

Original Research Article

<https://doi.org/10.20546/ijcmas.2018.708.181>

## SWOT Analysis of Agriculture in Kandhamal District of Orissa, India

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### ABSTRACT

Agriculture is the main livelihood option for the tribal of the district, which is characterised by small land-holdings, upland terrain, traditional cultivation practices, limited irrigation, poor water conservation measures, low productivity, limited crop diversification and low yields of food grains. Ninety three per cent of the population in the district is concentrated in rural areas and the economy is mostly based on agriculture and forest produce with very limited industrialisation. Farming practices play a vital role in food security but agriculture in Kandhamal district is constrained by various factors. SWOT analysis is a technique used to analyse the strength, weakness, opportunities and threats of any business. The present paper analyses the strength, weakness, opportunities and threats of agriculture in Kandhamal district of Orissa. As such, SWOT analysis is used to identify strategies for agricultural development, especially in farming systems, and they help the researchers or planners to manage and prioritize them for achieving food security. The research area was located in rural areas of Kandhamal district, the sample size (n=110) was selected by a combination of purposive and random sampling technique. The strength of the district lies with having a large forest cover and excellent climate for horticulture, conducive agro-climatic conditions for cultivation of medicinal plants and organic spices. The weakness of the district include underdeveloped infrastructure, lack of modern technology, limited irrigation facilities, large-scale use of traditional seeds, low level use of fertilizers and pesticides, lack of crop diversification and traditional methods of cultivation. The district offers opportunity in horticulture, forest products, agro-processing and tourism. The abject poverty and incoherent government policy is a serious threat of the district. Based on the results of SWOT, strategies for farming system management were prioritized.

#### Keywords

SWOT, Traditional,  
Organic,  
Horticulture, NTFP

#### Article Info

##### Accepted:

10 July 2018

##### Available Online:

10 August 2018

### Introduction

The district is located in central Odisha bound by Boudh, Rayagada, Ganjam, Nayagarh and Kalahandi district. The soil is characteristically red sandy soil of the red laterite group. The soils are generally light

textured, porous and acidic in nature, having pH ranging from 5.3 to 6.5. The climate is sub-tropical in nature, characterised by hot and dry summer and dry cold winter. Most of the population of the district is concentrated in rural areas and the economy is mostly based on agriculture and forest produce. Paddy,

vegetables, maize, mustard, ginger, horse gram and turmeric are the principal crops. The district is known for cultivating a variety of vegetables and spices organically. The favourable agro-climatic conditions of the district promote the cultivation of horticulture crops such as mango, banana, guava, papaya and jackfruit. Very less area is under protective irrigation.

SWOT analysis is a technique used to analyse the strength, weakness, opportunities and threats of any enterprise. (SWOT) analysis indicates a framework for helping the researchers or planners to identify and prioritize the goals, and to further identify the strategies of achieving them. SWOT analysis is used to identify strategies for agricultural development, especially in farming systems, and they help the researchers or planners to manage and prioritize them for achieving food security. The Strength-Weakness-Opportunity-Threat (SWOT) analysis is prepared in a participatory manner. The district administration, elected representatives, farmers, the director and the chief marketing officer of KASAM (Kandhamal apex spice association and marketing) and other key stakeholders were consulted to reflect on the areas of strength and concerns for the district. This paper deals with SWOT analysis of Kandhamal Agriculture. It gives the detailed view of agriculture sector in Kandhamal district.

## **SWOT**

SWOT analysis is a strategic planning method used to evaluate the strengths, weaknesses, opportunities and threats involved in any venture or enterprise.

It was used to identify SWOT of Agriculture.

S - What are the internal strengths of Agriculture?

W - What are the internal weaknesses of agriculture?

O - What external opportunities might move the agriculture forward?

T - What external threats might hold agriculture back?

## **Materials and Methods**

The research area was located in Kandhamal district of Odisha. The population of the study comprised of farmers, NGO officers, director and CMO of KASAM, assistant agriculture officer. The sample size (n=110) was selected by a combination of purposive and random sampling. Based on the results of SWOT, strategies for farming system management were prioritized.

## **Strengths of Kandhamal agriculture**

The district has a large forest cover and excellent climate for horticulture. It is known for its horticulture products, forest cover and crafts. Following are the various factors that have great bearing on the Kandhamal Agriculture.

## **Favorable climate**

Kandhamal district comes under North Eastern Ghats agro climatic zone covering 15 per cent of area with hot & moist, sub-humid climate, characterized by hot and dry summer and dry cold winter. The climate of the district is characteristically unique with changing season. The low temperatures being experienced throughout the year. The agricultural activities of the farmers are conditioned by the seasonal and spatial variations in the distribution of climatic elements. Climatic conditions of the district are favourable for off season vegetable production.

### **Hard working people**

In the district two-third of its population is directly dependent on agriculture. Hard working peasantry is an important pillar of strength of Agriculture in Kandhamal. The tribal of the district are very laborious.

### **Large forest cover**

Kandhamal district has the highest forest coverage in Odisha. About 71 per cent of the district are under forest cover. Major portion of the forests is covered by Sal trees. This district is mainly covered with deciduous dense and open forest. The Sal leaves add a very good organic matter to the soil when it decomposed. The forest of the district is a rich source of NTFP.

### **The conducive agro-climatic conditions for cultivation of medicinal plants and organic spices**

The agro climatic condition of the district is very suitable for cultivation of medicinal plants and organic spices like turmeric and ginger. The district is by default organic. Kandhamal occupies a unique position in spice production in the state. The tribal of the district are traditionally grow turmeric and ginger organically from ages, which is the main cash crop for their economic development.

### **Indigenous farming system**

The farmers of the district have a good ITK (indigenous technical knowledge) which gives a prior advantage over the high cost of cultivation.

### **Weaknesses of Kandhamal agriculture**

In spite of the above mentioned advantages the district also has some weaknesses which

hinder the agricultural development of the district. The weaknesses are follows

### **Low yields**

Agriculture in Kandhamal slowed down due to the available potential of resources and technology getting exploited closer to the possible limits due to poor adoption of technology and use of traditional seeds, hence the yield and productivity gradually decreased.

### **Low value addition and food processing**

The district has a very good scope for value addition and food processing, as a lot of vegetable and spices are grown in the district.

These are the upcoming sectors which have the potential to generate lot of employment opportunities in the rural areas. Unfortunately in Kandhamal this potential has not been properly exploited. The food processing industry is not that well developed and is limited to grain processing like rice mills, flour mill and turmeric processing plant.

### **Post-harvest losses**

Due to low processing levels in the district there is a considerable amount of wastage of agricultural and horticultural produce. Due to lack of adequate facilities for post-harvest handling of vegetable crops, cold storage, untrained people in handling of the produce, lack of skills and training lead to serious post-harvest losses to the producers.

### **Lack of modern technology**

Most of the farmers of the district rely on the traditional method of agriculture having no linkage with any institution, no farmers' producer organisation, lack of adoption of any farm machinery and implements. The farmers are unaware about the use of improved seeds,

organic manure etc. Training and reliable sources of information are not available.

**Limited irrigation facilities**

In Kandhamal district, production and productivity is very low as water holding capacity of the soil is very low and drought like situation appears. The district basically depends upon rainfall for agriculture. Less Irrigation facility is available in this district. The district has no perennial irrigation source and has very less amount of canal irrigation facilities. Lift irrigation and rainwater

harvesting are major sources of surface irrigation. In ground water source, open wells (dug wells) are the major source of water availability.

**Lack of crop diversification**

It is an important phenomenon in agriculture. due to the knowledge and technology gap the farmers of the district don t practised crop diversification. To overcome the situation of low water holding capacity of the soil and drought situation, diversification from crops like paddy, pulses, oilseeds are recommended.

**Table.1** Area wise, crop wise irrigation status of Kandhamal district

| Crop Type             | Kharif (Area in Ha) |              | Rabi (Area in Ha) |              |
|-----------------------|---------------------|--------------|-------------------|--------------|
|                       | Irrigated           | Rainfed      | Irrigated         | Rainfed      |
| Cereals               | 17972               | 34603        | 468               | 0            |
| Pulses                | 0                   | 11775        | 710               | 12955        |
| Oilseed               | 107                 | 13413        | 751               | 17735        |
| Fibre                 | 0                   | 692          | 0                 | 0            |
| Vegetables            | 6424                | 7394         | 8199              | 0            |
| Condiments and spices | 292                 | 15758        | 508               | 0            |
| <b>Total</b>          | <b>28420</b>        | <b>96980</b> | <b>10770</b>      | <b>30690</b> |

Source: District statistical handbook, Kandhamal

| INTERNAL  |  |
|---|--|
| STRENGTH  | WEAKNESS   |
| <ul style="list-style-type: none"> <li>These are the features of any enterprise that give it an edge over the others.</li> </ul>  | <ul style="list-style-type: none"> <li>These are the features that place any enterprise at a disadvantage over the others.</li> </ul>            |
| EXTERNAL  |  |
| OPPORTUNITY   | THREAT   |
| <ul style="list-style-type: none"> <li>These are the rays of hope <i>i.e.</i>, some external factors that can be exploited to get maximum advantage for the enterprises.</li> </ul> | <ul style="list-style-type: none"> <li>These are the external factors in the environment that could cause trouble for the enterprise.</li> </ul> |

**Opportunities for Kandhamal agriculture**

**Diversification**

As the growth in market demand for spices and vegetables are considerably increasing

and the district is endowed with a good agro climatic condition for various crops.

If farmers are provided with less risky alternatives then they can get rid of the existing situation.

### **Value-addition and scope of agro processing**

There is an ample scope for the development of agro processing industry in Kandhamal and to open new avenues of investment and employment. This agro industry will not only develop the industrial sector of the economy but also boost the growth of the agriculture sector by creating demand for agriculture output as its raw material (Singh *et al.*, 2013) agri-business activities along with agriculture has been suggested by several economist to over-come the agrarian crises. Special interest given on setting up of multi-commodity small agro-processing centres in the district for primary processing and value addition will create employment opportunities.

### **Encouragement to modern organic farming**

With the backdrop of no irrigation, low yield, no application of fertilizer and manure etc. modern organic farming should be encouraged. The fertility of the soils which has diminished day by day because of deficiency of vital micro and macro nutrients, can be corrected with the encouragement of modern organic farming by application of farmyard manures, compost, green manuring to supplement inorganic fertilizers increases the soil fertility and maintains the soil health. Farmers should be aware about the inclusion of legume green manuring crops in the cropping sequence.

### **Off season vegetable cultivation**

The district has a conducive climate for vegetable production. As the district enjoys a low temperature throughout the year, it is suitable for vegetable production like cabbage, beans, cauli flower etc in off season, which gives economically more profit to the farmers.

### **Threats to Kandhamal agriculture**

#### **Incoherent government policies**

Though most of the farmer practise organic spice cultivation, still problems exist at the time of certification. As farmers of the nearby plots add fertilizers and pesticides with the hope of getting more return, which in turn affects the plot with its residual effect. To avoid this problem suitable government policies should be suggested.

#### **Indebtedness**

Commercialization of agriculture needs more money to invest and in the agricultural setup borrowing is a necessity. In the course of cultivation of crops regular outflow of cash is required which can't be solely borne by the resource poor farmers and this gap is plugged by borrowed funds mainly from non-institutional sources like money lenders. Increased cost of production, marketing cost and low price of the produce and thus low profit margins and crop failure are the main reasons for indebtedness of farmers.

#### **Uncertain weather conditions**

Climate is the important factor affecting agricultural production. The effects of weather on agriculture are far reaching, affecting the crop plants right from germination till maturity. Owing to various environmental changes the district is facing drought, heavy rainfall, high humidity like conditions which can alter the yield drastically and affect the income of the farmers.

#### **Conclusion and Recommendations**

Agriculture in Kandhamal today is constrained by many factors. This paper is an effort to analyse the strengths, weaknesses,

opportunities and threats of Agriculture in Kandhamal district of Odisha, it help the planners and policy makers to identify the strategies for achieving the goal of overall agricultural development. The strengths of the district lies in having favourable climate, scope of value addition and the weaknesses lie in low yield, lack of modern technology and post-harvest losses. Efforts need to be made to face the threats and exploit the available opportunities.

The important strategies developed are as follows –

Planting of crops with high economic values.  
Development of governmental supports.

Preparing strategic plans for development of organic farming.

Using sustainable water resource management techniques.

Demonstrations need to be conducted to educate the farmers, to adopt recommended application of organic manure.

Use of labour saving technologies and devices such as mechanised farm implements needs to be made available to farmers.

Extension workers should be given more thrust for the spread of technology.

Government should help the farmers to establish small scale mini processing plants, so that farmers will get maximum share in consumer's rupee.

Improved support services like marketing, cold storage and processing facilities can strengthen the agriculture and horticulture.

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### How to cite this article:

Prangya Paramita Sahoo, K.K. Sarangi, M. Sangeetha, Simantini Shasani<sup>1</sup> and Nagma Halima Saik. 2018. SWOT Analysis of Agriculture in Kandhamal District of Orissa, India. *Int.J.Curr.Microbiol.App.Sci*. 7(08): 1592-1597. doi: <https://doi.org/10.20546/ijcmas.2018.708.181>