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Analysing and Enhancing Agricultural Productivity-Banki-Dampara Block, Cuttack District, Odisha

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Abstract: ***This study has been undertaken to analyses the factors those are affecting for the less productivity and enhance the agricultural productivity in Banki-Dampara Block of Cuttack District. The agricultural productivity decreases day by day that is 51.08% from 2010-2022.***
The non agricultural area also increases day by day that is 22.5% from 2010-2022.There are mainly four factors are affecting the agricultural productivity such as lack of irrigation facilities , frequently flood attack , frequently attack of elephant & pest. This research will provide some solutions for increasing the agricultural productivity in near future.
Keywords: Agricultural Productivity, Irrigation facilities, Flood managent, Pest attack, Elephant attack.

I. INTRODUCTION

Agriculture plays a critical role in the entire life of a given economy and it is the backbone of the economic system of a country. Agriculture is the science and art of cultivating plants and livestock & it is the key development of human civilizations. Agriculture is the primary objective in rural areas & most people dependent on this agricultural sector to increases their livelihoods. Agriculture is practiced for the purpose of producing foods and other human needs such as clothing , shelter , medicines , weapons , tools , ornaments and indent finitely many more including livestock feed.

This sector providing food and raw materials, agriculture also provides employment opportunities to very large percentage of the population.

Agricultural productivity may also be measured by what is termed total factor productivity; this method calculating agricultural productivity compares an index of agricultural inputs to an index of outputs.

Agricultural productivity is measured as the ratio of agricultural outputs to agricultural inputs, while individual products are usually measured by weight; other varying densities make measuring overall agricultural output difficult. Odisha is basically known as agrarian state which more than 76% people live in rural areas and depend on agriculture for livelihood. Odisha is the 8 th largest state by area, 11th largest state by population and 3 rd largest population of Scheduled Tribes in India.

Odisha is ranked as 16th in GDP and 24th in GDP per capita income in India. Odisha is ranked as 12th in providing revenue in agriculture sector in India.

II. STUDY AREA

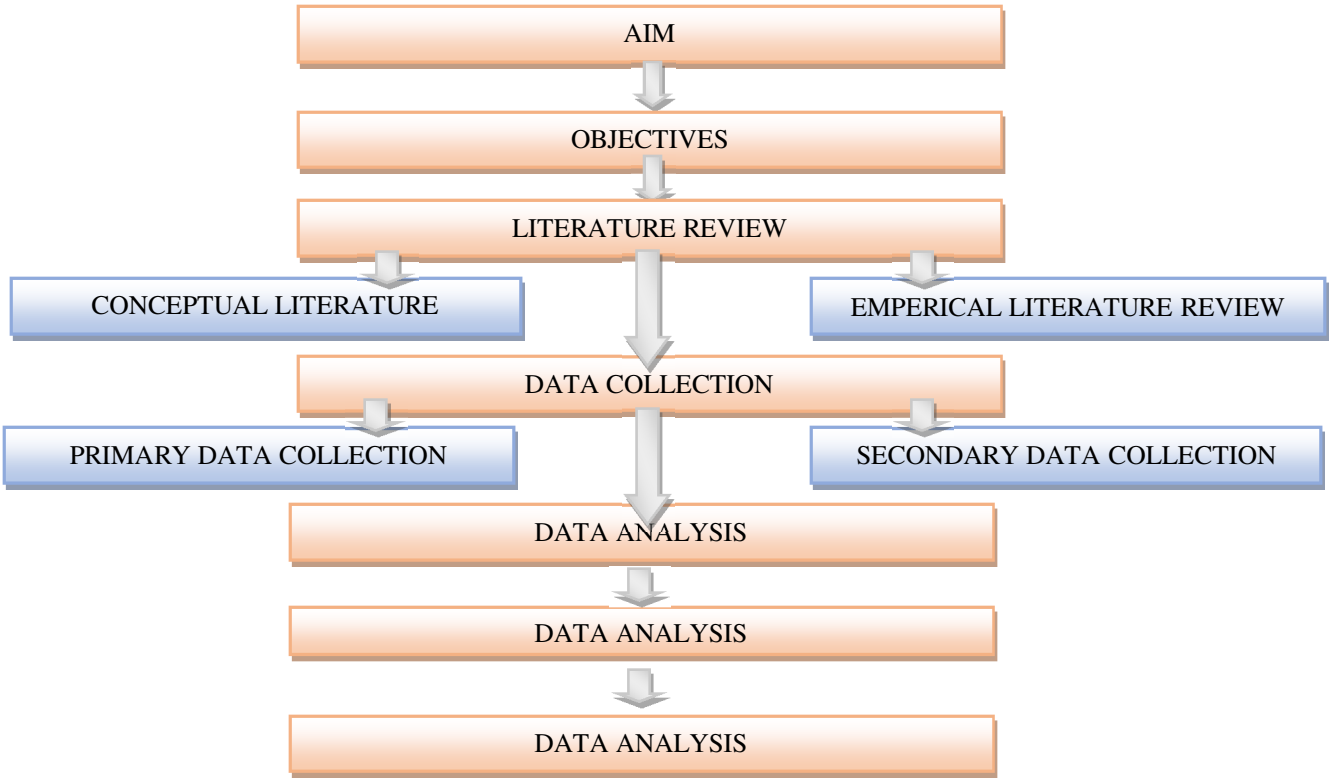
The study area Banki-Dampara block comes under Cuttack district of Odisha. The total geographical area is 262 sq.km. The total population of the study area is 39,076.The male population is higher than female population. 16.5% is belongs to SC population & 8.86% is belongs to ST population.

The climate is tropical wet & dry , the annual average temperature is 40°c , the annual average rainfall is 100 to 150cm. , the soil quality is black soil with more clay content. The population density is 563 per sq km. The sex ratio is 904 female per 1000 male. The literacy rate is 76.2%.

The major crops of this area are paddy , pulses , oil seeds , vegetables & others etc. The major rivers are Mahanadi & Rana. The main workers profile is 59.25% & marginal workers profile is 40.75%. The no of household is 7,276.

Source-Autocad

III. METHODOLOGY



IV. AIM

Analysing and enhancing agricultural productivity for improving the standard of living of Banki-Dampara block, Cuttack district.

V. OBJECTIVES

1) To study and analysing the present situation of agricultural productivity.
2) To study the factors responsible for low agricultural productivity.
3) To find out measures for the increasing the agricultural productivity and enhance the standard of living.

Table.No-1-Showing the year wise cultivated area, non-cultivated area & crop production of Banki-Dampara block.

YEAR	CULTIVATED AREA (In Hect.)	NON-CULTIVATED AREA (In Hect.)	CROP PRODUCTION (In Qtls.)
2010-2011	7,360	12,994	120,669
2011-2012	7,088	13,065	115,358
2012-2013	6,516	13,486	98,756
2013-2014	6,154	13,602	93,967
2014-2015	5,110	14,215	86,087
2015-2016	3,610	14,514	82,528
2016-2017	3,323	14,705	73,742
2017-2018	3,062	14,888	70,927
2018-2019	2,985	14,539	68,586
2019-2020	2,742	16,756	64,149
2020-2021	2,547	18,875	60,859
2021-2022	2,023	19,567	59,026

Inference-The analysis shows that the crop production decreased 51.08% & the non-agricultural land increased 22.5% of Banki-Dampara block from 2010-2022.

VI. CAUSES OF LOW PRODUCTIVITY

1) Lack of irrigation facilities
2) Frequently flood attack
3) Frequently elephant attack
4) Frequently pest attack

a) Lack Of Irrigation Facilities

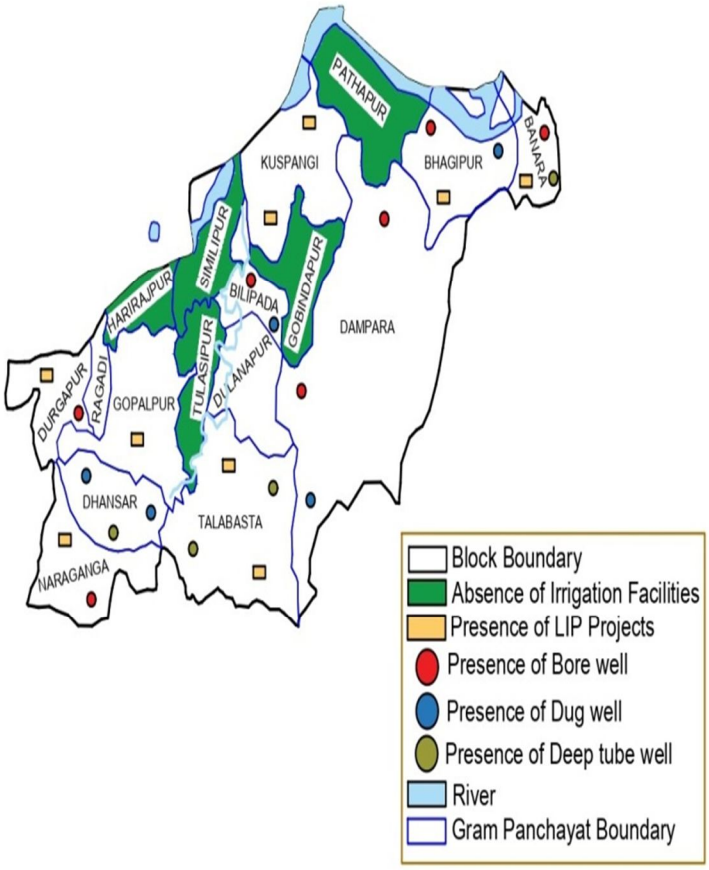
Table.No-2-Showing the Gram Panchayats wise irrigation facilitities and lack of facilities of Banki-Dampara block.

Gram Panchayats	Total no. Of irrigation points	Sources of irrigation	Dug well	Bore well	Deep tube well	Lip (lift irrigation project)
Banara	13	Deep tube well, LIP	0	0	5	8
Bhagipur	14	Dug well , Deep tube well , Bore well	8	3	3	0
Pathapur	Nil	Nil	Nil	Nil	Nil	Nil
Kuspangi	14	Bore well , LIP	0	5	0	9
Dampara	13	Dug well ,LIP ,	2	5	0	6

		Bore well				
Gobindapur	Nil	Nil	Nil	Nil	Nil	Nil
Dulanapur	9	Bore well	0	9	0	0
Talabasta	12	Deep tube well , LIP	0	0	2	10
Similipur	Nil	Nil	Nil	Nil	Nil	Nil
Harirajpur	Nil	Nil	Nil	Nil	Nil	Nil
Bilipada	18	Dug well , Bore well , LIP	5	2	0	11
Gopalpur	10	Dug well , LIP	1	0	0	9
Ragadi	Nil	Nil	Nil	Nil	Nil	Nil
Durgapur	15	Bore well , LIP	0	3	0	12
Dhansar	19	Dug well , Deep tube well , LIP	2	0	1	16
Tulasipur	Nil	Nil	Nil	Nil	Nil	Nil
Narganga	37	LIP	10	7	0	20
Total	157	-	18	27	11	101

Inference-The analysis shows that mainly 6 Gram Panchayats have no irrigation facilities in Banki-Dampara block.

Map No-4-Showing the irrigation facilities & lack of facilities of study area.



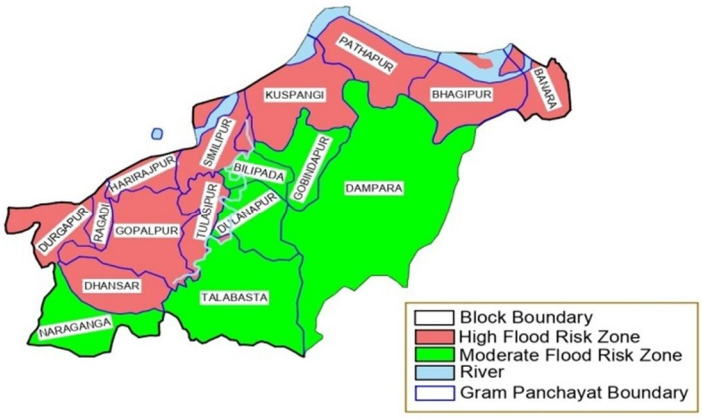
b) Frequently flood attack

Table.No-3-Showing the year wise flood attack & it's impact of Banki-Dampara block.

Year	Natural calamities	Cultivated area (In hects)	Damage area (In hects)	In (%)	Crop production (In qtls)	Crop damage (In qtls)	In (%)
2010-2011	Flood	7,360	2,288.22	31.09	1,20,669	51,320.52	42.53
2011-2012	Flood	7,088	4,518.6	63.75	115,358	46,200.87	40.05
2012-2013	Flood	6,516	3,397.44	52.14	98,756	38,959.24	39.45
2013-2014	Flood	6,154	3,120.69	50.71	93,967	34,852.36	37.09
2014-2015	Flood	5,110	2,314.31	45.29	86,087	25,051.31	29.1
2015-2016	Flood	3,610	774.34	21.45	82,528	24,118.89	28.20
2016-2017	Flood	3,323	793.20	23.87	73,742	36,893.12	50.03
2017-2018	Flood	3,062	1026.38	33.52	70,927	33,817.99	47.68
2018-2019	Flood	2,985	1,162.95	38.96	68,586	40,054.22	58.40
2019-2020	Flood	2,742	1,283.25	46.80	64,149	36,603.41	57.06
2020-2021	Flood	2,547	1,115.07	43.78	60,859	31,652.76	52.01
2021-2022	Flood	2,023	1,149.67	56.83	59,026	36,029.47	61.04

Inference-The analysis shows that flood is the major problem of this block & the crop production decreased day by day.

Map No-5-Showing the impact of flood in study area.



c) Frequently Elephant Attack

Table.No-4-Showing the year wise elephant attack of Banki-Dampara block.

Year	Elephant Affected Gram Panchayats	Damage Crop (in qtls.)	In (%)
2018-2019	Similipur,Dulanapur,Talabasta	7,448.43	10.86
2019-2020	Durgapur,Dampara,Kuspangi	5,093.43	7.94
2020-2021	Talabasta,Dampara,Durgapur	6,706.66	11.02
2021-2022	Similipur,Dhansar, Talabasta, Dampara	2,608.94	4.42

d) Frequently Pest Attack

Table.No-5-Showing the year wise pest attack of Banki-Dampara block.

Years	Major Pest attack	Crop production (in qtls.)	Crop damage (in qtls.)	Crop damage (in %)
2017-2018	Cotton leafworm, Pink steam borer, Jute Weevil, Rice hispa	70,927	7,255.83	10.23%
2018-2019	Root grubs and termites, Rice case worm, Leaf hoppers	68,586	10,383.92	15.14%
2019-2020	Rice hispa ,Leaf hoppers, Shoot and fruit borers , Jute weevil	64,149	11,771.34	18.35%
2020-2021	Root grubs and termites, Cotton leaf worm, Planthoppers,	60,859	13,078.59	21.49%
2021-2022	Rice case worm, Planthoppers , Shoot and fruit borers	59,026	13,971.45	23.67%

VII. PROPOSALS & RECOMMENDATIONS

A. Lack of Irrigation Facilities

1) To adopt drip & sprinkler irrigation method.

2) 1 LIP provide water = 70 acres land

Present LIP projects = 101
Defunct LIP projects = 15
Working LIP projects = 101- 15 = 86
Provide water = 86*70 = 6,020 acres land
Cultivated land = 2,023 hect.
Non-cultivated land = 19,567 hect.
Total agricultural land = 21,590 hect.
1 hect = 2.47 acre
21,590 hects = 21,590*2.47 = 53,327 acres land
Lack of land not provide water = 53,327-6,020 = 47,307 acres land
Need of LIP projects = 47,307/70 = 676 LIP projects.

a) To construct LIP Projects in Pathapur , Similipur , Harirajpur , Gobindapur , Ragadi&Tulasipuretc& repair the defunct LIP projects.

b) To provide border strip irrigation method.

B. Frequently Flood Attack

1) To creating dikes, ditches, barriers, embankment notches and irrigation channels manage to drainage the water properly.
2) To use PVC devices & it control the pressure of oncoming water to stabilize itself and create a barrier, Water gates are easier to set up because they self-deploy, which is important in an emergency.
3) To adopt vinyl-coated polyester tubes inflate, denser & heavier to prop up internal support structures, When the rains come down and the floods come up, these long barriers will hold back oncoming waters and protect the land.
4) To adopt LiDAR to pinpoint elevation change and determine which areas are more prone to flooding & add more drainage around their fields to better protect them from light and heavy flooding.
5) To create a run off area is a portion of land sacrificed to flood water in order to prevent it from flooding, It can also be a storage pond where excess water can flow.
6) To adopt more planting which can be reduce soil erosion and control the flood.

C. Frequently Elephant Attack

1) To focus on planting of sunflowers and chili plants on the boundary of the crop fields.
2) To use a small pocket which is a paste of chili, tobacco powder, waste engine oil to avoid elephant particularly.
3) To spray of repellent on plant when they matured which is also help to avoid the elephant.
4) To use of animal repellent on the boundary of crop fields.
5) To focus on making policies and strategies to avoid animal attacking.

D. Frequently Pest Attack

1) To use organic & synthetic pesticides protect the crop from pest attack.
2) To adopt crop rotation techniques for avoiding crop from pest attack.
3) To adopt incorporating integrated pest and insectsmanagement.

VIII. CONCLUSION

Odisha is basically known as an agrarian state of India .More than 76% people dependent on this sector. The increasing of crop production is more help full for the increasing of economy of this area. Agriculture is the primary sector & also the most dependent sector of rural people. So consider all the problems & it's solutions we can improve the present condition of Banki-Dampara block in agriculture sector.

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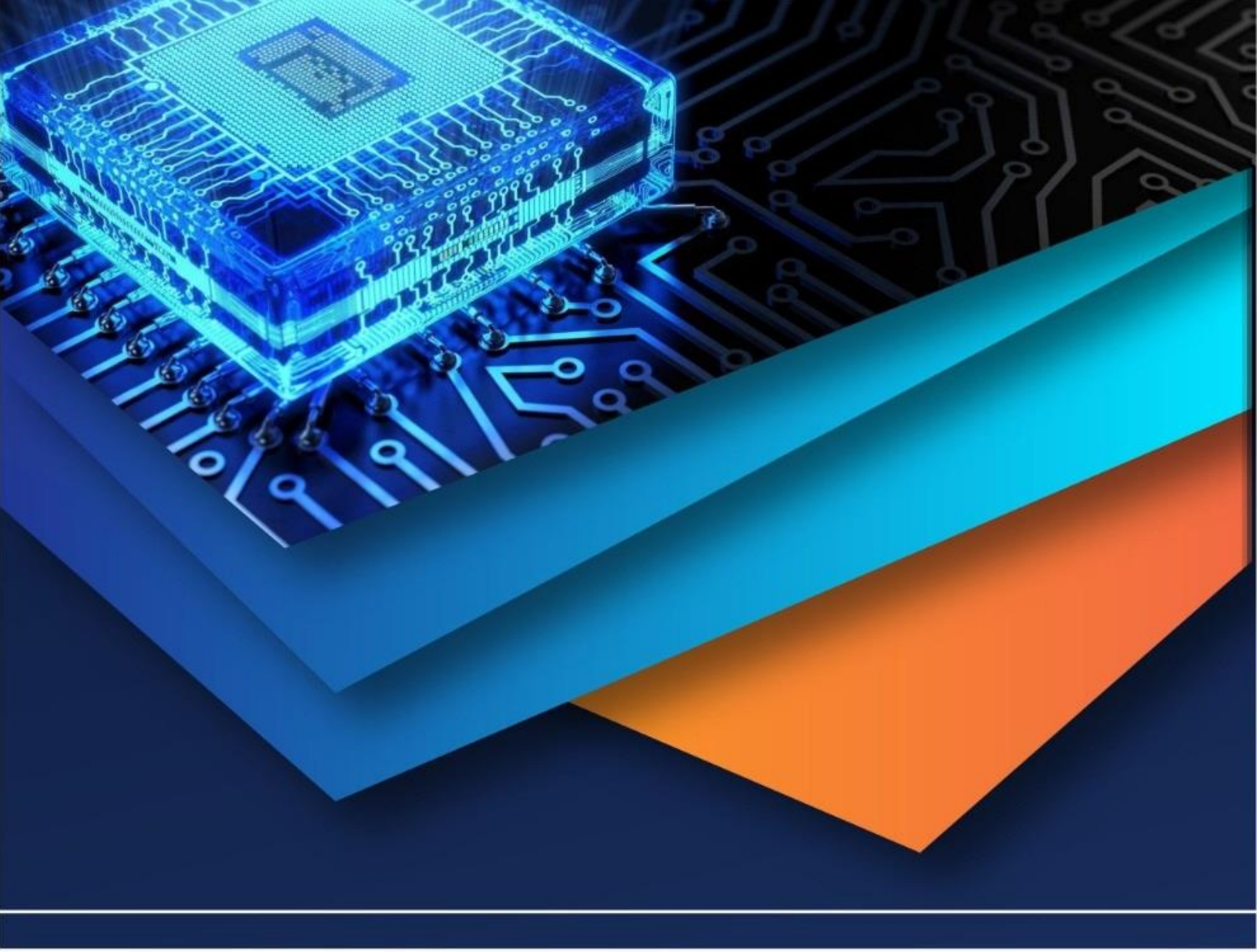

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