

**“Study of Temporal & Spatial Analysis of Landuse Pattern of Welunje Village
in Trimbakeshwar Tahsil of Nashik District ”**

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Abstract :-

Welunje village is located on $20^{\circ} 32'$ north latitude and $73^{\circ} 24'$ east longitude. occupying an area of 1789 hectares with population of 2552 in 2011. Welunje is situated on the meandering channel of Vaitarna Dam. The region has topography with gentle slope towards north. This village lies at 657.25 meters above mean sea level. There are two seasonal Streams within geographical area of village and finally meet to Vaitarna river and Vaitarna Dam towards north. Landuse of Welunje is controlled by local relief and soil types. Table 1 displays temporal changes in general landuse of Welunje. Village has 2552 hectares of net sown area accounting for 59.24 % during 2001-2002. The location of Welunje in plain, has influenced the general and agricultural landuse of this village. The net sown area in this village accounts for 59.25 % and has found in the central and parts in the village.

Key Note: Geographical Condition of Study Area, Temporal & Spatial Analysis of Landuse Pattern, Problem of Study Area, using GIS etc.

Introduction

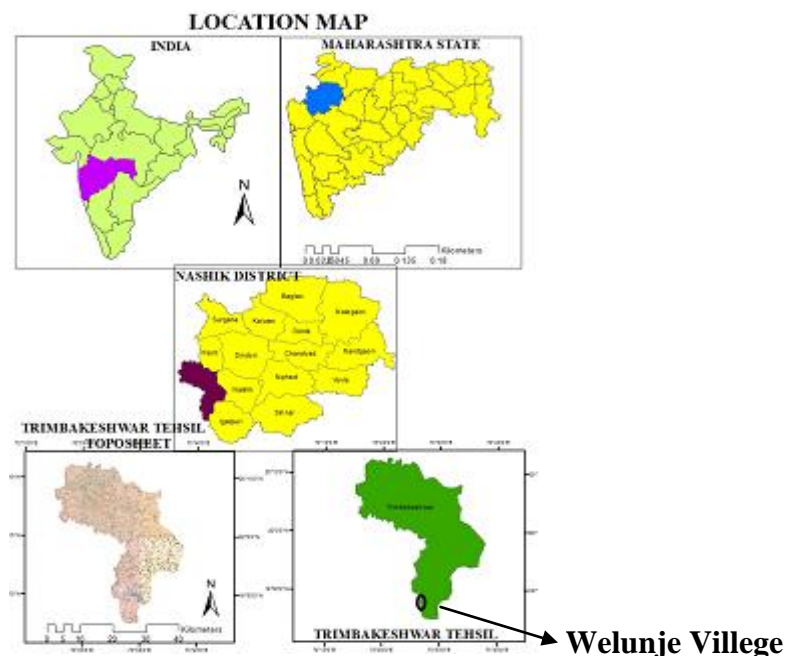
Welunje is situated in north central part in Trimbakeshwar Tahsil. It is located on $17^{\circ} 25'$ north latitude and $20^{\circ} 26'$ east longitude (fig.1). Rainfall scarcity and occurrence of frequent drought condition are common in this village. Welunje, the weekly market centre is located 8 kilometer. away from Welunje and it is connected by pakka road. The village spreads over 1059.18 hectares of area having population density. of 175 persons per square kilometer (2011 Census). Welunje shares its boundary with Vaghera to the north, Gothan to the east, Talwade Trimbak to the west and Trimbakeshwar Tahsil to the South (fig.8.10). the village settlement lies in central part of village area.

Objective of The Study Area:-

This Research Paper has been undertaken to make an in-depth and comprehensive study of **Temporal & Spatial Analysis of Landuse Pattern of Welunje Village** is possible by evaluating following objectives:-

- ✓ To assess the physical background of study area.
- ✓ To assess the spatial as well as temporal land use in the study area.
- ✓ To Study of **Problems of Welunje Village.**

Location of Study Area:



Methodology of Study Area:-

The present study is based on primary and secondary sources. The published sources are revenue record, socio-economic abstract of Nasik district, census Handbook, Department of Irrigation, Groundwater survey and department of Agency. Tahsil land record office to obtain data for the various crop in Welunje Village.

Primary data have obtained for six sample villages through questionnaires. The questionnaires cover aspects like crop land use, farmer's education income from various sources and problems regarding agriculture and allied sectors. This information concerned Talathi and Sarpanch were contacted to get more information of sample villages.

Analysis & Finding of study Area:
Physiography, Climate and Soil

Welunje is surrounded by hill ranges from three sides i.e. west, south and East. This village has foothill location. The general slopes of this village is towards west and northwest. There are two seasonal streams flows in south- north direction (fig.8.10). The village lies an altitude of 630 meters above mean sea level. Village lies in scarcity zone in Trimbakeshwar Tahsil having average annual rainfall of 650 mm. The rainfall receives from south west monsoon. It begins in the first week of June and least a up to October. July receives maximum rainfall. Both soil and irrigation play key role for crop growth in Welunje. Soils of this village are grouped in to four, namely sandy loam, sandy clay loam and clay soil (fig.8.11). Sandy soil accounts 45 % area observed along the hill range and its offshoots in central , east, south and southwest parts in this village. Soil suffers heavy erosion. Bajari rice and wheat are generally grown in this soil type. sandy loam soil appeared on 29 % in this village and it is concentrated in north - central part suitable for sugarcane. Clay soil is speared in two small patches on 9 % area along the stream. Sugarcane and vegetable are commonly grown in this soil.

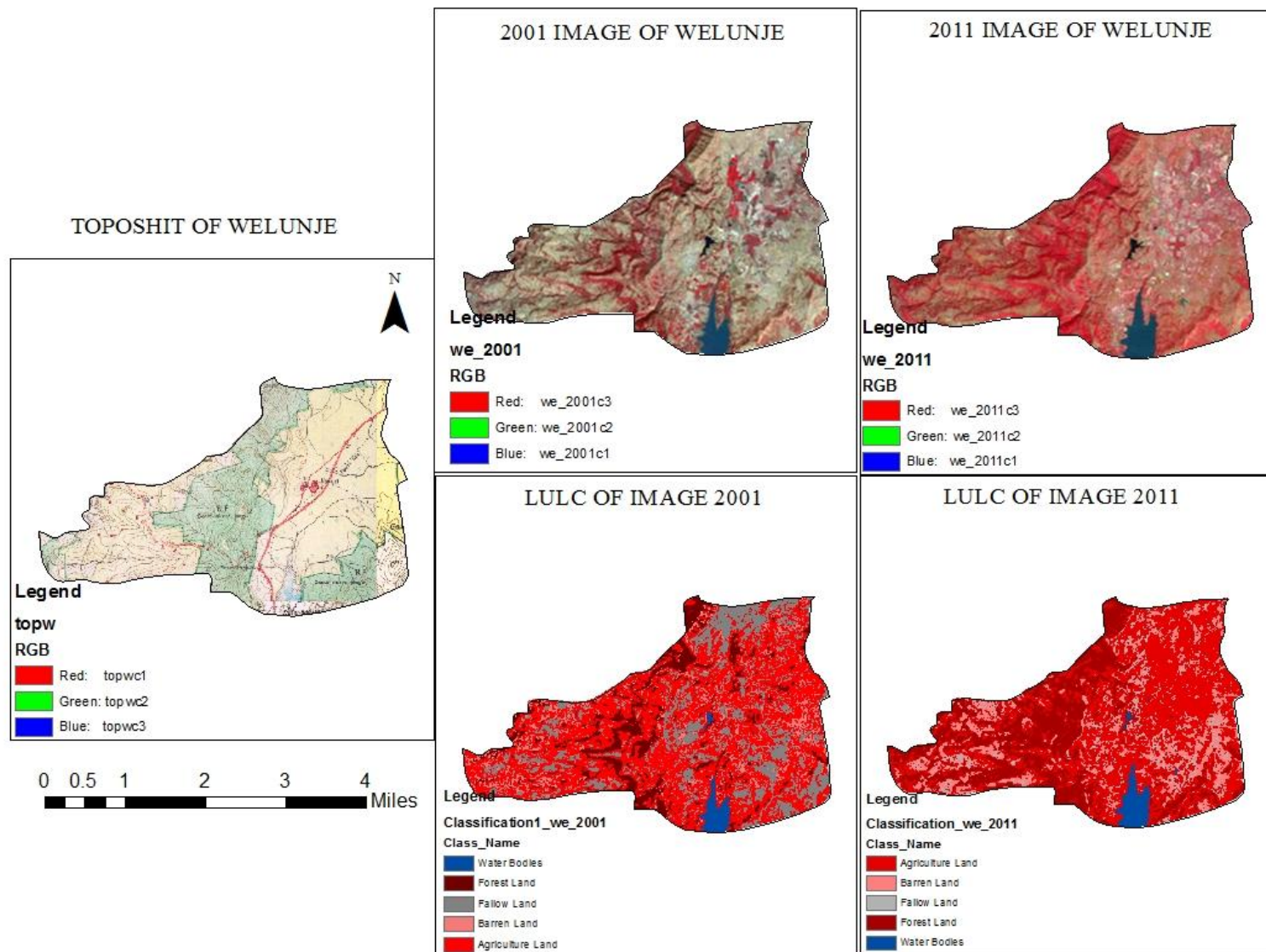
Table-7.9: Welunje Temporal Variations in Landuse (2001-2011)

Source: Village Revenue Record, Welunje

Year	GENERAL LANDUSE IN PERCENT TO TOTAL GEOGRAPHICAL AREA						AGRICULTURAL LANDUSE IN PERCENT TO NET SOWN AREA										
	N.S.A.	C.W.	F.L.	A.N.C.	Forest	Sugar cane	Onion	Rice	Wheat	Oilseed	Fodder	Bajra	Pulses	Vegetable	Fruits	Nachni	Rai
2001-2002	26.75	4.90	8.23	9.85	35.27	0	12.33	15.85	20.57	2.23	6.23	58.24	6.52	16.43	0	0	0
2003-2004	42.35	5.30	8.15	9.53	35.27	0	13.23	12.31	15.85	2.05	5.32	52.32	5.00	30.23	0	0	0
2005-2006	39.42	5.11	8.41	8.41	35.27	5.52	23.22	10.9	12.84	3.09	15.23	65.23	3.23	14.38	0	0	0
2007-2008	39.27	6.45	8.21	9.25	35.27	6.23	25.25	15.56	23.25	2.41	12.21	66.12	2.98	20.36	0	0	0
2009-2010	43.55	5.06	8.46	9.47	35.27	8.56	35.12	21.02	41.31	2.32	8.74	67.12	3.22	21.94	15.30	12.23	0
2011-2012	68.08	5.51	8.74	9.74	35.27	9.25	42.85	35.12	21.80	5.74	5.65	57.1	2.26	19.32	20.10	23.25	12.75

Note- CW=	Cultivable Waste
A.N.C.=	Area Not Available For Cultivation
F.C.=	Fallow Land
N.S.A.	Net Sown Area

TRIMBAKESHWAR TEHSIL-WELUNJE VILGE 2001-2011



Temporal Analysis of Landuse

Physiography has predominate role in landuse pattern in Welunje. Since village is surrounded by hill range from three sides (i.e. west, south and East). 69 % area in this village is under cultivation, Welunje has relatively more area than other sample villages.(26.07 %) under forest cover in this village is under cultivable waste negligible by 1.34 % percent where fallow land has decreased by 1.34 % from 2001 - 2011 (fig.7.7).

The land not available for cultivation and forest cover has remained stable during study period. bajara has highest coverage in Welunje (47.032 %) and ranked first during 2010-2011. It was 45.35 % during 2001-2002 .Bajra, as Kharif crop has ranked second with 21.37 % (2010-2011). Bajra has increased in its area by 8.2 % during study period. Oilseed has increased by 0.15 %. Sugarcane is cash crop covering 7.91 % to net sown area. The area under sugarcane was 4.65 % in2001-2002 shows increase of 3.26% in 2010-2011 due to well irrigation. Crops like onion, vegetables, pulses, fruits and fodder crop have decreasing trend during study period(fig.7.6).

Spatial Landuse Pattern

The local refit of this village plays vital role in landuse pattern in Welunje. The net sown area in this village account for the 69 % concentrated in central and north parts along the stream. Upper part of hill range is covered by forest whereas foothill and offshoots of hill range running east-west direction is occupied by fallow land (fig.7.6). Forest is spread on 26 % to total geographical area which is confined to south, east and south west parts on hilly ranges. The fallow land in

Welunje occupies 16.19 % and it has identified along the foothill zone and hills purées in central west and south parts where soil sandy. Welunje represents the region of two crop combination (Rice and Bajara).Nachani is a leading crop of rabi season cultivated over 47.09 % in south, central, north and north-east parts. Bajara is replaced by Nachani on 21.57 % area. wheat is a winter crop covering 3.44 % area and it is cultivated along the stream in sandy clay loam and clay soil in north-west parts. Sugarcane occupies 7.91 % area in central part in study region in irrigated tracks. Onionconcentrates in north-west part over sandy clay loam and clay soil covers 7.74 %

to net sown area. Vegetable is taken along the stream in central part occurring 3.31 % area. pulses, oil seeds and fruit crops are grown in central part (fig.7.6) on 5 % area.

Landuse and Pattern

Welunje is a medium village in terms of population (3234 person) in 2011. This village has 58 % small farmers, 39 % medium farmers and only 3 % large farmers. Per capita land available for cultivation is 0.46 hectare in this village (table-8.80). The population density in Welunje is 160 person (2011) per square kilometer. This density of population has increased than 2001 (50 %).

Table ;7.10 Land use and Population in Welunje

Sr.No.	Land use Categories	Area in Hectares	Land per head of population
1	Total Village Area	1055	0.92
2	Net Sown Area	986	0.36
3	Gross Cropped Area	865	0.37
4	Double Cropped Area	753	0.53
5	Irrigated Area	652	0.45

Source: Village Revenue Record, Welunje

Occupational Structure

Welunje has witnessed 6.12 % population growth from 2001 and 2011. There is an increase in % of cultivators, agricultural labors and other workers by 0.6%, 0.36% and 0.20 % respectively in 2011 (Table-7.7). There is decreasing trend in case of non-workers by 2.48 %. This indicates an increase dependency ratio in the village.

Table 7.11: Occupational Structure in Welunje

Sr.No.	Category	Population				Percent Change
		2001	Percent	2011	Percent	
1.	Total Population	1689	100	2460	100.0	100.00
2.	Total main Worker	453	26.82	865	35.16	-8.34
	I) Cultivators	298	17.64	332	13.49	4.15
	II) Agricultural Labors	115	6.80	116	4.71	2.09
	III) Other Worker	12	0.71	1	0.04	0.67
3.	Non Workers	873	51.68	793	32.23	19.45
4.	Marginal Workers	25	1.48	31	1.26	0.22

Source : District Census Handbook, Nashik District

Problem of Welunje village:

Welunje show 83b % of its work force engaged in agricultural sector. Frequent occurrence of drought has disturbed the economy of village. water scarcity is the basic problem over a couple of years. The farmers are badly suffering by irregular supply of electricity and the problem of load shading 60 % farmers (small and holders) have reported the need of capital investment in agriculture. These farmers were unable to afford high input coast in agriculture against infertile soil and irrigation facilities. Absence of local market creates difficulties in travelling at a distance of 9 kilometers to reach at Trimbakeshwar city. The dairy, as a secondary activity suffered by lack of fodder lands, water scarcity, road accessibility etc. The village also lacks the infrastructural facility, street light and safe drinking ware supply.

Summary

Welunje represents the region of two crop combination with Nachani and Bajara. village is connected by state highway road with nearly villages. Soil in Welunje are grouped into four namely, sandy, sandy loam, sandy clay loam and clay soil. 60 % area in the village is under cultivation. Local relief plays vital role in land use pattern in Welunje. Net sown area is increased by 1.76 % whereas the fallow land shows decrease by 1.34 % during the study period. Though 83 % of work force is engaged in agriculture., frequent occurrence of droughts has described the economy of the village. 60 % farmers were reported the need of capital in major agricultural operations. Absence of local market generated difficulties in traveling at a distance of 9 kms. To reach nearest market place i.e. Trimbakeshwar city.

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