



## DIVERSIFICATION OF AGRICULTURE IN TRIBAL TRACKS OF KBK REGION OF ODISHA

**Sadasiba Tripathy**

*H.O.D, Department of Economics, Bhairab Degree Mahavidyalaya, Borigumma, Koraput, Odisha, India.*

### **Abstract**

*Diversification of crops refers to change or shift in crops, their variety and the cropping pattern. Crop diversification is necessary due to change in market, food habits, climate change, and availability of high value crops. The necessities of crop diversification is basically for ensure constant flow of income, create employment opportunities, alleviate hunger and malnutrition, effective management of the uneven weather and increase the income of the small and marginal farmers. For the article, a most remote tribal belt i.e. undivided Koraput is chosen for the study. Some important objectives are to know the impact of crop diversification among the tribal people. to know the nature and extent of crop diversification in the tribal tracts in KBK areas and to point out some problems and suggestions to improve the process of crop diversification in the study area.*

*The article is based on a case study method of a remote tribal village of KBK area. Both primary and secondary data are used. A structured interview schedule has been developed and the data is collected from 60 households by simple random sampling method. For the study, only the years 2009-10 and 2017-18 has been chosen. There has been a positive impact found in crop diversification in Putra village but it is not up to satisfaction. So there is a need of agricultural innovation concern on the problems.*

**Keywords:***Agricultural diversification, Particular Vulnerable Tribal Group (PVTG), Kalahandi, Bolangiri, Koraput (KBK), Climate change, Per Capita Income.*

### **Introduction**

Diversification of agriculture refers to change in production of single crop to more crops over various seasons of a year or few years. Agricultural diversification is a strategy to minimize risks involved in traditional agriculture to get better returns in modern commercial agricultural practices. Diversification is the intensive use of inputs to increase production with higher profit with greater market orientation. The use of inputs like, quality seeds, fertilizers, implements, market, information and specific farmer training are some of the success of agricultural diversification. Effective management of water use, watershed development, control of soil erosion and proactive crop price policies is essential for accelerating crop diversification in tribal tracts.

Diversification of crops refers to change or shift in crops, their variety and the cropping pattern. Crop diversification is necessary due to change in market, food habits, climate change, and availability of high value crops. The necessities of crop diversification is basically for ensure constant flow of income, create employment opportunities, alleviate hunger and malnutrition, effective management of the uneven weather and increase the income of the small and marginal farmers. But it is depend on proportion of area under HYV of cereals, proportion of gross irrigated area to gross cropped area, rainfall, average size of holding, market density and fertilizer consumption. The creation of basic infrastructural facilities is an essential prerequisite for crop diversification.

### **Objectives and Methodology**

The study has been construed with three following objectives:

- To know the impact of crop diversification among the tribal people.
- To know the nature and extent of crop diversification in the tribal tracts in KBK areas.
- To point out some problems and suggestions to improve the process of crop diversification in the study area.

The article is based on a case study method of a remote tribal village of KBK area Both primary and secondary data are used. A structured interview schedule has been developed and the data is collected from 60 households by simple random sampling method. For the study, only the years 2009-10 is chosen for pre- crop diversification and 2017-18 has been chosen for post crop diversification. For clarification and to deduce the inferences, simple statistical tools and bar diagram are used.



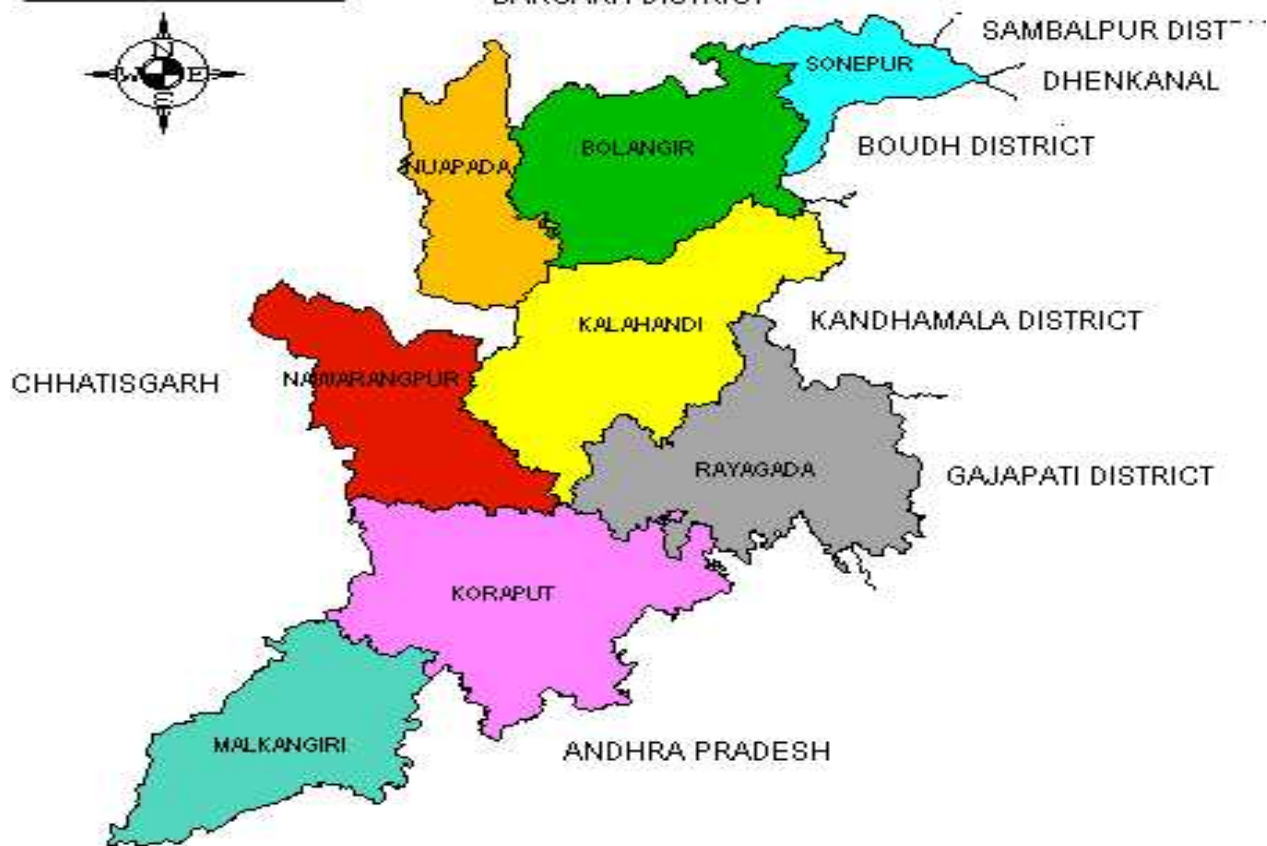
### Tribal Tracks of KBK Region: A Profile

The KBK districts (Map-1) account for a population of nearly 73 lakhs over 47646 Sq.Km. of geographical area of the state. 91% of the people of this region still live in villages. In comparison to the State's population density of 236/Sq.Km. the region is sparsely populated having a density of 153/Sq.Km. As per the 2001 census about 28 lakh (38.41%) people of these districts belong to schedule tribe (ST). Bonda, Dadai, Langia, Soura and Dongaria Kandhas are included in PVTGs. The total literacy of KBK is only 43.33%; female literacy being down to 29.10%. In the KBK region 10.64 lakh families are dependent on agriculture. The region has 18.51 lakh hectare of cultivated area which is 30% of the State's net cultivable area. Irrigation facilities are underdeveloped and only 21.91% (4.06 lakh ha) of the total cultivated area is under irrigation. Agricultural productivity has remained rather low due to poor irrigation facilities and lack of use of new technology. Most of the agriculture is dependent on rainfall, which varies between 1378 mm to 1522 mm.

Tribal tracks of KBK are quite backward in terms of market facilities, communication facilities, employment opportunities, nutritional support and income of the peoples. Most of the tribal people in this area are dependent on agriculture and their condition can be changed by effectively development of agriculture through changing their cropping pattern. Cropping pattern includes crop, variety, and the cropping system.

Map-1

#### KBK DISTRICTS



From Odisha, Agriculture Statistics ranging from 2001-02 to 2005-06 for KBK district has seen that there is a marginal decline in cropping intensity in Malkangiri and Rayagada. However, both districts show a higher cropping intensity in 2005-06 as compared to 1997-98. Bolangir shows a positive change. The KBK region as whole shows higher percentage change in the second period as compared to the first. In the second period the KBK region had a higher increase as compared to the State (Table-1).



**Table 1: Cropping Intensity of tribal people in KBK districts**

District	1997-98	2001-02	2005-06	% Change 1997/98 to 2001/02	% Change 2001/02 to 2005/06
Bolangir	136	130	141	-4.41	8.46
Sonepur	155	161	175	3.87	8.70
Kalahandi	142	151	162	6.34	7.28
Nuapada	133	354	160	15.79	3.90
Koraput	134	135	138	0.75	2.22
Malkangiri	147	158	156	7.48	1.27
Nawarangpur	148	139	148	6.05	6.47
Rayagada	140	162	160	15.71	-1.23
KBK	140	145	152	3.57	4.83
Orissa	141	151	157	7.09	3.97

Source: Data taken from Various Orissa Agriculture Statistics

### Putra village: A profile

Putra is a village situated in Hadia Panchayat of Jeypore block in Koraput district of Odisha. Hadia Panchayat comprises of 5 villages namely, Putra, Khairmundi, Hadia, Bhatra and Sindhigam. It is situated 27Kms from the district headquarters of Koraput. As per the Population Census 2011, there are total 296 families residing in Putra village. The total population of Putra is 1,438 out of which 703 are males and 735 are females. Schedule Caste population is 67 and Schedule Tribe population is 839. The literacy rate of Putra is 51.9%. Thus, Putra village has higher literacy rate in comparison to Koraput district (41.2%). The male literacy rate is 61.9% and the female literacy rate is 42.41%. The prime occupation in this village is agriculture. Putra has been taken as sample village for the study.

### Crop diversification of tribal people

The crop diversification status of the village explains that people cultivate only paddy in the year 2009-2010 and is the only source of their income which is represented in table-2 below

**Table- 2: Household income in pre-agricultural diversification period (2009-10)**

Name of The crop	Area under Cultivation (in acres)	Quantity Produced (in quintals)	Quantity consumed (in quintals)	Quantity sold (in quintals)	Income (In rupees)
Paddy	3,19	3,828	1,022	2,806	19,64,200
Non-paddy	----	----	----	----	----

Source: Compiled from primary data

The empirical observation shows that in 2009-10 the farmers were producing paddy and some vegetables in the backyard of their home for self-consumption.

The Table-3 shows that tribal people started producing vegetables and different crops are also practicing in post diversification period i.e. in 2017-1018.



**Table .3: Household income in post-agricultural diversification period (2017-2018)**

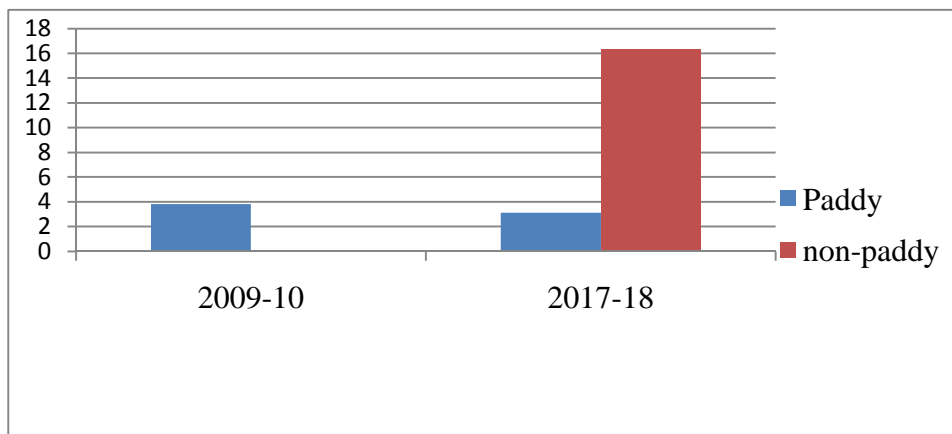
Name of The crop	Area under Cultivation (in acres)	Quantity Produced (in quintals)	Quantity consumed (in quintals)	Quantity sold (in quintals)	Income (In rupees)
Paddy	136	3128	1,024	2,104	27,35,200
Spiny gourd	43	6,450	-----	6,450	96,75,000
Pointed gourd	22	1,320	-----	1,320	19,80,000
Coccinia	28	1,680	-----	1,680	16,80,000
Brinjal	11	2,310	-----	2,310	23,10,000
Cowpea	17	3,060	-----	3,060	36,72,000
Sugarcane	32	1,440	4,78	9,62	7,69,600
Total	289 acres				2,28,21,800

Source: Compiled from primary data

It is observed that, area under paddy cultivation is highest in comparison to other crops but the income from paddy is less than other crops. The income is highest in case of Spiny Gourd i.e. Rs. 96, 75,000.

Figure-1 shows that the farmers were producing only paddy in the year 2009-2010 but in 2017-18 they have diversified their cropping pattern from paddy to non-paddy items.

**Fig-1: The status of pre and post crop diversification**



Unless knowing the expenditure patterns it is impossible to derive the standard of living of the tribal people. It is identified from the survey that their income is spending towards grocery, clothing, fuel, house building maintenance, social functions, health and education. The production of paddy is used for selling and consumption purposes (Table-4).

**Table.4 Household Annual expenditure**

Heads of Expenditure	Amount ( in rupees)
Food ( Paddy)	Self
Grocery	23,76,000
Clothing	2,43,000
Fuel	2,70,000
House building Maintenance	3,30,000
Social functions	1,35,000
Health	1,43,200
Agriculture	12,30,0000
Education	3,48,000
Total	1,61,45,200

Source: Compiled from primary data



From the above table, it is depicted that, the per capita expenditure of the 60 households is 1, 61, 45,200 rupees. The saving of each household per annum is calculated below:

Total Income of the 60 households per annum – Per capita expenditure of the 60 households per annum  
= 2, 28, 21,800 - 1, 61, 45,200  
= 66, 76,600 rupees per annum.

Income of a single household is Rs. 1, 11, 276.67 per annum and Rs. 9, 273.05 per month.

With the comparison of two periods i.e. 2009-2010; and 2017-2018, certainly, there is a visibility in income and standard of living of tribal farmers due to crop diversification.

### **Factors responsible for crop diversification**

There are number of factors responsible for crop diversification which is discussed below:

#### **Increase in income**

In Putra village, the incomes of the farmers have been increased because of the crop diversification. It is observed that the sample households are earning 1, 11, 276 rupees per annum and are maintaining a better standard of living than before. The farmers are getting short term profit from crop diversification within a period of 3 to 4 months by selling vegetables and other crops in the nearby markets.

**Demonstration effect:** Another cause which is highly responsible in this area to diversify their crops is the effect of demonstration. As the nearby farmers 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 this region. Government has provided L.I. facilities, pump sets, hand pumps and dug-well facilities to increase the production.

**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 human resources everyday to work in this sector.

#### **Advancement of Technology**

Another important cause which is responsible for crop diversification in Putra is the availability of advanced technologies. The use of Chemical fertilizers like DAP, Super, Potash, etc. implements like Tractor, Rotavator, Power tiller, Levelers, Harvesters, etc. are the main inputs for enhancing the production in the village.

#### **Problems in crop diversification**

There are number of obstacles and bottlenecks observed in the path of progress of crop diversification, which are discussed below:

##### **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.

##### **Lack of Storage facilities**

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.

##### **Lack of organize system of distribution**

It has been observed that there are a lot of intermediaries involved in agricultural marketing system. The share of the farmers is reduced and discourages them for further production.

##### **Lack of Credit facilities**

Credit is highly essential for the growth of agriculture and diversification of agriculture. No doubt government is serious in these spheres but still the tribal farmers are depending on local money lenders for loan.





### **Lack of information**

Farmers are not getting the proper information regarding the market price of the product in exact time for which, they are selling their crops in cheaper rate to the intermediaries.

### **Inadequate transport facilities**

Inadequate transport system is a great hindrance for the selling or shifts their agricultural produce to the market. These facilities are very essential for diversification of agriculture.

### **Suggestions**

Some suggestions are also given below:

1. High yielding variety seeds should be provided to the farmers.
2. Standardization problems like, lack of proper training, lack of agricultural research centre, lack of food processing units, lack of export facilities lack of soil testing facilities and lack of proper water management system are the main cause of failure of crop diversification and it should be provided to the farmers as soon as possible.
3. Storage facilities must be provided to the farmers.
4. Govt. should take steps to provide sprinklers and water guns to the farmers in that region so that the development of the horticulture would be better.
5. Learning programmes should be provided to the farmers in their villages through Digital Green System where short videos of success stories should be screened.

### **Conclusion**

Rapid urbanization in developing countries affects consumption patterns. Moreover, a smaller number of farmers has supplied to a larger number of consumers. Developing country farmers have considerable success by diversifying into crops that can meet export market demand. Farmers face risk from bad weather and from fluctuating prices. The type of crop that can be grown is affected by changes in temperatures and the length of the growing season. Urbanization is both an opportunity and a threat, in that the expansion of cities places pressure on land resources and puts up the value of the land. If farmers are to remain on the land they need to generate greater income from that land than by growing the basic staple crops. So diversification is a logical response. Though there has been a positive impact found in crop diversification in Putra village but it is not up to satisfaction. So there is a need of agricultural innovation concern on the problems which is suggested in the article.

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