

“Perusal of Trend and Pattern Recognition of Agricultural Land Use Efficiency (LUE) of Nashik District, Maharashtra, India”

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Abstract:

Agriculture is a main role player in economic development of the country especially Climate matters must in the Agricultural development. In this paper an attempt should made to analyze the agricultural pattern and development through land use efficiency. Agricultural Land use efficiency index indicates the potential of the Crop yield. The variations in Spatial and Temporal pattern in land use efficiency examined for four decades the results will more clear and fruitful to planning of sustainable agricultural practices in study region.

Key Words: Agriculture, Land Use Efficiency, Trend, Cropped Area, LUEI, Perusal.

Introduction:

Agriculture practices in study area was influenced by the South-West Monsoon Season and followed by post monsoon season rainfall distribution is mainly from western parts having excess rainfall while middle part of the district having moderate rainfall and eastern and south eastern part having scarcity of rainfall. Nashik District is not regular, natural relief and other geographical features. Consideration of all these things Agricultural Land Use Efficiency varied spatially and temporally in the Nashik District

M. G. Kendall was the first to develop a concept of agriculture land use efficiency followed by L. D. Stamp Shafi, Sapre and Deshpande, Bhatia, Gupta, M. Ali and Jasbir Singh etc.further modified and discovers new techniques to analyze LUEI (Land Use Efficiency Index)

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Study Region:

Nashik district lying between 19°35'18" North latitude to 20°53'07" North latitude and 73°16'07" East longitude to 74°56'27" East longitude, with an area 15530 sq.km. and population of 6,109,052, as per the 2011 census. There are 15 Tahasil and 66 revenue circles are in the Nashik district.

Nashik district is situated in the Deccan trap of Maharashtra which is partly in the Tapi Basin and partly in the upper Godavari Basin. The main stream of hills in the Sahyadri which is runs North-South in the western proportion of the district. Ajanta range which runs right across the district. It acts as a watershed between the Girna and its tributaries which drain towards the Tapi to the north and the Godavari and its tributaries to the south. More area of this region is in the rain shadow zone which is called as rain fed area. Drought is the phenomenon which affects the cropping pattern and agricultural development. So we are interested to find out some concrete solution for the agricultural development of this region.

Objectives:

- 1) To find out Trend of the Agricultural Land Use Efficiency in Nashik District
- 2) To identify the pattern of Agricultural Land Use Efficiency in Nashik District

Methodology:

This study is depending upon four decades data of Cropping Pattern mainly Gross cropped area and net sown area the data is obtained from the Directorate of Agriculture, M.S. Pune and District Inspector Land Records, Nashik. We used Jasbir Singh's (1976) Method for Calculation of level of LUEI. The Index is calculated by using the following formula.

$$\text{Index of Land Use Efficiency (LUEI)} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} \times 100$$

The higher the index of the efficiency means higher the agriculture land use efficiency and the lower the index of the efficiency means the lower the agriculture land utilization.

Connotation:

Agricultural Land Use Efficiency in study area categorized in three categories i.e. Low Agricultural Land Use Efficiency, Moderate Agricultural Land Use Efficiency and High Agricultural Land Use Efficiency.

A. Pattern of Agricultural Land Use Efficiency

Land use efficiency represents the use of agricultural land hundred percent of the capacity of growing and yield of crops.

1. Low Agricultural Land Use Efficiency (100% to 110%)

More than 90% area is covered by the Low Agricultural Land Use Efficiency i.e. index in between 100% to 110% in all the decades mainly western and northern part of the district is having low agricultural land use efficiency the area is backward in terms of Education and Transport and communication accessibility. Farmers apply old agricultural techniques and mostly depend upon monsoon rainfall

Years		1980-81			1990-91			2000-01			2011-12		
Sr. No.	Tahsil	Gross Cropped Area	Net Sown Area	Land Efficiency Index	Gross Cropped Area	Net Sown Area	Land Efficiency Index	Gross Cropped Area	Net Sown Area	Land Efficiency Index	Gross Cropped Area	Net Sown Area	Land Efficiency Index
1	Nashik	61610	57312	107.49	59727	55800	107.03	40582	34042	119.21	38857	32794	118.48
2	Peth	31052	30914	100.44	34489	34137	101.03	35474	35013	101.31	21040	21040	100
3	Dindori	75715	72172	104.91	80681	76552	105.39	70299	66499	105.71	49459	41550	119.03
4	Surgana	30153	30060	100.3	32420	32310	100.34	34993	34993	100	30254	29974	100.93
5	Kalwan	48369	38749	124.82	61777	57141	108.11	40953	34699	118.02	47917	38966	122.97
6	Baglan	87296	80447	108.51	87163	81814	106.53	77586	71660	108.26	74801	68146	109.76
7	Malegaon	120038	112573	106.63	116775	112704	103.61	108735	103967	104.58	93191	88071	105.81
8	Chandwad	68220	64879	105.14	65003	63208	102.83	67521	62310	108.36	55160	53221	103.64
9	Nandgaon	61813	60104	102.84	63072	60418	104.39	67420	63000	107.01	13281	10781	123.18
10	Yeola	77463	72762	106.46	84245	77147	109.2	83163	73540	113.08	85607	85607	100
11	Niphad	92112	83172	110.74	84173	77561	108.52	81080	72729	111.48	75412	68741	109.7
12	Sinner	94528	90028	104.99	97727	90200	108.34	82027	78299	104.76	74786	67802	110.3
13	Igatpuri	55449	54683	101.4	57156	55288	103.37	51909	49388	105.1	14918	12475	119.58
14	Trimbak	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	27394	26892	101.86
15	Devala	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	35707	29470	121.16
Total		903818	847855	106.6	921408	874280	105.39	841742	780139	107.89	737784	675530	109.21

Agricultural Land Use Efficiency Index Year: 1980-2012

Table: 1. Pattern of Agricultural Land Use Efficiency Nashik District 1980-2012**Source:**

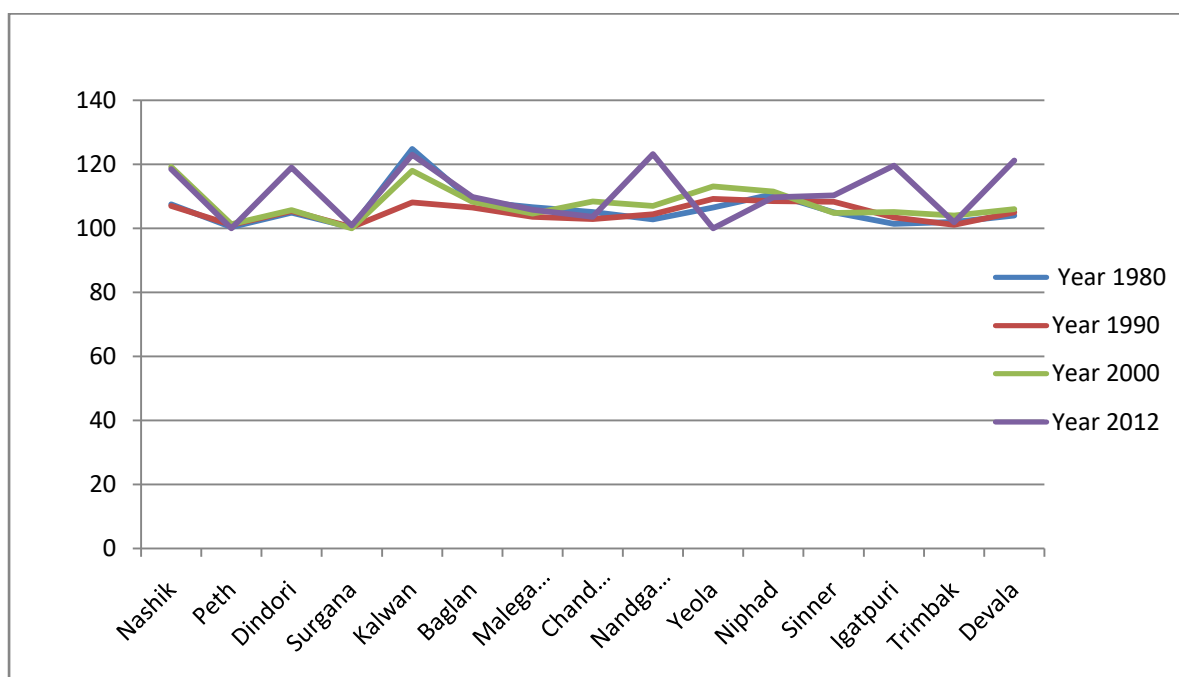
1. Directorate of Agriculture, M.S. Pune and District Inspector Land Records, Nashik.
2. Socio-Economic Abstract Nashik District
3. Land Efficiency Index Compiled by Research Scholar

2. Moderate Agricultural Land Use Efficiency (111% to 120%)

Moderate Agricultural Land Use Efficiency was not observed in the decades of 1981 and 1991 while in the year 2001 it is at Nashik 119.21% , Kalvan 118.02%, Yeola 113.08%,Niphad 111.48% in the year 2012 ,Nashik118.48%,Dindori 119.03% and Igatpuri 119.58%.

3. High Agricultural Land Use Efficiency (121% and Above)

High Agricultural Land Use Efficiency was occurred an insignificant time it is only covers four Tahsils while in 1990 and 2001 it was not observed. In 1981 Kalwan Tahsil was having 124.82%, In 2012 Kalwan, Nandgaon and Devala having respectively 122.97%, 123.18%, 121.16%.

B. Trend of Agricultural Land Use Efficiency Index**Fig: 1 Trend of Agricultural Land Use Efficiency Year 1980-2012**

Above graph (Fig: 1) shows the trend of the Agricultural Land Use Efficiency for four decades there is no significant fluctuations in the years of 1980,1990,2000 .In the year of 2012 the graph shows more fluctuations otherwise trend is normal for the all decades.

Conclusion:

More area of this region is in the rain shadow zone which is called as rain fed area. Drought is the significant phenomenon which affects the cropping pattern and agricultural development. The present study will help to understand the relationship between Agricultural land Use Efficiency Index and the influences of other factors, like Soil, water supply and technology, represented by mechanization, pest and disease control, and the other agricultural management aspects. Although these factors are crucial in agriculture and crop yield. Scientific crop planning is possible through an understanding of Agroclimatic potential of the Study Region. The region having low agricultural efficiency index is facing problems of the Deforestation, wild life is becoming rare, soil erosion is common, water level is very deep, and soil fertility has been reduced in some of the Drought Prone areas. Most of the region having uneven Climatic and Physiographic Condition. There is regional imbalance in water resource and management. Some parts of Region having wrong Agricultural Practices. Lack of Awareness within the farmers and civilians is on climate change issues for further adaptation and mitigation. There is a Scope for Sustainable Agricultural Development of the Region.

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