561	686	3130586
		J.P.Nagar	2,321	646	1499193
		Rampur	2,367	812	1922450
		Moradabad	3,648	1,028	3749630
	Bareilly division	Bareilly	4,120	873	3598701
		Budaun	5,168	594	3069245
		Pilibhit	3,499	470	1643788
		Shajahanpur	4,575	557	2549458
Total			79,803		60738090

Data Source : http://nicsu.up.nic.in/
http://en.wikipedia.org/wiki/Districts_of_Uttar_Pradesh

Land use in Western Uttar Pradesh

Land use is the human modification of natural environment or wilderness into built environment such as fields, pastures, and settlements. The major effect of land use on land cover since 1750 has been deforestation. Land use pattern of Western Uttar Pradesh is given in the following table.

Table 3 – Western Uttar Pradesh land use

S.N.	Land use	1996-97	2006-07
		Percentage	Percentage
1	Net sown area	74.36	78.44
2	Agricultarable waste land	1.97	1.41
3	Present fallow land	2.34	3.04
4	Other fallow land	2.39	1.69
5	Non agricultarable	2.72	1.88
6	Land use other than agriculture	9.9	11.80
7	Grassland	0.22	0.22
8	Gardens and scrubs	0.611	0.69
9	Forest	5.43	5.39

Source : http://upgov.up.nic.in/spatrika/graphical/simpleup.html

Issues of agricultural land use

Easy availability of food and water is the main cause of population growth and population growth is the cause of so many problems. In the field of agriculture most alarming problems with population growth in western Uttar Pradesh are as following.

1. Decreasing size of land holding
2. Decreasing underground water
3. Degradation of Land Fertility

In the present research paper problems of decreasing size of land holding is analyzed both temporally as well as spatially.

Decreasing size of land holding: temporal problem

Decreasing size of land holding

The population of western Uttar Pradesh is growing because of the favorable factors such as fertile land and availability of underground water. An overview of population growth and its effect on land holding is given in the following tables and maps.

Table 4 – Western Uttar Pradesh Population Structure

	Total Population	Population engaged in agriculture @ of 73% of total population	Farm holders @ of 50% of population engaged in agriculture
1991	48036840	35066893.2	17533446.6
2001	60738090	44338805.7	22169402.85

Data Source : http://www.upgov.nic.in/

Per capita net sown area in total population, the population engaged in agriculture and farm holders is calculated taking to the data of Net Sown Area Base Year – 1996-97. The results are given in table no.5.

Table 5: Western Uttar Pradesh Change in Per capita net sown area – 1991-2001

	Total Population		Farm holders + Agricultural labor		Farm holders	
Year	1991	2001	1991	2001	1991	2001
Per capita net sown area.	0.123	0.097	0.169	0.133	0.338	0.267
Change in %	78.86		78.69		78.99	
Net Sown Area Base Year – 1996-97 – 5932585 sq. hectares.						

Data Source: http://upgov.up.nic.in/spatrika/graphical/simpleup.html

Spatial distribution of per capita net sown area in 1991 and 2001 is given in the following table no.6.

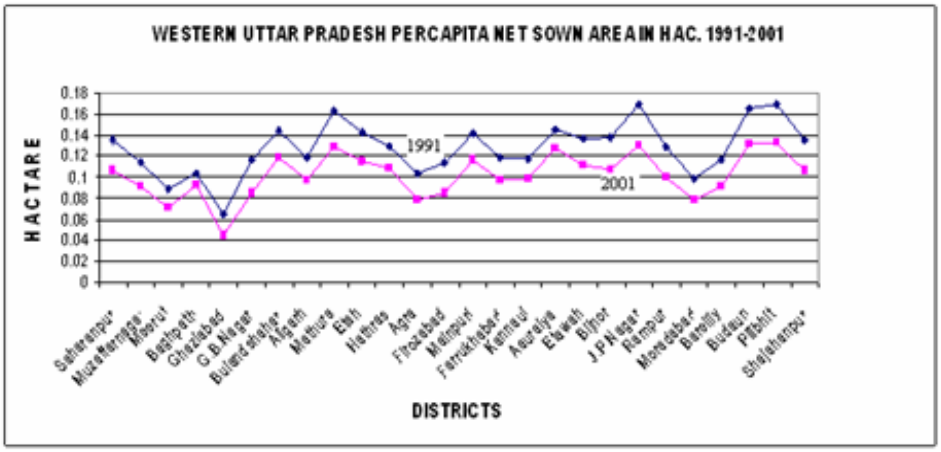
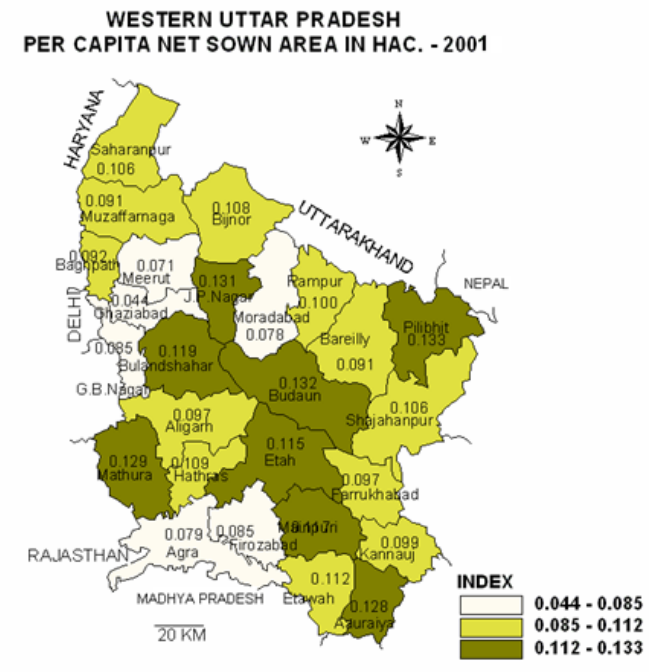


Table 6 - Western Uttar Pradesh Per capita net sown area in hac.

Districts	1991	2001
Saharanpur	0.136	0.106
Muzaffarnagar	0.114	0.091
Meerut	0.089	0.071
Baghpath	0.104	0.092
Ghaziabad	0.065	0.044
G.B.Nagar	0.116	0.085
Bulandshahar	0.145	0.119
Aligarh	0.119	0.097
Mathura	0.164	0.129
Etah	0.143	0.115
Hathras	0.129	0.109
Agra	0.104	0.079
Firozabad	0.114	0.085
Mainpuri	0.142	0.117
Farrukhabad	0.119	0.097
Kannauj	0.118	0.099
Aauraiya	0.146	0.128
Etawah	0.137	0.112
Bijnor	0.138	0.108
J.P.Nagar	0.170	0.131
Rampur	0.129	0.100
Moradabad	0.099	0.078
Bareilly	0.116	0.091
Budaun	0.166	0.132
Pilibhit	0.170	0.133
Shajahanpur	0.136	0.106

Per capita net sown area more than 0.112 hectare was covered in 21 districts, only four districts namely Bagpat, Meerut, Moradabad and Agra were in between 0.085 to 0.112 hectares, however Ghaziabad was on the bottom accounting 0.044 to 0.065 hectares.



During 2001 Per capita net sown area more than 0.112 hectare was minimized to eight districts namely J.P. Nagar, Bulandshahar, Budaun, Pilibhit, Etah, Mathura, Manipuri and Aauraiya. Twelve districts covered the area in between 0.085 to 0.112 hectares of net sown area., however Meerut, Ghaziabad, G. B. Nagar, Moradabad, Agra and Firozabad were on the bottom accounting only 0.044 to 0.065 hectares.

Agriculture land use - spatial problem

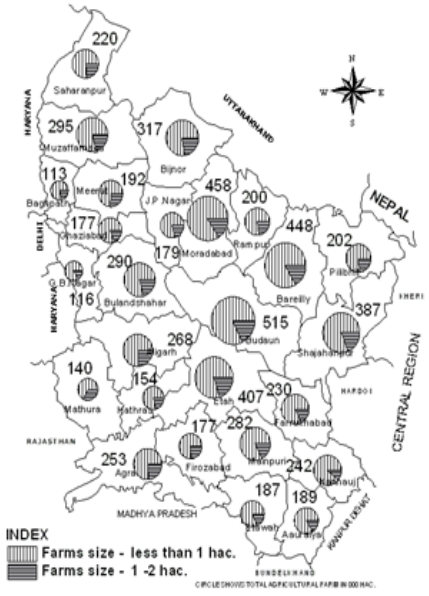
The problem of small size agriculture land holding varies district to district. The districts covering more than seventy five percent agricultural area under less than one hectare farms are as Moradabad, Bareilly, Farrukhabad, Kannauj, Mainpuri and Aauraiya. While Ghaziabad, Shajahanpur, Budaun, Etah and Etawah are the district which cover 68.83 to 74.86 percent agricultural area under less than one hectare farms. Mathura was recorded as the district covering 48.57 percent area less than one hectare of agriculture land[1-5].

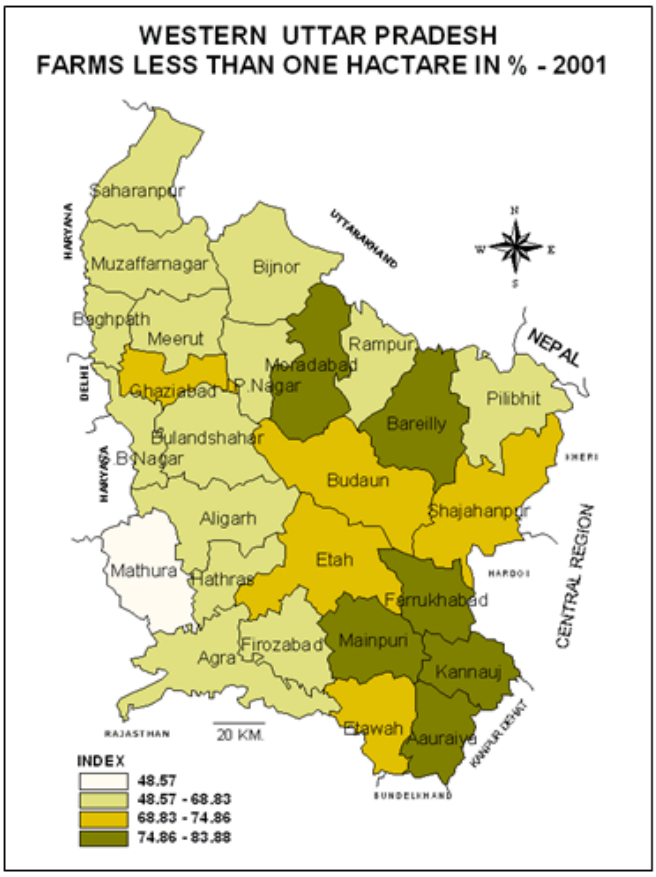
Table 7: Western Uttar Pradesh Farm Size in Hac. 2001

S.N.	DISTRICTS	TOTAL FARMS in 000'Hac	FARMS LESS THAN I HAC. in %
1	Saharanpur	220	48.57
2	Muzaffarnagar	295	65.51
3	Meerut	192	68.14
4	Baghpath	113	68.83
5	Ghaziabad	177	66.10
6	G.B.Nagar	116	67.79
7	Bulandshahar	290	64.58
8	Aligarh	268	72.31
9	Mathura	140	64.85
10	Etah	407	68.00
11	Hathras	154	63.63
12	Agra	253	74.86
13	Firozabad	177	77.24
14	Mainpuri	282	63.63
15	Farrukhabad	230	62.31
16	Kannauj	242	76.52
17	Aauraiya	189	66.77
18	Etawah	187	68.62
19	Bijnor	317	83.88
20	J.P.Nagar	179	65.61
21	Rampur	200	77.65
22	Moradabad	458	72.09
23	Bareilly	448	73.46
24	Budaun	515	76.56
25	Pilibhit	202	75.98
26	Shajahanpur	387	74.56

Data Source: http://upgov.up.nic.in

UTTAR PRADESH WESTERN REGION: AGRICULTURE LAND SIZE- 2001





Measures to control temporal and spatial problems of small size land holding

a) One child policy norm should be strictly allowed in non labor intensive agricultural areas.
b) Agricultural land should not be divided till the life of head of the family.
c) Agricultural farms should be marked with the trees.
d) Consolidated large agricultural farms should be given more subsidies.
e) The farmers should be trained for the optimum agriculture land use.

Reference

1. Bhalla, G. S. and D. S. Tyagi. 1989. *Patterns in Indian Agricultural Development: A District-Level Study*. New Delhi: Institute for Studies in Industrial Development.
2. Bhalla, G. S. and Y. K. Alagh. 1979. *Performance of Indian Agriculture: A District- Wise Study.* New Delhi: Sterling Publishers.
3. Dasgupta, B. 1977. *Agrarian Change and the New Technology in India*. Geneva: United Nations Research Institute for Social Development.
4. Government of India. 1987. *All India Report on Agricultural Census 1980-81*. New Delhi: Ministry ofAgriculture.