



IMPACT OF KHADAKPURNA PROJECT ON CROP PRODUCTIVITY IN BULDHANA DISTRICT

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Abstract

The study of agriculture productivity is important for the development of agriculture. Agriculture productivity on micro level in the region is closely influenced by various physical, socio-economic, political, technological and organizational factors.

Circle is taken as basic unit of investigation entire study is based on secondary data which is derived from socio-economic review and statistical abstracts of all circles of impact of Khadakpurna project in Buldhana District region. Study reveals that central part of the study region, Peth, Deulgaon Raja, Deulgaon Mahi, Sakhar Kherda, circle experienced high productivity.

Keywords : *Khadakpurna project irrigated area, Agriculture productivity, Correlation, Regression.*

Introduction:

Productivity as defined in economic or agricultural geography means out put per unit of input or per unit of area respectively and the importance in agricultural productivity is generally the result of a more efficient use of factors of production viz. environment, arable land, labour and capital. Agriculture makes six contributions to economic growth, increased food, supplies release of labour to industry, recourses of industrial, market creation, agriculture productivity on macro and micro level in the region is closely influenced by various physical, socio-economic, political, technological and organizational factors. Agriculture productivity is a function of number of factors including physical, socio-economical and technical organization, mechanization. (Noor Mohammad, 1995). Technological variables have made a significant impact on both agriculture pattern and productivity.

The Study region:

The study area is located in Buldhana district in Amravati division in Maharashtra state. This study area is situated between 19°50' N to 20°27' N latitude and 75°58' E to 76°25' E longitude (Map No. 1) falls in survey of India Toposheets 56-A/1, 46-P/16, 55-D/3. Total geographical area is 2361.94 sq.km. It is 24.44% out of the total district geographical area. The elevation of the Chikhali tableland various from 763 m above sea-level and natural slope of the study area is from east-west side. Ajanta range river Khandakpurna and tributaries are the major physical units in study area. Chikhali, Deulgaon Raja and Sindhakhed Raja are three major tahasils in study area. This tahasils are divided in 23 circles. Total population of the study area is 586974 (Sensus-2011). The major river in Buldhana district in Painganga, Purna and Khadakpurna another tributaries rivers are Ban, Mon, Koradi, Nalganga, Vishwaganga, Dyanganga etc. Annual rainfall in study region is 619 mm in the year 2017.:

Objectives

The main objectives of this research paper are as follows -

- 1) To examine the impact Khadakpurna project irrigated area on agricultural productivity.
- 2) To study the co-relation between cultivated area and major crops productivity.

Database & Methodology

The present study is based on secondary data which is derived from socio-economic review and statistical abstracts of all tahsils of Buldhana districts. Two time periods of 1991 & 2011 are taken for revealing the agricultural productivity regions. Collected rough data are processed. To determine agricultural productivity Kendall's method (1939) of ranking co-efficiency & crop productivity is used. Nine crops are selected for this purpose. To examine the impact of cultivated area and crop productivity the Pearson's Coefficient of correlation technique has been utilized.

Results & Discussions

The agricultural productivity is related with many elements i.e. physical, climatic & socio-economic factors. In the present study, the degree of correlation between cultivated area and agriculture productivity. The topography, soil, types rainfall, temperature, irrigation facility nearest market, transportation, communication facility, population density & worker, farmer knowledge & cultivation technique are considered while interpreting in any area present point aim is analysis of the project impact on crop production in study region and project connected area, also.

The variation in agricultural productivity of indices is examined for year (1991-2011, Table -

1) for studying the variation in indices classes are registered namely.

- 1) High crop productivity area
- 2) Moderate crop productivity area
- 3) Low crop productivity area
- 1) High crop productivity area

High productivity is founded in the central part of study region. Peth, Taljapur, Hatni, Deulgaon Raja, Andhera, Mechuna Raja, Mera Khurd, Eklara, Chikhali, Sakhar Kherda, Malkapuri Pangri, Kaara, Sonoshi, Deulgaon Mahi, seven circles and their villages have lift and canal irrigation facility by Khadakpurna project, plain cultivated area, Black soil, nearest market centers by the reason this area have high level of crop productivity. Peth circle is also connected by Pentakli project, irrigation facility, fertility soil, availability of rural labour. Use of modern technology is field factors show impact on high levels of crop productivity in above impact on high levels.

2) Moderate crop productivity area

It is found that total four circles have moderate crop productivity in study area and they are Dusarbid, Shendurjana, Amdapur, Kingaon Raja and Shelgaon Raja is project land connected, some villages from bank of Khadakpurna river, black cotton soil are available in these circles hence above circles have moderate crop productivity.

**Table No. 1
Impact of the Project on Crop Productivity (kg/hectare) in Study Area**

Sr. No.	Circles	1		2		3		4		5		6		7		8		9		Crop E. R.	
		Soybean	R	Cotton	R	Tur	R	Maize	R	Jawar	R	Udid	R	Gram	R	Wheat	R	Mung	R		
1	Undri	687	22	1224	7	1134	4	750	14	1416	11	621	13	400	21	750	19	568	20	131	14.56
2	Amdapur	586	23	826	19	1063	5	690	16	1507	8	731	5	540	18	1450	9	658	15	118	13.11
3	Eklara	1930	6	1176	10	1163	3	1503	7	1739	2	386	22	1500	11	1500	8	476	22	85	9.44
4	Chikhali	1890	7	1670	1	1278	1	1204	10	1570	5	523	18	1580	5	740	20	656	16	83	9.22
5	Hatni	1944	5	1098	13	975	7	930	13	1280	15	696	9	730	16	1200	13	758	8	99	11.00
6	Shelgaon Atol	1530	13	1663	2	302	15	680	18	1208	16	560	17	1530	7	850	18	650	17	123	13.67
7	Chandhai	1560	12	1620	3	324	13	621	19	1156	18	452	21	1520	8	860	17	630	18	129	14.33
8	Dhodap	930	21	1100	12	300	16	320	22	930	21	233	23	335	22	350	23	135	23	183	20.33
9	Peth	1506	16	920	16	421	10	2002	5	1560	6	523	19	1570	6	1100	14	722	10	102	11.33
10	Kolara	2066	2	1232	6	1044	6	1204	9	1508	7	613	15	1460	13	920	16	845	6	80	8.89
11	Mera Kh.	1972	4	905	17	1215	2	960	12	1428	10	733	4	1490	12	1030	15	709	13	89	9.89
12	Andhera	1522	14	890	18	246	17	420	21	1575	4	697	8	1097	15	1218	12	802	7	93	10.33
13	Deulgaon Mahi	2300	1	560	21	399	12	4085	1	1625	3	678	11	1098	14	1218	11	573	19	81	9.00
14	Mehuna Raja	2035	3	347	23	54	23	1478	8	815	22	790	3	1750	3	2215	2	1055	2	89	9.89
15	Deulgaon R	1520	15	381	22	180	21	1050	11	1365	12	1754	1	1582	4	1665	7	1198	1	94	10.44
16	Tuljapur	1830	8	1000	14	188	20	3550	2	1295	14	720	6	265	23	1355	10	1002	3	100	11.11
17	S. Raja	1218	19	990	15	324	14	2200	4	1492	9	611	16	470	20	624	22	690	14	133	14.78
18	Kingaon Raja	1160	20	692	20	399	11	3250	3	142	23	487	20	1997	1	3470	1	528	21	120	13.33
19	Dusarbid	1465	17	1177	9	200	19	689	17	1170	17	670	12	1814	2	1754	6	710	12	111	12.33
20	Malkapur p.	1685	11	1191	8	150	22	720	15	2246	1	717	7	1513	9	1925	4	847	5	82	9.11
21	Sakhar Kherda	1703	10	1480	4	628	9	475	20	1311	13	798	2	1513	10	1924	5	752	9	82	9.11
22	Shendurjan	1795	9	1123	11	222	18	233	23	1104	19	685	10	545	17	725	21	853	4	111	12.33
23	Sonoshi	1415	18	1425	5	825	8	1675	6	1059	20	655	14	518	19	2050	3	713	11	76	8.44

3) Low crop productivity area

This category of productivity is mainly observed in four circles respectively Dhodop, Sindhkhed Raja, Undri and Chandhai (Map No. 1). Above circles have high hill area, low fertility and lack of irrigation facility by this reason low productivity is found in above area. Co-relation Cultivated Area and Crop Productivity:

Correlation between cultivated area and crop productivity in show graph No. 1 with the help of regression line. The obtained correlation coefficient value ($r=0.11$) shows the positive but negligible level of relationship among the cultivated area and crop productivity. Low rainfall area limited irrigation facilities, incomplete and ongoing project canal construction, irregular water supply etc. factors affect cultivated area and crop productivity in study region. But some project-connected circles have canal and lift irrigation facilities hence here is little correlation between cultivated area and crop productivity.

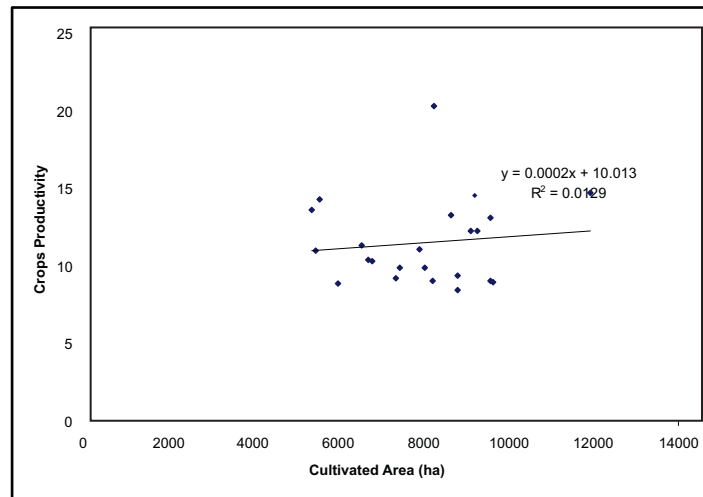
Table No. 2
Co-relation between Cultivated area and Crop Productivity

Sr. No.	Circles	Cultivated Area (Area in Hectors)	Crops Productivity	Co-relation coefficient (r)
1	Undri	9223.07	14.56	0.11
2	Amdapur	9575.32	13.11	
3	Eklara	8799.49	9.44	
4	Chikhli	7360.73	9.22	
5	Hatni	5475	11.00	
6	Shelgaon Atol	5381	13.67	
7	Chandhai	5578	14.33	
8	Dhodap	8244.14	20.33	
9	Peth	6566	11.33	
10	Kolara	5981	8.89	
11	Mera kh.	8036	9.89	
12	Andhera	6798.22	10.33	
13	Deulgaon Mahi	9631.96	9.00	
14	Mehuna Raja	7442.48	9.89	
15	Deulgaon Raja	6718.75	10.44	
16	Tuljapur	7919.62	11.11	
17	S. Raja	11926	14.78	
18	Kingaon Raja	8661	13.33	
19	Dusarb id	9257	12.33	
20	Malkapur P.	9583	9.11	
21	Sakhar Kherda	8221	9.11	
22	Shendurjan	9106	12.33	
23	Sonoshi	8812	8.44	
Total		184296.78	12.22	

Source : Computed by the Author

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Co-relation between Cultivated area and Crop Productivity - Regression Line



Graph No. 1

Conclusion

In study region Talsapur, Deulgaon Raja, Mehuna Raja, Mera Khurd, Malkapuri, Deulgaon Mahi & Kolora these seven circles and their villages have lift and canal irrigation facility by Khadakpurna project, plain cultivated area, black soil, nearest market centres by this reason this area have high level of crop productivity. The functional form of linear relationship of "y" on "x". Found to be at $y = 10.013 + 0.0002x$. The regression coefficient indicated that agricultural productivity of study area by 0.11 irrigated area in turn to increase agricultural productivity.

References

1. L. Lhingneilam (2013) : "Watershed Management and Sustainable Development of the Upper Course of Tuivai River", p. 22.
2. Ahmad Pahlavaravi (2008) : "A Geographical Study of Drought Monitoring In Iran", The Deccan Geographer, Vol. 46, p. 1.
3. Carter Harold (1982) : "The study of urban Geography", Arnold- Heinman Publication, New Delhi, pp. 40-43.
4. S.S. Deshpande (2007) : "Road Connectivity and Road Development in Vidarbha, M.S.", The Deccan Geographer, Vol. 47, p. 37.
5. M.K. Sinha (2010) : "Water Resources section Disaster Management Planning for Dam Break Situations in India", p. 17.
6. R.K. Vishnoi (2007) : "Sustainable Development - A Case Study of Dam Project", Indian Journal, Vol. 64, pp. 14-15.
7. District Socio-economic Report of Buldana - Government of India 2011.

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