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DIVERSIFICATION OF AGRICULTURE AND THE NEED OF AGRICULTURAL INNOVATION IN THE TRIBAL REGIONS OF SOUTH ODISHA

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ABSTRACT

This paper aims to analyse the need of Agricultural innovation in the study area. The study is based on the primary data. A structured interview schedule has been developed and the data is collected from 60 households by simple random sampling method. I found crop diversification is beneficial in the study area.

Keywords – Crop diversification, Irrigation, Tribal households.

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Introduction

India is an agro-based economy and it ranks second in farm output in the whole World. India has achieved a record food grain production of 259.29 million tonnes in 2011-12. Output fell to 255.36 million tonnes in 2012-13 due to drought in some parts of the country. Out of the total work-force in India, workers engaged in agriculture constitute around 50 percent as on 2014. In Odisha agriculture contributes 20 percent of state's GSDP. It provides employment and sustenance directly or indirectly to more than 60 percent of the state's total work-force. Out of the total cultivated area of 61.80 lakh ha. about 51percent is irrigated and the rest is un-irrigated during Kharif season. The total irrigation potential created so far from all sources is about 47.03 lakh ha. i.e. Kharif 31.3 lakh ha. and Rabi 15.73 lakh ha. The total food grains production has been widely fluctuating in the state. It was 76.19 lakh tonnes in 2010-11 as compared to 75.51 lakh tonnes in 2009-10. Paddy still constitutes about 90 percent of the total production of food grains and continues to be the dominant crop in Odisha.

Profile of the Study Area

Borigumma is the largest block of koraput district as well as of Odisha. It is also called the land of Bhairaba. There are 30 grampanchayats in Borigumma Block. The total population of Borigumma is 1, 45,835and out of this 73,624 is the ST population as per the census of 2011. The study area explores "Syamlaguda Panchayat". Here most of the people are dependent upon agriculture for their livelihood. In Syamlaguda panchayat there are three villages namely Mundaguda, Nakulguda and Syamlaguda. The total population of this panchayat is 4,591 as per the census of 2011. The indigenous people of the locality have diversified their agricultural practices from paddy to non-paddy crops.

Crop Diversification

Diversification of agriculture refers to shift of the production of a single crop to number of crops and from paddy to non-paddy crops. It reduces the risk involved in traditional agricultural practices to get better returns in modern agricultural practices.

Objectives

To study the extent and impact of crop of diversification in the area.
To suggest some measures to improve the process of crop diversification in the study area.

Methodology

The study is based on the primary data. A structured interview schedule has been developed and the data is collected from 60 households by simple random sampling method. The respondent chosen purposefully are more than 50 years of age so that data can be compared between pre-diversification and post diversification of agriculture in the study area. The time period chosen was 2000-01, 2009-10 and 2017-18. For data analysis simple statistical tools like percentage method has been used. Bar diagram is used for visual clarification.

Diversification status

As Syamalaguda panchayat is comprises of 3 villages Mundaguda, Nakulguda and Syamlaguda. Syamalaguda has been taken as sample village. In this village there are 764 households and the population is 3,091 as per the census of 2011.
The crop diversification status of the village is explained below:
Status of the village in pre-diversification period. Here is a table that shows the situation of the cropping

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pattern of the village during 2000-2001:

Table .1

Crop	Area under cultivation	Quantity produced (in quintals)	Quantity consumed (in quintals)	Quantity sold (in quintals)	Income (in rupees)
Paddy	354acres	2478	1139	1339	5,35,600
Non-paddy	---	---	---	---	---

(SOURCE: Primary data)

The above table shows there were no diversification occurred in 2000-2001 and also the income from the paddy cultivation of the farmers were also very low that was 5, 35,600.
Now we will move to the situation of the cropping pattern of the village during 2009-2010:

Table .2

Crop	Area under cultivation	Quantity produced (in quintals)	Quantity consumed (in quintals)	Quantity sold (in quintals)	Income (in rupees)
Paddy	271acres	2810	1476	1334	12,00,600
sugarcane	83acres	2905	---	2905	14,52,500

(SOURCE :Primary data)

The cropping pattern in 2009-2010 had changed to some extent that the farmers were earning 12, 00,600 from paddy and 14, 52,500 from sugarcane but no such instances of vegetable cultivation were there. In 2011-12 they faced crop failure in Sugarcane. The plants of sugarcane effected with red- root problems. So after that the farmers of that region shifted their agricultural practices towards vegetables. This is shown in the table below.

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Table .3: Household Agricultural income

Crop	Area under cultivation	Quantity produced (in quintals)	Quantity consumed (in quintals)	Quantity sold (in quintals)	Income (in rupees)
Paddy	144 acres	2044	1094	950	12,35,000
Green motor	28 acres	8963	_____	896	17,92,000
Cabbage	44 acres	1540	_____	1540	30,80,000
Tomato	26 acres	5720	_____	5720	57,20,000
Sugarcane	38 acres	1710	_____	1710	11,97,000
Total	280 acres				1,30,24,000

(Source: primary data)

in the above table we can see that the area under paddy cultivation is the highest but the income is comparatively less than that of the other products and the farmers are getting more profit in non-paddy crops than that of the paddy. Under paddy the farmers are getting 12,35,000 rupees out of the selling of 950 quintals , in Green motor the total income earned is 17,92,000 rupees out of the selling of 896 quintals , in cabbage total income earned is 30,80,000 rupees out of the selling of 1540 quintals , in tomato the farmers are getting 57,20,000 rupees out of the selling of 5720 quintals , in case of Sugarcane the farmers are getting 11,97,000 rupees out of the selling of 1710 quintals. So the total income earned by these 60 sample households is 1,30,24,000 rupees per annum and per household per annum is 2,17,066.66 rupees.

Unless we know their expenditure we can't able to know their standard of living. So here is a table which shows the expenditure habits of the farmers of the locality.

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Household Annual expenditure Table.2

Heads of expenditure	**Amount (in rupees)**
Food (Paddy)	Self
Grocery	32,40,000
Clothing	3,60,000
Fuel	5,76,000
Household maintenance	1,74,000
Social functions	1,38,000
Health	2,25,780
Agriculture	42,15,000
Education	45,000
Total	89,73,780

(Source: primary data)

Here in the above table we can see that the total expenditure of these 60 households is 89, 73,780 rupees out of which the expenditure on agriculture is the highest that is 42,15,000 rupees and the per head expenditure of the 60 households1, 49,563 rupee.

Now, we will calculate the per head household saving per annum:

Per head household saving per month is 5625.25 rupees
So, if we will compare the three periods i.e. 2000-2001, 2009-2010; and 2017-2018 we can experience certainly the diversification of crops have raised the income of the farmers and also their standard of living.

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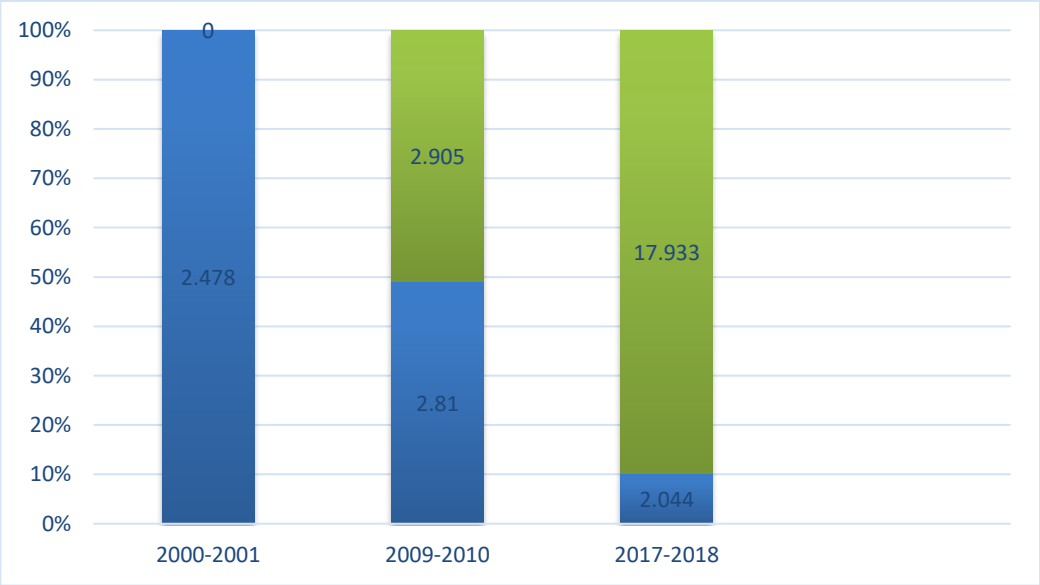

On y-axis we measure production of crops in quintals and on the x-axis the different periods. In 2000-2001 we can see there was no such crop diversification but in 2009-2010 the farmers diversified their cropping pattern from paddy to sugarcane which further we can see in 2017-2018 a huge amount of crop diversification is experienced from paddy to non-paddy crops.

Causes responsible for crop diversification

Increase in income

In Syamlaguda panchayat the income of the farmers have been increased because of the crop diversification. As you can see that the sample households are earning 67,503 rupees per annum. So they are maintaining a higher standard of living than that of before.

Short term profit

The farmers are getting short term profit in crop diversification in that area. Within a period of 3 to 4 months they yield the vegetables and sell it in the markets and get better profits.

Demonstration effect

Another cause which is highly responsible in this area to diversify their crops is the effect of demonstration. As the nearby farmers to them are earning profit out of the crop diversification consequently others also went on changing their agricultural practices.

Irrigation

Irrigation is the main cause of crop diversification in that region. They have L.I. facilities pump sets, hand pumps which they use for this purpose.

Major source of employment

It is providing a major source of employment in this area. From farm to market it needs a huge number of people everybody has a proportionate share in it.

Advanced technologies.

Another important cause which is responsible for crop diversification in Syamlaguda is the availability of advanced technologies. In advanced technologies we can say the use of Chemical fertilizers like DAP, Super, Potash, etc. In implements like Tractor, Rotavator , Power tiller, Leveler, Harvesters, etc.

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Hindrances

Lack of supportive price

Though the farmers in that area have diversified their agricultural pattern still they face a lot of difficulties. The first and foremost difficulty is the lack of supportive price. Sometimes they are compelled to sell it in a low price. So only a limited number of farmers go for diversifying the crop.

Storage

Lack of storage facility in that area is another hindrance in the way of crop diversification in that region. As there is no such storage facility and after 3 to 4 days they are bound to sell it in a lesser price.

Insurance coverage

Farmers in that viewed that they are not getting any benefits of insurance coverage from the Govt. In 2011-12 they faced crop failure in Sugarcane. The plants of sugarcane effected with red- root problems. V.A.W and R.I. of the region investigated and new breeds were provided to the farmers like Nayana, Kanaka Durga and Biswamitra but though the lamps had taken the charges of crop insurance during crop loans but the insurance had not been covered. However now with the new breeds the farmers are getting benefits.

Impact of Crop diversification

Though there has been a positive impact experienced by the farmers of crop diversification but it is not up to satisfaction. So there is a need of an agricultural innovation concern to their problems.
Those are mentioned below:

(i) High yielding variety seeds should be provided to the farmers.
(ii) Storage facilities must be provided to the farmers.
(iii)Govt. should take steps to provide sprinklers to the farmers in that region so that the development of the horticulture would be better.
(iv)Learning programmes should be provided to the farmers in their villages through Digital Green System where short videos of success stories should be screened.
(v) Though India is aiming at providing MSP to the farmers by 2022 but it is the urgent need of the day

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