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Growth Action of Land Utilization Pattern in Jalna District of Maharashtra State, India

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A B S T R A C T

The present study examines the growth action of land utilization pattern in the Jalna in Maharashtra. Using data from 2002-03 to 2016-17, linear and compound growth rate of land utilization pattern in Jalna District was estimated for each period to study the growth performance. In the District, gross cropped area occupies major portion in total geographical area of the state followed by net sown area and forest area. Despite of this, area under current fallow, other fallow occupies prominent portion in total area. Area under the fallow is increasing. Hence importance is given to prevent converting cropped area to waste land. The study suggests farmers to make use of available resource efficiently to convert cultivable waste land and fallow land into farm land.

Introduction

Land and water are the crucial natural resources for any development activity. Consequently, access to land and control over its uses were the prime sources of conflict within and between communities throughout human history. Like any other resource land has two dimensions, viz., quality and quantity, and both of these crucial aspects are under serious threat. Though technological progress in agriculture and agricultural intensification have mitigated the demand for land for non-agricultural purposes are posing a serious challenge to both researchers and policy makers. Intensive agriculture coupled with large-scale irrigation projects without utilized or unutilized. For sustainable utilization of the land ecosystems, it is essential to know the natural characteristics, extent and location, its quality, productivity, suitability and limitations of various land uses.

Recognizing the important role of agriculture in the economic development of country, five-year plans assign high priority to agricultural development. Agriculture has been the major source of livelihood in India since the primordial age. Invent of Moghals followed

by British did not change the situation to the desired level. Agriculture remained totally primitive, deteriorative and turbulent. The deficiency of food grains had lead to witnessing of a number of horrible families. The agriculture sector in many developing countries could not move ahead because of large number of physical, natural, economical, social, political and human factors. Since, the post-independence period, several measures have taken to swing-up agricultural sector. The first five year plan allotted 31 per cent of its total investment on agriculture and allied activities in Jalna district area barren and uncultivable land, Net sown area use shows increase in percentage change with positive sign. Area under forest, permanent pastures, area sown more than once gross cropped shows decrease in percentage change. It clearly shows that fallow land, land under non-agricultural use should be used properly to improve land utilization pattern of the state. In present study a comparison is done to analyze percentage change in area under Land utilization pattern for two different periods and growth rates were identified for the same period. The main objective of this study is to change the land utilization pattern.

Materials and Methods

In the present study, Linear Growth Rate (LGR) and Compound Growth Rate (CGR) were estimated for each period to study the growth LUP. For studying the growth rate in land utilization pattern, linear growth rate was estimated by using following linear functions.

$Y = a + bx + e$

Where

Y = Dependent variable for which growth rate is estimated
a= Intercept/Constant
b= Regression/trend coefficient

x= Period in years
e= Error term with zero mean and constant variance.

Compound Growth Rate was then estimated by using the following equation:

$Y = a. b^x$

Y= Dependent variable for which growth rate is estimated
a= Intercept or constant
b= Trend / Regression coefficient
x= Period in years

$b = (1+r)$

where, r = is compound growth rate

$C.G.R. = (\text{antilog of } b-1) \times 100$

The necessary data for the selected cereals crops was purely based on secondary sources and it was collected from various issues of Statistical Hand Book of Maharashtra, Season and Crop report of Maharashtra.

To work out triennium averages for base period i.e., 2002-03, period considered were 2000-01, 2001-02, 2002-03 and for end period i.e., 2016-17, period for triennium considered were 2014-15, 2015-16, 2016-17 simple arithmetic averages, percentages of selected parameters of development were used for the comparison of situation in Maharashtra over three period of time.

Time period I, II and III represents time series data for 2002-03 to 2008-09, 2010-11 to 2016-17 and 2002-03 to 2016-17 respectively. The present study examines the growth performance of Land Utilization Pattern in Maharashtra State. Table 1 reports the Land utilization pattern for the period of 2002 to 2016-17. It reveals that area under current fallow is constantly increasing throughout the

period and area sown more than once is decreasing. Gross cropped area of the state is also declining. Area under forest is decreasing but change is minute when compared to other particulars.

Results and Discussion

Land utilization pattern of jalna district of Maharashtra (2002-03 to 2016-17)

Land under non-agricultural use is increasing eminently for the entire study period. There is prominent decrease in area sown more than once. Area under permanent pasture is decreasing, but in meager level for every year, when compared to other changes. Forest area of the state also started to diminish. Due to change in climate, unavailability of water, labour and resources area under agriculture is decreased.

Gross Cropped Area of the state declined from 85.76 per cent to 78.91 per cent of the total geographical area. Likewise net sown area also declined from 80.09 per cent to 80.16 per cent of total geographical area. Land utilization pattern of the state for the study period is given in Table 1.

Percentage change of Land utilization pattern for the period 2002-03 to 2016-17

Due to unavailability of resources at needed time net sown area of the state has reduced and its percentage change is reduced with negative growth. Similarly area under permanent pastures, area sown more than once and gross cropped area, cultivable waste land shown change in percentage with negative growth. This leads to positive change in Barren and uncultivable land and Net Sown area (Table 2).

Growth rates

The linear and compound growth rate of the parameters were worked out and presented in Table 3. The average area under forest and barren, uncultivable land were significant for entire working period. Area under land under non-agricultural use was non significant at 1 % for period I and overall period. The average area under current fallow had been significant at 1% for I, II and overall period. The gross cropped area for period II and overall period was non significant at 1%. The average area under cultivable waste land, land under the non agriculture, land under misc trees, grooves not included in area sown, area sown more than once were non-significant for overall period. Gross cropped area for state has been decreased significantly in both linear and compound growth rate. It had been decreased from -23.2 to 0.57 per cent in linear growth and -25 to 1.43 per cent in compound growth rate.

The dynamics of land use pattern in the state over the last twenty years reveals that there was a significant decline in the area under cultivable wastes and barren land, area sown more than once, gross cropped area, permanent pastures while there was a sharp increase in land under non-agricultural use, cultivable waste land, land under misc trees, grooves not included in net area sown.

The study reveals that there has been a significant reduction in the area under common lands mainly because of the diversion of these lands for nonagricultural purposes. Stabilization of irrigated acreage is perhaps a more important step than the expansion of irrigation so as to better utilize land resources.

Table.1 Land utilization pattern of Jalna in Maharashtra (2002-03 to 20016-17) (Area in ha)

Year	Forest	Barren and uncultivable land	Land under non-agricultural use	Cultivable waste land	Permanent pastures	Current fallow	Other fallow	Net sown area	Area sown more than once	Gross cropped area
2002-03	10100	14400	71200	80900	41100	84000	48500	531000	13200	663000
2003-04	10100	14400	71200	80900	41100	84000	48500	531000	13200	663000
2004-05	10100	14400	71200	80900	41100	84000	48500	531000	13200	663000
2005-06	10100	14400	71200	80900	41100	84000	48500	511000	13200	663000
2006-07	10100	15500	71200	81200	42200	76000	48500	511000	13200	663000
2007-08	10100	15500	71000	81200	42200	76000	48500	511000	13200	663000
2008-09	9450	15500	71000	81200	42200	76000	45300	501000	12050	663000
2009-10	9450	15500	71000	81200	42200	76000	45300	501000	12050	663000
2010-11	9450	15500	71400	81200	42800	76000	45300	501000	12050	663000
2011-12	9450	15500	71400	81000	42800	45000	45300	493800	12050	652000
2012-13	9450	15500	71400	81000	42800	45000	42000	493800	12100	652000
2013-14	9100	15800	45500	18000	42800	45000	42000	493800	12070	647700
2014-15	9100	15800	45500	18000	32600	45000	40000	489000	12100	610000
2015-16	9100	15800	46000	18000	32600	45000	40000	489000	12100	610000
2016-17	9100	15800	46000	18000	32600	45000	40000	489000	12100	610000

Source: Season and Crop report of department of statistics Jalna (2016)

Table.2 Percentage change in land utilization pattern of the state

Sr. No	Category of Land	Triennium ending average 2002-03	Percentage to total area	Triennium ending average 2009-10	Percentage to total area	Percentage change
1	Forest	10100	15.23	9100	14.91	-9.90
2	Barren and uncultivable land	14400	1.79	15800	1.95	9.7
3	Land under non-agricultural use	71200	10.73	45800	7.50	-35.67
4	Cultivable waste land	80900	9.38	58000	9.50	-28.30
6	Permenant pastures land	41100	6.19	32600	5.34	-20.68
7	Current fallow	84000	12.66	45000	7.37	-46.42
8	Other fallow	48500	7.31	40000	6.55	-17
9	Net sown area	531000	80.09.	489000	80.16	7.90
10	Area sown more than once	132000	19.90	121000	19.83	-8.33
11	Gross cropped area	663000	85.76	610000	78.91	-7.99
12	Total area	773000	100	773000	100	00

Table.3 Growth rate of land utilization pattern

Sr. No.	Particulars	LGR			CGR		
		I	II	III	I	II	III
1	Forest	-39.17	13.19	3.05	-38.23	24.13	6.72
2	Barren and uncultivable land	0.81	0.36	0.85	0.79	0.36	0.86
3	Land under non-agricultural use	-0.05	-8.25	-3.08	-0.05	-8.03	-3.39
4	Cultivable waste land	0.06	-24.27	-7.68	0.06	-24.94	-11.13
5	Permanent pastures	0.47	0.25	0.36	0.50	0.23	0.44
6	Land under misc trees, grooves not included in area sown	-4.74	7.74	1.66	4.55	8.11	1.50
7	Current fallow	14.92	19.04	14.00	15.93	23.27	15.06
8	Other fallow	0.57	12.25	7.33	0.57	14.54	6.97
9	Net sown area	0.15	-1.14	-0.46	0.15	-1.14	-0.47
10	Area sown more than once	-0.94	-0.12	-0.88	-0.97	-0.09	-0.87
11	Gross cropped area	0.05	-1.21	-0.51	0.05	-1.20	-0.52

*Significant at 5 per cent
**Significant at 1 per cent

The analysis of factors affecting the extent of fallow lands at the farm level using cross-section data reveals that increase in farm size, non-agricultural income and labor shortage have strong positive impact on the extent of fallow lands, while the credit availability and irrigation facilities are found to reduce the extent of fallow lands at the farm level. Another important measure is the institutional reform to ensure the prevention or regulation of converting fertile agricultural lands for non-agricultural purposes is another important mechanism to stabilize the net sown area. Conversion for non-agricultural purposes appears to be the most important threat to the common property land resources such as cultivable wastelands, land under miscellaneous tree crops and groves and grazing lands.

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