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STATE BUDGETARY RESOURCES AND  
AGRICULTURE DEVELOPMENT  
IN UTTRAKHAND

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## P R E F A C E

Budgetary allocation of resources is an important instrument of economic policy of the government to accelerate economic growth and reduce disparities. Its size and pattern has great influence on development of various sectors. Agriculture in India is beset with problems like slow growth, stagnant and low productivity, continuously rising prices of food items and farm distress due to unviable cultivation. Allocation of resources is an important instrument to carry out corrections and a medium to realize objectives of public policy. With this realization, present study was formulated to analyse growth and pattern of budgetary allocation to the agricultural sector in Uttrakhand. It is based on secondary sources of data.

Keeping in view the natural constraints of Uttrakhand, agricultural advancement is difficult but it is possible through well thought out policies and their effective implementation. This is urgent because agriculture sector employs around 58 per cent of workers and provides livelihood security to the major proportion of population in the rural areas. We have examined trends in budgetary expenditure on agricultural sector. The growth of expenditure has been found significant and state has been implementing a large number of crop specific schemes. But, impact of these allocations has not been visible on foodgrains production which dominates crop husbandry in the state. It could be due to poor implementation and lack of proper monitoring. Hence, finding weaknesses of the current schemes and strengthening them in this light is the answer to agricultural development in Uttrakhand.

In view of scarce availability of literature on this subject at the state level, present report would be of immense utility for the policy makers, researchers and professionals.

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## **Chapter-1**

### **Introduction**

#### **Importance of Budgetary Resources**

Budgetary allocation of resources is an important instrument of economic policy of the government to accelerate economic growth and reduce disparities. Its size and pattern has great influence on development of various sectors. The ideal of welfare state has increased the magnitude of budgetary expenditure over the years. It has emerged as an important factor influencing the sectoral growth. The level and composition of budgetary expenditure is determined by the political, social and economic factors. Normally, welfare state would spend on public goods and take care of the growth of agriculture along with promoting manufacturing and tertiary sectors.

Agriculture contributes around 19% of the GDP and employs almost 52% of the work force in India. But, this sector has been languishing in growth despite the overall growth of more than 8% during the last few years. Unfortunately, it could not achieve even a modest growth target of 4% despite its overwhelming importance in reducing poverty and providing food security to the nation. It has grown at the rate of 2.5 during the Ninth (1997-2002) and Tenth Five Year Plan periods (2002-07). This is the result of inadequate attention of the policy in allocation of resources and evaluating the outcomes. The allocation of planned resources to agricultural sector during the Tenth Five Year Plan was 3.75 per cent of total allocation. The share of agriculture remains almost the same during the Eleventh Five Year Plan too. The low provision to agriculture in comparison to other sectors reflects poor realization of the needs of agricultural sector. Particularly, public investment in this sector has been low. It has grown at the minimal rate of 0.74% per annum between 1990 and 1999 (Bathla and Thorat, 2006).

Productivity increase in agriculture is also considerably dependent on capital formation both from the public and private sectors. Unfortunately, Gross Capital Formation (GCF) in agriculture as a proportion to the total capital formation has shown a continuous decline. It declined from 8.6 per cent in 1999-00 to 5.8 percent in 2006-07. GCF in agriculture relative to GDP in this sector has, however, shown an improvement from 9.6 per cent in 2000-01 to 12.5 percent in 2006-07. This needs to

be raised to 16 per cent during the Eleventh Five Year Plan to achieve the target growth of 4 per cent in this sector (Economic Survey, 2007-08)

## **Objectives**

Agriculture in India is beset with problems like stagnant and low productivity, continuously rising prices of food items and farm distress due to unviable cultivation. Allocation of resources is an important instrument to carry out corrections and a medium to realize objectives of public policy. After realizing, government has started putting more emphasis on agriculture in resource allocation but emphasis also has to be on fixing the system/outcomes. Sometimes, it needs more fixing than money. Therefore, it seems urgent for the government to have an appraisal of its expenditure in terms of achieving physical targets along with financial allocations. Many times, financial targets of programmes are achieved but physical targets as crucial as supplying seeds remain partially attained. Absence of this mechanism appears to be one of the reasons for lower outcomes. This common study was formulated to understand the flow of budgetary resources in agricultural sector. Our Centre was assigned the responsibility for carrying out this study for Uttarakhand and Haryana. The present report on Uttarakhand is a part of this study. The specific objectives of the study are as under.

- i) To examine trends in budgetary allocation of resources to the agricultural sector as a whole and in the sub-sectors of agriculture.
- ii) To document schemes under operation in Uttarakhand to accelerate development of agricultural sector.
- iii) To analyse the impact of these schemes on agricultural sector in the state.

The study on budgetary expenditure requires a wide range of information on relevant indicators. Uttarakhand is a young state formed in 2000 and therefore, available information is extremely limited. However, a serious attempt has been made to gather information from all secondary sources. The study is primarily based on data collected from Statistical Diary of Uttaranchal, Statistical Abstract of India, Agricultural Statistics at Glance, various volumes on Agriculture and Finance published by the Centre for Monitoring Indian Economy (CMIE). These are supplemented with the information obtained from Directorate of Agriculture and Planning Department, Government of Uttarakhand, Uttarakhand.

This study covers a period from 2000-01 to 2006-07. The compound growth rates were calculated for the analysis of time series data on area, production and yield of important crops as well as for revenue, capital and total expenditure on economic services, agriculture and allied activities and aggregate expenditure by using the following formulae.

**Compound Annual Growth (CAGR)**

$$\text{CAGR} = \left[ \frac{\text{Last Value}}{\text{First Value}} \right]^{1/(\text{No. of Years})} - 1$$

**Review of Literature**

Uttarakhand lies in the Central Himalayan region. The state is rich in biodiversity but remained economically backward due to neglect of the planners and policy makers. For understanding this phenomenon, an insight into the past is essential. This state is backward because its natural environment required initiative and investments which were beyond their limited horizons and also their limited resources and capabilities (Joshi, 1995).

A few attempts have been made to study development in Uttarakhand. Some of these studies have been carried out before the formation of Uttarakhand in the year 2000. These studies have analysed issues related to state hood of the region but these had some component of development. We will focus on issues related to budgetary expenditure and agricultural development.

Joshi (1995) has focused on challenges of the new state. He has highlighted that there is an important aspect of the new situation, which deserves serious attention from all of us. While Uttarakhand was never totally isolated and was always open to influences from outside, the new era inaugurated by new means of transport and new modes of communication has created a new kind of openness. It has resulted in building new linkages between Uttarakhand and the rest of India.

The economy of Uttarakhand is predominantly based on agriculture and its related activities. As a consequence, population in the region is primarily dependent on agricultural activities both for livelihood and employment. But, agricultural economy is unable to provide regular and gainful employment opportunities to the growing labour force and adequate income to the farm households, engaged in this sector.



An article by Saravanan, (2003) tried to map “Opportunities for Cooperation in Uttranchal”. The state has vast water potential. It receives high rainfall of over 1,000 mm. In addition, it is endowed with some perennial, snow fed rivers from the Himalayan region. One of these rivers is Mahakali (or Sharada as she is known in India) that forms boundary with Nepal. Most part of the river flows on the Indian side in the Kumaon division of Uttranchal. This river has enormous potential to address poverty on either side of the border. It could generate revenue for Uttranchal and strengthen the economy of both India and Nepal, yet its potential remains untapped.

A paper by Singh and Singh, (2007) analysed “Agriculture Farming Systems in the State of Uttranchal”. They have concluded that mountain farming has diversity in all respects. The fragility of the terrain does not permit to undertake the intensive agricultural practices. The crops are grown sparsely. In addition, fertility of soil is very low due to excessive soil erosion. Under these circumstances, introduction of a new pattern of farming is needed to boost the agricultural economy and restore the environment in Uttrakhand.

A review of the agricultural history of Uttrakhand has revealed that the ‘Green’ and ‘White’ revolutions have no relevance for these regions due to constraints such as socio-political changes, difficulties in the mechanization of agriculture, continued fragmentation of the already small land holdings, denudation of the vegetative cover and lack of inputs. Moreover, discontinued winter migration to the foothills for pastures and summer migration to the alpine meadows have increased the biotic pressure. Lack of strategic planning has created a difficult situation. Increase in urbanization has crowded the cities and spoiled the environment (Pande, 1998).

Agricultural management and farm practices in most of the hilly areas in our country are not on sound scientific lines. Therefore, yields of various crops grown in these regions are poor. It has also affected hilly environment. Such practices on the hill slopes lead to the erosion of the soil and problems of weed growth. Extensive use of artificial fertilizers proves to be feverish for the soils. Random use of pesticides for the protection of the crops and vegetables pollutes various components of the eco-systems that cause fatal influence on the life systems. It is, therefore, essential that proper scientific agro-practices should be adopted in all hilly areas with proper use of fertilizers and pesticides. As far as possible, natural fertilizers should be used to improve productivity. For pest control, biological methods should be adopted (Sharma and Tej Kumari, 1998).

Mittal, (2004) has reviewed the possibility of alternative land use in Uttarakhand. The land forms and agro-climatic situations of the North-Western hill regions provide simple evidence to conclude that cereal or field crop based farming system in most of these areas would not be a paying proposition. The National Commission on Agriculture (NCA) has recommended growing of horticultural crops due to limited scope for intensive use of land through cereal-pulses-millet cropping system. The impact that cultivation of fruits and vegetables can have on the earnings and living conditions of hill people has been demonstrated in some pockets of Uttar Pradesh hills (Ramgarh) as well as in some areas of Himachal Pradesh and Jammu and Kashmir. In these areas, horticulture economy had higher pay offs. The higher returns from fruits and vegetables have induced change in the cropping pattern in favour of horticultural crops. Apart from fruits, this region has shown an equally good scope for growing best quality potato seed, ginger, chillies, supply of temperate vegetables to plains during the off season. State is also producing seeds of temperate vegetable varieties, which require low temperature for flowering and seed setting.

Another paper by Sharma et. al. (2004) in Mittal edited book has pointed out that growing of cereals is neither feasible nor economical on degraded lands due to various farming constraints in Uttarakhand. But, these vulnerable lands can be utilized efficiently on sustained basis for fruit production, as fruit plants can withstand biotic stress. Low cultural practices in the soils of orchards keep surface conditions intact, improve physical conditions, enhance the infiltration rate and reduce the amount of run-off which otherwise is going waste along with soil and nutrients

In Uttarakhand, more than 70 per cent of the population in rural areas is engaged in the primary sector, namely, agriculture, livestock, forestry, plantation, etc., for their livelihood. However, for enhancement of production in this sector, advanced technological inputs are neither available nor ecologically appropriate.

Chauhan, et. al. (2001) in their paper in an edited book analysed the possibility of crop diversification in Uttarakhand. They have stated that variation in altitude and microclimates offer a natural advantage for crop diversification. As such, alternative strategies for agriculture related enterprises viz., horticulture, forestry, floriculture, medicinal plants need to be strengthened. Besides, less remunerative crops can be replaced with more profitable crops on a rotational basis. Utilization of fallow lands may also provide additional economic gains.

Agriculture on hill slopes causes soil erosion, nutrient and water loss. In order to make agriculture sustainable, soil and water conservation needs to be given top priority. It will enhance soil nutrient status. Low consumption of chemical fertilizer and pesticides in this state is blessing in disguise and therefore, attempt should be made to promote integrated nutrient and pest management that will make agricultural production sustainable (Aggarwal, 2003).

Considering the structure of hill agriculture and constraints, strategies for improvement should be based on ground realities. Variations in altitude and climate may be utilized for benefits through crop diversification. The traditional and scientific knowledge should be blended and disseminated to improve agricultural economy of the hills. It is essential to integrate the available natural resources, tap the untapped potential of crops/varieties and technical know-how in an eco-friendly manner to enhance agricultural productivity of food crops, which will provide nutritional security to the population in the state (Sati and Sati, 2000).

All these studies conclude that Uttarakhand continued to be a depressed region in terms of agricultural development. The production of important crops did not increase and around 36.44 per cent of the population is below the poverty line. Thus, efforts to overcome the backwardness of this region through implementation of various schemes drawn up by the government did not yield significant results so far.

Allocation of budgetary resources can play an important role in accelerating development of agriculture and devising proper policies for the sector. None of the aforesaid studies analysed the pattern and composition of expenditure incurred by the government on agriculture and allied activities in Uttarakhand since its inception. This is a crucial aspect and this study explores issues related to this aspect.

### **Profile of Uttarakhand**

Uttarakhand, the 27<sup>th</sup> State of the Union of India was carved out of the 13 north Western districts of Uttar Pradesh on 9<sup>th</sup> November 2000. The state comprising of the central Himalaya, is spread over 53, 483 square kms. and inhabits 84.8 lakh population (Census, 2001). The state is known for its scenic beauty and also called "Devbhoomi" due to its shrines, temples & places of worship, meditation and soul searching. Uttarakhand is included in the National Agro-climatic zone No.-9 and 14. The plains region of the state known as Tarai-Bhabar region comprises of Udham Singh Nagar, Haridwar and parts of Dehradun and Nainital districts. The hill region of

the state consists of Uttarakashi, Tehri, Pauri, Chamoli, Rudraprayag, Almora, Bageshwar, Champawat, Pithoragarh and parts of Dehradun and Nainital districts.

The entire state is rugged mountainous terrain except Udham Singh Nagar, Haridwar, Doon Valley, Garhwal and Nainital districts. Administratively, it comprises of the divisions of Kumaon and Garhwal, which are further composed of thirteen districts. Kumaon division comprises districts of Almora, Nainital, Pithoragarh, Champawat, Bageshwar and Udham Singh Nagar while the Garhwal division consists of districts of Uttarkashi, Chamoli, Tehri, Pauri, Dehradun, Haridwar and Rudraprayag. The state has 95 development blocks and 48 tehsils. The Kumaon division covers an area of 21035 sq.kms. and inhabits 35.64 lakh people whereas the Garhwal division has an area of 32450 sq.kms. and a population of 49.16 lakh persons. Thus, Uttarakhand accounts for 1.61 per cent of the total geographical area and 0.82 per cent of the total population of the country.

The total population of Uttarakhand was 84.9 lakh persons in 2001. The sex ratio was 962 which is above the all India level. The density of population defined as number of persons per square kilometre was only 159 persons. It is due to large area under mountains, which is sparsely populated (Table-1.1).

The literacy rate in Uttarakhand has been above the all India level. Around 72.08% of population was educated. Among males, 84.01% and females 60.26% were literate during 2001. Women are considered the backbone of the economy of Uttarakhand. Therefore, it is essential to provide substantial educational facilities to women in the region. They should be motivated for this purpose.

In Uttarakhand, 36.9 per cent of population was workers. Among males, this proportion was 46.4 per cent while it was 27.1 per cent among females. Surprisingly, work participation rate of population in the state is lower than the all India level. It could be attributed to relatively low work participation of male population. This figure is 46.4 per cent against 51.9 per cent for all India. Historically, male workers have been migrating to plains in search of employment opportunities and this feature has reduced the work participation rate of males in Uttarakhand. On the other hand, work participation rate of females in Uttarakhand is above the national level. It could be due to the significant contribution of women in various economic activities, primarily in agricultural based activities.

The occupational distribution of workers is the most important determinant of social, cultural, economic as well as environmental development of a region. It is

responsible for social progress, creation of wealth, development of science and technology. Economic development of a region depends on proportion of working force engaged in primary, secondary and tertiary sectors. Agriculture is the main source of employment in Uttarakhand and around 58 per cent of workers earned their livelihood from this sector in 2001. Like all India, proportion of workers was the highest in agriculture followed by other workers and household industry workers (Table-1.2).

The larger part of the state is characterized by a difficult terrain, undulating topography, remote and inaccessible villages, sparse population, tiny land holdings, agriculture based economy and weak infrastructure. Though, region is rich in beauty and natural resources, improper use of these resources and rapidly growing population has thwarted its development and consequently region is technically backward and economically poor. The pressure of increasing population has also resulted in stress on the limited natural resources of the state. This is because topographical, infrastructural and environmental constraints do not allow proper utilization of resources available in the inner parts of this fragile region. Thus, an imaginative, ecologically and environmentally balanced dynamic approach is needed to handle the dilemma of development in the state of Uttarakhand.

The economic development of any area is best reflected in infrastructural facilities. A good infrastructure can be achieved by investment in basic amenities like roads, power, water and communication. The infrastructural development of Uttarakhand has been one of the important components of development planning but so far, it has been poor. A serious effort is needed to enhance these facilities to promote economic development.

**Table 1.1****Area, Population and Work Participation Rate in Uttarakhand and India (2001)**

<b>Item</b>	<b>Uttarakhand</b>	<b>India</b>
<b>I. Area</b>	<b>2001</b>	<b>2001</b>
Total Area (000' Sq. km.)	53 (1.61)	3287 (100.00)
<b>II Population</b>		
Total Population (000')	8489 (0.82)	1028737 (100.00)
Sex Ratio (No)	962	933
Rural Population (000)	6310	742618
% of rural Population to Total Population	74.33	72.22
Population Density per Sq. km.	159	325
Literacy Rate (%)	72.08	65.00
<b>III. Workers</b>		.
Work Participation Rate (%)		
Male	46.4	51.9
Female	27.1	25.7
All	36.9	39.3
% of main Workers to Total Workers	74.16	77.80
% of Marginal Workers to Total Workers	25.84	22.20

Source: Statistical Abstract of India, 2004 and Agricultural Statistics at a Glance, 2008.

**Table 1.2**  
**Occupational Classification of Main Workers in Uttarakhand and India (2001)**

Category	Uttarakhand		India	
	No.	(%)	No.	(%)
<b>I. Cultivators ('000)</b>				
Male	686	34.19	86328	31.33
Female	873	77.46	41300	32.51
All	1559	49.76	127628	31.71
<b>II. Agricultural Labourers ('000)</b>				
Male	191	9.52	57354	20.83
Female	68	6.03	50093	39.43
All	259	8.27	107448	26.69
<b>III. Household Industry Workers ('000)</b>				
Male	43	2.14	8312	3.02
Female	27	2.40	8084	6.36
All	70	2.23	16396	4.07
<b>IV. Other Workers ('000)</b>				
Male (000's)	1086	54.13	123469	44.82
Female	158	14.02	27571	21.70
All	1245	39.74	151040	37.52
% of Agricultural Workers to Total Workers		58.02		58.40
% of Cultivators to Total Agricultural Workers		85.75		54.29
% of Agricultural Labourers to Total Agricultural Workers		14.25		45.71
% of Female Agricultural Workers to Total Agricultural Workers		51.76		38.88

Agriculture workers = Cultivators + Agricultural Labourers

Source: Agricultural Statistics at a Glance, 2008.

## **State Income:**

The economy of Uttarakhand has recorded rapid growth between 1999-00 and 2004-05. The GSDP of the state at factor cost at current prices has risen at the highest rate of 15.31 percent during 2003-04. Out of the six included years, percentage change in income has surpassed 10 per cent in four years i.e. 2000-01, 2002-03, 2003-04 and 2004-05. The results for constant prices are different but percentage change of more than 10 per cent in state income was observed over the previous year in the same years. Growth was below 10 per cent only in 2001-02. It has been contributed by primary, secondary and tertiary sectors. The, sectoral analysis reveals that primary sector which comprises of agriculture, livestock, forestry, fishing and mining sectors contributed 38.16 per cent to the state GSDP during 1999- 2000. Its share declined to 25.99 per cent in 2004-05. The share of secondary sector, which covers manufacturing, construction, electricity, gas and water supply sectors had a share of 21.38 per cent in 1999- 2000 and it rose to 29.24 per cent during 2004-05. The tertiary sector, which comprises of trade, transport, banking, public administration and other services contributed a share of 40.46 per cent during 1999- 2000. Its proportion has risen by almost 4 percentage points between 1999-2000 and 2004-05. The structural composition of state economy has witnessed significant change during the recent years. But, agricultural sector still continues to occupy a significant position in the state economy with its continuously declining share. The importance of agricultural sector is also responsible for good deal of instability in the rate of growth of the economy due to fluctuations in agricultural output (Table 1.3 and 1.4).

In a nutshell, composition of GSDP of Uttarakhand reveals that share of primary sector is continuously declining whereas shares of secondary as well as tertiary sectors are continuously rising. It implies that state economy is shifting from agriculture to manufacturing and service sectors, which is a sign of structural change in the economy of the state.



**Table-1.3****GSDP of Uttrakhand****(Rs. crore)**

Year	At Current Prices	% Change	At Constant Prices (1993-94=100)	% Change
1999-00	10625	-	6856	-
2000-01	12234	15.14	7591	10.72
2001-02	13182	7.75	8042	5.94
2002-03	15064	14.28	8858	10.15
2003-04	17371	15.31	9899	11.75
2004-05	20205	16.31	11058	11.71
<b>CGR</b>				
1999-00 to 2004-05	13.72	--	10.03	--

Source: Public Finance, CMIE, 2007

**Table-1.4****Share of Important Sectors in GSDP of Uttrakhand****(%)**

Year	Primary	Secondary	Tertiary
1999-00	38.16	21.38	40.46
2000-01	37.03	22.46	40.51
2001-02	32.89	24.81	42.31
2002-03	30.63	27.12	42.25
2003-04	28.47	27.79	43.74
2004-05	25.99	29.24	44.77

Source: *Ibid*

**Agricultural Development in Uttrakhand**

Agricultural advancement is the most important challenge in Uttrakhand due to natural constraints. This is urgent since agriculture sector employs more than 55 per cent of workers and provides livelihood security to the major proportion of population in the rural areas.

At the out set, we will discuss land use pattern, which is manifestation of combined effect of various physio-climatic conditions in the region. Table-1.5 indicates that forests occupy dominant proportion of land and cover around 61 percent of the reported area in the state. As per the information of Directorate of

Agriculture, around 30 per cent of forest area is in the category of degraded forests. There are plans to promote cultivation of Jatropha and bamboo on significant proportion of area under degraded forests. This will help to remove rural poverty in these areas. In addition, 6.78 and 1.21 percent of reported area is under cultivable wasteland and fallow land other than current fallows. These lands can be brought under cultivation through proper planning and execution. These areas can also be utilized for plantation of fruits, medicinal and aromatic plants. Current fallows comprised less than 1 per cent of the reported area.

The net sown area formed only 13.58 per cent of the geographical area. Out of this area, 59.22 per cent was sown more than once during 2000-01. It is found low in comparison to agriculturally developed regions like Punjab and Haryana. Since, progress on this front in the state is low, a marginal increase was noticed in crop intensity between 2001-05. The percentage of net irrigated area to net sown area in Uttarakhand is around 44 per cent and it has been constant during the referred years. Interestingly, share of gross irrigated area in gross cropped area also has been almost uniform in the study period. In a nutshell, land use pattern does not show any perceptible change in Uttarakhand during the study period.

Since, a large part of Uttarakhand is hilly, average size of operational holdings is less than one hectare. Around 72 per cent of holdings are marginal and area operated by this category of farmers is merely 0.35 hectare. The size of these holdings is extremely tiny and therefore, scale of economies cannot be availed of which makes crop husbandry unviable proposition. Generally, these farmers opt for subsistence farming due to their poor economic status and do not use expensive inputs. Urgent policy initiatives are needed for the development of smallholdings. The options like dairying, poultry and horticultural high value crops including medicinal and aromatic plants should be encouraged to increase per unit productivity of the available small pieces of land for cultivation.

**Table -1.5****Land Use Pattern in Uttarakhand (2001-05)**

(\*000 ha)

Year	Total Reported Area	Forest	Not Available for Cultivation	Permanent Pastures and other Grazing Land	Land under Misc. Tree, Crops and Grooves	Cultivable Waste Land	Fallow Land Other than Current Fallows	Current Fallows	Net Area Sown	Area Sown More than once	Total Cropped Area	Cropping Intensity	Net Irrg. Area	GIA*
2000-01	5672	3465 (61.09)	462 (8.14)	229 (4.04)	254 (4.48)	385 (6.78)	69 (1.21)	38 (0.67)	770 (13.58)	456	1226	159.22	344 (44.68)	537 (43.80)
2001-02	5672	3465 (61.09)	462 (8.14)	229 (4.04)	251 (4.42)	386 (6.81)	67 (1.18)	35 (0.61)	777 (13.70)	445	1221	157.14	346 (44.53)	539 (44.14)
2002-03	5672	3468 (61.14)	465 (8.20)	229 (4.04)	252 (4.44)	386 (6.81)	72 (1.27)	41 (0.72)	759 (13.38)	453	1212	159.68	341 (44.93)	524 (43.23)
2003-04	5668	3465 (61.13)	463 (8.17)	229 (4.04)	251 (4.43)	385 (6.79)	71 (1.25)	43 (0.76)	761 (13.43)	461	1222	160.57	344 (45.20)	537 (43.94)
2004-05	5670	3465 (61.11)	464 (8.18)	229 (4.04)	249 (4.39)	386 (6.81)	68 (1.20)	42 (0.74)	767 (13.53)	468	1235	160.01	345 (44.98)	549 (44.45)

\*GIA : Gross Irrigated Area

Figures in brackets show percentage

Source: Directorate of Agriculture, Uttarakhand.

## Growth in Area, Production and Yield of Important Crops

We begin with analyzing crop pattern. It indicates percentage of gross cropped area devoted to different crops in a region during an agricultural year. The agro-climate variations in Uttarakhand are large and hence state is bestowed with a variety of crops. The diverse agro-climatic conditions of the state provide a unique advantage as well as a competitive edge over other states in production of off season vegetables and fruits, which fetch high value in the market. The identification of suitable crops for each zone is the great challenge before the state.

Wheat (30.91%) followed by rice (25.51%) and ragi (12.32%) are the principal crops of the state (Table-1.6). In addition, sugarcane and small millets are also grown on sizeable percentage of gross cropped area. The fact remains that crop pattern in Uttarakhand is dominated by food grains, which occupied 82.24% of GCA in 2000-01. The share of food grains dropped to 77.20% in 2006-07. The proportion of area under wheat remained almost the same while rice has indicated a decline of almost 4%. It appeared that traditional crops like maize, ragi, barley and small millets lost marginally while soyabean, rape and mustard gained slightly.

Information presented in Table-1.6 suggests that around 10% of GCA is being devoted to other crops like vegetables and fruits for which detailed data are not available. The crop rotation and agronomic practices differ from zone to zone due to climatic variations in the zones. In the tropical zone (plains), food grains and sugarcane dominate the crop pattern while in the sub-tropical zone, two crops namely paddy and wheat are harvested. Paddy is sown in the month of March and harvested in September and wheat is sown in the October and harvested in May.

**Table-1.6**  
**Percentage of GCA under Important Crops in Uttarakhand**

Year	(% of GCA)									
	Rice	Wheat	Maize	Ragi	Barley	Sugarcane	Soyabean	Rapeseed & Mustard	Small Millets	Total food grains
2000-01	25.51	30.91	2.98	12.32	2.13	9.99	0.38	1.05	6.03	82.24
2001-02	23.55	29.96	2.73	11.17	1.82	9.92	0.67	1.00	4.41	77.25
2002-03	21.39	31.07	2.65	11.82	2.20	10.16	1.21	0.96	5.51	77.85
2003-04	23.59	32.50	4.10	11.10	2.63	10.44	1.58	1.10	6.99	84.35
2004-05	24.22	31.89	2.41	13.54	1.93	8.70	1.43	1.38	5.80	81.90
2005-06	23.41	31.51	2.61	11.19	2.02	8.04	1.06	1.42	5.87	81.53
2006-07	21.62	30.95	2.37	10.74	2.03	9.56	0.67	1.26	5.37	77.20

Source: Directorate of Agriculture, Uttarakhand

After harvesting wheat, mandua, pulses or other crops are sometimes sown as pure crops or mixed crops. The land unsuitable for these crops is often devoted to fruit crops such as peach, pear and khumani.

Uttarakhand is known for its horticultural crops, which include off-season vegetables, floriculture crops, medicinal and aromatic plants. In temperate zone of the state, only kharif crop is taken due to very cold climate. Thus, agriculture in Uttarakhand is characterized by subsistence farming. The policy should focus on improving food, nutrition and livelihood security. Given the climatic conditions, mixed farming seems a practical approach that should include dairying, horticulture, agro forestry and organic farming.

Table-1.7 gives information on year-to-year percentage change in cultivated area under important crops in Uttarakhand. The results are different for each crop in each year. Most of the years have shown a decline in area cultivated under rice. However, 2006-07 has indicated a drop in area under wheat, ragi, soyabean, small millets and all food grains.

An examination of growth in acreage under important crops between 2000-01 and 2006-07 indicates that rice has lost area at the rate of 2.22 per cent per annum. It is due to water stress in hilly areas in the kharif season. In the better monsoon years, the situation becomes opposite. In plains, area under sugarcane fluctuates in response to price policy. Millets are basically grown as substitute alternate crops in times of water stress and therefore, do not receive adequate attention from the Government as well as from farmers. Wheat has gained acreage at the rate of 0.53 per cent per year between 2000-01 and 2006-07. Although, area has declined under ragi, barley, small millets and sugarcane, maize appeared to be the biggest loser by indicating a decline at the rate of 3.22 per cent per year. Soyabean and rape & mustard gained area at the rate of 10.38 and 3.65 per cent per year during the study period (Table-1.8).

After analyzing acreage under important crops, we would focus on the status of production of important crops. Table-1.9 gives information on absolute production and its growth over the study period (2000-01 and 2006-07). Since, area cultivated under rice and yield have declined, production has also declined at the rate of 2.54 per annum. The declining rate was most substantial in the case of maize (6.47). On the other hand, production of wheat and barley has increased at the rate of 1.92 and 2.27 per cent per year during the same period. The other crops with declining production include ragi, rape & mustard, small millets and total food grains. It is heartening that yield of pulses in Uttarakhand was found 909 kg/ha. against 638 kg/ha. in India during 2006-07

**Table-1.7****Percentage Change in Area Cultivated under Important Crops in Uttarakhand****(Area in '000 ha.)**

Year	Rice	Wheat	Maize	Ragi	Barley	Sugarcane	Soyabean	Rapeseed & Mustard	Small Millets	Total food grains
2000-01	312.7	379.0	36.5	151.0	26.1	122.5	4.7	12.9	74.0	1008.3
2001-02	298.9* (-4.41)	380.2 (0.32)	34.6 (-5.21)	141.7 (-6.16)	23.1 (-11.49)	125.9 (2.78)	8.5 (80.85)	12.7 (-1.55)	56.0 (-24.32)	980.3 (-2.78)
2002-03	283.0 (-5.32)	411.0 (8.11)	35.0 (1.16)	156.4 (10.37)	29.1 (25.97)	134.4 (6.75)	16.0 (88.24)	12.7 (0.00)	73.0 (30.36)	1030.0 (5.07)
2003-04	288.3 (1.87)	397.2 (-3.36)	50.1 (43.14)	135.7 (-13.24)	32.1 (10.31)	127.6 (-5.06)	19.3 (20.63)	13.4 (5.51)	85.4 (16.99)	1030.7 (0.07)
2004-05	299.1 (3.75)	393.8 (-0.86)	29.8 (-40.52)	167.2 (23.21)	23.8 (-25.86)	107.4 (-15.83)	17.7 (-8.29)	17.0 (26.87)	71.6 (-16.16)	1011.5 (-1.86)
2005-06	293.1 (-2.01)	394.5 (0.18)	32.7 (9.37)	140.1 (-16.21)	25.4 (6.72)	100.6 (-6.33)	13.3 (-24.86)	17.8 (4.71)	73.5 (2.65)	1020.8 (0.92)
2006-07	273.3 (-6.76)	391.3 (-0.81)	30.0 (-8.26)	135.8 (-3.07)	25.6 (0.79)	120.9 (20.18)	8.5 (-36.09)	16.0 (-10.11)	67.9 (-7.62)	975.8 (-4.41)

\* Brackets show percentage change in area of the crop over previous year.

Source: Directorate of Agriculture, Uttarakhand

**Table-1.8**  
**Growth in Acreage under Important Crops in Uttrakhand**

(Area in '000 ha.)

Year	Rice	Wheat	Maize	Ragi	Barley	Sugarcane	Soyabean	Rapeseed & Mustard	Total Oilseeds	Small Millets	Total Pulses	Total food grains
2000-01	312.7	379.0	36.5	151.0	26.1	122.5	4.7	12.9	25.0	74.0	48.70	1008.3
2001-02	298.9	380.2	34.6	141.7	23.1	125.9	8.5	12.7	25.5	56.0	48.80	980.3
2002-03	283.0	411.0	35.0	156.4	29.1	134.4	16.0	12.7	26.00	73.0	50.01	1030.0
2003-04	288.3	397.2	50.1	135.7	32.1	127.6	19.3	13.4	29.00	85.4	50.00	1030.7
2004-05	299.1	393.8	29.8	167.2	23.8	107.4	17.7	17.0	37.00	71.6	42.00	1011.5
2005-06	293.1	394.5	32.7	140.1	25.4	100.6	13.3	17.8	44.00	73.5	53.00	1020.8
2006-07	273.3	391.3	30.0	135.8	25.6	120.9	8.5	16.0	45.00	67.9	55.00	975.8
<b>CGR</b>												
2000-01 to 2006-07	-2.22	0.53	-3.22	-1.75	-0.32	-0.22	10.38	3.65	10.29	-1.42	2.05	-0.54

Source : Directorate of Agriculture, Uttrakhand

**Table-1.9****Growth in Production of Important Crops in Uttarakhand (2001-07)**

('000 tonnes)

Year	Rice	Wheat	Maize	Ragi	Barley	Sugarcane	Soyabean	Rapeseed & Mustard	Total Oilseeds	Small Millets	Total Pulses	Total food grains
2000-01	621.5	714.6	59.6	193.3	25.7	7349.2	3.0	9.6	15.40	89.0	31.17	1726.4
2001-02	614.4	734.8	51.0	176.0	25.4	7455.3	8.7	7.6	14.97	79.0	34.75	1707.5
2002-03	483.0	761.9	38.0	154.2	35.8	7331.7	13.0	8.0	18.00	69.0	36.00	1560.0
2003-04	548.7	745.3	72.8	174.0	34.5	7651.3	21.0	10.9	20.00	104.5	34.00	1707.5
2004-05	550.1	793.8	44.3	190.2	33.3	6441.4	22.9	11.5	35.00	90.7	28.00	1729.6
2005-06	563.9	644.5	44.2	174.3	17.6	6134.2	15.4	11.6	43.00	87.2	48.00	1566.7
2006-07	532.7	801.2	39.9	186.3	29.4	7377.3	9.8	9.1	45.00	86.2	50.00	1708.9
<b>CGR</b>												
2000-01 to 2006-07	-2.54	1.92	-6.47	-0.61	2.27	0.06	21.81	-0.89	19.57	-0.53	8.19	-0.17

Source : Directorate of Agriculture, Uttarakhand



**Table-1.10****Growth in Productivity of Important Crops in Uttarakhand (2001-07)**

kg/ha)

Year	Rice	Wheat	Maize	Ragi	Barley	Sugarcane	Soyabean	Rapeseed & Mustard	Total Oilseeds	Small Millets	Total Pulses	Total food grains
2000-01	1988	1885	1633	1280	985	59994	638	744	604	1207	640	1712
2001-02	2056	1933	1474	1252	1100	60010	1024	598	587	1216	712	1742
2002-03	1707	1854	1086	986	1230	54551	812	630	692	949	720	1515
2003-04	1903	1876	1453	1282	1073	59955	1085	816	689	1225	680	1657
2004-05	1839	2016	1488	1497	1398	60000	1294	674	946	1267	667	1710
2005-06	1924	1633	1354	1244	691	60996	1155	653	977	1185	906	1535
2006-07	1949	2047	1333	1372	1150	61000	1149	572	1000	1271	909	1751
<b>CGR</b>												
2000-01 to 2006-07	-0.33	1.38	-3.33	1.16	2.61	0.28	10.30	-4.29	8.77	0.86	6.02	0.38

**Source: Directorate of Agriculture, Uttarakhand**

The crop of soyabean has indicated outstanding growth (21.81% per year) during the reference period because it can be grown successfully under water stress too.

Yield is the most important factor influencing production but in Uttarakhand, yield of important crops is low. The productivity per hectare of rice, wheat, maize, barley, sugarcane, soyabean, small millets and total food grains is below the national average. Table-1.10 indicates that productivity of the major crop that is rice in the state has declined at the rate of 0.33 per cent per annum during the study period. The other two crops with declining productivity have been maize, rape and mustard. The yield of soyabean has risen at the highest rate (10.30% per annum) during this period. In addition, total oilseeds, pulses, wheat (1.38%), ragi (1.16%), barley (2.61%) and small millets (0.86%) have also shown increase in the yield rates between 2000-01 and 2006-07. To conclude, productivity of a few crops has increased significantly but in most cases, results are not found satisfactory. It is disappointing to note that productivity of main staple crop that is rice in Uttarakhand has shown a decline. Under these circumstances, policy needs to take an urgent action so that yield of rice can be enhanced. This is possible by adoption of high yielding variety seeds on the larger scale. The adoption of recommended farm practices is pre-condition to maximize the benefits.

### **Input Use**

The utilization of fertilizer, pesticides, tractor and tube wells play an important role in boosting the agricultural development of a region. Uttarakhand is lagging behind in the use of these inputs. The consumption of fertilizer was extremely low. However, use of pesticides was found better in cultivation. The nitrogenous fertilizers were preferred over phosphatic and potassic fertilizers. The state of Uttarakhand is moving towards agricultural mechanization gradually. But, use of implements per hectare of GCA was found extremely low (Table-1.11). It was reported that Uttarakhand is ahead of many states in the production as well as distribution of high yielding variety seeds but information on percentage of cultivated area of the wheat and paddy under high yielding variety seeds is not available.

Potential of organic farming in Uttarakhand is excellent. In view of rising demand for organic products, state should exploit this opportunity. Lack of physical infrastructure in hills makes distribution of inputs extremely difficult. Massive

investment is needed to address this shortcoming. Government should give priority to this aspect to boost growth of agriculture in the state.

**Table-1.11**  
**Status of Fertilizer and Manure Consumption & Agricultural Mechanization in Uttrakhand**

Item	2005-06	Use per ha. of GCA (in tonnes)
N ('000 t)	90.45	0.073
P ('000 t)	24.56	0.021
K ('000 t)	10.72	0.009
Micro Nutrients ('000 t)	0.74	0.001
Manures ('000 t)	15.51	0.013
Bio-Fertilizers ('000 t)	0.021	0.000
Area under Green Manuring (ha)	2550	2.060
Bio-pesticides (MT)	9.97	0.001
Pesticides (MT)	492	0.398
<b>Agricultural Mechanization</b>		
Tractor/Power Tillers (No.)	144	0.120
Power Operated (No.)	330	0.267
Zero till drill (No.)	60	0.049
Sprinkler sets (No.)	43	0.0348
Water Lifting Pumps (No.)	50	0.040

Source: Directorate of Agriculture, Uttrakhand

### **Organization of the Study**

The study is divided into five chapters. Chapter-1 is introductory and gives an overview of the state in terms of area, population, workers, income, agricultural development and input use. It also provides a brief review of available studies. Chapter-2 deals with the main theme of the study that is trends and pattern of budgetary expenditure on agriculture and allied activities. Chapter-3 analyses the schemes being implemented for agricultural development in the state of Uttrakhand, while chapter-4 reviews nexus between state intervention and agricultural development. The final chapter presents summary and conclusions of the study.

## **Chapter-2**

### **Trends and Pattern of Budgetary Expenditure on Agriculture**

#### **Introduction**

Budgetary expenditure plays a key role in planning for development. Its classification has crucial importance for the economy because it indicates relative importance of different sectors in the government expenditure. Under Article 112 and 202 of the Constitution, Central and state governments are required to present their expenditure estimates under the categories of (a) revenue expenditure and (b) capital expenditure. To this classification is added a further division, viz, plan and non-plan expenditure (both capital & revenue) on the plan projects undertaken during a plan period.

This chapter aims to analyse growth and composition of budgetary expenditure on agriculture in Uttarakhand. It is divided into three sections. Section-1 presents trends in budgetary expenditure on agriculture and allied activities. Section-2 deals with changing composition of expenditure on agriculture while Section-3 focuses on plan expenditure. It also presents expenditure on agriculture as a share of NSDP in Uttarakhand. The data to fulfill these objectives were collected from Statistical Diary of Uttarakhand and publications of Centre for Monitoring Indian Economy on Finance and Agriculture. These were supplemented with information collected from Directorate of Agriculture, Uttarakhand. The analysis covers a period from 2000-01 to latest available period. The annual compound growth rate was calculated for relevant indicators.

#### **Section-1**

##### **Expenditure on Agriculture and Allied Activities**

Expenditure on agriculture includes revenue and capital expenditure. We will first define these terms and then will present the empirical results. Revenue expenditure relates to the normal running of the government and various services such as interest payments on debt incurred by the government, grants given to the state governments and subsidies, etc. Broadly speaking, all those expenditures of the government that do not result in the creation of physical or financial assets are treated as revenue expenditure. Budget documents classify total revenue expenditure into plan and non-plan expenditure. Out of total budgetary expenditure

of Uttarakhand in 2000-01, 19.79 per cent was the plan expenditure and rest of 81.21 per cent was the non-plan expenditure. Their proportion became 22.82 and 77.18 percent respectively during 2006-07.

We will now define capital expenditure. The expenditures of the government, which lead to creation of physical or financial assets or reduction in recurring financial liabilities, fall under the category of capital expenditure. Such expenditures pertain to payments on acquisition of assets like land, buildings, machinery, and equipment, investment in shares, loans and advances given to the state Governments, public sector enterprises and other parties. Capital disbursements are of two kinds, those spent directly (capital outlays) and those spent indirectly by extending loans and advances.

The revenue and capital expenditure cover a wide variety of general, social and economic services provided by the government. First, we briefly describe the items included in these services and then present the empirical results for Uttarakhand. The general services include both civil and defence services while social services cover expenditure incurred on basic social amenities to the population as consumers. These relate to expenditure on education, art and culture, sports, medical, housing, labour, employment, social security and welfare. The category of economic services includes all such expenditures, which promote productive activity within the economy. In other words, benefits of expenditure under this category accrue to people as producers. The major heads of expenditure of this sector are general economic services, like foreign trade and export promotion, agriculture and allied activities, rural development, irrigation, flood control, energy, industries, transport, science and technology.

There are un-allocable revenue expenditures, which cannot be related to specific purposes. The main items included under these are: statutory grants in aid, advances, ad-hoc loans, technical and other loans.

The rationale underlying the categorization of government expenditure into the above-mentioned categories is that while general services relate to the defence of the country and the general upkeep of the Government, social services provide basic amenities to citizens as consumers, economic services extend benefits to citizens as producers, and un-allocable expenditures signify lack of specific purpose.

The revenue and capital expenditure on economic services, agriculture & allied activities and total expenditure in Uttarakhand are presented in Table-2.1. It also

provides their annual compound growth rates for the study period. The total revenue expenditure of Uttarakhand government in 2000-01 was Rs. 1110 crore which became Rs. 10625 crore in 2006-07. It increased at the rate of 45.71 per cent per annum. In total expenditure, capital expenditure accounted for 17.66 per cent in the beginning, which increased to 28.51 per cent in 2006-07. It rose at the rate of 57.82 per cent per annum during this period. It implies that capital expenditure received adequate attention in the total expenditure of the state. An exceptional increase of more than 500 crore was noticed in 2002-03 over 2001-02. Therefore, compound growth rate, between 2001-02 and 2006-07, came down to 26.36 per cent.

**Table 2.1**

**Trends in Total Budget, Economic Services and Agriculture Expenditure in Uttarakhand**

(Rs. crore)

Year	Total Expenditure			Economic Services			Agriculture & Allied Activities		
	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
<b>At Current Prices</b>									
2000-01	914	196	1110	351	147	498	106	21	127
2001-02	2833	465	3298	695	264	959	337	7	344
2002-03	3676	1172	4848	950	306	1256	367	2	369
2003-04	4362	1844	6206	1005	476	1481	450	94	544
2004-05	5036	1330	6366	1089	999	2088	449	87	536
2005-06	6820	2202	9022	1547	1645	3192	579	137	716
2006-07	7596	3029	10625	1637	2045	3682	685	165	850
<b>Annual C.G.Rate*</b>									
2001-07	42.32	57.82	45.71	29.26	55.08	39.58	36.48	41	37.28
2002-07	21.81	45.47	26.36	18.69	50.6	30.87	15.24	88.14	19.83
<b>At Constant Prices (1993-94=100)</b>									
2000-01	587	126	713	225	94	319	68	13	81
2001-02	1756	288	2044	431	164	595	209	4	213
2002-03	2204	703	2907	570	183	753	220	1	221
2003-04	2480	1048	3528	571	271	842	256	53	309
2004-05	2689	710	3399	581	533	1114	240	46	286
2005-06	3487	1126	4613	791	841	1632	296	70	366
2006-07	3684	1469	5153	794	992	1786	332	80	412
<b>Annual C.G.Rate*</b>									
2001-07	35.81	50.61	39.05	23.35	47.99	33.19	30.24	34.55	31.00
2002-07	15.97	38.50	20.31	13.00	43.38	24.60	9.72	79.12	14.09

Source: PUBLIC FINANCE, CMIE- 2007

The expenditure on economic services was Rs. 498 crore in Uttarakhand in 2000-01. It increased to Rs. 3682 crore in 2006-07. The growth rate of increase was 39.58 per cent per annum. It may be noted that the share of capital expenditure out of total expenditure on economic services was 29.52 per cent during 2000-01. It showed an exceptional growth and became 55.54 percent in 2006-07. It indicates that this crucial component received priority in the policy in Uttarakhand.

Table 2.1 also presents revenue, capital and total expenditure on agricultural and allied activities for the study period. The total expenditure on this sector rose from Rs 127 crore in 2000-01 to Rs. 850 crore in 2006-07. The rate of increase was 37.28 percent per year for this period. The overall growth has been quite impressive. It is common to expect that revenue expenditure on agriculture and economic services would grow along with other expenditures. But, share of revenue and capital expenditure in total expenditure on agriculture would depend on government policy. The share of revenue and capital expenditure in total expenditure was 83.46 and 16.54 percent during 2000-01, which became 80.59 and 19.41 percent during 2006-07. The growth rate of capital expenditure was higher than revenue expenditure. This indicates that capital expenditure received adequate attention by the government after the formation of the state in 2000.

The second part of Table-2-1 provides expenditure on economic services, agriculture and allied services and total at constant prices. Like current prices, a significant growth was observed in each type of expenditure between 2000-01 and 2006-07. But, the gap narrowed down. The annual growth rates of each type of expenditure came down substantially.

Capital formation in agriculture is a burning issue and demands urgent attention. The capital expenditure overtime in agriculture in Uttarakhand has been rising at the rate of 41 per cent per annum. It implies that infrastructure for agriculture was given adequate priority. Unfortunately, it is not accompanied by growth in agricultural productivity. The capital formation is a process and even if we do something now, it is going to take a little bit of time. It cannot be created overnight. Particularly, creation of infrastructure for important items such as irrigation needs a time lag. Hence, policy should plan in advance so that growth is not hampered in the long run.

**Table 2.2****Share of Agriculture Expenditure in Total Expenditure and Expenditure on Economic Services in Uttarakhand**

(%)

Year	Share of Total Budget Expenditure		Share of Expenditure on Economic Services	
	Revenue A/c	Total *	Revenue A/c	Total
2000-01	11.60	11.44	30.20	25.50
2001-02	11.90	10.43	48.49	35.87
2002-03	9.98	7.61	38.63	29.38
2003-04	10.32	8.76	44.78	36.73
2004-05	8.91	8.42	41.23	25.67
2005-06	8.49	7.94	37.43	22.43
2006-07	9.02	8.00	41.84	23.09

\*Total includes Revenue Account + Capital Account.

Source: Ibid

It is essential to look into the share of expenditure on agriculture and allied activities to expenditure on economic services and total budget expenditure. These expenditures on revenue account were 11.60 and 30.20 per cent respectively during 2000-01. The proportion of former declined while the share of latter increased during the reference period. It may be noted that share of total budgetary expenditure and expenditure on economic services to agricultural sector declined by more than 2 per cent but focus of policy did not change significantly during this period (Table-2.2).

**Share of Agriculture and Allied Activities in NSDP of Uttarakhand**

The share of expenditure on important sectors in the NSDP is useful indicator to gauge relationship between overall growth in the region and growth in a particular sector. Table 2.3 gives an overview of agricultural sector expenditure as percentage of NSDP (Net State Domestic Product) for the period 2000-01 to 2006-07. Share of expenditure on agriculture and allied activities to the NSDP was 0.97 per cent during 2000-01 which became 3.17 per cent in 2006-07. No clear relationship emerged between the two indicators. The rate of increase in the two indicators was fluctuating. The positive as well as negative changes were noticed. It implies that expenditure on agriculture did not grow proportionately with rising income of the state in Uttarakhand.



The expenditure showed year-to-year variations. But, expenditure on agriculture and allied activities more than trebled in percentage terms during the study period. These results imply that share of agriculture in government expenditure increased overtime in Uttarakhand. But, it seems inadequate in view of the proportion of population dependent on agriculture in the state.

**Table 2.3**

**Share of Expenditure on Agriculture and Allied Activities in NSDP of Uttarakhand**

Year	NSDP (Rs. Crore)	% Change in NSDP	Per capita Income (Rs.)	% Change in Per capita Income	% of NSDP on Agriculture
2000-01	13045	-	15482	-	0.97
2001-02	14075	7.9	16408	6.0	2.44
2002-03	16408	16.6	18819	14.7	2.25
2003-04	18193	10.9	20519	9.0	2.99
2004-05	19915	9.5	22093	7.7	2.69
2005-06	22520	13.1	24585	11.3	3.17

Source: Economic Survey, .2007-08

An enquiry into the relationship between revenue expenditure on agriculture and allied activities and per capita income of the state was also found weak. The per capita income was rising all through but the rate of increase varied from year-to-year. But, this is not found true for expenditure on agriculture. These results imply that two indicators did not coincide with each other. It is possible that a state with high per capita income may spend less on agriculture or vice versa. It is imperative for the state like Uttarakhand that a larger share of income is spent on agricultural sector to enhance the growth and income.

## **Section-2**

### **Pattern and Composition of Expenditure on Agriculture**

In the earlier section, we have focused our attention on the macro view of expenditure on agriculture and allied activities and briefly compared expenditure level in 2000-01 with that in the year 2006-07. We define agricultural sector expenditure as the total of expenditure on crop husbandry, soil and water conservation, animal husbandry, dairy development, fisheries, forestry and wild life, plantations, food storage and warehousing, agricultural research and education, agricultural finance institutions and cooperation. Now, we will analyse pattern and composition of revenue expenditure on various items of agriculture for the study period. Its break up is given in Table-2.4.

Uttrakhand spent between 8-41 per cent of agricultural expenditure on crop husbandry. In 2000-01, its share was 8.49 per cent. It reached to the highest level in 2003-04 (40.89%). Thus, proportion of agricultural expenditure on crop husbandry has indicated an upward trend. The share of expenditure on soil and water conservation in total agricultural expenditure ranged between 0.73 and 4.72 per cent during the reference period. It was higher than rest of the years in 2000-01. The proportion of expenditure on animal husbandry was between 6-7 per cent. It reached to the highest level in the year 2005-06.

Dairy and fisheries development are crucial for the survival of small and marginal farmers with extremely tiny land holdings in the hilly regions. Unfortunately share of these sectors in agricultural expenditure was minuscule through out the study period. The expenditure on forestry and wild life increased 2000-01 onwards and reached to the highest level of 46.13 per cent in 2006-07.

A special priority should be accorded to agricultural research and education in the recently formed state of Uttrakhand where area specific improved varieties are an urgent need to enhance productivity of crops grown in the region but its share has shown a declining trend from the peak level of 47.16 per cent in 2000-01 to 6.27 per cent in the year 2002-03. The percentage of expenditure on cooperation showed an upward movement. It remained almost constant upto 2002-03 and then started rising.

**Table 2.4****Item-wise Share of Expenditure on Agriculture and Allied Activities in Uttarakhand**

Item	(Rs. Crore)						
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Crop Husbandry	9 (8.49)	66 (19.58)	142 (38.69)	184 (40.89)	139 (30.96)	164 (28.32)	182 (26.57)
Soil and Water Conservation	5 (4.72)	14 (4.15)	4 (1.09)	2 (0.44)	6 (1.34)	7 (1.21)	5 (0.73)
Animal Husbandry	7 (6.60)	22 (6.53)	22 (5.99)	29 (6.44)	31 (6.90)	42 (7.25)	47 (6.86)
Dairy Development	0 (0.0)	8 (2.37)	7 (1.91)	8 (1.78)	8 (1.78)	10 (1.73)	10 (1.46)
Fisheries	0 (0.0)	2 (0.59)	1 (0.27)	1 (0.22)	3 (0.67)	4 (0.69)	4 (0.58)
Forestry and Wild Life	27 (25.48)	166 (49.28)	141 (38.42)	148 (32.89)	179 (39.87)	255 (44.06)	318 (46.43)
Plantations	-	-	-	-	-	-	-
Food Storage and Warehousing	3 (2.83)	8 (2.37)	8 (2.18)	9 (2.00)	10 (2.23)	12 (2.07)	13 (1.90)
Agri. Research And Education	50 (47.16)	35 (10.39)	23 (6.27)	46 (10.23)	64 (14.25)	57 (9.84)	84 (12.26)
Agricultural Finance Institutions	-	-	-	-	-	-	-
Cooperation	2 (1.89)	5 (1.48)	7 (1.91)	10 (2.22)	9 (2.00)	28 (4.83)	22 (3.21)
Others	3 (2.83)	11 (3.26)	12 (3.07)	13 (2.89)	0 (0.0)	0 (0.0)	0 (0.0)
<b>Total</b>	<b>106</b> <b>(100.00)</b>	<b>337</b> <b>(100.00)</b>	<b>367</b> <b>(100.00)</b>	<b>450</b> <b>(100.00)</b>	<b>449</b> <b>(100.00)</b>	<b>579</b> <b>(100.00)</b>	<b>685</b> <b>(100.00)</b>

Note: Figures in brackets show percentage

Source: Public Finance, CMIE, 2007

Next, we take up item-wise per hectare expenditure on agriculture and allied activities in Uttarakhand (Table-2.5). It indicates that total expenditure per hectare of GCA increased from Rs. 864 in 2000-01 to Rs. 5419 in 2006-07. It is almost six fold increase. A look at the item wise break up indicates that agricultural research and extension received the highest priority in per hectare terms during 2000-01.

However, forestry and wild life followed by crop husbandry became prominent during 2006-07.

After looking into composition of expenditure on agriculture and allied activities in Uttarakhand, it would be desirable to examine growth in expenditure on each component during the study period (Table-2.6). The highest growth of 65.06 per cent was noticed in expenditure on crop husbandry. In view of the specific requirements of the state, special attention was paid to the forestry and wild life and expenditure on this item rose by 50.84 per cent during this period. The other important components indicating higher-rise in expenditure were cooperation, animal husbandry, food storage and ware housing. It is strange that agricultural finance institutions have not received any funds and virtually nothing was spent on this head.

### **Section-3**

#### **Plan Expenditure**

Attaining regional balance in economic development has been one of the important objectives of the Five Year Plans in India. Therefore, a significant proportion of the total expenditure of the Central Government is incurred as plan outlays/expenditures. Thus, plan expenditure is the annual fund allocated by the Central Government to the state governments for development schemes outlined in the on-going Five Year Plan, while the expenditure incurred on maintenance of the projects already created is accounted under the non-plan expenditure. The devolution of resources from the centre to the states is designed to bridge regional inequality in services and developmental activity. Yet, according to a recent study, (Saksena, 2005) no significant development has been made in terms of per capita and state income. On the contrary, fresh imbalances seem to be cropping up. In such circumstances, it is essential to study the pattern of fund allocation under Five Year plans to each of the state. We have analysed plan outlay to Uttarakhand for the Tenth Five Year Plan (2002 to 2007).

With the active intervention of the Central Government in the economic development of the states, plan outlay has become a major instrument of policy. It is therefore, necessary to gauge the pattern of plan outlay for Uttarakhand.

**Table-2.5**  
**Itemwise Per Hectare Expenditure on Agriculture and Allied Activities**  
**in Uttrakhand**

Item	(Rs)						
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Crop Husbandry	73	541	1171	1505	1125	1310	1439
Soil and Water Conservation	41	115	33	16	49	56	40
Animal Husbandry	57	180	182	237	251	335	372
Dairy Development	0	66	58	65	65	80	79
Fisheries	0	16	8	8	25	32	32
Forestry and Wild Life	220	1360	1163	1211	1449	2038	2515
Plantation	-	-	-	-	-	-	-
Food Storage and Warehousing	25	66	66	74	81	96	103
Agricultural Research and Education	407	287	189	376	518	455	665
Agricultural Finance Institute	-	-	-	-	-	-	-
Cooperation	16	41	58	82	73	223	174
Total*	864	2760	3028	3682	3636	4625	5419

\* Total includes other items

GCA from Directorate of Agriculture, Uttrakhand

Source: Ibid

**Table-2.6**  
**Component wise Growth in Expenditure on Agriculture in Uttrakhand**

Items	(Rs crore.)								
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	C.G.R	
								2001-07	2002-07
Crop husbandry	9	66	142	184	139	164	182	65.06	22.49
Soil & Water Conservation	5	14	4	2	6	7	5	0.00	-18.61
Animal Husbandry	7	22	22	29	31	42	47	37.35	16.40
Dairy Development	0	8	7	8	8	10	10	-	4.56
Fisheries	0	2	1	1	3	4	4	-	14.87
Forestry & Wild life	27	166	141	148	179	255	318	50.84	13.88
Plantation	-	-	-	-	-	-	-	-	-
Food Storage & Warehousing	3	8	8	9	10	12	13	27.68	10.20
Agricultural Research & Education	50	35	23	46	64	57	84	9.03	19.14
Agricultural Finance Institutions	-	-	-	-	-	-	-	-	-
Cooperation	2	5	7	10	9	28	22	49.13	34.49
Others	3	11	12	13	0	0	0	-100.00	-100.00
Total	106	337	367	450	449	579	685	36.48	15.24

Source: Ibid

Table-2.7 presents item wise Plan outlay for Uttarakhand. Clearly, outlay on soil and water conservation (37.56 per cent) is predominant, probably in conformity with the needs of the newly formed state. Centre has spent a higher proportion on these items when compared to crop husbandry. Forestry and wild life followed by crop husbandry was the second priority of the government because more than 20 per cent of the outlay was incurred on these items. The year-to-year variations in plan outlay on different items are quite significant. The highest percentage of approved plan outlay was spent on cooperation in the year 2004-05. A further analysis of expenditure on agriculture makes clear that a large part of the variation is due to change in the focus of policy.

The expenditure on dairy development and animal husbandry are the next items in the plan outlay of Uttarakhand. The expenditure on these items was 3.28 and 2.55 per cent of the projected Plan outlay in 2002-07.

The proportion of plan outlay spent on agricultural research and education was 4.04 per cent. It seems lower in view of the needs of the state. It was found lower in comparison to other important items.

To conclude, soil and water conservation, forestry and wild life and crop husbandry were the most important items of expenditure in the Plan outlay of Uttarakhand.

**Table 2.7**

**Plan Expenditure on Agriculture and Allied Activities in Uttarakhand**

(Rs. Lakh)

Item	2002-03		2003-04		2004-05		2005-06	2006-07	10 <sup>th</sup> Plan 2002-07	% Share in 10 <sup>th</sup> Plan
	Actual Expenditure	% of Approved Exp.	Act. Exp.	% of Approved Exp.	Actual Expenditure	% of Approved Exp.	Approved Outlay	Approved Outlay	Projected Outlay	
Crop Husbandry	4992.85	104.56	0.00	0.00	3951.26	224.17	1798.04	2238.00	14483.00	20.84
Horticulture	1420.76	-	1699.55	-	1795.34	106.30	1926.23	2470.00		
Soil and Water Conservation (including control of shifting cultivation)	4293.00	82.38	5188.48	109.88	3165.00	-	3317.00	3970.00	26099.00	37.56
Animal Husbandry	307.27	73.98	435.82	143.36	428.81	113.14	993.99	2757.00	1771.00	2.55
Dairy Development	1099.69	176.52	1161.96	151.49	1114.35	150.61	804.05	865.00	2281.00	3.28
Fisheries	46.49	53.44	57.00	65.52	222.13	93.64	153.33	580.00	367.00	0.52
Forestry & wildlife	9078.95	144.71	6238.34	102.22	7818.40	158.97	13984.48	24943.00	20693.00	29.78
Plantations	0.00	0.00	0.00	0.00		-	0.00	0.00	0.00	0
Food, Storage & Warehousing	0.00	0.00	0.00	0.00		-	0.00	0.00	0.00	0
Agriculture Research & Education	667.00	100.00	0.00	0.00	2492.22	363.03	1011.00	3159.00	2808.00	4.04
Agriculture Finance Institutions	0.00	0.00	0.00	0.00		-	0.00	0.00	0.00	0
Cooperation	781.30	301.67	1503.05	580.33	1930.84	781.14	285.00	1282.00	990.00	1.42
<b>Other Agricultural Programmes</b>						-				
a) Agriculture Marketing	0.00	0.00	0.00	0.00		-	0.00	0.00	0.00	0
b) Others	0.00	0.00	6707.05	-			0.00	445.00	0.00	0
<b>Total</b>	<b>22687.31</b>	<b>123.90</b>	<b>22991.25</b>	<b>121.74</b>	<b>22918.35</b>	<b>153.41</b>	<b>24276.12</b>	<b>42709.00</b>	<b>69492.00</b>	<b>100.00</b>

Source: Directorate of Agriculture, Uttarakhand

## Chapter-3

### Schemes for Agricultural Development in Uttarakhand

#### Introduction

Uttarakhand is one of the food deficient states of India. A study by Agricultural Department, Government of Uttarakhand has pointed out that state could not produce required quantity of pulses, oilseeds and millets. As a result, state has been depending to a large extent on supply from outside the region. This situation has emerged due to inadequate cultivated area and low productivity of these crops. Thus, raising production of food crops is the most important challenge for the government of Uttarakhand. The agricultural production can be increased by expanding cultivated area, cropping intensity, adoption of high yielding/improved variety seeds and availability of better post harvest technology.

The Central and state governments have initiated several schemes to accelerate agricultural development in Uttarakhand since its formation in the year 2000. These schemes and programmes are helping farmers in enhancing productivity of various crops. This chapter presents an overview of these schemes in Uttarakhand. It may be mentioned that information on expenditure incurred on these schemes is available but data on physical and financial targets and their achievements are partially available.

#### State Sponsored Schemes:

The state government of Uttarakhand has been constantly making efforts to accelerate growth of agricultural sector by assisting farmers through various schemes. The necessary initiatives have been taken to identify the problems and constraints and accordingly schemes have been formulated and implemented. These schemes relate to soil and water conservation, seed production programmes, transfer of technology, distribution of water pumps and sprinkler sets, water harvesting programmes extension and training. Table-3.1 provides information about the allocation of outlay on important schemes during the Tenth Plan period (2002-07).

The highest priority has been given to soil and water conservation and an amount of Rs.2245 lakh (49.96 per cent) was allocated for this purpose during the Tenth Five Year Plan. Next was transfer of technology programme with Rs.613 lakh allotment. The basic objective of this scheme has been to raise productivity levels by adopting improved seeds and associated improved farm practices. In addition, Rs.363



lakh were spent on seed production programme/seed village schemes. The components of plant protection/bio-pesticides/micro nutrients received an allocation of Rs.350 lakh (7.32 per cent).

**Table-3.1**

**Total Outlay for State Sector Schemes in Tenth Five Year Plan (2002-07) in Uttarakhand**  
(Rs. lakh)

<b>Name</b>	<b>Total Outlay</b>	<b>Continuing Schemes</b>	<b>New Schemes</b>
Soil & Water Conservation	2245.00 (46.96)	2245.00 (84.34)	-
Direction & Administration	223.80 (4.68)	223.80 (8.38)	-
Seed Production Programme/Seed Village Scheme	363.00 (7.59)		363.00 (17.13)
Plant Protection/Bio Pesticides/micro Nutrients	350.00 (7.32)		350.00 (16.52)
Promotion of Bio-fertilizers/Micro Nutrients	40.00 (0.84)	40.00 (1.50)	-
Transfer of Technology Programme	612.67 (12.82)		612.67 (28.92)
Strengthening of Seed Stores/Agricultural Farms & Training Centre	165.00 (3.45)		165.00 (7.79)
Establishment of Labs	83.00 (1.74)		83.00 (3.92)
Research Programme for Package of Practices of Hill Crops	200.00 (4.18)		200.00 (9.44)
Farmers Information and Advisory Centres at Block Level	200.00 (4.18)		200.00 (9.43)
Uttanchal Organic Commodity Board	25.00 (0.52)		25.00 (1.18)
Distribution of Water Pumps, Sprinkler Sets, etc.	70.00 (14.46)		70.00 (3.30)
Building Construction	5.00 (0.10)	5.00 (0.19)	-
Establishment of Poly House/Mechanization	33.00 (0.69)	33.00 (1.24)	-
Support to Women Farmers	12.00 (0.25)	12.00 (0.45)	-
Other Activities	76.00 (1.59)	76.00 (2.86)	-
Extension & Training	27.06 (0.57)	27.06 (1.03)	-
Water Harvesting Programme (new)	50.00 (1.06)	-	50.00 (2.36)
<b>Total</b>	<b>4780.53</b> <b>(100.00)</b>	<b>2661.86</b> <b>(100.00)</b>	<b>2118.67</b> <b>(100.00)</b>

Source: Annual Plan (2007-08), Government of Uttarakhand, State Planning Commission, 2007

A substantial amount was incurred on strengthening of seed stores/agriculture farms and training centres. The research programme for package of practices of hill crops is being implemented in the entire state and an expenditure of Rs.200 lakh was incurred for this purpose. Realizing the needs of the state, programmes related to water harvesting, establishment of poly houses and labs have been also operational during the Tenth Five Year Plan.

### **Centrally Sponsored Schemes:**

In addition to schemes run by the state Government, Central Government has been providing assistance for several programmes for boosting the agricultural development of Uttarakhand (Table-3.2). Macro management is a centrally sponsored scheme being implemented in the whole state. Government of India and the state Government share the expenditure incurred under the scheme in the ratio of 90:10. Main objective of the scheme is to increase the growth of agriculture in Uttarakhand.

Agriculture extension plays a crucial role in dissemination of technological packages to the farmers. The desired results in adoption of recommended technologies by farmers however could not be achieved and a significant gap remains between generated technology and utilized/adopted technology. Moreover, changing agricultural scenario has necessitated capacity building of the extension workers, their exposure in latest tools of information technology and mass media particularly in the light of gradual liberalization of the Indian economy and encouraging farmers to adopt latest developments on their fields. Given the physiological and other constraints in Uttarakhand, extension need to focus on eco-friendly, sustainable and location specific technologies. Diversification, organic farming and efficient use of inputs should be given priority.

Agricultural production in Uttarakhand largely depends on availability of water from rainfall that creates wide fluctuations in the crop output. In order to support farmers, crop insurance scheme is being implemented by the Central government on 50:50 sharing basis. In addition, timely reporting scheme and improvement of agricultural statistics have been also operational in the state between 2002-07. Efforts are being made to use information technology for communication to the farmers on inputs and prices.

Apart from the above-mentioned schemes, Central government has been sponsoring schemes for the development of maize, pulses, oilseeds, medicinal and aromatic plants in Uttarakhand.

**Table-3.2****Total Outlay for Centrally Sponsored Schemes in Tenth Five Year Plan (2002-07)  
in Uttarakhand**

(Rs. lakh)

<b>Name</b>	<b>Total Outlay</b>	<b>Continuing Schemes</b>	<b>New Schemes</b>
Macro management (90:10%)	1093.40 (67.83)	1093.40 (75.82)	-
Crop Insurance Scheme (50:50%)	170.00 (10.55)	-	170.00
Timely Reporting Scheme	29.00 (1.80)	29.00 (2.01)	-
Improvement of Agriculture Statistics (50:50%)	17.30 (1.07)	17.30 (1.20)	-
Support to State Extension Programme for Extension Reforms	29.44 (1.83)	29.44 (2.04)	-
Feed Resources & Nutrient Utilization	2.49 (0.15)	2.49 (0.17)	-
Maize Development	7.08 (0.44)	7.08 (0.49)	-
Pulses Development	10.92 (0.68)	10.92 (0.79)	-
Oil Seeds Development	15.00 (0.93)	15.00 (1.04)	-
Medicinal & Aromatic Plants	2.45 (0.15)	2.45 (0.17)	-
Agriculture Credit to Farmers	200.00 (12.41)	200.00 (13.87)	-
National Oil Seed/Vegetable board sponsored Scheme (100%)	35.00 (2.16)	35.00 (2.43)	-
<b>Total</b>	<b>1612.08</b> (100.00)	<b>1442.08</b> (100.00)	<b>170</b>

Source: Ibid

The main objectives of these programmes have been to expand area and raise yield levels. The funds allocated for this purpose were spent on seed, fertilizer, implements and extension related components. The special priority has been given to the production of foundation seeds. Block demonstrations, Integrated Pest

Management, distribution of seed minikits, gypsum, rhyzobium and bio fertilizers were additional components. To make the farming community aware about the new crop production and plant protection techniques, training of farmers was organized. In addition, sprinkler sets are being provided to farmers on subsidy @ 50 per cent limited to Rs.7500 per hectare. Under the scheme, plant protection equipment (spray pumps) is provided to the farmers on 50 per cent subsidy limited to Rs. 800 for manually operated and Rs.2000 for power operated equipment. Plant protection chemicals are also provided to the farmers on 50 per cent subsidy limited to Rs.500 per hectare for the control of pests and diseases.

### **Schemes for Horticultural Development:**

During recent years, horticulture has emerged as a popular land use in the entire upland and foothill region of Uttrakhand due to the success of a variety of temperate fruits in the mountainous part and some tropical species in the narrow foothills and the Dun valley areas. This is corroborated by a substantial proportion of land under this category in all the Himalayan districts-except the three north-western districts i.e. Uttarkashi (1 percent), Chamoli (0.4 percent) and Tehri (0.7 percent) and the two southern most and extensively cultivated districts of Haridwar (0.10 percent) and Udham Singh Nagar (0.4 percent). Besides these, many districts in the Lesser Himalayan zone of Uttrakhand reveal significant proportion of land under orchards-the highest being in district Champawat (8.6 percent), followed by Pauri (7.9 percent), Bageshwar (7.3 percent), Pithorgarh (6.8 percent), Almora (6.3 percent) and Rudraprayag (6.2 percent). Towards the south, this area is not very high but success of some tropical fruits in the narrow foothill zone extending from Ramnagar to Dehradun is likely to create rapid changes in the land use in the near future. Presently, district Naini Tal and Dehradun show 3.9 percent and 1 per cent of their area under orchards.

Fruits and vegetables make a valuable contribution to the economy of the state, although these are grown on a limited area. For Uttrakhand, information on area and production is available only for apple, citrus and litchi among fruits and for onion, green peas and potato for fresh vegetables. Total area under fruits is estimated at 187 thousand hectares with an estimated output of around 515 thousand tonnes. The share of the state comes to around 5 per cent in terms of area, but only 1.3 per cent of the all India output. Area under vegetables in the state is over 65 thousand hectares while production is about 363 thousand tonnes.

Vegetables account for one per cent of the total area in the country, but only 0.5 per cent of total production. These results imply that productivity of these crops is relatively low in Uttarakhand. Table-3.3 shows area, production and productivity of selected horticultural crops in Uttarakhand.

Like food grains, yield rates of the above mentioned horticultural crops in Uttarakhand are generally lower than the average for the country and substantially below achieved by the progressive states. For instance, yield per hectare (3.2 tonnes) of apple in the state is almost 50 per cent of the all India level and less than one-third that of Jammu and Kashmir (11 tonnes). For citrus fruits, productivity compares unfavourably at less than four tonnes against 14 tonnes achieved in Maharashtra. For litchis, the state yield is less than 2 tonnes against 12 tonnes reported in Bihar. For green peas, the state average productivity of less than 5 tonnes compares poorly with 8.5 tonnes achieved in Haryana.

**Table-3.3**

**Area, Production and Productivity of Horticultural Crops in Uttarakhand**

Crop	Area (000 hectare)		Production (000 tonne)		Yield (tonne/ha)	
	Uttarakhand	All India	Uttarakhand	All India	Uttarakhand	All India
<b>Fruits</b>	-	-	-	-	-	-
Total	186.7	3681.7	515.3	40,050.9	2.8	10.8
Apple	55.6	227.6	176.4	1,320.6	3.2	6.1
Citrus	23.4	482.7	86.2	4,456.2	3.8	8.0
Litchi	8.8	13.3	16.0	454.7	1.8	7.8
<b>Vegetables</b>						
Total	65.4	5,629.3	362.6	72,831.6	5.5	12.9
Onions	1.35	360.0	16.6	3,200.0	12.3	8.9
Potato	14.4	1,210.0	320.6	17,650.0	22.3	19.3
Green peas	13.6	272.5	67.1	2,421.7	4.9	8.9

\* Total includes other crops

Note: Data for Uttar Pradesh (Hills) are assumed to pertain to Uttarakhand.

Source: J.P. Negi and Lily Mitra: Indian Horticulture Database: National Horticulture Board, 1999.

Uttarakhand has been considered as a treasure house of horticultural crops. The Government has introduced several schemes to promote these crops in the state in order to meet the growing demand in the country and abroad. The policy makers have been focusing on promotion of horticultural crops as a means of

increasing income of farmers and for crop diversification. The following important schemes are currently in operation for horticultural development in Uttarakhand.

**Table-3.4**

**Important Schemes for Horticultural Development in Uttarakhand**

(Rs. lakh)

<b>Name</b>	<b>Total Outlay</b>	<b>Continuing Schemes</b>	<b>New Schemes</b>
Integrated development of fruits in selected belts	5.00 (0.16)	5.00 (0.16)*	-
Bee keeping	127.00 (4.05)	127.00 (4.05)	-
Vegetable & Spices development	22.00 (0.70)	22.00 (0.70)	-
Ornamental horticulture development	5.00 (0.16)	5.00 (0.16)	-
Establishment Expenditure	42.02 (1.34)	42.02 (1.34)	-
Subsidy on various inputs for horticulture development	20.00 (0.63)	20.00 (0.63)	-
Human Resource Development/training for women	43.00 (1.37)	43.00 (1.37)	-
Dehydration of fruits & vegetables	153.44 (4.89)	153.44 (4.89)	-
Production & dissemination of Quality planting materials	590.15 (18.82)	590.15 (18.82)	-
Development of commercial horticulture through production and post harvest management	360.00 (11.48)	360.00 (11.48)	-
Strengthening of 27 Govt. Gardens	1179.00 (37.60)	1179.00 (37.60)	-
Development of Olive, Almond, Apricot & lemon varieties	160.00 (5.10)	160.00 (5.10)	-
Mushroom development programme	50.00 (1.59)	50.00 (1.59)	-
Off-season vegetables programme	163.00 (5.20)	163.00 (5.20)	-
Agricultural Export Development Unit	93.00 (2.97)	93.00 (2.97)	-
Post harvest management	123.00 (3.94)	123.00 (3.94)	-
<b>Total</b>	<b>3135.61</b> <b>(100.00)</b>	<b>3135.61</b> <b>(100.00)</b>	

\* Brackets show percentage

**Source: Annual Plan (2007-08), Government of Uttarakhand, State Planning Commission, 2007**

The information on allocation of funds to important schemes for horticultural development in Uttarakhand suggests (Table-3.4) that strengthening of 27 government gardens received the maximum share (37.60 percent) during the Tenth Plan period. The scheme for production and dissemination of quality planting materials was allotted a proportion of 18.82 per cent. Around 11 per cent of outlay was devoted to development of commercial horticulture through production and post harvest management. Off-season vegetables, olive, almond, apricot and lemon are suitable crops for Uttarakhand and almost 5 per cent of total expenditure was devoted for their development. For commercialization, dehydration of fruits & vegetables is essential and therefore, 4.89 per cent of total outlay was allotted for this purpose. Since post harvest management is crucial for perishable fruits and vegetables, this programme received 3.94 per cent of allotted funds. There are several other schemes in operation for horticulture development and each one received funds ranging between 0.16 and 2.97 per cent of total expenditure on these schemes. These results imply that government has been making efforts for the overall development of horticulture crops in Uttarakhand. The scope of these schemes is quite wide and almost all components are covered in the development strategy for horticulture.

The impact of above schemes is less visible on the horticultural economy of the state. It could be due to inadequate infrastructure. Systematic and realistic planning for sustainable development of these crops requires detailed information on economics of cultivation of these crops vis-à-vis traditional crops to establish advantages. Unfortunately, this information is very scant. A recent field study (Malik, 2007) presents evidence about the economics of medicinal and aromatic plants vis-à-vis traditional crops. The plants selected are Jumbo Faran and Lemon grass. It is essential to state that these plants occupy land through out the year and hence combined economics of kharif and rabi season crops is taken into account.

The per hectare per year economics in terms of gross returns, cost and net returns of Jumbo Faran, Lemon grass and competing crops given in Table-3.5 suggests that cost of cultivation and gross returns for Jumbo Faran are significantly higher than the combined cost and value of out put of rajma and wheat. The net returns of both are almost at the same level. In case of aromatic plants, cost of cultivation and gross value of output of lemon grass are less than the combined corresponding values for paddy and wheat but the net returns of lemon grass are higher than that of paddy and wheat by almost 34 per cent. (Malik, 2007)

Table-3.5

**Economics of Medicinal and Aromatic Plants vis-à-vis Competing Crops  
in Uttrakhand**

(Rs./ha.)

Crop	Gross Returns	Cost	Net Returns
<b>I. Medicinal Plant</b>			
Jumbo Faran	109485	33606	75879
<b>Competing Crops</b>			
Rajma (Kharif)	83211	13637	69574
Wheat (Rabi)	12109	6367	5742
Rajma+Wheat (Annual)	95320	20004	75316
<b>Medicinal (Rajma+Wheat)</b>	<b>14165</b>	<b>13600</b>	<b>563</b>
<b>II. Aromatic Plant</b>			
Lemon Grass	31838	10240	22477
<b>Competing Crops</b>			
Paddy (Kharif)	16044	8901	6529
Wheat (Rabi)	19768	10625	9143
Paddy+Wheat (Annual)	35812	19526	15972
<b>Aromatic (Paddy+Wheat)</b>	<b>(-) 3974</b>	<b>(-) 9286</b>	<b>6505</b>

Source: Malik, 2007

Table-3.6

**Physical Targets and Achievements of Crop specific Programmes  
in Uttrakhand (2002-07)**

Name	Target	Achievement	% Achieved
<b>1. Food Production ('000 MT)</b>			
Rice	600.00	571.00	95.17
Wheat	780.00	794.00	101.79
Maize	60.00	44.00	73.33
Pulses	30.00	28.00	93.33
Other Foodgrains	330.00	314.00	95.15
<b>Total Foodgrains</b>	<b>1800.00</b>	<b>1751.00</b>	<b>97.28</b>
<b>2. Oilseed Production ('000MT)</b>			
Til	0.60	1.00	166.67
Mustard	11.40	11.00	96.49
Other Oilseeds	0.50	3.00	600.00
Soyabean	27.80	23.00	82.73
<b>Total Oilseeds</b>	<b>40.30</b>	<b>38.00</b>	<b>94.29</b>

Source: Annual Plan (2007-08), Government of Uttrakhand, State Planning Commission, 2007



## Achievements of Targets

Table-3.6 provides the outcomes of physical targets of crop specific schemes. Wheat has shown the complete achievement of set targets. The results for rice, pulses and other food grains also appeared to be quite impressive. The achievement of set targets for total food grains was commendable. The overall achievements of set targets for oilseeds production was worth appreciating but soyabean was lagging behind til and mustard.

Seed is the most crucial component for increasing productivity of the crops grown in any region. Table 3.7 provides information on achievement of set targets for certified seed production and distribution for cereals, pulses and oilseeds in Uttarakhand. Around 96 per cent of production targets were achieved. The success of cereals was found better than pulses and oilseeds. It is amazing to note that distribution targets were overwhelmingly achieved. In each case, achievements surpassed 100 per cent.

**Table-3.7**

### **Physical Targets and Achievements of Seed Specific Programmes in Uttarakhand**

<b>Name</b>	<b>Target</b>	<b>Achievement</b>	<b>% Achieved</b>
<b>A- Total Certified Seed Production (lakh qtl)</b>	<b>26.25</b>	<b>25.30</b>	<b>96.38</b>
Cereals	26.00	25.08	96.46
Pulses	0.05	0.04	80.00
Oilseeds	0.20	0.18	90.00
<b>B – Seed Distribution (MT)</b>	<b>5445</b>	<b>8352</b>	<b>153.39</b>
Cereals	5285	8099	153.25
Pulses	10	38	380.00
Oilseeds	150	215	143.33

Source: Ibid

**Table-3.8****Targets and Achievements of Schemes for Horticultural Development in Uttarakhand**

<b>Name</b>	<b>Target</b>	<b>Achievement</b>	<b>% Achieved</b>
Commercial Horticulture Development through Production and Post Harvest Management (No)	2135	2120	99.29
Demonstration (Vegetable) (No)	60000	56347	93.91
Demonstration (spices) (No)	2027	1212	59.79
Training to farmers (off season, spices) (No)	2020	2496	123.56
Seminar and Technology Transfer (No)	2	2	100.00
Establishment of New Horticulture mobile Teams (No)	97	97	100.00
Distribution of bee colonies (No)	5032	3799	75.50
Distribution of corrugated boxes (L No)	366700	351105	95.75
Fruits plant production including new varieties (L No)	60.62	39.82	65.69
Vegetable seed production (Qtl.)	869.99	919	105.63
Potato seed production (Qtl.)	6708.5	8012	119.43
Procurement of apple, malta, pear, litchi etc.	20	20	100.00
Fruits and vegetable processing (Qtl.)	233028	13876	5.95
Training in fruit & vegetable Processing (No.)	72877	53100	72.86
Fruit belt development in selected areas (ha)	4224	5849	138.52

Source: Ibid

Table-3.8 demonstrates targets and achievements of important schemes operational for the development of horticultural crops in Uttarakhand. It is essential to mention that information on this aspect is not available for all the schemes enumerated in Table-3.4. Therefore, we are constrained to analyse the results for the mentioned schemes. It is heartening to note that schemes for fruits belt development in selected areas, training to farmers, seminar and technology transfer, establishment of new horticultural mobile teams, procurement of apple, malta, pear, litchi and vegetable seed production achieved their set targets fully. The fulfillment of targets in four cases was more than 100 per cent. The scheme for fruits and vegetable processing was an exception because only 5.95 per cent of set target was achieved. The results of achievements of set targets of horticulture development schemes in

Uttarakhand have been extremely encouraging. It seems that continuation of such outcomes would be able to provide great success in development of this sector. But, a proper attention should be given to yield aspect, which ensures economic returns to the farmers and determines their response to allocate cultivated area in the long run.

The distribution of chemical fertilizers and micronutrients is crucial for obtaining higher productivity through the adoption of technology. Table-3.9 indicates that targets of nitrogenic, phosphatic and potassic fertilizers were fully achieved. But, coverage of area under micronutrients has indicated poor performance. The same was true for green manuring and area covered under bio-fertilizers. In this case, only 22 per cent of set target was fulfilled. This indicates poor management of these components by the state government.

**Table-3.9**  
**Physical Targets and Achievements of Fertilizer Specific Programmes in Uttarakhand**

<b>Name</b>	<b>Target</b>	<b>Achievement</b>	<b>% Achieved</b>
<b>a. Chemical Fertilizers (NPK) ('000 MT)</b>	<b>89.67</b>	<b>120.68</b>	<b>134.58</b>
Nitrogenic	63.58	88.32	139.09
Phosphatic	17.85	23.69	132.71
Potassic	8.24	8.67	105.22
<b>b. Micro Nutrients ('000 ha)</b>	<b>5.00</b>	<b>1.50</b>	<b>30.00</b>
<b>c. Green Manuring (material) ('000 qtl)</b>	<b>5.00</b>	<b>2.40</b>	<b>48.00</b>
<b>2. Area Coverage under Bio-fertilizer (ha)</b>	<b>4960</b>	<b>1096</b>	<b>22.10</b>

Source: Ibid

Table 3.10 and 3.11 provide results about the achievements of set targets for plant protection measures and soil and conservation measures. The target of pesticides distribution was partially fulfilled (57.36 per cent). It is worth appreciating that 92.15 per cent of gross cropped area has been covered by the plant protection schemes in Uttarakhand.

Out of total cultivated area in Uttarakhand, about 50 per cent area is severely affected with the problems of soil erosion. The area treated through soil and water conservation measures was significant (75.56 per cent) under watershed programmes. However, state sector schemes revealed poor performance and merely 15.67 per cent area was covered. The measures included construction of check dams, water harvesting structures and diversion bunds, etc. The vegetative

cover to denuded soil helps in shielding the soil cover from water erosion. Agro forestry is another measure. Besides, checking water erosion, it helps in catering the needs of fodder, fuel and wood of the local community. Water harvesting structures help in recharging the ground water table. The stored water helps in providing life saving irrigation to the crops in difficult times. These measures if properly implemented, could help in checking land degradation, soil erosion, and reduction in run off.

**Table-3.10**

**Physical Targets and Achievements of Schemes Related to Plant Protection Measures in Uttarakhand**

<b>Name</b>	<b>Target</b>	<b>Achievement</b>	<b>% Achieved</b>
Distribution of Pesticides (MT)	880.00	504.80	57.36
Distribution of Bio-pesticides (MT)	-	14.43	-
Area Coverage (Gross Area '000 ha.)	1237.00	1140.00	92.15

Source: Ibid

**Table-3.11**

**Physical Targets and Achievements of Area Treated through Soil and Water Conservation Measures in Uttarakhand**

<b>Name</b>	<b>Target</b>	<b>Achievement</b>	<b>% Achieved</b>
Area under Water Sheds ('000 ha.)	90	68	75.56
Under State Sector Schemes ('000 ha.)	134	21	15.67

Source: Ibid

## Chapter-4

### Nexus between State Intervention and Agricultural Development

#### Introduction:

This chapter aims to briefly review the nexus between budgetary expenditure and agricultural development in Uttarakhand. Realizing the constraints of the state, particularly hill regions, policy planners introduced a variety of measures in the form of schemes and programmes which were much wider and deeper than the ones operational before the statehood of Uttarakhand. The whole package of policy initiatives introduced in the early 21<sup>st</sup> century aimed at inducing dynamism in the agricultural sector, enhancing efficiency and growth, strengthening the economy to be more resilient to internal as well as external competition and improving the technology to enhance growth and development of the state.

Now we would discuss effects of government intervention on crucial aspects related to development.

#### Impact of Budgetary Expenditure on State Income and Poverty:

We have observed in the Chapter-3 that recent policy initiatives addressed several critical areas. The overall response of the Uttarakhand economy to the development process was very encouraging. The state produced good results in terms of economic growth during 2002-03 and 2005-06. The rate of economic growth surpassed 10 per cent in these years. However, economic growth was not observed sustainable and it fluctuated from year to year. For instance, NSDP growth which was 7.9 per cent in 2002-03 rose to 16.6 per cent in the very next year. During 2004-05 and 2005-06, rate of growth of the NSDP declined and it was estimated 10.09 and 9.5 per cent respectively. It however, rose to 13.1 per cent in 2005-06.

Notwithstanding the above results on economic growth of Uttarakhand, there were several disturbing aspects as well. The growth in foodgrains production has been far from the satisfactory. Added to this, sustaining a growth of 4 per cent per annum in agriculture has been an uphill task. Further more, it has not been possible to produce enough food for the existing population.

Moreover, there is hardly any evidence on the impact of budgetary expenditure on the crucial indicators of agricultural development. In fact, information on crucial indicators such as value of agricultural output per hectare or agricultural output per worker is not available. We have calculated these indicators for analyzing

the impact of financial allocation on the growth of agricultural sector in the state. Results show that value of agricultural output per hectare in Uttarakhand was Rs. 36949 per year and Rs. 3079 per month during 2000-01. These incomes rose to Rs. 42518 and Rs. 3543 respectively during 2004-05. The total increase was computed 14.28 percentage points between 2000-01 and 2004-05. It comes to only 3.57 percentage points per year. Similarly, value of agricultural output per worker was Rs. 24917 per year and Rs. 2076 per month during 2001. It rose to Rs. 26744 and Rs. 2229 respectively during 2005. An increase of 7.12 percentage points was calculated between 2001 and 2005. It translates into 1.78 percentage points per year. This growth appears to be extremely low in view of inflationary conditions in the country. In view of these results, it is urgent to gauge the shortcomings and drawbacks of the ongoing schemes and programmes. It is also a must to evolve a vision and to suggest reforms in the policy initiatives to improve agricultural development of the state.

Economic growth is primary objective of the government in Uttarakhand and the implicit assumption with this objective is that there is a multi co- linearity between growth, reduction in poverty and increase in employment. Moreover, it is assumed that the benefits of economic growth would automatically percolate down to rural population. The issue of debate therefore is whether growth has percolated or increased income in rural areas of the state. Around 36 per cent of the families in the state are below the poverty line (BPL). Most districts have even higher share of families in this category and Uttarkashi has the highest proportion of families below the poverty line. In general, hilly districts such as Chamoli, Tehri Garhwal and Bageshwar have shown larger share of BPL families. These are also districts with high share of rural population.

### **Agricultural Development:**

Most theories of economic development stress that an increasing proportion of addition to national income should be devoted to capital formation. Since, the marginal propensity to consume of rural households is higher, it is necessary to transfer a part of additions to national income. If these transferred resources are put to productive uses, the development process can be speeded up.

The amount of budgetary expenditure in a particular sector is bound to influence pattern and amount of production either directly or indirectly. In agricultural sector, farmers are the producers and their response to output gets affected by the

incentives and support provided by the government. The budgetary allocation to agricultural sector in Uttarakhand was devised to encourage and increase production of various crops grown by the farmers. Farmers in this state produce a variety of crops with inadequate irrigation facilities and traditional farm practices. So far, a substantial increase in productivity of major crops has not been visible. Unfortunately, production of rice, a major foodgrains crop in the state has declined from 622 thousand tones in 2000-01 to 533 thousand tones in 2004-05. Maize and ragi also faced the similar situation. As a result, production of total foodgrains has declined in the study period. This has been the outcome of decline in acreage or yield of some of the foodgrain crops.

Although, production of wheat and pulses has shown increase, it was not sufficient to cover losses of other crops. Thus, effect of budgetary allocation of resources in Uttarakhand on foodgrains production has not been expansionary. Soyabean and oilseeds have experienced commendable increase in production at the rate of 21.81 and 19.57 per cent per year because yield has risen at the rate of 10.30 and 6.02 per cent per annum during the reference period. Overall effect of government expenditure in Uttarakhand on agriculture has not been satisfactory. This does not mean that expenditure in agricultural sector should be reduced or kept at low level in future. Given these realities, it is urgent for the government to review the choice of expenditure. If agricultural sector is to get the utmost benefit from expenditure, a high sense of responsibility and efficiency must accompany every increase in the expenditure.

The inducement of dynamism in agriculture in Uttarakhand requires huge investment in irrigation and other infrastructural facilities. The allocation of budgetary resources should be enhanced in these areas because investment in such fields may not be commercially attractive in particularly hill region for private investors. Indirectly, budgetary expenditure by providing social and economic overheads induces farmers to invest and take the risk. Some examples of these overheads are infrastructural facilities; means of transport and communications, banking and insurance services, extension centres, research and development institutions in rural areas. These services provide congenial environment to the farmers. Government may encourage private initiative in these areas through soft loans, grants and subsidies.

Instability in the level of economic activities related to agriculture is well known due to dependence on natural factors such as rainfall, temperature, etc. These fluctuations affect supply of agricultural commodities and cause change in demand due to price effect. We have observed in Chapter-1 that production of major crops in Uttarakhand has exhibited wide year-to-year fluctuations. For avoiding these uncertainties, government should manipulate level of expenditure in productive activities related to agricultural sector in such a way so that fluctuations in output are minimized. However, potency of expenditure is determined by two factors (a) how well organized and interrelated is the economic system and second, what is the adjustment capacity of the sector. The first factor implies that agricultural sector should be responsive to budgetary expenditure measures. The second factor stipulates unutilized capacity or potential of the sector. These conditions limit the success of budgetary expenditure in controlling fluctuations in the production of agricultural output.

### **Farm Sector Distress:**

The political and economic thinking of the 20<sup>th</sup> century has stressed the establishment of welfare societies within democratic framework. Left to it self, the market mechanism may not produce that distribution of income, which provides basic amenities and minimum standard of living.

The crop farming in India has been experiencing diminishing returns and has caused farm distress. The National Farmers' Commission (NFC) has highlighted this phenomenon in India. According to the NFC, about 1.5 lakh farmers committed suicides in India upto 2006 in various states. The share of Maharashtra, Andhra Pradesh, Karnataka and Madhya Pradesh has been almost two third. Goa and Kerala have also reported substantial number of farmers' suicides. The causes cited behind these suicides have been crop failure, economic and social pressure. It is not the rich farmer but the small and marginal farmers and sometimes tenant cultivators who are victims and the number gets bigger if we take into account women farmers. They die most commonly by consuming pesticides and extreme conditions of stress and loss of economic assets drive them to this act. Thus, main reasons for farmers' economic distress is limited earnings from their very small sized holding.

The farm loan waiver announced in the Budget 2008-09 has received wide spread acclaim. The main question is will this provide the desired relief to the



farmers and resolve the current agrarian stress. Unless, India protects its domestic agriculture from cheap imports, rising costs and low capital formation, it is not possible. In fact, India needs a total revamp of agriculture.

The Gangetic plain region and eastern India have seen fewer farm suicides. States such as Uttar Pradesh, Uttranchal, Bihar, Jharkhand and Orissa have reported very few suicides of this kind. These states in many respects are different from the states with higher farmers' suicides. These are overwhelmingly food crop regions. They are not intensive input zones and their costs of cultivation are much lower. Use of chemicals is at much lower levels. Government support prices for food crops provide minimal stability. The status of water availability in these states is much superior.

We have observed that large majority of farmers, more than 75 per cent in Uttrakhand own extremely tiny land holdings, which provide low income for the sustenance of the family and create distress. Most of these families supplement their income by taking up non-farm employment. It is a hard reality that their income levels are low. In view of their poverty and poor income levels, it would be beneficial to provide them support to adopt improved technology to increase production and reduce farm distress. In addition, they should receive public services like free/subsidized medical, educational and transport facilities. These measures would add to their real income and would help in reducing the wide gap between the large and small/marginal farmers. The pattern of government intervention should be such that its effect on reducing economic inequalities is the strongest.

It is important that benefits intended for the poor farmers should preferably be given in kind rather than cash grants. Aid given in kind e.g. seeds, fertilizers, pesticides, medicines and books cannot be turned into cash and diverted for other purposes. However, quality of these services should be ensured and benefits should go to intended farmers. These measures would reduce farm distress and improve welfare of the farming community in Uttrakhand.

## **Chapter-5**

### **Summary and Conclusions**

This Chapter presents summary and conclusions of the present study. The main objective of this research has been to analyse growth in budgetary allocation to the agricultural sector in Uttarakhand. The specific objectives of the study are as under:

- (i) To analyse trends in budgetary allocation of resources to the agricultural sector as a whole and in the sub-sectors of agriculture.
- (ii) To analyse schemes under operation in Uttarakhand to accelerate the development of agricultural sector.
- (iii) To analyse the impact of these schemes on agricultural sector in the state.

The study on budgetary expenditure requires a wide range of information on relevant indicators. Uttarakhand is a young state formed in 2000 and therefore, available information is extremely limited. However, a serious attempt has been made to gather information from all secondary sources. The study is primarily based on data collected from Statistical Diary of Uttaranchal, Statistical Abstract of India, various Volumes on Agriculture and Finance published by the Centre for Monitoring Indian Economy (CMIE). These are supplemented with the information obtained from Directorate of Agriculture and Planning Department, Government of Uttarakhand, Uttarakhand.

### **Main Findings**

#### **I. Population, Literacy, Occupational Structure and Income**

Uttarakhand is included in the National Agro-climatic zone No.-9 and 14. The plains region of the state known as Tarai-Bhabar region comprises of Udham Singh Nagar, Haridwar and parts of Dehradun and Nainital districts. The hill region of the state consists of Uttarkashi, Tehri, Pauri, Chamoli, Rudraprayag, Almora, Bageshwar, Champawat, Pithoragarh and parts of Dehradun and Nainital districts.

The entire state is rugged mountainous terrain except Udham Singh Nagar, Haridwar, Doon Valley, Garhwal and Nainital districts. Administratively, it comprises of the divisions of Kumaon and Garhwal, which are further composed of thirteen districts. Kumaon division comprises districts of Almora, Nainital, Pithoragarh, Champawat, Bageshwar and Udham Singh Nagar while the Garhwal division consists of districts of Uttarkashi, Chamoli, Tehri, Pauri, Dehradun, Haridwar and Rudraprayag. The state has 95 development blocks and 48 tehsils. The Kumaon division covers an area of 21035 sq.kms. and inhabits by 35.64 lakh people

whereas the Garhwal division has an area of 32450 sq.kms. and a population of 49.16 lakh persons. Thus, Uttarakhand accounts for 1.61 per cent of the total geographical area and 0.82 per cent of the total population of the country.

The total population of Uttarakhand was 84.9 lakh persons in 2001. The sex ratio was 962 which is above the all India level. The density of population defined as number of persons per square kilometre was only 159 persons. It is due to large area under mountains, which is sparsely populated.

The literacy rate in Uttarakhand has been above the all India level. Around 72.08% of population was educated. Among males, 84.01% and females 60.26% were literate during 2001. Women are considered the backbone of the economy of Uttarakhand. Therefore, it is essential to provide substantial educational facilities to women in the region. They should be motivated for this purpose.

In Uttarakhand, 36.9 per cent of population was workers. Among males, this proportion was 46.4 per cent while it was 27.1 per cent among females. Surprisingly, work participation rate of population in the state is lower than the all India level. It could be attributed to relatively low work participation of male population. This figure is 46.4 per cent against 51.9 per cent for all India. On the other hand, work participation rate of females in Uttarakhand is above the national level. It could be due to the significant contribution of women in various economic activities, primarily in agricultural based activities.

Economic development of a region depends on proportion of working force engaged in primary, secondary and tertiary sectors. Agriculture is the main source of employment in Uttarakhand and around 58 per cent of workers earned their livelihood from this sector in 2001. Like all India, proportion of workers was the highest in agriculture followed by other workers and household industry workers.

The economy of Uttarakhand has recorded significant growth between 1999-00 and 2004-05. It has been contributed by primary, secondary and tertiary sectors. The sectoral analysis reveals that primary sector which comprises of agriculture; livestock, forestry, fishing and mining sectors contributed 38.16 per cent to the state income during 1999-2000. Its share declined to 25.99 per cent in 2004-05. The share of secondary sector, which covers manufacturing, construction, electricity, gas and water supply sectors had a share of 21.38 per cent in 1999-2000 and it rose to 29.24 per cent during 2004-05. The tertiary sector, which comprises of trade, transport, banking, public administration and other services contributed a share of 40.46 per cent during 1999-2000. Its proportion has risen by almost 4 percentage points

between 1999-2000 and 2004-05. The structural composition of state economy has witnessed significant change during the recent years.

Thus, composition of GSDP of Uttarakhand reveals that share of primary sector is continuously declining whereas shares of secondary as well as tertiary sectors are continuously rising. It implies that state economy is shifting from agriculture to manufacturing and service sectors, which is a sign of structural change in the economy of the state.

## **II. Agricultural Development in Uttarakhand**

Agricultural advancement is the most important challenge in Uttarakhand due to natural constraints. This is urgent since agriculture sector employs more than 55 per cent of workers and provides livelihood security to the major proportion of population in the rural areas

### **Land use Pattern**

Land use pattern of Uttarakhand indicates that forests occupy dominant proportion of land and cover around 61 percent of the reported area in the state. The net sown area formed only 13.58 per cent of the geographical area. Out of this area, 59.22 per cent was sown more than once during 2000-01. It is found low in comparison to agriculturally developed regions like Punjab and Haryana. Since, progress on this front in the state is low, a marginal increase was noticed in crop intensity between 2001-05. The percentage of net irrigated area to net sown area in Uttarakhand is around 44 per cent and it has been constant during the referred years. Thus, land use pattern does not show any perceptible change in Uttarakhand during the study period.

### **Crop Pattern**

An analysis of crop pattern in Uttarakhand reveals that wheat (30.91%) followed by rice (25.51%) and ragi (12.32%) are the principal crops of the state. In addition, sugarcane and small millets are also grown on sizeable percentage of gross cropped area. The fact remains that crop pattern in Uttarakhand is dominated by food grains, which occupied 82.24% of GCA in 2000-01. The share of food grains dropped to 77.20% in 2006-07. The proportion of area under wheat remained almost the same while rice has indicated a decline of almost 4%. It appeared that traditional crops like maize, ragi, barley and small millets lost marginally while soyabean, rape

and mustard gained slightly. Around 10% of GCA is being devoted to other crops, which include crops like vegetables and fruits.

### **Growth of Area, Production and Yield**

Wheat and pulses have gained acreage at the rate of 0.53 and 2.05 per cent per year between 2000-01 and 2006-07. But, area under rice, maize, ragi, barley, small millets and sugarcane has declined however, maize appeared to be the biggest loser by indicating a decline at the rate of 3.22 per cent per year. Soyabean and rape & mustard gained area at the rate of 10.38 and 3.65 per cent per year during this period.

Since area cultivated under rice and yield declined, its production has dropped at the rate of 2.54 per cent per annum. The declining rate was most substantial in the case of maize (6.47 % per year). On the other hand, production of wheat and barley has increased at the rate of 1.92 and 2.27 per cent per year during the same period. Other crops with declining production include ragi, rape & mustard, small millets and total food grains. The crops of soyabean and oilseeds indicated outstanding growth (21.81 and 19.57 % per year) in production during the reference period because these can be grown successfully under water stress.

Yield is the most important factor influencing production in a region with limited potential of area expansion. But, in Uttarakhand, yield of important crops is low. The productivity per hectare of rice, wheat, maize, barley, sugarcane, soyabean, small millets and total food grains is below the national average. Moreover, yield of these crops has not indicated significant growth except for soyabean, oilseeds and pulses. It is heartening that yield of total pulses in Uttarakhand was 909 kg/ha. against 638 kg/ha. in India during 2006-07.

### **Input Use**

The utilization of fertilizer, pesticides, tractor and tube wells play an important role in boosting the agricultural development of a region. Uttarakhand is lagging behind in the use of these inputs. The consumption of fertilizers was extremely low. However, use of pesticides was found better in cultivation. The nitrogenous fertilizers were preferred over phosphatic and potassic fertilizers.

### **III. Expenditure on Agriculture and Allied Activities**

Expenditure on agriculture includes revenue and capital expenditure. The total revenue expenditure of Uttarakhand government in 2000-01 was Rs. 1110 crore which became Rs. 10625 crore in 2006-07. It increased at the rate of 45.71 per cent per annum. In total expenditure, capital expenditure accounted for 17.66 per cent in the beginning, which increased, to 28.51 per cent in 2006-07. It rose at the rate of 57.82 per cent per annum during this period. Thus, capital expenditure received adequate attention in the total expenditure of the state. An exceptional increase of more than 500 crore was noticed in 2002-03 over 2001-02. Therefore, compound growth rate, between 2001-02 and 2006-07, came down to 26.36 per cent.

The expenditure on economic services was Rs. 498 crore in Uttarakhand in 2000-01. It increased to Rs. 3682 crore in 2006-07. The compound growth rate of increase was 39.58 per cent per annum. It may be noted that the share of capital expenditure out of total expenditure on economic services was 29.52 per cent during 2000-01. It showed an exceptional growth and became 55.54 percent in 2006-07. It indicates that this crucial component received priority in the policy in Uttarakhand.

The expenditure on agriculture and allied activities rose from Rs 127 crore in 2000-01 to Rs. 850 crore in 2006-07. The rate of increase was 37.28 percent per year for this period. The overall growth has been quite impressive. The share of revenue and capital expenditure in total expenditure was 83.46 and 16.54 percent during 2000-01, which became 80.59 and 19.41 percent respectively during 2006-07. The growth rate of capital expenditure was higher than revenue expenditure. This indicates that capital expenditure for agricultural development received adequate attention by the government after the formation of the state in 2000.

Share of expenditure on agriculture and allied activities to expenditure on economic services and total budget expenditure on revenue account was 11.60 and 30.20 per cent respectively during 2000-01. The proportion of former declined while the share of latter increased during the reference period. Although, share of total budgetary expenditure on economic services to agricultural sector declined by more than 2 per cent, focus of policy did not change significantly during this period. Share of expenditure on agriculture and allied activities in the NSDP was 0.97 per cent during 2000-01, which became 3.17 per cent in 2006-07.

## **Pattern and Composition of Expenditure on Agriculture**

Pattern and composition of expenditure on various items of agriculture in Uttarakhand indicated that the state spent between 8-41 per cent of agricultural expenditure on crop husbandry during 2001-07. Its share was 8.49 per cent in 2000-01. It reached to the highest level in 2003-04 (40.89 per cent). Thus, proportion of agricultural expenditure on crop husbandry has indicated an upward trend. The share of expenditure on soil and water conservation in total agricultural expenditure ranged between 0.44 and 4.72 per cent during the reference period. It was higher than rest of the years in 2000-01. The proportion of expenditure on animal husbandry was between 6-7 per cent. It reached to the highest level in the year 2005-06.

Dairy and fisheries development are crucial for the survival of small and marginal farmers with extremely tiny land holdings in the hilly regions. Unfortunately, share of these sectors in agricultural expenditure was minuscule throughout the study period. The expenditure on forestry and wild life increased from 2000-01 onwards and reached to the highest level of 46.13 per cent in 2006-07.

A special priority should be accorded to agricultural research and education in the recently formed state of Uttarakhand where area specific improved varieties are an urgent need to enhance productivity of crops grown in the region but its share has shown a declining trend from the peak level of 47.16 per cent in 2000-01 to 6.27 per cent in the year 2002-03. The percentage of expenditure on cooperation showed an upward movement. It remained almost constant upto 2002-03 and then started rising.

Item-wise per hectare expenditure on agriculture and allied activities in Uttarakhand indicates that total expenditure per hectare of GCA increased from Rs. 864 in 2000-01 to Rs. 5419 in 2006-07. It is almost six fold increase. A look at the item wise break up indicates that agricultural research and extension received the highest priority in per hectare terms during 2000-01. However, forestry and wild life followed by crop husbandry became prominent during 2006-07.

Item wise Plan outlay in Uttarakhand shows that outlay on soil and water conservation (37.56 per cent) is predominant, probably in conformity with the needs of the recently formed state. Centre has spent a higher proportion on these items when compared to crop husbandry. Forestry and wild life followed by crop husbandry was the second priority of the government and consequently more than 20 per cent of the outlay was incurred on these items. The year-to-year variations in plan outlay on different items

are quite significant. The highest percentage of approved plan outlay was spent on cooperation in the year 2004-05. A further analysis of expenditure on agriculture makes clear that a large part of the variation is due to change in the focus of policy.

The expenditure on dairy development and animal husbandry are the next items in the plan outlay of Uttarakhand. The expenditure on these items was 3.28 and 2.55 per cent of the projected Plan outlay in 2002-07.

The proportion of plan outlay spent on agricultural research and education was 4.04 per cent. It seems lower in view of the needs of the state. It was found lower in comparison to other important items.

#### **IV. Schemes for Agricultural Development in Uttarakhand**

The Central and state governments have initiated several schemes to accelerate agricultural development in Uttarakhand since its formation in the year 2000. These schemes and programmes are helping farmers in enhancing productivity of various crops.

State government incurred a substantial amount on strengthening of seed stores/agriculture farms and training centres. The research programme for package of practices of hill crops is being implemented in the entire state and an expenditure of Rs.200 lakh was incurred for this purpose. Realizing the needs of the state, programmes related to water harvesting, establishment of poly houses and labs have been also operational during the Tenth Five Year Plan.

In addition to schemes run by the state Government, Central Government has been providing assistance for several programmes for boosting the agricultural development of Uttarakhand. Macro management is a centrally sponsored scheme being implemented in the whole state. Government of India and the state government share the expenditure incurred under the scheme in the ratio of 90:10. Main objective of the scheme is to increase the growth of agriculture in Uttarakhand.

Agriculture extension plays a crucial role in dissemination of technological packages to the farmers. The desired results in adoption of recommended technologies by farmers however could not be achieved and a significant gap remains between generated technology and utilized/adopted technology. Moreover, changing agricultural scenario has necessitated capacity building of the extension workers, their exposure in latest tools of information on technology and mass media particularly in the light of gradual liberalization of the Indian economy and encouraging farmers to adopt latest developments on their fields. Given the



physiological and other constraints in Uttarakhand, extension needs to focus on eco-friendly, sustainable and location specific technologies, Diversification, Organic farming and efficient use of inputs should be given priority.

Agricultural production in Uttarakhand largely depends on availability of water from rainfall that creates wider fluctuations in the crop output. In order to support farmers, crop insurance scheme is being implemented by the Central government on 50:50 sharing basis. In addition, timely reporting scheme and improvement of agricultural statistics have been also operational in the state between 2002-07. Efforts are being made to use information technology for communication to the farmers on inputs and prices.

The main objectives of these programmes have been to expand area and raise yield levels. The funds allocated for this purpose were spent on seeds, fertilizers, implements and extension related components. The special priority has been given to the production of foundation seeds, block demonstrations, Integrated Pest Management, distribution of seed minikits, gypsum, rhizobium and bio fertilizers.

Fruits and vegetables make a valuable contribution to the economy of Uttarakhand. The government has introduced several schemes to promote these crops in the state in order to meet the growing demand in the country and abroad. The policy makers have been focusing on promotion of horticultural crops as a means of increasing income of farmers and for crop diversification. Strengthening of 27 government gardens, development of commercial horticulture, dehydration of fruits and vegetables, off-season vegetables programme and post harvest management are some of the major schemes currently operational for horticultural development in Uttarakhand. The impact of above schemes is less visible on the horticultural economy of the state. It could be due to inadequate infrastructure.

The outcomes of physical targets of crop specific schemes indicate that wheat has shown the complete achievement of set target. The results for rice, pulses, and other food grains also appeared to be quite impressive. The achievement of set targets for total food grains was commendable. Achievements of set targets for the production of certified seed of cereals, pulses and oilseeds in Uttarakhand were appreciable. Around 96 per cent of production targets were achieved. The success of cereals was found better than pulses and oilseeds.

The seed distribution targets were overwhelmingly achieved. In each case, achievements surpassed 100 per cent. But, coverage of area under micronutrients has indicated poor performance. The same was true for green manuring and area

coverage under bio-fertilizers. In this case, only 22 per cent of target was fulfilled. This indicates poor management of these components by the state government.

## **V. Impact of Budgetary Expenditure**

### **State Income and Poverty**

Policy initiatives in Uttarakhand addressed several critical areas. The overall response of the economy to the development process was very encouraging. The state produced good results in terms of economic growth during 2002-03 and 2005-06. The rate of economic growth surpassed 10 per cent in these years. However, economic growth was not found sustainable and it fluctuated from year to year. For instance, NSDP growth, which was 7.9 per cent in 2002-03, rose to 16.6 per cent in the very next year. During 2004-05 and 2005-06, rate of growth of the NSDP declined and it was estimated 10.09 and 9.5 per cent respectively. It however, rose to 13.1 per cent in the 2005-06.

Agricultural output per hectare in Uttarakhand was Rs. 36949 per year and Rs. 3079 per month during 2000-01. These incomes rose to Rs. 42518 and Rs. 3543 respectively during 2004-05. The total increase was computed 14.28 percentage points between 2000-01 and 2004-05. It comes to 3.57 percentage points per year. Similarly, agriculture output per worker was Rs. 24917 per year and Rs. 2076 per month during 2001. It rose to Rs. 26744 and Rs. 2229 respectively during 2005. An increase of 7.12 percentage points was calculated between 2001 and 2005. It translates into 1.78 percentage points per year. This growth appears to be extremely low in view of inflationary conditions in the country.

The state government has notified that around 36 per cent of the families in the state are below the poverty line (BPL). Most districts have even higher share of families in this category and Uttarkashi has the highest proportion of families below the poverty line. In general, hilly districts such as Chamoli, Tehri Garhwal and Bageshwar have shown larger share of BPL families. These are also districts with high share of rural population.

### **Agriculture Development**

The budgetary allocation to agriculture sector in Uttarakhand was devised to encourage and increase production of various crops grown by the farmers. Farmers in this state produce a variety of crops with inadequate irrigation facilities and traditional farm practices. So far, a substantial breakthrough in productivity of major

crops has not been visible. Unfortunately, production of rice, a major foodgrain crop in the state has declined from 622 thousand tonnes in 2000-01 to 533 thousand tones in 2006-07. The maize and ragi also faced the similar fate. As a result, production of total foodgrains has marginally declined in the study period. This has been the outcome of decline in acreage or yield of some of the foodgrain crops.

Although, production of wheat and pulses has increased, it was not sufficient to cover losses of other crops. Thus, effect of budgetary allocation of resources in Uttrakhand on foodgrains production has not been expansionary Soyabean and oilseeds have experienced a commendable increase in production at the rate of 21.81 and 19.57 per cent per year because yield has risen at the rate of 10.30 and 6.02 per cent per annum during the reference period.

Production of major crops in Uttrakhand has exhibited wide year-to-year fluctuations. For avoiding these uncertainties, government should manipulate level of expenditure in productive activities related to agricultural sector in such a way so that fluctuations in output are minimized. However, potency of expenditure is determined by two factors (a) how well organized and interrelated is the economic system and second, what is the adjustment capacity of the sector. The first factor implies that agricultural sector should be responsive to budgetary expenditure measures. The second factor stipulates unutilized capacity or potential of the sector. These conditions limit the success of budgetary expenditure in controlling fluctuations in the production of agricultural out put.

### **Farm Sector Distress**

Large majority of farmers, more than 75 per cent in Uttrakhand own extremely tiny land holdings, which provide low income for the sustenance of the family and create distress. Most of these families supplement their income by taking up non-farm employment. It is a hard reality that their income levels are low. In view of their poverty and poor income levels, it would be beneficial to provide them support to make their farm holdings viable.

## **VI Policy Implications**

Uttrakhand has 61 per cent of geographical area under forest cover. Net sown area forms only 13.58 per cent of reported area. In addition, land degradation is a serious problem as slopes make the region vulnerable to soil and water erosion.

These limitations put a severe constraint on large-scale industrial development, mechanized and input intensive farming.

The impact of topological factors has been profound on the agricultural development in Uttarakhand. As a result, majority of farmers cultivate extremely tiny landholdings (0.93 ha) and practice traditional farming. Urgent policy initiatives are needed for the development of smallholdings. The options like dairying, poultry and horticultural high value crops including medicinal and aromatic plants should be encouraged to increase per unit productivity of the available small pieces of land for cultivation. Findings of this study reveal that production of some important crops in the state has not exhibited significant increase. It appears that agriculture has not experienced major break through after the formation of the state in 2000. This is largely due to limited potential of area expansion and low yields of rice, wheat, maize millets, mustard, fruits and vegetables. Improving productivity is the key to agricultural development. We need to boost yield on the size and scale of agriculturally advanced states despite limitations.

Organic farming has excellent potential in Uttarakhand. It is safe for human beings as well as environment. It is a low budget form of farming and does not require heavy investment in chemical fertilizers and pesticides. Most farmers in Uttarakhand have one/two cattle and their dung can be converted into vermi compost.

Raising productivity of food crops and popularizing organic farming need state intervention. The state should invest in research and development to identify area specific varieties for these purposes. In view of low investment and risk taking capacity of the small and marginal farmers, state should assist them through supplying seeds and other required facilities.

Keeping in view natural constraints of Uttarakhand, agricultural development is difficult but well thought out policies and their effective implementation would solve the problem. We have examined trends in budgetary expenditure on agricultural sector. The growth of expenditure has been significant and state has been implementing a large number of crop specific schemes. These programmes benefited pulses and oilseeds. But, impact of these allocations has not been visible on food grains production, which dominates crop husbandry in the state. It could be due to poor implementation and lack of proper monitoring. Hence, finding weaknesses of the current schemes and strengthening them in this light is the answer to agricultural development in Uttarakhand.

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### **Action Taken on Comments of the Coordinator**

- Comments 1-4 have been incorporated in the tables. Compound growth rates could not be calculated by using log linear method because available number of observations was not sufficient for this purpose.
- Comments 5 & 6 were partially added due to data constraint.
- Comments 7 has been incorporated.