

# “IMPACT OF CHANGE IN TRADITIONAL FARMING METHOD AND CROPPING PATTERN ON SUSTAINABLE DEVELOPMENT:

*With reference to rural areas of Pauri district”.*

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**Abstract :-**In general, development means "moving towards improvement from the present situation" and if its relation with human beings is added, then the meaning of the word development becomes more elaborate. The real meaning of development is mainly to develop economically, and the contribution of agriculture in economic development cannot be denied. Agriculture is one of great importance in the Indian economy, and the development of the agriculture sector and farmers is important in itself for rapid economic growth. In this direction, to make the right structure of agricultural development, it becomes necessary to study various factors affecting the technique or method of agriculture, agricultural land use and crop pattern etc. In order to study the utility and role of agriculture in the context of Uttarakhand state, which is a hilly state and where even today agriculture is done traditionally, a topic of research paper “**IMPACT OF CHANGE IN TRADITIONAL FARMING METHOD AND CROPPING PATTERN ON SUSTAINABLE DEVELOPMENT: With reference to rural areas of Pauri district**” has been selected. In the research, an attempt was made to study the role and necessity of this subject in the agriculture of Uttarakhand. Under this, in addition to the study of traditional agricultural techniques, status of organic agriculture, need for sustainable agricultural development in the state of Uttarakhand, an attempt is made to obtain information regarding traditional agricultural methods, land use, changes in the pattern of crops, etc. in the state of Uttarakhand. Was done and the impact of this change on sustainable development was studied. The presented research will contribute to making new suggestions and measures to understand agricultural development in relative form and remove the obstacles in development and will be helpful in establishing new dimensions of development in the context of mountain agriculture.

Key words: traditional agriculture, sustainable agriculture development, organic agriculture.

## Introduction

Sustainable development has diversity in itself. Sustainable development is a broad concept. Before defining sustainable development, it becomes very important to know the meaning of development. In fact, the meaning of change is development. Development is multidimensional. Perhaps evolution is related to humans. Man is always striving for development. “Under development, human economic development, social development and environmental development are included. That is, development is measured in the context of human beings only. In other words, development is a model of structural reversal, which occurs qualitatively. If seen, due to diversity in the interactional relations between man and nature, development takes place in different forms with reference to time and region. Accordingly, the word development means optimization of natural resources and positive interaction of human beings, where maximum possible use of resources has taken place, relatively more structural reversal is possible. That is why a more developed word is used for such an area or society. On the contrary, if there is no development even as a result of minimal human interaction in an area full of resources, then it is called underdeveloped. On the contrary, where there is absence of interactional relations between nature and man, the word underdeveloped is used there. So it is clear that development is possible through the interaction of human and nature.

According to the report of the United Nations, “Development should not only be related to the material needs of man but also to the advancement of the social conditions of his life. In this way, social, cultural, institutional and economic changes should also be included in development.”

Hence, the following conclusions can be drawn from the concept of development –

1. Development is an inter-disciplinary, inter-regional and multi-dimensional word.
2. Basically, the meaning of development is economic development.
3. The concept of development varies from country to country, region, society and individual in economic, social and political contexts.
4. The most important objective of development is the inequality-free welfare of human beings and the entire society.
5. The interaction between man and nature is one of the major factors affecting development.

## Economic development

Economic development is the process under which a country, through human efforts, increases production and productivity in all sectors of the economy and increases its real per capita income, eliminating poverty and economic disparity in the country and improving the standard of living of the citizens.

In the words of Prof. Rostov, "Economic development is such a relationship between the rates of increase in capital and working power on the one hand and the rate of population growth on the other hand that per capita production increases."

Therefore, economic development is a continuous process, under which the resources available in the country are efficiently exploited, as a result of which there is a continuous and long-term increase in national income and per capita income, reduction in economic disparity, the standard of living and welfare of the general public. There is an increase. Sustainable Development The concept of sustainable development is mainly a part of the study area of development. The concept of sustainable development emphasized the idea of improving ecological, economic and social conditions for all people, in all places and at all times. Sustainable development acknowledges the importance of the natural order that sustains the existence of life on earth. The main idea of sustainable development is "A policy of development that meets our present needs without compromising on to preserve the capabilities to meet the needs of the next generation.

The World Commission for Environment and Development has defined sustainable development as follows - "It is a process of change that harmonizes the exploitation of resources, the direction of investment, the development of technology and the direction of institutional changes, and which meets human needs and expectations." present and future capabilities to be fulfilled.

## Role of Agriculture in Sustainable Development

### Importance of Agriculture in Development

If we look at the history, we find that agriculture has been the main means of livelihood of the people since the beginning of the development of human civilization. Even today, agriculture is the main occupation and the biggest source of income for most of the world's population. Being the main occupation in developing countries, agriculture is the main means of national income, employment and livelihood, besides this, agriculture is also the basis of industrial development, commerce and foreign trade. Agriculture is the backbone of the economy of these countries and the key to development. Agriculture occupies the first place in the major stages of development of the world. Agriculture is the mother of all industries and the basic foundation of industrialization. No country can achieve high rate of economic development with its limited resources until it develops its basic agricultural industry. That is, it can be said that the increasing productivity of agriculture directly and indirectly leads to success in industrial development.

Today every nation of the world is always trying to speed up the economic development. The main objective of all the three types of economy – capitalist, socialist, mixed is to make our country prosperous. In which the contribution of agriculture cannot be ignored. Mainly the importance of agriculture in economic development is reflected from the following points-

1. Agriculture supplies raw materials for industries.
2. Agriculture helps in capital formation.
3. Agriculture is the source of foreign exchange.
4. Agriculture is necessary to meet the growing demand for food items.
5. Agriculture provides market for industrial goods produced.
6. It provides manpower for industry.
7. Agriculture contributes to employment.
8. Agriculture is the source of national income and per capita income and increase in it.

### Sustainable Agriculture Development

Sustainable agriculture is mainly a combination of traditional, formal, organic, organic, ecological and natural methods, which aims at meeting the current agricultural needs of human beings, without compromising the ability of future generations to meet their agricultural needs. to be harmed, to be sure. In short, this agriculture is such a method which is ecologically strong, economically satisfactory and socially just and humane. In sustainable agriculture, farming is done on a natural basis without any external cost or intervention.

Today the concern of environmental degradation has become the subject matter of worldwide debates, seminars, and conferences etc. Its objective is to establish a proper relationship between environment and development.

This objective is also clearly visible in the agriculture sector, so how to increase the production as well as protect the productive power of the soil, this specialty is being sought. It is being called agricultural scientific sustainable agriculture.

WCED, Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

According to Pereira, development systems should be looked at in a holistic manner, as sustainable agriculture cannot be achieved without sustainable development. Agricultural scientists have made significant efforts to define sustainable agricultural development. In the context of agriculture, sustainable development means maintaining productivity while conserving the resource base. For which organic agriculture can be used. That is, while maintaining the environment, improving its quality and keeping the natural resources safe and successfully coordinating the resources, fulfilling the changing needs of human beings through agricultural resources is sustainable agriculture. Therefore, sustainable agriculture is such agriculture which is ecologically sound, economically satisfactory and socially just and humane. In sustainable agriculture, it is mainly necessary to have the qualities of ecological soundness, economic efficiency, social justice, humaneness and acceptability.

Taking the context of the state of Uttarakhand, agriculture is the main occupation in the state. Most of its part is of mountainous and heterogeneous climate. There are no suitable conditions for agricultural development in the state. Agriculture is done only on about 15 percent of the entire geographical land. In hilly terrain, agriculture is done in terraced fields, whereas in plains the situation is opposite. The size of agricultural holdings in the state of Uttarakhand is very small or marginal. Due to limited per capita land and adverse conditions of agriculture and lack of irrigation facilities in the state, many social and economic problems like poverty, migration, less employment opportunities and food insecurity have emerged as challenges in front of the development of Uttarakhand. To overcome these problems, first of all it is necessary to emphasize on the development of agriculture and means of agriculture in Uttarakhand. As a result of which, along with agriculture, the development of the farmers can also be possible. Therefore, it is necessary for the state to create a well-organized and efficient policy framework for agriculture, which will lead agriculture to the path of development.

About 86 percent of the total working population of the state is dependent on agriculture. Apart from this, more than 51.76 percent (according to Agriculture Statistics 2012) women have participation in agriculture work. In fact, 75 percent of the total population of the state is rural. Which is traditionally dependent on agriculture for its livelihood. Here mainly food crops like Paddy, Wheat, Barley, Potato, Madua, Bhatt, Gahat, Parati Urad, Sauth, Taurai, Masoor, Cholai, Chili, Sesame, Mustard etc. are produced, but this production of crops neither can meet the total food requirements of the state, nor is full employment available in the state. The main reason for this is the lack of traditional and livelihood-oriented agriculture and new agriculture system. Seasonal unemployment is found more here.

## Objectives of the study

Keeping in view the need to study the impact of change in traditional agriculture pattern on sustainable development in rural areas of Uttarakhand, the following objectives have been taken for the research study.

1. To study the trend of change in traditional agriculture pattern in district Pauri and the major factors causing change.
2. To study the use and importance of organic agriculture in district Pauri.
3. Presenting appropriate measures and suggestions for traditional agriculture and sustainable development according to mountain conditions.

## Study area

Pauri (Garhwal) district of Uttarakhand state has been taken for the research topic. Pauri Garhwal is an important district of Uttarakhand, the 27th state of India. The district headquarters is Pauri. The district occupies a geographical area of 5,329 square kilometers. There are total 9 tehsils and 15 development blocks in the district. The latitudinal position of the district is between 29°45' to 30°15' north latitude and the longitudinal position is between 77°035' east to 79°020' east longitude. The district is bounded by Chamoli, Rudraprayag and Tehri Garhwal in the north, Udham Singh Nagar in the south, Almora and Nainital in the east and Dehradun and Haridwar districts in the west. The total population of the district is 687270 as per 2011 census. There are 326830 males and 360440 females in the district. If the rural and urban population is classified then the district has 574570 rural populations and 112700 urban populations.

**Research method:** - "Descriptive survey method" was used for the present research.

**Population:-** For the present research, all the 15 development blocks of Pauri district were studied to achieve the objectives.

**Collection of data:-** In the presented research, primary and secondary data were used to obtain information.

## 1. RESEARCH ANALYSIS AND RESULTS

In the research area, Method of agriculture, means the method by which agriculture is mainly being done. It is first necessary to study what is the method and type of agricultural production in the study area. Therefore, on the basis of yield, the agricultural method can be divided into three parts.

1. Organic Agriculture
2. Inorganic / Non-organic Agriculture
3. Mixed Agriculture

### 1.1 Organic Agriculture:-

Organic agriculture will be called that agriculture in which no chemical fertilizers or other agricultural chemicals are used and it is completely organic for making the crop strong. That is, organic agriculture is a system in which biological processes and ecological contact are accelerated to maintain soil fertility and prevent insects and diseases. Agriculture done by organic seeds, organic manure and traditional methods is called organic agriculture, in which manure made from compost manure, vermin compost, residues of crops, etc. is used. The produce obtained from this is completely organic produce. Looking at the need of the present time, the importance of organic agriculture can be understood. The products produced from organic agriculture are healthy and nutritious, in addition to this; organic agriculture does not harm the fertility of the soil. Therefore, as the method of organic farming is used in the agricultural land, the fertilizer power of the land increases. Therefore, the long-term effects of organic farming are more beneficial than chemical farming. Apart from this, organic agriculture contributes significantly in maintaining the deteriorating environmental balance. Therefore, organic agriculture not only improves the health of the soil, but also provides tasty, quality food, and increases resistance to the effects of pests and diseases. In this way, organic agriculture is the best option for the land provided by man and nature.

### Importance of organic agriculture

1. Organic agriculture is healthier, nutritious and tastier as it is produced from organic resources.
2. Adoption of organic agriculture does not require much technical knowledge. That is, organic farming can be done only by conventional method.
3. Organic fertilizers used in organic farming can be easily prepared at home. Along with organic agriculture, animal husbandry, poultry, bee keeping, fruit flower production and flower production can also be done. Therefore, organic farming provides employment throughout the year.
4. Organic agriculture is completely natural and it is also beneficial for the environment and nature.

- There is overall development in organic agriculture. That is, organic agriculture is useful for sustainable development.

### 1.2 Inorganic Agriculture

In contrast to organic agriculture, chemical pesticides are used on the production of crops for high production and quick production in organic agriculture. Organic agriculture is probably harmful to the human body.

### 1.3 Mixed Farming

In mixed farming, production is achieved by both organic and inorganic methods. At present, most of the farmers in India and Uttarakhand are getting production by adopting mixed farming type. But still organic farming is being done by most of the farmers in Pauri district.

### Distribution of type of agriculture in the area

In the following table, the type of agriculture done under the study area, that is, the type of crop, organic, non-organic or mixed, has been observed. The results of the study are as follows.

Table 1.1 Description of Agriculture Type

S.No.	Agriculture Type	Number and Percentage	
		Number	Percentage
1	<b>Organic agriculture</b>	334	92.77%
2	<b>Inorganic Agriculture</b>	00	00 %
3	<b>Mixed Farming</b>	26	07.23 %

Source : Primary Survey (March 2016 to January 2017)

The details of agriculture production type of total farmer respondents are given in Table 1.1. In the above table, the farming families have been divided into three types of agricultural production, organic, non-organic and mixed farming. In the table, 92.77 percent respondents have been found to be producing organic agriculture. 00 percent farmers have been obtained in non-organic farming and 07.23 percent in mixed farming. Even today in rural areas organic farming is done by traditional method. In this method of production, without using any pesticides and chemical fertilizers, compost is produced by manure. This is the reason that there is a high demand for health products produced in rural areas.

### 2. Change in crop pattern

If we observe the direction of change in crop pattern, at present farmers are giving more priority to non-organic farming due to easy availability of inorganic, chemical fertilizers and pesticides in the market. Besides this, the farmers in the study area are limited to the production of only two crops i.e. wheat and rice. Whereas in the past the state was famous for its traditional crops which were enriched with nutritional value through sustainable agriculture. Barhanaja farming method was prevalent in the state, in which 12 varieties of different crops were produced simultaneously. It has been found in the research that at present, the production of traditional crops of the state is gradually decreasing, which shows the inappropriate and adverse condition of crop pattern change.

### Results and effects of cropping pattern change

- A huge decline has been found in the production area of almost all the crops. The trend of decline has been seen more in traditional and local crops of the state which include coarse grains.
- Traditional crops like Barley, Cowpea, China, Jowar, Bajra etc. have reached the verge of extinction.
- Barhanaja is the traditional mixed cropping system practiced in hilly areas. Manduwa, Jhangora, Ramdana, Pumpkin, Jowar, Maize, Rajma, Wheat, Bhatt, Rayanyas, Urad, Sunta, Ragdwas, Toor, Bhaganjir, Sesame, Jakhya, Bhang, Sana, Kakhdi etc. 12 to 20 crops are included in Barhanaja cropping system. Is. The crops of Barhanaja farming method are full of nutrition. The production of Barhanaja cropping system crops is slowly ending. Farmers have limited themselves to the production of wheat, rice and pulses.
- Even today in rural areas, while harvesting the crops, it is a practice to keep the good grains safe in the form of seeds. But it is becoming impossible to keep the seeds safe due to low production of grains and loss of crops by wild animals.

## Research Findings

- Due to urbanization and construction of tar coal roads in the name of development, a large part of agricultural land has been destroyed every year.
- As a result of the increasing population and succession rules, there is division of farms and fragmentation of holdings. To overcome the losses arising out of fragmentation of holdings, "consolidation" (consolidation of holdings) of farms has been done in many parts of the country.
- Agricultural production is mainly affected by physical relief, climate, socio-economic, technological and other organized factors.
- As a result of climate change, there has been a change in water and heat, the main elements of agriculture, there has been instability in monsoon, due to which there has been a decrease in agricultural productivity, cropping pattern, socio-economic status of people, environment etc. has caused undesirable changes.
- As a result of decrease in agricultural land productivity and change in cropping pattern, people are forced to remain economically poor, and due to economic disparity, they also lag behind socially.
- It has been learned from the study that the farmers of the hilly areas are mainly dependent on forests and forest resources. And due to the adverse policies of the government, the farmer is forced to leave agriculture under compulsion.

## Suggestion

- There is a need to motivate and encourage farmers for organic farming for sustainable development and sustainable agriculture.
- Keeping in view the usefulness and importance of traditional crops, the production of traditional crops of the state should be encouraged.
- The following suggestions can be given in this direction. Farmers can be motivated for the production of local crops, especially millets and local pulses, by explaining the usefulness of these crops.
- Local traditional crops can be directly or indirectly linked to the public distribution system by the government. Local crops including Madunwa, Jhangora, Bajra and other coarse cereals etc. should be included in the public distribution system.
- Along with this, scientific measures and latest technology should be propagated to increase the productivity in traditional agriculture.
- The state government can do branding for the marketing of local traditional crops, which will directly benefit the local farmers. Local traditional crops which are organic produce can be helped by the government in providing branding and FCCI mark etc. as organic agricultural produce.
- Farmers should be made aware and trained to re-use Barhanaja farming method.
- For the sale of local traditional crops, facilities can be made available to take them to suitable markets and markets.
- The very wide land area with diversity is beneficial for various crops. There is a possibility of increase in land use for non-agriculture purposes in the coming years. Therefore, it is necessary that relatively more land area should be made multi-cropped by increasing irrigation facilities.
- There is a need to adopt proper scientific methods for farming in hilly areas.
- Lack of finance is also an important problem of agriculture. As a result, agriculture is limited to earning a living. If the government makes proper arrangements and efforts, then agriculture can grow from livelihood earning to commercialization. For this, the government can provide advanced seeds, fertilizers, pesticides and other means at concessional rates.

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