



# Spatial Distribution of Market Centers in Hingoli District : A Geographical Study

*Marketing geography describes the various facts of retailing as aspect of geography which is concerned with territory economic activities and especially the distributive trades. The distribution of market centers is influenced by different physical and cultural factors. rural economy market plays a vital role in the interactions and exchanging the local products through certain norms where 'system of rural market serves as the nodal points for the collection and distribution of large range of goods and services of both local and external origin' Therefore attempt is made here to analyze spatial distribution of market centers in Hingoli District. The paper is based on secondary data. To analyze spatial distribution of market centers Statistical techniques i.e. mean and Standard Deviation has been utilized. The study reveals that there is great influence of geographical factors on distribution of market centers in Hingoli District.*

**Key Words :** Spatial Distribution, Market centers.

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## Introduction :

“Marketing geography describes the various facts of retailing as aspect of geography which is concerned with territory economic activities and especially the distributive trades” (Davies, 1976).

Geographers are mainly concerned with the spatial distribution of geographical phenomena. The distribution of market centers is influenced by different physical and cultural factors. Each factor has its own influence and affects directly or indirectly on the distribution of market centers (Pawar & Lokhande 2000). There is a great variation also in the distribution of market centers at tahsil level e.g. there are 14 market centers in Sengaoon tahsil while they are only 04 in Hingoli, 05 in Aundha Nagnath, 06 in Kalamnuri, and 08 in Basmat tahsils. The correlation between number of market centers and area, inhabited villages and population etc. may give a more realistic picture (Gharpure & Pawar, 1919).

Market centers are the main places of gathering of the farmer's societies, the reason behind this is that the main features of internal trade network is the existence of market nodal point to and from which, flows of commodities are directed (Brombley, 1971). In the economy, especially rural economy market plays a vital role in the interactions and exchanging the local products through certain norms where 'system of rural market serves as the nodal points for the

collection and distribution of large range of goods and services of both local and external origin' (Good, 1972). Therefore attempt is made here to analyze spatial distribution of market centers in Hingoli District.

## Objectives :

The main objective of the present study is to analyze the spatial distribution of Market centers in Hingoli district.

## Data Base and Methodology :

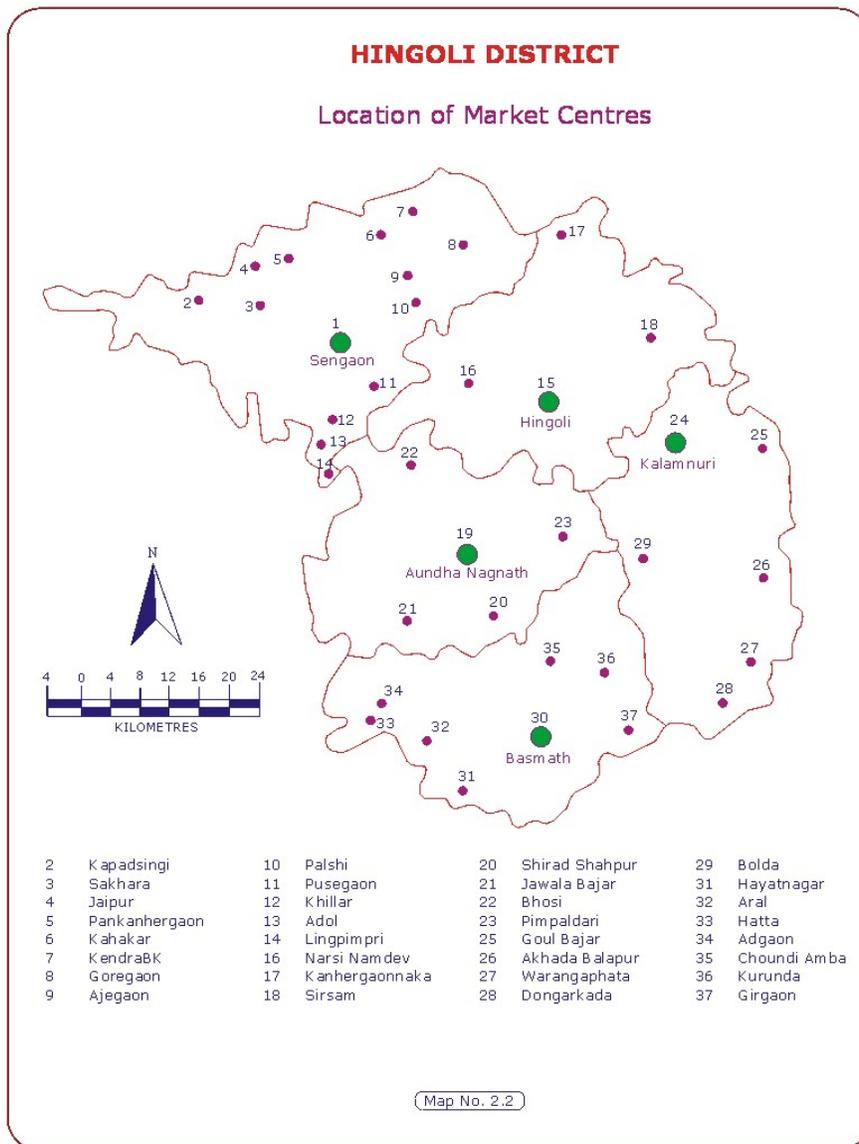
The present research work of spatial distribution market centers has been based secondary data. To fulfill the objective the data regarding number of markets area has been collected from socio-economic reviews and district statistical abstract of Hingoli district for the year of 2010.

After collection of the data, the data is processed to analyze spatial distribution of market centers the density of market center per 100 km<sup>2</sup> the markets per 100 habitation villages and markets per 10,000 population has been calculated then on the basis of mean and standard deviation the tahsils of Hingoli district are grouped into four categories on the basis of these statistical techniques the conclusions are drawn.

## Study Area :

Hingoli district of eastern Maharashtra is selected as a study region for the present investigation. Hingoli district lies between 19° 05' North to 20° 05' North latitude and 76° 30' East to 77° 30' East longitude. It covers an area of 4827

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centers are recorded in Hingoli tahsils in 2010, due to the rugged topography area which resulted into lower development of transportation.

**Tahsils of medium number of market centers :**

The Tahsils which have numbers of market centers in between above mean minus 1 standard deviation to mean are included in this category. The moderate numbers of market centers are recorded in Aunda Nagnath and Kalamnuri tahsils in 2010.

**Tahsil of high number of market centers :**

The tahsil which have numbers of market centers above mean to mean plus 1 standard deviation are included in this category. The table exhibits that high number of market centers in Basmath.

**Tahsil of very high number of Market centers :**

Tahsil which have numbers of market centers above mean plus 1 standard deviation are included in this category. The very high number of market centers are found in the tahsil of Sengaoon mainly because of these are located in Purna basin, where fertile soil is available;

sq.km. Which is 1.56 percent to the total area of the state and a population of 1178973 (2011 census) which is 1.05 percent of the total population of the state of Maharashtra. Among the 35 districts of the state, the district ranks 32nd in terms of area and 33rd in terms of population and 29th in terms of density. The region, comprising 710 inhabited villages and 03 urban centers, is administratively subdivided into 05 tahsils namely Hingoli, Kalamnuri, Basmath, Aunda Nagnath and Sengaoon.

**Discussion :**

**Tahsil-wise market centers :**

The District as a whole has 37 Market centers in 2010, but spatial distribution of market centers varies from tahsil to tahsil on the basis of mean and standard deviation the tahsil of Hingoli District is categorized into four categories.

**Tahsil of low number of market centers :**

The tahsil which have numbers of market centers below mean minus 1 standard deviation are included in this category. The table indicates that low numbers of market

**Table 1: Distributional Of Market Centers in Hingoli district (2010)**

Tahsils	No. of Market Centers	Area Km <sup>2</sup>	Density of Markets Per 100km <sup>2</sup>
Sengaoon	14	1124	1.25
Hingoli	04	969.4	0.41
Aundha Nagnath	05	835	0.60
Kalamnuri	06	941.8	0.64
Basmath	08	932.4	0.85
District	37	4827	0.77
Mean	--	--	0.75
<b>SD</b>	--	--	<b>0.28</b>

**Source :** Socio Economic Review & District Statistical Abstract Of Hingoli District 2010.

furthermore these tahsil having high rainfall, both these high rainfall and fertile soils resulted into high agricultural productivity, high density of population and high Accessibility.

#### **Density of market centers :**

The number of market centers not gives clear idea of spatial distribution therefore attempt is made here to present tahsil- wise density of market centers on the basis of mean and standard deviation. The tahsils of Hingoli District are divided into four category i.e. tahsil of low, medium, high and very high density.

#### **Tahsil of low density :**

The tahsil having density of market centers below mean minus 1 standard deviation (below 0.42- per 100 sq. km) are included in this category. The table indicates that there is only one tahsil in Hingoli tahsil, which having low density because it is situated in Satmala range where topography is very rugged.

#### **Tahsils of Medium density :**

The tahsils which having density of market centers above mean minus 1 standard deviation to mean (0.42 to 0.65) are included in this category. The table exhibits that medium density is recorded in Aundha Nagnath and Kalumnari tahsils.

#### **Tahsil of high density :**

The tahsil which having density of market centers above mean to mean plus 1 standard deviation (0.65 to 0.86 per 100sqkm) are included in this category. The table indicates that high density of market centers per 100 square kilometers is recorded in Basmat tahsil because this tahsil is situated in plain with fertile soil.

#### **Tahsil of very high density :**

The Tahsil having density above mean plus 1 standard deviation (above 0.86) are included in this category. The table indicates that very high density of market centers in Sengaon tahsil because these tahsils are situated along the bank of Purna river and having very fertile soil and high rainfall such Physiography and climatic conditions are favorable to agricultural production as well as development of transportation.

#### **Conclusion :**

The above discussion indicates that there is great influence of geographical factors on distribution of market centers in Hingoli District. Low number of market centers in Hingoli tahsil is a result of rugged topography area. While very high number of market centers in Sengaon mainly due to their location in Purna basin leads to high agricultural productivity, development of transportation.

Low density of market centers only in Hingoli tahsil is mainly due to adverse topography area. High density of market centers in Basmat tahsil and very high density of market centers in Sengaon mainly due to favorable physiography, Soil condition which leads to transportation development and high agricultural productivity.

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## Water Pollution : Today's Challenge

*Water pollution is a very serious issue and has grave implications for the human beings. In fact, the very survival of human beings is dependent on availability of pollution free water with the passage of time, there has been a huge growth in the population levels and the same has led to industrialization, urbanization etc. thereby putting immense pressure on the available natural resources. The increasing population has also results in demand for more food grains, which in turn has resulted in extensive use of fertilizers and pesticides. This excessive use of pesticides, once a passage of time, along with industrialization and urbanization has led to increase in water pollution level. We have to act and control this menace before it is too late.*

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In many developing countries economic growth without adequate environmental protection has resulted in widespread environmental damage, creating new environmental problems. Populations in urban areas are at risk of suffering adverse health effects due to rising problems of severe air and water pollution. Water is a liquid of life, as there can be no life without water. Pure water is an animating fluid while polluted water is a real curse for living beings. Accordingly, causes and impact of water pollution and its adverse effects on health of human beings will be looked into.

Man during course of his civilization has settled in places where plenty of water was available. But with the increase of population and in exploitation of natural resources for his own benefit, he has behaved in a wild manner by creating problems of pollution hazardous not only to aquatic life but also to his own life. While western countries have become quite sensitive to this problem, India is still continuing, because of irresponsible behaviour of its citizens, in rendering water more polluted day by day and the situation is deteriorating progressively (Tripathi & Dubey, 2009).

The water resources on the earth are depleting fast. Out of several components of environment, water, being traditionally the most convenient receptacle for the society in India, has been polluted to the threshold. The water resources are limited but the assault in the form of pollutants is an ongoing process. About 70 percent of all available water in India is feared polluted. This state of affairs is really alarming (Mehdi, 2007).

### Water Pollution :

The term water pollution has been used differently in various Indian Acts. Some described it as nuisance', while others as negligence. Fouling of water was also the way of describing as poisoning of water. Some acts described as rendering water less fit or not fit for consumption by human beings and animals. Interference with or alteration in flow of water to carry away rubbish or causing water to be corrupted in any waterway so as to endanger, damage or render it less useful, was another mode of explaining the term water pollution. Before the enactment of the Water (Prevention and Control of Pollution) Act, 1974, almost all the statutes, stressed upon the mode of causing pollution rather than explaining pollution itself. In a simple sense, water pollution is 'adding of any substance to water or the changing of water's physical and chemical characteristics in any way which interferes with its use for legitimate purposes (Talib, 2005).

According to the Water (Prevention and Control of Pollution) Act, 1974, 'water pollution means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may or is likely to, create a nuisance or render such water harmful or injurious to public health or safety or to domestic, commercial, industrial, agricultural or other legitimate uses, or the life and health of animals or plants or of aquatic organisms (Section 2e The Water Act, 1974).

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## **Water Pollutant :**

There are hundreds, perhaps thousands of pollutants whose effects are of actual and potential concern. Their numbers increase annually as new compounds and formulations are synthesized (Abel, 1996). Several attempts have been made to group water pollutants into classes or categories. Pollutants have been classified according to their mode of occurrence into physical, chemical and biological pollutants (Agarwal, 2009).

### **Sources of Water Pollution :**

The sources of water pollution are innumerable. Major sources can be found in practically every variety of industrial, municipal and agricultural operations.<sup>33</sup>The main sources of water pollution are as under:

- (1) Domestic wastes ;
- (2) Industrial wastes ;
- (3) Agricultural wastes, insecticides and pesticides ;
- (4) Thermal pollution ;
- (5) Marine pollution ; and
- (6) Radioactive wastes.

### **Effects of Water Pollutants :**

Justice V.R. Krishna Iyer once remarked that, the unconscionable industrialization, the unpardonable deforestation and the inhuman extermination of living species betray an exploitative brutality and anti-social appetite for profit and pleasure which is incompatible with humanism and conservationism. Today a bath in Yamuna and Ganga is a sin against bodily health, not a salvation for the soul, so polluted and noxious are these holy waters now (Reddy, 2004).

When our population was limited, water supplies seemed endlessly renewable. We could then afford to foul one water source, abandon it, and move on to another. This, however, is no longer possible since the exponential growth rates of human population have already reduced the availability of water to below its per capita availability. Consequently, any further expansion of human activity will depend not only on how well we are able to prevent the loss and contamination of the available water resources, but also how sustainably we use what we have. Polluted water also poses a serious health hazard to communities living nearby, and which depend on that source for most of their activities (Reddy, 2004).

Water pollution can cause both immediate and long-term health effects (Dubos, 1973). Acute effects occur within hours or days of the time that a person consumes a contaminant. People can suffer acute health effects from almost any contaminant if these are exposed to extraordinarily high levels. In drinking water, microbes such as bacteria and viruses are the contaminants with greatest chance of reaching levels high enough to cause acute health effects.

### **Conclusion :**

We can thus say that pollution of water is a very serious issue and has grave implications for the human

beings. In fact, the very survival of human beings is dependent on availability of pollution free water with the passage of time, there has been a huge growth in the population levels and the same has led to industrialization, urbanization etc. thereby putting immense pressure on the available natural resources. The increasing population has also results in demand for more food grains, which in turn has resulted in extensive use of fertilizers and pesticides. This excessive use of pesticides, once a passage of time, along with industrialization and urbanization has led to increase in water pollution level. We have to act and control this menace before it is too late.

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## जनपद टिहरी गढ़वाल में कृषि भूमि उपयोग एवं कृषि विकास की संभावनाएँ

प्रस्तुत शोधपत्र जनपद टिहरी-गढ़वाल ( उत्तराखण्ड ) में कृषि भूमि उपयोग एवं कृषि विकास की संभावनाओं पर आधारित है। हिमालय के मध्य में स्थित टिहरी-गढ़वाल अपनी विशिष्ट भौगोलिक परिस्थितियों एवं सामाजिक विशेषताओं के लिए प्रसिद्ध है। जिले के अधिकांश समुदाय कृषि, बागवानी, पशुपालन एवं वन आधारित आजीविका पर जीवन निर्वाह करते हैं। जनपद टिहरी-गढ़वाल राजनैतिक एवं सांस्कृतिक रूप से समृद्ध रहा है। यहाँ की कृषि अधिकांश असिंचित एवं मौसम पर निर्भर है। जनपद में मात्र 11.18 प्रतिशत भूमि पर कृषि कार्य हो रहा है। विशिष्ट भौगोलिक परिस्थितियों, उन्नत बीजों, तकनीकी एवं सिंचाई सुविधाओं के अभाव में कृषि की स्थिति बहुत अच्छी नहीं है, लेकिन भौगोलिक परिस्थितियों को मद्देनजर रखते हुए किसानों को उन्नत बीजों व तकनीकी प्रशिक्षण देकर तथा सिंचाई सुविधाओं को बढ़ाकर कृषि उत्पादकता को बढ़ाया जा सकता है।

### मुकेश रयाल

#### प्रस्तावना :

भूमि का उपभोग मानव अपनी आवश्यकतानुसार करता है, तो उस भू-भाग के लिए भूमि उपयोग (land utilization) शब्द का प्रयोग उचित होगा। अर्थात् भूमि उपयोग के भू-भाग का प्राकृतिक रूप क्षीण हो जाता है तथा मानवीय क्रियाओं का योगदान महत्वपूर्ण हो जाता है, तभी इसे भूमि उपयोग की संज्ञा देते हैं। फॉक्स ने भूमि उपयोग को निम्न शब्दों में परिभाषित किया है, "Land utilization is a process of exploiting the land use that is applied to a specific objective" कृषि भूमि के वर्गीकरण के अंतर्गत काम में लायी जानी वाली भूमि का विभिन्न रूपों में उपयोग तथा अनुपयोग महत्वपूर्ण माना जाता है। 1949 में स्थापित (Technical committee on conditions of Agricultural statistics TCAS) द्वारा निश्चित आधारों पर सर्वमान्य वर्गीकरण दिए गए हैं :

(1) वन क्षेत्र (2) कृषि अयोग्य भूमि (3) परती रहित कृषि अयोग्य भूमि (4) परती भूमि (5) वास्तविक बोया गया क्षेत्र (6) सकल बोया गया क्षेत्र (7) एक से अधिक बार बोया गया क्षेत्र इत्यादि।

#### अध्ययन क्षेत्र :

शोधकार्य का अध्ययन क्षेत्र भारत के सुदूर उत्तर पूर्वी भाग में स्थित उत्तराखण्ड राज्य के उत्तर पश्चिमी भाग में जनपद-टिहरी गढ़वाल स्थित है। इस अध्ययन क्षेत्र का विस्तार 30°31' से 30°53' उत्तरी अक्षांश तथा 77°56' से 79°04' पूर्वी देशांतर तक है। टिहरी गढ़वाल के उत्तर में उत्तरकाशी जनपद पूर्वी में पौड़ी गढ़वाल जनपद स्थित है। जनपद टिहरी गढ़वाल का कुल भौगोलिक क्षेत्रफल 3642 वर्गकिमी० है। 2011 की जनगणना के अनुसार कुल जनसंख्या 618931 व्यक्ति हैं, जिसमें 297986 पुरुष

तथा 320945 महिलाएँ हैं। जनपद टिहरी गढ़वाल में 9 विकासखण्ड, 12 तहसील, 75 न्याय पंचायत, 1030 ग्राम पंचायत, 1764 आबाद गाँव, 72 गैर आबाद गाँव एवं 26 वन ग्राम तथा कुल ग्रामों की संख्या 1862 है। कुल जनसंख्या के सापेक्ष 88.63 प्रतिशत जनसंख्या ग्रामीण तथा 11.37 प्रतिशत जनसंख्या नगरीय है।

#### अध्ययन की परिकल्पना :

किसानों को कृषि तकनीकी से प्रशिक्षित करके उन्नत बीजों और सिंचाई सुविधाओं का विकास करके कृषि की स्थिति को सुदृढ़ किया जा सकता है।

#### अध्ययन के उद्देश्य :

- (1) कृषि भूमि उपयोग का अध्ययन करना।
- (2) मुख्य फसलों के उत्पादन एवं उत्पादकता का अध्ययन करना।
- (3) जनपद में कृषि विकास की संभावनाओं का अध्ययन एवं विश्लेषण करना।

#### विधितंत्र :

आंकड़ों का संग्रहण प्राथमिक एवं द्वितीयक आंकड़ों पर आधारित है। प्राथमिक आंकड़े प्रश्नावली साक्षात्कार के माध्यम से एकत्रित किए गए हैं। जनपद टिहरी गढ़वाल के 9 विकासखण्डों के अंतर्गत प्रत्येक विकासखंड से दो-दो गाँवों को लेकर कुल 18 गाँवों का चयन किया गया। द्वितीयक आंकड़ें जिला सूचना केंद्र (टिहरी) जिला सांख्यिकीय पत्रिका (जनपद टिहरी गढ़वाल) एवं अन्य सम्बन्धित कार्यालयों से एकत्रित किए गए हैं।

#### कृषि भूमि उपयोग :

जनपद टिहरी गढ़वाल का अधिकांश भाग पर्वतीय तथा विषम भौगोलिक परिस्थितियों वाला है, जिसके कारण कृषि कार्य में कठिनाइयाँ आती हैं। जिले में 86415 कृषि जोतें तथा कुल

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क्षेत्रफल 54281 हेक्टेयर है, जिसमें 69.03 प्रतिशत लघु एवं सीमांत कृषक हैं, जिनकी कुल जनसंख्या 114530 है। जिले की कुल कार्यशील जनसंख्या का लगभग 58.78 प्रतिशत कृषि कार्य पर निर्भर है। संपूर्ण भौगोलिक भूमि के लगभग 11.18 प्रतिशत भू-भाग पर ही कृषि की जाती है।

**सारणी 1 : भूमि उपयोगिता वर्गीकरण  
(क्षेत्रफल हेक्टेयर में) (2013-14)**

क्र.	भूमि उपयोगिता वर्गीकरण	क्षेत्रफल (हेक्टेयर में)	प्रतिशत में
1.	वन	321564	66.23
2.	कृषि योग्य बंजर भूमि	73982	15.24
3.	वर्तमान परती भूमि	9431	1.94
4.	अन्य परती भूमि	8570	1.77
5.	उसर एवं कृषि के अयोग्य भूमि	5885	1.21
6.	कृषि के अतिरिक्त अन्य उपयोग	7068	1.45
7.	चारागाह	220	0.05
8.	उद्यानों, बागों, वृक्षों एवं झाड़ियों का क्षेत्र	4516	0.93
9.	शुद्ध बोया गया क्षेत्रफल	54281	11.18
	<b>कुल प्रतिवेदित क्षेत्रफल</b>	<b>485517</b>	<b>100</b>

सारणी 1 से स्पष्ट है, कि जनपद टिहरी गढ़वाल में कुल प्रतिवेदित क्षेत्रफल के सापेक्ष शुद्ध बोया गया क्षेत्रफल 11.18 प्रतिशत है। शिक्षा, चिकित्सा, रोजगार के अभाव में पलायन का प्रभाव कृषि पर स्पष्ट रूप से देखा जा सकता है। उत्तराखण्ड राज्य बनने के बाद पिछले 15-16 वर्षों में जनपद में 4007 हेक्टेयर कृषि भूमि गैर कृषि कार्यों में परिवर्तित हो गयी है।

**सारणी 2 : जनपद में मुख्य फसलों के अंतर्गत क्षेत्रफल  
(प्रतिशत में) 2013-14**

फसलें	गेहूँ	धान	सावां	मंडुवा	मक्का
प्रतिशत में	31.50	15.98	20.4	17.08	2.52
फसलें	जौ	दालें	तिलहन	आलू	—
प्रतिशत में	2.65	5.86	2.61	1.76	—

सारणी 2 से स्पष्ट है, कि जनपद टिहरी गढ़वाल में सर्वाधिक 31.50 प्रतिशत भूमि पर गेहूँ, 15.98 प्रतिशत भू-भाग पर धान, 20.04 प्रतिशत भू-भाग पर सावां तथा सबसे कम 17.6

**सारणी 3 : जनपद में मुख्य फसलों की औसत उपज  
(कुन्तल प्रति हेक्टेयर में)**

मुख्य फसलें	2011-12	2012-13	2013-14
गेहूँ	13.9	14.89	14.51
चावल	14.88	14.4	15.8
सावा	13.64	14.57	15.42
मंडुवा	15.13	14.93	14.57
जौ	12.3	13.57	13.40
दालें	7.96	7.76	8.20
तिलहन	6.1	5.73	6.09
आलू	91.96	90.67	92.24

प्रतिशत भू-भाग पर आलू की खेती की जाती है। जनपद के अधिकांशतः क्षेत्रों में सिंचाई सुविधाओं का अभाव है। इसलिए यहाँ ऊँचे पवतीय भू-भागों पर गेहूँ की खेती की जाती है, तथा घाटियों में सिंचाई सुविधा उपलब्ध होने के कारण धान की खेती की जाती है।

सारणी 3 से स्पष्ट है, जनपद में वर्ष 2013-14 में मुख्य फसलों का उत्पादन क्रमशः गेहूँ का 14.51 क्विंटल प्रति हेक्टेयर, चावल का 15.8 क्विंटल प्रति हेक्टेयर, सावां का 15.42 क्विंटल प्रति हेक्टेयर, मंडुआ का 14.57 क्विंटल प्रति हेक्टेयर, जौ का 13.40 क्विंटल प्रति हेक्टेयर, दालें 8.20 क्विंटल प्रति हेक्टेयर, तिलहन 6.9 क्विंटल प्रति हेक्टेयर तथा आलू का उत्पादन 92.24 क्विंटल प्रति हेक्टेयर है। जनपद में दाल एवं तिलहन का उत्पादन अपेक्षाकृत बहुत कम है, जबकि आलू का उत्पादन सभी फसलों में सर्वाधिक है। इससे स्पष्ट होता है, कि जनपद में आलू के उत्पादन की अच्छी सम्भावनाएँ हैं, जबकि दालों एवं तिलहन के उत्पादन के बढ़ाने के लिए विशेष प्रयासों की आवश्यकता है। सरकार/कृषि विभाग के विभिन्न प्रयासों के बावजूद फसलों के प्रति हेक्टेयर उत्पादन में आशानुकूल बढ़ोत्तरी नहीं हो पायी है। मुख्य रूप से दालों के उत्पादन बढ़ाने हेतु अतिरिक्त प्रयास की आवश्यकता है।

**जनपद में कृषि की समस्याएँ :**

- (1) जनपद में अधिकांश कृषि असिंचित तथा वर्षा पर निर्भर है।
- (2) जनपद में छोटे-छोटे सीढ़ीनुमा खेत हैं, जिसमें आधुनिक कृषि यंत्रों का प्रयोग नहीं किया जा सकता है।
- (3) अति वर्षा के समय सीढ़ीनुमा खेतों की दीवारों टूट जाती है, जिससे कृषि एवं धन की भारी हानि होती है।
- (4) जनपद में अधिकांश कृषि कार्य परंपरागत रूप में किया जाता है, जिसमें उन्नत किस्म के अधिक उत्पादन वाले बीजों का प्रयोग नहीं किया जाता है।
- (5) जनपद में अधिकांश छोटे तथा बिखरे जोत हैं।

**जनपद टिहरी गढ़वाल में कृषि विकास हेतु सुझाव :**

- (1) जनपद की अधिकांश कृषि असिंचित तथा वर्षा पर निर्भर है, और समय पर वर्षा न होने के कारण फसलें सूख जाती हैं, इसलिए सिंचाई सुविधाओं पर विशेष ध्यान दिया जाना चाहिए।
- (2) कृषकों को आधुनिक कृषि यंत्र उपलब्ध कराये जाये, जिससे कम समय में अधिक कार्य संभव हो सके।
- (3) कृषकों को उन्नत बीजों के उपयोग रखरखाव एवं कृषि यंत्रों के उपयोग हेतु समय-समय पर प्रशिक्षण की व्यवस्था की जानी चाहिए।
- (4) परंपरागत फसलों के साथ-साथ व्यावसायिक फसलों के उत्पादन को बढ़ावा दिया जाये।
- (5) रासायनिक खाद के बजाय जैविक खाद का प्रयोग अधिक किया जाना चाहिए।

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- (4) जिला सांख्यिकीय पत्रिका, जनपद टिहरी गढ़वाल, 2015.

