

Research study No. 2013/04

**Evaluation of Market Intervention Scheme
in Uttarakhand (Apple 'C' grade)**

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At the centre, the Acting Director created all sorts of hurdles in initiating and carrying out of work. First, she did not allow the collection of preliminary information for months together on non-existent issues. Second, obstinately set the condition of selecting an agency which demanded the lowest allowance for the field work, in the instant case about Rs. 20000 for field work of two different crops in Haryana and Uttarakhand. Third, when the agency did not fulfill its commitments which nobody could be expected to do such a huge field work with this meager amount she as usual defended the agency by not asking it to complete the work. And last, when I wanted to send the team for verification/ collection of data she asked them to fill the schedules by calling the respondents on phone.

The Nature also played havoc when we were struggling to send the team the unexpected floods ruined almost everything. While trying to confirm some information on phone I was shocked to know that at least three of our respondents and some other families were no more. I send my deepest condolences to the bereaved family members.

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Chapter – I

I Introduction

After liberalization of economic policies economic growth rate took higher trajectory, unprecedented after independence but it led to income disparity, reduction in farmers' income, and also huge imbalance in supply of domestically produced agricultural commodities. The reasons are obvious. Half-hearted economic reforms in the field of agriculture did not bring in much needed investment from the private sector, also the public sector investment in agriculture for which the farming community was habituated could not maintain its earlier tempo. Edible oilseeds sector is a classic example of imbalance in supply and demand. In 1993-94 due to impact of Technology Mission on Oilseeds and Pulses (TMOP), the country became almost self-sufficient in edible oils when a negligible quantity of edible oils was imported. But once the edible oil sector was put on Open General License, the imports have gone up to 60% and more of the country's needs. Notwithstanding of late tremendous increase in the supply of horticultural produce, the imbalance in the demand and supply of fruit and vegetables is one of the major reasons of food inflation. Similarly, food grains production has been going up regularly but the overall availability of food grains per capita is almost stagnant at 1961 levels.

The environmental degradation along with disparate rural income has been other concern. The reflection is manifested in the form of diminishing soil fertility in major food producing states and in diminishing number of farmers in agriculture sector in the country due to agriculture becoming almost unviable economic activity.

Rural income can be increased either by increasing overall production or by higher returns per unit of output or by both. Further, higher returns can be achieved either by reducing per unit cost of production or increasing per unit price of the commodity or by both. Because higher returns depend upon market which is beyond the control of the farmers, hence, their emphasis has been on more production and in order to achieve that they have been putting more emphasis on yield, obviously because area expansion has huge restrictions. Intensive and aggressive land use leaves no land vacant to recoup its natural health which has been declining over time. Also, the health of soil and quality of water due to over use of chemical fertilizers and pesticides has been deteriorating. Important point is that productivity is either stagnating or deteriorating notwithstanding the overuse of inputs. In such circumstances another well established alternative to increase rural income and nutrition level thereby health of the consumers is to change the cropping pattern replacing lower value crops with higher value crops like fruit and vegetables. But a judicious balance has to be maintained to protect food security. In fact, the reforms agenda in agriculture sector focused on food processing, change in cropping pattern, development of rural infrastructure in the form of roads, storage, better availability of modern transport for delicate crops etc. That is why the existing marketing system through regulated markets was proposed to be changed with the amendment in marketing acts. Also to increase participation of private sector provisions for contract farming were made. To make use of the international markets in competitive conditions, provisions like Special Economic Zones (SEZ) were also made. In sum, four major steps were taken up – one liberal import and exports of agricultural commodities, two, change in APMC act, three, permission to contract farming and four, grant of SEZ etc.

Though the results are not on expected lines, still some important changes can be noted. For example, enhancement in area under horticulture crops and production thereof can be noted. Secondly, consumption pattern also is reported to be changing. People are replacing cereal food grains with more horticultural crops. Some well known comments from the persons in authority also emphasize and even mention it as one of the reasons of food inflation.

In economic reforms, including agricultural marketing, market plays an important role in the determination of not only farmers' income but also in land use, overall production, demand for agricultural commodities and supply thereof.

Instances of market failure are more frequent for agricultural commodities and for the developing countries. Consequences of market failure for either producer or consumer of agricultural commodities are enormous. Government therefore intervenes in agriculture market for the sake of protection of producers and consumers and to maintain food security and national stability. The level of government intervention is being scaled down continuously. During mid sixties if the government was forcing farmers to sell food grains to its agencies through levy system¹, distributing through PDS from sugar, wheat, wheat flour to bread etc., now it is focusing on softer alternatives and restricted items.

In India Government intervention in agricultural market takes place through Price Support Scheme (PSS) and Market Intervention Scheme (MIS). In the PSS government besides announcing MSP for major agricultural commodities (25) also defend the said price by organizing procurement of these commodities through various public and cooperative agencies like Food Corporation of India (FCI), Cotton Corporation of India (CCI), Jute Corporation of India (JCI), Central Warehousing Corporation (CWC), National Consumer Cooperative Federation of India (NCCF), National Agriculture Cooperative Marketing Federation (NAFED), Tobacco Board in addition to state level intervention by various state governments, monopoly cotton procurement scheme of Maharashtra Govt., for example.

During peak period of arrivals prices of other commodities excluding the (25) many times fall to low levels. To avoid such situation the Union Government on the request of state government arranges procurement of specific commodity at price agreed between central and state governments under the MIS. Also, the state government purchases the targeted commodity at the predetermined price under the MIS, when there is limited role for the Union government, for example, apple 'c' grade in Himachal and Uttarakhand. The central government reimburses 50% losses in MIS operations. The MIS is applicable in two situations: one – when production is more than 10% of the preceding year and price is likely to go down due to extra production, and two – when price of a commodity falls below 10% of the preceding year whatever may be the level of production. The MIS is achieved with the help of several public and cooperative agencies. The MIS unlike PSS is an *ad hoc* arrangement. The MIS is operational for certain commodities during the selected period of the year.

¹ An example will be worth citing. After school education, I went to seek admission in a nearby college. The principal was inviting every student with guardian (father or brother) for interaction. When I went alone, he enquired about my guardian and was surprised to know that my brother did not accompany me because he was hiding from the police because we have not sold wheat as yet and paid levy (a part of the wheat sold) to the government compulsorily.

The procurement agency often incurs loss in its operations under PSS and MIS due to obvious reasons, such that they have to operate against all the market norms, viz. buy at more than market prices and sell with the motive to keep the market price in check. The loss incurred in undertaking the PSS is reimbursed up to 15 percent of MSP by the central government. In the MIS operation loss is shared equally between Central and State Governments.

Protection of interests of the farmers, consumers, food security etc. though important but also causes budgetary constraints when fiscal deficit is mounting, govt. has to and should review its policies to maintain a healthy fiscal balance by cutting avoidable expenditures, particularly if they are unproductive and also do not cause much heart burn among the stake holders. Keeping this in mind an All India study was planned to evaluate the MIS/ PSS schemes.

We (AERC Delhi) have two very contrasting states, as far as agricultural production and practices are concerned. Haryana has seen tremendous growth in agricultural production, intensive land use due to modern inputs and substantial use of farm machinery and surface and ground water irrigation. On the other hand, in Uttarakhand largely due to topography of the state, agricultural production is at around pre green revolution level. Use of farm machinery is absolutely nil in hill areas and plains are miniscule in the state. Use of high breed seeds is limited and use of fertilizers and pesticides is also restricted. As far as marketing of farm produce is concerned, Haryana has sufficient number of regulated markets (main market yards -106, sub market yards -178 and in addition to them number of village purchase centres). The state has at least one market for 64 villages and average area per market yard is about 152 square kilometers, it faces heavy rush of peak season arrivals and therefore a significant role of public sector procurement agencies. In contrast due to limited production of commodities and limited local demand marketing of farm produce is very difficult operation in Uttarakhand. For outside sale, massive infrastructure in the form of collection centres, storage, proper transport, roads etc. is needed which the state is trying to create. In Uttarakhand there are 36 wholesale markets and 30 rural and primary markets. Out of total 58 regulated markets 25 are principal regulated markets and 33 regulated submarket yards. Average area served by each regulated market is huge about, 962 sq. kms, which is about 7 times more than Haryana. Though in Uttarakhand population density is much less as compared to Haryana, per market population served in Uttarakhand, 146368, is almost double in comparison to Haryana where each market serves about 74453 persons. The unfavourable terrain and lack of infrastructure further widen the distance in the form of problems in accessing the market.

Of late, due to change in land use practices in favour of horticultural produce, if the hill areas of the state face shortage of cereals, pulses, edible oils etc, the state faces problems of marketing of horticultural produce as well.²

In both the cases, however, the role of state agencies in the marketing of farm produce is increasing instead of diminishing against the objective of the policy makers who envisaged a larger role for private entrepreneurs in agriculture in the liberal economic atmosphere.

The present study is planned to evaluate direct role of the state in the marketing of Apple 'c' grade with reference to maintenance of price stability, particularly during the peak of arrivals

² Bhupal, D.S Impact assessment of agricultural market reforms, AERC Delhi, 2009

because due to obvious reasons a huge percentage of farmers cannot withhold the produce to wait for the prices to move up. Moreover, apple 'c' grade like other fresh fruit and vegetables cannot be stored for long. Because it is small in size, it gets lowest preference of the buying agencies and consumers. But for the purchases made by some processing units like Patanjli Yogpeeth, Mother Dairy etc. for murabba, sauces and jams, farmers in cases have to throw away the produce as waste. Therefore the market intervention scheme and price support system (MSP) play crucial role in not only protecting the producers and serving the consumers but also in saving the nutritious, healthy and precious fruit from going waste.

II Objectives:

In the light of the above the specific objectives were as follows:

- To analyze the extent of coverage of MIS with respect to farmers of apple 'c' grade in the chosen districts of Uttarakhand.
- To ascertain the socio-economic factors that influence coverage of villages and farmers in MIS.
- To understand problems of different stakeholders in operation of MIS.
- To study the effect of MIS on the market price of commodity in Uttarakhand, and,
- To suggest policy measures to improve operations of MIS.

The objective to evaluate the efficiency of the nodal agency involved in procurement of apple 'c' grade, Horticulture Mobile Team, could not be pursued as it is a section of a government department of horticulture and its primary function is to provide extension services, and also so far it has procured a small quantity of apple 'c' grade under MIS only thrice and that too not on regular basis.

III Data and Methodology:

After allotment of the project an effort was made to look into the areas where apple orchards are maintained in Uttarakhand. Moreover coverage under MIS was most important rather than overall production of apple in the districts of Uttarakhand. Little information in the form of one figure of 1.86 lakh was noticed in the literature. Hence, from the offices of the Directorate of Economics and Statistics and Directorate of horticulture details of area, production and marketing of the crop were obtained. It was noticed from the information that only in one district Uttarkashi MIS for apple 'c' grade was operationalized, though apple is grown in many other districts like Pithoragarh, Champawat, Nainital etc. Therefore the only district where MIS was operational was selected. Not only in one district, in fact the MIS was operational in one block, Mori, so block Mori has to be a natural choice. Therefore, district Uttarkashi alone was selected at the first stage, Block Mori at the second stage and from there 8 villages and/or 'Toks' (small hamlets) namely Thunara, Kiranu, Arakot, Bhutanu, Gokool, Jhatodee, Kaleech, and Makuri were selected. In fact in the entire state large part of MIS for apple C grade was implemented only in these villages / hamlets. Therefore these were our natural choice. However, among these villages/ toks gram sabhas were formed in Bhutanu, Arakot and Gokool. We have to opt for more villages/ toks because number of households with MIS was not enough to select adequate sample from 4 villages as per the original plan to take 2 villages from each block and 4 villages from each district.

The agency bidding lowest fee for field work was selected as per the decision of the Acting Director. In fact she obstinately opposed even to invite the second higher bidding agency for our earlier study. In this case the agency was supposed to complete massive field work in two contrasting states of Uttarakhand and Haryana with a meager amount of about Rs. 20000. Naturally after working in Haryana when it consumed its money, it left the field work incomplete in Uttarakhand without claiming the balance. The gaps were attempted to be filled on phone as per the orders of the Acting Director. The Nature also worked against. The entire belt was devastated. In June I received the shocking message of at least 3 of respondents being eliminated by floods and sludge. After that even if we had tried to get the information as we did in Haryana with the kind support of our GB chairperson, we could not have got. Secondly as is well known, Uttarakhand government's web pages also do not provide much information. Thus we were handicapped in getting the required information and had to write this piece with whatever information and data we could gather with the help of my two colleagues, Dr. Subhas and Mr. Meena, who worked very hard under all adverse circumstances, for example travelling by bus obviously because taxi was disallowed by the Acting Director. How frequent bus service in hill regions is, is known to everyone!

Sampling Framework

The details of sample are as given in table 1.1

Table 1.1 Sample size

Item	Uttarakhand	Total
Selected Distt.	Uttarkashi	1
Tehsil/ block	Mori	1
Crops	Apple 'C' grade	
Beneficiary farmers	30 (8)	30 (8)
Non – beneficiaries	39 (11)	39 (11)
District schedules	1	1
Village schedules	8	8

Villages / toks in parentheses

As the MIS in the state is implemented in a very limited way, the sampling design as proposed by the coordinator could not be strictly applied. Rather we have taken the entire Universe (one block and 8 main villages) as our sample where MIS was operational. Secondly number of non-beneficiary farmers is more than 30 because many of the owners were not residing and available in Uttarkashi. However the sampling scheme suggested by the coordinator was as follows:

For the selected crops two districts where MIS/ PSS was in operation will be selected at the first stage. In each of the selected district the most important regulated market was to be chosen which will be used as benchmark for selection of village clusters. It was proposed that three clusters of two villages in each of the cluster will be selected. These clusters will capture market and infrastructure related variability of the district. The village clusters may preferably be chosen from different administrative units (tehsil/ sub-division/ blocks) located on different directions from the benchmark market. The village clusters must be more than 10 KM away from the benchmark. The village clusters have to be away from each other by more than 15 kms.

The process of selection of village clusters was as follows. A list of villages located on District road at a distance of 10 km away from the benchmark was to be prepared. Subsequently one village will be chosen randomly from the list; another village adjacent to the above village but away from the district road was to be selected, a cluster of two villages was thus formed. From each of the cluster of two villages, a list of farmers cultivating targeted crop will be made or procured from the village head. Another list of beneficiary farmers can be procured from Assistant / Manager of the above Scheme (MIS/PSS). A comparison of the above two lists of cultivators would indicate participation of farmers in the above scheme.

From each of the above two groups, five (5) farmers will be selected by adopting systematic sampling; thus a total of 10 farmers will be selected from each cluster. Since the study propose three clusters in each district, the sample will consist of a minimum of 30 farmers from the district and for targeted crop there will be a minimum of 60 farmers in the state.

This scientific and rational sample would have been applicable in the case of larger Universe. As stated above we have very limited number of villages in one block of one district and farmers of the targeted crop, hence the deviation from the procedure proposed by the coordinator was made to cover the entire universe.

The questionnaires as supplied by the coordinator have been canvassed without any modification with some additional information wherever it was necessary.

Chapter scheme: The chapter scheme as per the requirement of the study has been followed except in those areas where there was no information available.

The second chapter presents basic information of the state, district level information about the crops, marketing system etc and socio-economic back ground of the respondents.

Chapter 3 presents marketing results of the study and finally, in chapter 4 policy options along with a brief summary of the findings, conclusion and suggestions are presented.

Annexure – 1.I

Number of Wholesale, Rural Primary and Regulated Markets in India (as on 31.03.2011)

State/ U.TS	Number of Markets			Principal	Regula- ted Markets		Area covered by each market in sq.	Require- ment of Markets	Population Served by each Market
	Whole- Sale	Rural Primary	Total		Submarket Yards	Total			
Andhra Pradesh	329	576	905	329	576	905	303.92	3501	84210
Arunachal	6	63	69	16	113	129	1213.67	1066	8511
Assam	405	735	1140	20	206	226	347.07	998	117945
Bihar *	325	1469	1794	* APMR Act Repealed			0	1198	
Jharkhand	205	603	808	28	173	201	396.59	1015	134059
Goa	4	24	28	1	7	8	462.75	47	168459
Gujarat	207	129	336	196	218	414	473.49	2495	122394
Haryana	284	189	473	106	178	284	155.68	563	74453
Himachal Pradesh	42	35	77	10	38	48	1184.53	709	126623
J & K	26	8	34	APMR Act not implemented			0	2829	
Karnataka	504	730	1234	152	352	504	382.82	2441	104862
Kerala	348	1014	1362	APMR Act not implemented			0	495	
Madhya Pradesh	241	1321	1562	241	276	517	601.06	3924	116799
Chhattisgarh	2	1132	1134	73	112	185	734.24	1721	112615
Maharashtra	880	3500	4380	299	581	880	349.65	3916	110089
Manipur	20	98	118	APMR Act not implemented			0	284	
Meghalaya	35	84	119	2	-	2	11214.5	285	1159411
Mizoram	10	105	115	APMR Act not implemented			0	268	
Nagaland	19	174	193	18	Nil	-----	0	211	
Orissa	398	1150	1548	45	269	314	495.88	1982	117212
Punjab	488	115	603	139	349	488	103.2	641	49916
Rajasthan	431	312	743	129	302	431	795.9	4356	131107
Sikkim	7	12	19	1	-	1	7096	90	56473122
Tamil Nadu	300	677	977	277	15	292	445.4	1655	213718
Tripura	84	554	638	21	-	21	499.33	133	152343
Uttar Pradesh	584	3464	4048	249	356	605	394.32	3036	274707
Uttarakhand	36	30	66	25	33	58	962.84	711	146368
West Bengal	279	2925	3204	43	641	684	129.19	1130	117282
A & N Island	0	0	0	APMR Act not implemented			0	105	
Chandigarh	1	0	1	1	-	1	114	1	900914
D & N Haveli	0	8	8	APMR Act not implemented			0	6	
Daman & Diu	0	2	2	Reported Nil		0	0	1	
Delhi	30	0	30	8	13	21	70.62	19	659548
Lakshadweep	0	0	0	APMR Act not implemented			0	0	
Puducherry	9	0	9	4	5	9	54.67	6	108261
Total	6539	21238	27777	2433	4813	7246	28982.67	41838	149717

Annexure – 1.II
Changes in MSPs for Selected Crops (according to Crop year)

Sl. No	Commodity	Variety	MSP (Rs per quintal)							
			1965-66	197-71	1980-81	1990-91	2000-01	2010-11	2011-12	2012-13
Kharif Crops										
1	Paddy	Common	40	53	105	205	510	1000	1080	1250
		Grade 'A'	-	-	-	-	540	1030	1110	1280
2	Jowar	Hybrid	-	-	105	180	445	880	980	1500
		Maldandi	36-40	45	-	-	-	900	1000	1520
3	Bajra		36-40	45	105	180	445	880	980	1175
4	Maize		36-41	45	105	180	445	880	980	1175
5	Ragi		36-42	45	105	180	445	965	1050	1500
6	Arhar(Tur)		-	-	190	480	1200	3000*	3200*	3850
7	Moong		-	-	200	480	1200	3 170*	3500*	4400
8	Urad		-	-	200	480	1200	2900*	3300*	4300
9	Cotton	F-414/H-777/J34	247 ⁺	299 ⁺	304	620	1625	2500 ^a	2800 ^a	3600
		H-4	-	-	-	750	1825	3000 ^{aa}	3300 ^{aa}	3900
10	Groundnut In Shell		-	-	206	580	1220	2300	2700	3700
11	Sunflower Seed		-	-	183			2350	2800	3700
12	Soya been	Black	-	-	183	600	1170	1400	1650	2200
		Yellow	-	-	190	400	865	1440	1690	2240
13	Sesamum		-	-	-	-	1300	2900	3400	4200
14	Niger seed		-	-	-	-	1025	2450	2900	3500
Rabi Crops										
15	Wheat		59	76	130	225	580	1120\$	1285	1350
16	Barley		-	-	105	200	430	780	980	980
17	Gram		40	-	145	450	1100	2100	2800	3000
18	Masur (Lentil)		-	-	-			2250	2800	2900
19	Rapeseed/Mustard		-	-	-	600	1100	1850	2500	3000
20	Safflower		-	-	-	575	1100	1800	2500	2800
21	Toria		-	-	-	570	1065	1780	2425	-
Other Crops										
22	Copra (Calendar Year)	Milling	-	-	-	1600	3250	4450	4525	5100
		Ball	-	-	-	-	3500	4700	4775	5350
23	De-Husked Coconut		-	-	-	-	-	1200	1200	1400
24	Jute		-	-	160	320	785	1575	1675	2200
25	Sugarcane@		-	7.37	13.00	23.00	59.50	139.12	145.0	170.0

Notes: * Additional incentives @ of Rs. 500/- per quintal of tur, mung and urad sold to procurement agencies payable during the harvest/arrival period of two months; # An additional incentive bonus of Rs. 50 per quintal is payable over the MSP; @ Fair and Remunerative Price; a- Staple length (mm) of 24.5-25.5 and Micronaire value of 4.3-5.1; aa- Staple length (mm) of 29.5-30.5 and Micronaire value of 4.5-4.3.

Source: GOI Statistics at a Glance (2012, and earlier issues).

Chapter II

Background details of the selected area

There is no similarity between the states of Haryana and Uttarakhand with regard to development of all aspects of agriculture – level of production, productivity, production practices, use of mechanization and fertilizers as well as with regard to marketing of the produce, aptitude towards agriculture, even participation of women, living conditions, level of income etc., all due to difference in geographical, topographical and climatic conditions of both the states. Comparison of both the states is not the subject matter of the study. So the general characteristic details given for the state of Haryana may not be necessary and also may not be possible for the state of Uttarakhand to be given in this study.

But the documentation of agricultural statistics needs to be emphasized. Of course on this count also no comparison can be made between the two states. With whatever short comings may be there, documentation of agricultural statistics is much better in Haryana as compared to the state of Uttarakhand. In fact there is some improvement after the separation of the state from Uttar Pradesh. Prior to that, a huge paucity of data could be noted as far as the documentation of agricultural statistics in Uttarakhand or that part of Uttar Pradesh was concerned.

Some possible details about the state are given below in a few tables, and for preparation of these tables many sources, viz. different documents of the state government, some web sites in the state government domain as well as some of the NGOs and some central government documents are taken help of for the compilation of these tables. For horticulture crops, documents and data published by the National Horticulture Board, both in hard form as well as on line, have been used.

Secondly as mentioned in chapter I, because MIS for apple ‘C’ grade in the state was operational at a miniscule level in one district, Uttarkashi, further, only in one block ‘Mori’ of the district, at least for the latest two years out of three in total when the MIS was applied, our sample has been restricted to this block alone, therefore the statistical details whatever possible are also largely for district Uttarkashi and block Mori. Villages in Uttarakhand are not similar to villages in Haryana. Moreover, village schedules were not filled by the data collecting agency, when we pointed out, the agency preferred not to claim the balance amount, our own staff could not be sent due to reasons best known to the Acting Director. Hence, we have to leave that section. Village wise total number of apple growers who were selected for the sample (beneficiary and non-beneficiary of MIS) is given in Table 2.1.

Another contrast with regard to Haryana is notable. In Haryana we could not have any sunflower grower from marginal farmers, whereas in Uttarakhand we could not have any beneficiary apple grower from large farmers. Three non-beneficiary large farmers were contacted to assess their views about problems of apple production and marketing. Also, no distinction could be made between beneficiary and non-beneficiary sunflower growers in Haryana because there no such distinction existed, whereas that was possible in Uttarakhand. As pointed out earlier the difference basically is due to topography and state of the economy of two states.

Further details related with demography, area etc. are given below in table 2.2.

Table 2.1: Sample Details

District	Blocks/ Tehsil	Villages	Household Total	Households (as per holding size)			
				Marginal (< 1 ha)	Small (1-2 ha)	Med. (2-5 ha)	Large (>5 ha)
Uttarkashi Beneficiary	Mori	Arakot	9	7	0	2	0
		Gokool	5	4	1	0	0
		Kiranu	5	3	2	0	0
		Bhutanu	2	2	0	0	0
		Jhatodee	3	3	1	0	0
		Makuri	3	0	3	0	0
		Thunara	1	1	0	0	0
		Kaleech	2	2	0	0	0
		Total	30	21	7	2	0
Uttarkashi Non-Beneficiary	Mori	Arakot	4	3	1	0	0
		Gookul	1	1	0	0	0
		Kiranu	5	3	0	1	1
		Bhutanu	11	9	1	1	0
		Makuri	2	1	1	0	0
		Thunara	6	5	1	0	0
		Kaleech	5	5	0	0	0
		Duchadu	1	0	0	0	1
		Tikachi	1	0	0	0	1
		Balawat	2	1	1	0	0
		Bawara Kot	1	1	0	0	0
		Total	39	29	5	2	3

Table 2.2: Demographic features of district Uttarkashi vis-à-vis Uttarakhand

PARTICULARS	District Uttarkashi		State		
	2000-01	2010-11	1990-91	2000-01	2010-11
Geographi. area (km ²)	7304	7951	53483	53483	53483
Inhabited village (no.)	677	682(102)*	15667	15828	16846
Total population	295002	329686	7050634	84.89 ¹	101.17 ¹
Male population	152015	168335	3640895	43.26 ¹	51.54 ¹
Female population	142987	161351	3409739	41.63 ¹	49.63 ¹
Male literacy (%)	83.6	89.29	72.79	83.3	88.33
Female literacy (%)	46.7	62.23	41.63	59.6	70.70

¹ in lakhs, * () villages in Block Mori.

[http://districts.nic.in/disdetails.aspx?str_state=dXQ=]

The figures for 1990-91 are for the pre separation of Uttarakhand. There appears some reduction in the geographical area of the district Uttarkashi in 2000-01 as compared to 1990-91(not given in table) that was due to reorganization of district boundaries after change in number of districts. The number of villages and mostly “TOKs”³ has increased due to increase in forest settlements as would be clear from the table number 2.3 below. Out of 144 forest settlements 17 were in the sample district Uttarkashi and 6 out of the 17 in the Mori block.

However, contrary to common belief that female population in hill areas is more favourable to gender ratio, 941 females per thousand males were far less in Uttarkashi as compared to 962 in the state in 2001. This has improved marginally to 959 as compared to 963 in the state in 2011. But it is satisfactory to note that improvement is better in the district vis-à-vis the state. Male literacy in the district has further improved. It was slightly better than in the state in 2001. But in 2011 the difference has further widened. But female literacy is nowhere near the state average. The difference in male –female literacy is widening further. The main cause is domestic as well as field work, which the females have to perform. The gender ratio and the female literacy should be two areas of utmost concern of the state. Further details, particularly about gender ratio are discussed below as per table 2.3.

Table 2.3: District wise population, populous villages and forest settlements

S. No.	District	Total populous villages (2001)	populous forest settlements (2001)	Net populous villages (2001)	No. of Forest Settlements (2001)			m/f ratio
					Total	Male	Female	
1	Uttarkashi	682	17	665	2044	1256	788	627
2	Chamoli	1166	12	1154	386	326	60	184
3	Tehri Garhwal	1801	11	1790	648	374	274	733
4	Dehradun	738	20	718	4650	2576	2074	805
5	Pauri Garhwal	3151	14	3137	6720	3779	2941	778
6	Rudra Prayag	658	0	658	-	-	-	
7	Pithoragarh	1579	13	1566	67	49	18	367
8	Almora	2172	24	2148	816	515	301	584
9	Nainital	1091	26	1065	75736	41462	34274	827
10	Bageshwar	883	2	881	13	8	5	625
11	Champawat	656	5	651	282	186	96	516
	Hilly Districts (Total)	14577	144	14433	91362	50531	40831	808
12	Haridwar	510	5	505	10827	5787	5040	871
13	Udham Singh Nagar	674	16	658	23541	12189	11352	931
	Plain Districts (Total)	1184	21	1163	34368	17976	16392	912
	Uttarakhand	15761	165	15596	12573	68507	57223	835

Chief Revenue Commissioner, Uttarakhand; ‘m/f’ is used for male /female

³ ‘Tok’ in local dialect is used for forest settlement

Table 2.3 gives district wise number of villages, forest settlements, and number of male/ female in different districts and forest settlements of the state. In the forest settlements the gender ratio had gone down to dangerous and alarming level in 2001. The data for 2011 are yet to be made available. In 2001, for example, as compared to overall average of 962 in the state in the forest settlements it was 835 and it was only 808 in the hilly districts vis-à-vis 912 in the plain districts of the state. Further if we take 3 border and top North districts viz. Uttarkashi, Chamoli and Pithoragarh, this ratio is the lowest 184 in Chamoli, followed by 367 in Pithoragarh and 627 in the forest settlements of Uttarkashi. The other districts even with lower ratio than Uttarkashi were Champawat, Bageshwar and Almora. Generally it was believed, that due to lack of productive and remunerative employment in the hill districts, male persons move down to earn, therefore, the women are left behind. During census, persons are counted where they are present in the village/ town etc. Therefore a fewer number of women should be a serious matter.

Education level in Uttarakhand was considered better as compared to undivided Uttar Pradesh and other hill regions in the country may be due to history of the region as it was mostly inhabited and visited by the learned sages. Literacy rate is better in comparison to other tribal and hill areas in the country also. Table below acquaints us with district wise gender/ literacy in the state.

Table 2.4: District-wise Literacy and Population in Uttarakhand, 2011

Districts	Literates Population			Literacy Rate (%)		
	Persons	Males	Persons	Males	Persons	Males
Uttarkashi	216,322	129,289	87,033	75.98	89.26	62.23
Chamoli	284,118	157,013	127,105	83.48	94.18	73.20
Rudraprayag	169,626	91,016	78,610	82.09	94.97	70.94
Tehri Garhwal	401,040	227,423	173,617	75.10	89.91	61.77
Dehradun	1,280,462	712,934	567,528	85.24	90.32	79.61
Pauri	499,212	263,853	235,359	82.59	93.18	73.26
Pithoragarh	350,844	192,237	158,607	82.93	93.45	72.97
Champawat	179,844	103,170	76,674	80.73	92.65	68.81
Almora	440,918	233,748	207,170	81.06	93.57	70.44
Bageshwar	181,713	98,693	83,020	80.69	93.20	69.59
Nainital	706,750	391,234	315,516	84.85	91.09	78.21
Udhamsingh Nagar	1,060,739	611,229	449,510	74.44	82.48	65.73
Haridwar	1,225,845	718,335	507,510	74.62	82.26	65.96

Topography of the area among others like sources of income, working conditions and means of livelihood has been one of the important factors affecting land use, population, living conditions cropping pattern and most importantly land use of the area. Briefly we discuss land use for the three years of the state below as per table 2.5.

Table 2.5: Land use in Uttarakhand (area in hectares)

Details	2006-07	2007-08	2008-09	cgr	% change over 2006-7 in 8-09
Total reported area	5666878	5672590	5672568	0.001	0.10
Forests	3465057	3483872	3485847	0.003	0.60
Barren and uncultivable land	311849	224185	224480	-0.152	-28.02
Land put to nonagricultural uses	160649	216682	216534	0.161	34.79
Cultivable waste lands	366713	302240	303144	-0.091	-17.33
Permanent pastures, grazing lands	220286	198720	198737	-0.050	-9.78
Land under misc. trees, grooves	269042	384229	383987	0.195	42.72
Current Fallows	44064	35795	35161	-0.107	-20.20
Fallow other than current fallows	64068	71832	70967	0.052	10.77
Net sown area	765150	755035	753711	-0.008	-1.50
Area sown more than once	447159	432374	434751	-0.014	-2.77

With all the developmental activities taking place in the state, area under forests has increased by 0.6% during the last three years at an annual rate of .003%. But decline in net area sown and area sown more than once is a matter of concern, also the decline is substantial. Equally disturbing is almost 10% decrease in permanent pastures and grazing lands. However, about 35% increase in non-agricultural uses is not a small amount of land converted. Though that seems to come from barren and waste land, but current fallow has also been converted to uses. Increase in land for misc. trees and grooves seems to have come from replacement of uprooting of trees for non-agricultural uses as per directions of the environment authorities including the courts and also from the people planting fruitful trees all along. Overall, it appears large scale transformation of land use has taken place during the period under consideration. The policy makers have to be cautious about the destruction of natural protection of hills in the name of development. Further on looking at the time series data about land use in Uttarakhand (annexure 2.1), it becomes obvious that though rate of change in land use in Uttarakhand is marginal and insignificant in most of the cases, but the trend is clear. For example, area under non-agricultural uses is on the decline by 007% compounded annually and it is mostly due to 0.046% decreases in barren land. Similarly cultivable waste land has also through the years declined by 0.03% annually. And all this decrease has been replaced by increase in area under non-agricultural uses and marginally under forests. It is to be noted that non-agricultural use of land has gone to construction of roads, dams, industrial units and for such other purposes.

But decrease in NET area sown (table 2.5) should be more serious as food security of the state, particularly production of cereals, pulses, edible oils etc. will come under pressure⁴ as more and more area is likely to be shifted for horticultural crops with coming in of FDI and private players in the marketing, processing, storage and transportation etc. with prime motive of profits. This

⁴ Bhupal, D.S: Impact assessment of agricultural market reforms, AERC, Delhi, 2009

may affect the vulnerable households with small holdings and mostly dependent upon agriculture. The details of holdings are given below

Table 2.6: Number and Area of Operational Holdings by Size in Uttarakhand (2010-11)
(Area in Hectares)

Size Group (in Hectares)	Total No.		Area	
	Total holdings	%	Area (Ha.)	%
Below 1.0	828267	70.5	242511	28.7
1.0-2.0	158402	17.8	220726	26.2
2.0-4.0	78414	8.8	212384	25.2
4.0-10.0	24163	2.7	132200	15.7
10.0 and above	1421	0.2	35629	4.2
Total	1090667	100	843450	100

Distribution of holding in Uttarakhand as portrayed in above table is not much different from the national scene on this account. For example, more than 70% holding are marginal with less than 1 hectare of land, having less than 29% of total area. Another about 18% households own between 1 and 2 hectares with 26% of land. Thus over 88% households operate less than 2 hectares each.

If we look at district Uttarkashi our sample district, out of 36 thousand holdings, 25 thousand or nearly 70% are marginal with less than one hectare of land and 6 thousand or about 17% are between 1 to 2 hectares of holdings. These percentage distribution is on the same pattern as in Uttarakhand state as a whole. The position is not much different in other hill districts or districts in the plains.

District wise details are shown in table no. 2.8. In the entire state of Uttarakhand about 61% area is under forests whereas in district Uttarkashi about 89% area is under forests. About 1% more area than the state is also barren land in the district. However, land put to non-agricultural uses is less than three quarters of 1% in Uttarkashi as compared to about 4% in the state as a whole and this brings the total cultivable waste area to about 1/3rd of 1% in the district as compared to about 5% in the state. But area under permanent pastures and grazing lands is also less than 1% in the district which in the state is about 3.5%. Similarly area under misc. trees, grooves etc. is also about half a percent in the district as compared to about 7% in the state. And most important is net sown area which is less than 4% in the district as compared to about 13% in the state as a whole. These were the figures for the year 2008-09. During last 4-5 years many developments have taken place in the state. Lot of construction work has taken place, more than 70 hydro power projects are under construction or have been sanctioned and a few of them are in the district of Uttarkashi. Therefore, the latest data on the subject will present a more realistic picture which unfortunately we lack at the moment. Most useful will be the economic census data (underway now) which will cover many more things.

**Table 2.7: District wise number of operational holdings in Uttarakhand (2000-01)
and Agricultural Workers (in '000)**

S. No.	District	Total Holdings	Marginal Holdings (1.0 hectare)	Small holdings (1-2 hectare)	Agricultural Workers
1	Uttarkashi	36	25	6	1
2	Chamoli	39	26	8	-
3	Tehri Garhwal	81	56	18	2
4	Dehradun	66	50	9	12
5	Pauri Garhwal	87	44	24	1
6	Rudra Prayag	32	25	5	-
7	Pithoragarh	87	75	10	1
8	Almora	122	94	22	1
109	Nainital	50	33	8	12
11	Bageshwar	55	50	5	1
12	Champawat	36	27	6	1
Total	Hilly Districts	691	505	121	32
12	Haridwar	116	79	21	54
13	Udham Singh Nagar	84	44	17	57
Total	Plain Districts	200	123	38	111
Total	Uttarakhand	891	628	159	143

Table 2.8: District wise land use details of Uttarakhand in 2008-09 (ha)

District	Total reported area	Forest	Barren and cultivable land	Land put to non-agricultural uses	Cultivable waste lands	Permanent pastures & other grazing lands	Area under Misc. tree crops that is not included in net area sown	Current Fallows	Fallow lands other than current fallows	Net Area Sown
Uttarkashi	812689	721664	39452	5473	2860	5305	4501	734	1939	30761
Chamoli	851764	506100	71116	61209	10302	27865	141500	308	697	32667
Tehri Garhwal	485517	321564	5568	7181	78007	477	1970	3536	5670	61544
Pauri Garhwal	669055	385044	33330	15925	32078	14753	14596	5770	8092	46247
Dehradun	364830	203659	3975	22868	44870	34310	58469	8684	21945	78220
Rudra Prayag	234796	180365	6876	3460	2578	4623	15677	195	367	20655
Pithoragarh	411883	205299	20573	11016	39588	45673	39477	2430	5262	42565
Almora	464942	236184	25235	12527	38269	28319	33989	1529	6950	81940
Nainital	406308	298236	1569	9683	22280	118	21606	1681	2066	49069
Bageshwar	207902	110160	6267	5129	14024	19801	24635	1902	1530	24454
Champawat	233225	132337	6173	4589	13516	17395	23997	2690	9301	23227
Hilly Districts	5142911	3300662	220134	159060	298372	198639	381417	29459	63819	491349
Udham Singh Nagar	243162	84537	2773	27395	1716	68	1756	2761	3780	118376
Haridwar	286495	100648	1573	30079	3056	30	814	2941	3368	143986
Plain Districts	529657	185185	4346	57474	4772	98	2570	5702	7148	262362
Uttarakhand	5672568	3485847	224480	216534	303144	198737	383987	35161	70967	753711

Table 2.9: District wise GCA, NAS, GIA and NIA (2008-09) (ha)

District	Cropped Area		Irrigated Area		% age of irrigated area to cropped area	
	Gross	Net	Gross	Net	Gross	Net
Uttarkashi	44715	30761	9495	5202	21.2	16.9
Chamoli	47091	32667	3286	1692	6.9	5.2
Tehri Garhwal	96933	61544	17009	8824	17.5	14.3
Pauri Garhwal	66364	46247	32374	19382	48.8	41.9
Dehradun	110807	78220	14152	7368	12.8	9.4
Rudra Prayag	33496	20655	5205	2608	15.5	12.6
Pithoragarh	73321	42565	6506	3597	8.9	8.5
Almora	122037	81940	11351	5759	9.30	7.0
Nainital	76763	49069	40214	28045	52.4	57.2
Bageshwar	42325	24454	11689	5866	27.6	23.9
Champawat	36550	23227	3720	2012	10.2	8.7
Hilly Districts (Total)	750402	491349	155001	90355	20.7	18.4
Udham Singh Nagar	170864	118376	1552722	180241	90.9	91.4
Haridwar	267196	143986	259446	141533	97.1	98.3
Plain Districts (Total)	438060	262362	414768	249774	94.7	95.2
Uttarakhand	1188462	753711	569769	340129	47.94	45.13

Source: Uttarakhand at a glance

Similarly there is wide difference between the distribution of cropped area in the state as well as variation in individual districts. For example, Uttarkashi has about 14% of the reported area of the state, but gross cropped area in the district is only 3.76% and NET area sown only 4%. But if we look at the net area irrigated in the district, it is almost negligible, around 1.5% of the state (table 2.9).

In the following three Tables (2.10-2.12) area under principal crops of the state, their production and yield per hectare are given. We do not have any authenticated data about area, production and yield of horticultural products. The Horticulture Board of India though publishes data about these aspects regularly, but they themselves probably are not sure about the accuracy of data. In fact, there is another project with the AERCs about the base line data of these crops. We can hope that something useful relating to methodology and exact measurement of area, production and productivity of these crops will probably come out.

Table 2.10: Area (Hectares) under Principal Crops in Uttarakhand

S.No.	Crops	2007-08	2008-09	2009-10
1	Cereals	964957	964957	944982
	a) Paddy	295670	295670	294223
	b) Wheat	398301	398301	394633
	c) Jowar	28097	28097	23739
	d) Maize	32922	32922	27960
	e) Other food grains	209967	209967	204427
2	Pulses	64035	64035	56895
	a) Urad	13910	13910	12707
	b) Peas	6171	6171	5568
	c) Red Lentils	17212	17212	12500
	d) Split Bengal gram	617	617	663
	e) Other Pulses	26125	26125	25457
3	Total oilseeds	27386	27386	29785
	a) Rapeseed and Mustard	14319	14319	14847
	b) Groundnut	1352	1352	1340
	c) Black Sesame	2364	2364	2445
	d) Soybean	9351	9351	11153
4	Fruits and Vegetables			
	Fruits			193787
	Vegetables			58451
5	Other crops			
	a) Sugarcane	124008	104987	96072

Table 2.11: Production of Principal Crops in Uttarakhand Metric Tonne (MT)

S. No.	Crops	2007-08	2008-09	2009-2010
1	Cereals	1744976	1725691	1757148
	a) Paddy	592177	581510	613312
	b) Wheat	814293	797328	845438
	c) Jowar	26008	22173	26475
	d) Maize	43086	42404	38061
	e) Other food grains	269412	282276	233862
2	Pulses	50198	38679	42138
	a) Urad	11395	10227	9634
	b) Peas	8725	2636	5455
	c) Red Lentils	5304	6056	7192
	d) Split Bengal gram	758	219	443
	e) Other Pulses	24016	19631	19414
3	Total oilseeds	28852	25371	32185
	a) Rapeseed and Mustard	8880	9571	12127
	b) Groundnut	773	1818	1917
	c) Black Sesame	499	473	501
	d) Soybean	18693	13509	17640
4	Fruits			7239554
	Vegetables			564281
5	Other crops			
	a) Sugarcane	124008	104987	96072

Table 2.12: Average productivity of principal crops in Uttarakhand (Qtls. /ha.)

S. No.	Crops	2007-08	2008-09	2009-2010
1	Cereals	19.72	17.88	18.73
	a) Paddy	20.55	19.66	20.85
	b) Wheat	20.51	20.02	21.42
	c) Jowar	10.69	7.89	11.15
	d) Maize	14.67	12.88	13.61
2	Pulses	7.98	6.05	7.43
	a) Urad	8.03	7.35	7.58
	b) Red Lentils	4.18	3.52	5.75
	c) Split Bengal gram	6.82	3.55	6.68
3	Total oilseeds	9.24	9.26	10.81
	a) Rapeseed and Mustard	6.18	6.68	8.17
	b) Groundnut	5.58	13.45	14.31
4	Fruits (MT/HA)			3.73
	Vegetables (MT/HA)			9.65
5	Other crops			
	a) Sugarcane	124008	104987	96072

For the year 2009-10 the following data for horticultural crops could be reproduced from the Uttarakhand at a Glance.

There is big difference in utilization of area under orchards in plains like 'kinnu' orchards in Sirsa and Hissar districts of Haryana and fruit orchards (apple, pear, plum peach) in Uttarakhand. In plains the plots under orchards are exclusively used for fruit plains. No other crops are grown by inter-mixing which is very common in Uttarakhand. Therefore, considering that major fruit plots in the state are also used to grow other small crops as well. It would not make any sense to compare area under other crops with area under fruit plants as both are not grown on separate fields.

However, the directorate of economics and statistics was kind enough to provide us all available data about district wise distribution of area and production of apple in the state.

Table 2.13: District wise area and production of apple

District	2008-09		2009-10		2010-11	
	Area (ha)	Prod. MT)	Area (ha)	Prod. MT)	Area ha)	Prod. MT)
Nainital	7802	29258	7804	30035	7806	30443
Almora	1570	14150	1570	14150	1570	14147
Bageshwar	235	463	215	2	166	182
Pithauragarh	1566	1802	1580	1600	1594	3250
Champawat	562	740	574	600	581	614
Kumaun	11735	46413	11743	46387	11717	48636
Dehradun	4605	8218	4610	8226	4710	12819
Pauri	1215	3870	944	2467	1016	2684
Tehri	3169	2572	3272	2651	3427	2742
Chamoli	3782	22664	3956	22664	4070	23406
Rudra Prayag	348	995	355	597	366	404
Uttarkashi	7400	45898	7509	31000	7714	45203
Garhwal	20519	84217	20646	67605	21306	87258
Total	32254	130630	32389	113992	33023	135894

Source: Directorate of horticulture

From the above tables it is obvious that about 2/3rd of production of apple is in the Garhwal region of the state and about 1/3rd of that in Uttarkashi district. Uttarkashi district thus covers about 1/4th of area and yields about 1/3rd production of apple in the state or with about 2/3rd area under apple in the Kumaun region the district produces about as much apple as the entire Kumaun region produces. As far as area under the fruit is concerned, it is increasing in the state as well as in district Uttarkashi. In the last three years area under apple in the state has increased by 2.4% to be exact from 32255 hectares to 33023 hectares. Similarly in Uttarkashi district we find area under apple increasing from 7400 hectares to 7714 hectares which is more than 4%. Though contribution to production may appear of area and not of yield, but that is not the case as production from new covered area under fruits will start after a gestation gap of 5-6 years. Rather in Uttarkashi production has gone down from 45898 MT to 45203 MT which is about 1.5% decrease. This decline is not related with increase in area under apple or gestation period, rather it should be fall in yield or something like. It cannot be a general phenomenon of overall decline in production in the region as we see production of apple in Garhwal division to which Uttarkashi district also belongs has increased.

Hence there is need to examine the reasons of down fall in apple production in the district which in terms of area and total production is an important district.

Table 2.14: District wise net irrigated area (Ha) and source wise irrigated area (2008-09)

S. No.	District	Net irrigated area	Canal	Lake	Tube Well	Other Wells	Other sources
1	Uttarkashi	5202	3094	0	0	0	2108
2	Chamoli	1692	352	0	0	0	1340
3	Tehri Garhwal	8824	855	0	0	0	7969
4	Rudra Prayag	2608	2039	422	0	0	4907
5	Pauri Garhwal	7368	12337	0	3135	118	3792
6	Dehradun	19382	1941	0	0	0	667
7	Pithoragarh	3597	541	105	0	0	2951
8	Almora	5759	3570	0	0	0	2189
9	Nainital	28045	23396	0	3105	1214	330
10	Bageshwar	5866	5043	0	0	0	823
11	Champawat	2012	567	0	1445	0	0
	Hilly Districts (Total)	90355	53735	527	7685	1332	27076
12	Haridwar	108241	13097	0	92816	0	2328
13	Udham Singh Nagar	141533	29090	243	97692	14255	253
	Plain Districts (Total)	249774	42187	243	190508	14255	2581
	Uttarakhand	340129	95922	770	198193	15587	29657

Tables 2.14 through 2.15(a) show details of irrigation in the state. However, most of these irrigation facilities for example, canal irrigation, tube well etc. are in the plain districts of Udham Singh Nagar and part of Haridwar. Whereas in the hill districts either small lakes, (ponds) to be more specific, and natural springs are used for irrigation and most of the irrigation needs are met from rainfall and natural moisture. We are not making any comment on the facilities in plains as apple is not produced in these districts. In the upper Uttarakhand districts like Uttarkashi, Chamoli, canals are used from the natural flow of rivers.

Table 2.15: Source wise irrigated area in Uttarakhand (Hectares)

S. No.	Source	2006-07	2007-08	2008-09
1	Net Irrigated Area	345020	340925	340129
	Canal	95205	88727	95922
	Tube Well	199333	202388	198193
	Other Wells	18544	14464	15587
	Lake	138	114	770
	Others	31800	35232	29657
2	Gross Irrigated Area	554013	554461	569769

Table 2.15 (a): Source wise irrigated area in Uttarakhand (Percentages)

S. No.	Source	2006-07	2007-08	2008-09
1	Canal	27.59	26.03	28.20
2	Tube Well	57.78	59.36	58.27
3	Other Wells	5.37	4.24	4.58
4	Lake	0.04	0.03	0.23
5	Others	9.22	10.34	8.72
6	Total	100	100	100

In tables 2.16 and 2.17 details about Infrastructure Facilities in the state are given.

Table 2.16: Nurseries and preservation

Fruits preservation centres	49
State nurseries	104

Table 2.17: District wise Major Economic Indicators of Uttarakhand (2007-08)

District	Metalled Road length per '000 ha. area (km.)	Metalled Road length per lakh of population by (km.)	No. of primary health care centre per lakh population	No. of beds available in primary health care centre per lakh population
Uttarkashi	175.53	361.04	9.82	91.03
Chamoli	152.8	216.04	10.56	115.02
Tehri Garhwal	545.58	201.78	12.03	81.22
Dehradun	946.6	114.71	3.94	89.06
Pauri Garhwal	723.59	445.67	15.56	161.59
Rudra Prayag	393.15	269.93	10.76	103.74
Pithoragarh	127.94	154.44	15.61	123.24
Almora	528.51	289.48	11.97	139.93
Nainital	1073.64	238.20	7.44	195.43
Bageshwar	343.64	200.90	10.35	63.64
Champawat	334.36	185.34	7.99	65.91
Hilly Districts (Total)	410.61	232.53	10.03	121.37
Udham Singh Nagar	1176.94	125.21	2.64	36.83
Haridwar	1013.14	64.95	3.44	82.07
Plain Districts (Total)	1098.08	94.55	2.92	61.89

Uttarakhand at a glance

Table 2.16 has a direct bearing on the area and production of the crops, including our selected crop. And in table 2.17 first two columns affect the marketing of the produce. These will be discussed in next chapter. However, for detailed information analysis at the block level of the selected district Uttarkashi is required which is discussed below.

District Uttarkashi

As per the requirement of the structure of the report, block wise details of the selected district Uttarkashi, are given in the following paragraphs.

Detailed land use in the years 2007-08 to 2009-10 figures for which were available is given in table 2.18. During the period there was virtually no change in the forest cover of the district. Though in the state area under forests increased. But huge increase in fallow land is noticed. In percentage terms area under these categories changed between 25% and 43%. Area under permanent pastures and under miscellaneous, trees grooves etc. shows negligible increase. But area under cultivation particularly under rabi crops and area sown more than once decreased substantially. Overall there was about 3% decline in gross cropped area. Further if we look at the percent coverage area under different categories it would be evident that but for barren land there is no excessive change in area under non-agricultural uses and uncultivable land. For example,

area under each of the these categories is less than 1% and that is obviously due to huge area about 89% of gross reported being under forests in the district (Table 2.19). We discuss below block wise land use in the district, particularly in the Mori block of the district which is our sample block.

Table 2.18: land use in district Uttarkashi

Block	Area reported	Forest	Barren land	current Follow	other Follow	Uncultivated land	Use in non agriculture work
2007-08	812689	721664	2860	754	2039	39453	5473
2008-09	812689	721664	2860	734	1939	39452	5473
2009-10	812689	721664	2927	1076	2564	39465	5475
cgr		0	0.0116	0.195	0.121	0.000	0.000
%change in 9-10/ 8-9			2.34	42.71	25.75	0.03	0.04

	Pastures	Misc.	GCA	sown >once	Total	Gross Sown Area	
						Rabi	Kharif
2007-08	5305	4503	30638	16004	46642	16636	30106
2008-09	5305	4531	30761	13954	44715	15275	29440
2009-10	5308	4525	29685	14869	44554	15116	29438
cgr		0.002	-0.016	-0.036	-0.023	-0.047	-0.011
%change in 9-10/ 8-9		0.49	-3.11	-7.09	-4.48	-9.14	-2.22

Source: Uttarakhand at a glance

Table 2.19: Block wise land use (area in hectares)

Block	Total area reported	Forest	Barren land	Current Fallow	other Fallow	Un-cultivated	non – agricul. Use
Mori	22153	3641	596	201	856	11638	387
		16.44	2.69	0.91	3.86	52.53	1.75
Purola	11628	2877	541	188	138	2745	577
Nugaon	28283	2002	541	192	555	3371	1619
Dunda	17745	4586	188	145	136	3934	1140
Chinyalisor	14084	3694	177	172	127	3865	903
Bhatwari	15330	1398	884	178	752	3912	849
Total rural area	109223	18198	2927	1076	2564	39465	5475
Forest	703466	703466					
District Total	812689	721664	2927	1076	2564	39465	5475
% share		88.80	0.36	0.13	0.32	4.86	0.67

Contd ...2009-10 area in hectares

Block	Pastures	Misc.	GCA	sown >once	Total	Gross Sown area	
						Rabi	Kharif
Mori	826	1081	3352	2529	5881	1624	4257
	3.73	4.88	15.13	11.42	26.55	7.33	19.22
Purola	175	474	4473	1654	6127	2182	3945
Nugaon	646	1091	8158	3622	11780	4295	7485
Dunda	1319	465	5390	3134	8524	2845	5679
Chinyalisor	649	348	3771	2163	6934	2347	3587
Bhatwari	1693	1066	4541	1767	6308	1823	4485
District Total	5308	4525	29685	14869	14554	15116	29438
% share	0.65	0.56	3.65	1.83	1.79	1.86	3.62

Uttarakhand at a glance

In Uttarkashi about 89% area is under forests, about 5% area in total is uncultivable which includes barren, fallow, other non-agricultural uses etc. All these are less than 1% each. Therefore, as per 2009-10 records, there is not much interruption with nature to invite its fury as witnessed during June this year.

Looking at the data of block Mori, we find that land use is at quite variation from the district land use. For example, forest area in the block is just 16.4 %, nowhere near the district average of 89%. It is 5 times less than area under forests in the district. Similarly area under non-agricultural uses is huge as compared to state and district average. In this block about 53% area is uncultivated. Which includes barren land, fallow, current fallow, area under non-agricultural uses etc.

But cropped area is more than in the district. Similarly area sown more than once is more than 11% whereas in the district it is less than 2%. Permanent pastures and grazing land is about 4% in the block as compared to less than 1% in the district. Natural formations seem to be aggressively altered in the block vis-à-vis district Uttarkashi, but not necessarily that these alterations will be injurious to nature. For example, agriculture takes place on more area than in the district. Table 2.20 gives details of land holdings in the district as well as in Mori block.

Table 2.20: Block wise number of operational holdings in Uttarkashi (Agril. Census 2005-06)

Block	< 1 ha		1-2 ha		2-4 ha		4-10 ha		>10ha		Total	
	no	Area	no	area	no	area	no	area	no	area	no	area
Mori	2900	1021	662	1011	524	1411	121	712	2	23	4209	4178
Mori (%)	68.90	24.44	15.73	24.20	12.45	33.77	2.87	17.04	0.05	0.55	100	100
Purola	3086	1129	885	1149	642	1669	168	858	6	73	4787	4878
Nugaon	5043	1712	1705	2475	1228	3398	260	1343	4	45	8240	8973
Dunda	5823	1670	1370	2036	742	1896	136	696	3	40	8074	6338
Chinyalisor	4219	1400	1151	1517	515	1484	102	521	2	26	5989	4948
Bhatwari	5012	1676	1065	1573	509	1414	108	576	4	64	6698	5303
District Total	26083	8608	6838	9761	4160	11272	895	4706	21	271	37997	34618
Distt. (%)	68.64	24.87	18.00	28.20	10.95	32.56	2.36	13.59	0.06	0.78	100	100

Uttarakhand at a glance

One can see that pattern of less than 1 hectare of holdings is almost similar, be it block, district or be it the state on the whole. In the district about 69% holdings are less than 1 hectare in size, so is the case with block Mori. Similarly area occupied by these marginal holdings is about 24 % in the bloc and less than 25% in the district. But change starts with the increase in the size of holdings. In the holding size of 1 -2 hectares less than 16% holdings are in block Mori as compared to about 18% in the district and average area under this group of holdings is almost similar in the block and in the district. It works out near about 1.5 hectares in block Mori and in district Uttarkashi. Almost similar is the case of medium size of holdings (2-4hectares) we observe no substantial difference in number of holdings, about 12.5% and area occupied about 34% in block Mori as compared to 11% holdings in the district with 33% area. Average size of the holding being 2.69 hectares in the block as compared 2.71 hectares in the district. Slight difference appears in the case of size group of 4-10 hectares. In the block we find 2.9% holdings having 17% of the area whereas in the district 2.4 % holdings have 13.6% area with average size in both being 5.89 and 5.26 in the block and in the district respectively. However, in the largest size of holdings (10 hectares and above) the average size is more in the district in comparison to that in the block, whereas percentage of holding does not differ much. In both the cases it is about 0.05% and 0.06 %, and area occupied is 0.55% and 0.78% respectively with average size of the holdings being 11.5 hectares in the case of Mori and about 13 hectares in the case of Uttarkashi.

Table 2.21: Block wise Cropping pattern 2009-10 (area ha)

Block	Rice	Irri. Rice	Wheat	Irr. wheat	Maize	Irr. maize	Orchards
Mori	707	340	1340	566	59	1	4136
Mori (%)	9.89	4.76	18.74	7.92	0.83	0.01	57.85
Purola	2101	1057	1396	599	82	1	1650
Nugaon	2857	974	2476	370	114	2	3793
Dunda	1597	959	2273	809	52		1175
Chinyalisor	1730	799	2016	759	68	2	1230
Bhatwari	1360	841	2249	713	54	1	1417
Uttarkashi total	10352	4970	11750	3816	429	7	13401
Distt. (%)	23.15	11.11	26.27	8.53	0.96	0.02	29.96

Irr. = irrigated; Uttarakhand at a glance

Though Uttarkashi being the hill district is not known for intensive irrigation, still we find about 23% of paddy area is irrigated, 26% of wheat and 30% irrigation goes to orchards. Overall about 84% crops are under irrigation and the rest use rain water, natural hill moisture etc. (table 2.21)

Table 2.22: Block wise primary agri credit coop societies(2010-11) (Rs'000)

	no.	members	share cap	work cap	deposits
Mori	7	5804	3766	30888	16944
% share Mori	15.91	12.48	11.70	8.99	20.03
Purola	3	4510	3012	29364	6874
Nugaon	9	10232	10902	90108	20109
Dunda	8	9598	4704	57871	10288
Chinyalisor	7	8301	4566	54676	13691
Bhatwari	10	8065	5216	80634	16705
Uttarkashi total	44	46510	32186	343541	84611

Uttarakhand at a glance

Agriculture apart no economic activity can flourish without liquidity. Unfortunately, private sector banks do not prefer to give agricultural credit, not only in Uttarakhand but in any other state. The situation everywhere is same. However, public sector banks are statutorily bound to give credit to priority sector, i.e., agriculture. NABARD helps in this case though(Regional Rural Banks) RRBs, Cooperative banks and cooperative credit societies. In Uttarkashi we find total 44 primary agricultural credit cooperative societies. Share of Mori block with regard to these societies is less than 16% , whereas in the share capital it is further less that less than 12% of capital in the district. But Mori block has more deposits than percentage share in societies, share capital or members and working capital. About 20% deposits with these societies come from Mori Block.

Further details of production, marketing, marketing infrastructure, and credit for marketing etc. are discussed in the next chapter.

Annexure Table 2.1 District wise Major Socio-Economic Indicators of Uttarakhand

S. No.	District	Population Density (2001)	% age of SC/ST population to Total Population (2001)	% age of total primary workers to Total Population (2001)	% age of total Agricultural workers to Total Population (2001)
1	Uttarkashi	37	23.77	38.9	75.7
2	Chamoli	46	21.06	26.2	61.2
3	Tehri Garhwal	166	14.55	30.0	63.8
4	Dehradun	415	21.27	26.2	21.8
5	Pauri Garhwal	131	15.52	24.6	58.5
6	Rudra Prayag	115	17.80	33.4	73.2
7	Pithoragarh	65	27.19	26.8	60.4
8	Almora	201	22.40	32.5	72.1
9	Nainital	179	20.07	29.0	45.6
10	Bageshwar	111	26.64	34.3	75.2
11	Champawat	127	17.29	25.0	62.1
	Hilly Districts (Total)	120	20.38	28.7	52.8
12	Haridwar	613	21.91	24.4	40.4
13	Udham Singh Nagar	486	22.09	24.3	51.3
	Plain Districts (Total)	547	22.00	24.4	28.3

Contnd....

S. No.	District	%age of total household workers to Total Population (2001)	Literacy rate (2001)	%age of NAS to GCA (2008-09)	%age of Area under food grains to GCA (2008-09)
1	Uttarkashi	1.3	65.7	145.4	95.8
2	Chamoli	2.5	75.4	144.2	103.9
3	Tehri Garhwal	1.0	66.7	157.5	109.6
4	Dehradun	2.2	79.0	143.5	79.5
5	Pauri Garhwal	1.3	77.5	141.7	96.0
6	Rudra Prayag	1.1	73.6	162.2	104.6
7	Pithoragarh	3.6	75.9	172.3	115.8
8	Almora	1.3	73.6	148.9	106.1
9	Nainital	1.7	78.4	156.4	72.8
10	Bageshwar	2.0	71.3	173.1	112.6
11	Champawat	1.9	70.4	157.4	75.3
	Hilly Districts (Total)	1.8	74.9	152.7	98.3
12	Udham Singh Nagar	2.0	64.9	185.6	84.0
13	Haridwar	3.7	63.7	144.3	39.2

Contd.....

S. No.	District	Fertilizer use per hectare of GCA (kg) (2008-09)	%age of GIA to GCA (2008-09)	%age of NIA to NAS (2008-09)	%age of GIA through public canals to GCA (2008-09)
1	Uttarkashi	8.5	21.2	16.9	52.00
2	Chamoli	5.3	7.0	5.2	20.8
3	Tehri Garhwal	2.5	17.5	14.3	8.7
4	Dehradun	52.7	48.8	41.9	56.9
5	Pauri Garhwal	4.7	12.8	9.4	27.7
6	Rudra Prayag	4.3	15.5	12.6	64.0
7	Pithoragarh	5.0	8.9	8.5	10.7
8	Almora	3.6	9.3	7.0	49.3
9	Nainital	112.0	52.4	57.2	83.4
10	Bageshwar	5.5	27.6	24.0	86.0
11	Champawat	10.3	10.2	8.7	28.2
	Hilly Districts (Total)	20.0	20.7	18.4	56.2
12	Udham Singh Nagar	403.7	97.1	98.3	20.6
13	Haridwar	172.9	90.9	91.4	12.1
	Plain Districts (Total)	313.7	94.7	95.2	16.9

Uttarakhand at a glance

Annexure – 2 .I

Land use through the years ('000 hectares)

year	Geo area	repo rted	forest	Non-agri.u ses	barren	Total non-agri	Prmt pasture	Misc. trees	Cul waste	Total cultra ble
2001-02	5348	5672	3465	152	310	462	229	251	386	866
2002-03	5348	5672	3468	152	312	465	229	252	386	868
2003-04	5348	5668	3465	152	311	463	229	251	386	866
2004-05	5348	5670	3465	152	312	464	229	249	386	864
2005-06	5348	5666	3465	154	313	467	230	249	384	863
2006-07	5348	5667	3465	161	312	472	220	269	367	856
2007-08	5348	5673	3484	217	224	441	199	384	302	885
2008-09	5348	5673	3486	217	224	441	199	384	303	886
2009-10	5348	5672	3485	216	225	441	198	383	309	891
2010-11	5348	5673	3485	218	225	442	199	386	310	894
CGR			.0008	0.0535	-0.0462	-0.007	-0.0207	0.0645	-0.0329	0.0039

Land use statistics at a glance, GOI

Annexure 2.II
District wise demographic Indicators of Uttarakhand

S. No.	District	Population Density (2001)	% age of SC/ST population to Total Population (2001)	% age of total primary workers to Total Population (2001)	% age of total Agricultural workers to Total Population (2001)
1	Uttarkashi	37	23.77	38.9	75.7
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5	Pauri Garhwal	131	15.52	24.6	58.5
6	Rudra Prayag	115	17.80	33.4	73.2
7	Pithoragarh	65	27.19	26.8	60.4
8	Almora	201	22.40	32.5	72.1
9	Nainital	179	20.07	29.0	45.6
10	Bageshwar	111	26.64	34.3	75.2
11	Champawat	127	17.29	25.0	62.1
	Hilly Districts (Total)	120	20.38	28.7	52.8
12	Haridwar	613	21.91	24.4	40.4
13	Udham Singh Nagar	486	22.09	24.3	51.3
	Plain Districts (Total)	547	22.00	24.4	28.3

Uttarakhand at a glance

Annexure – 2.III
Comparative data of India and Uttarakhand

S. No.		Year	Uttarakhand	India	%age of Uttarakhand in India
1.					
		2009-10	41	6133	0.7
		2009-10	7	1089	0.6
		2009-10	14	905	1.5
		2009-10	20	4139	0.5
2.	Land use details (lakh ha.)				
	Forest	2006-07	34.65	697	4.9
	NAS	2006-07	7.65	1399	0.5
	Area sown more than once	2006-07	4.47	533	0.8
	NIA	2006-07	3.45	617	0.6
3.	Fertilizer consumption ('000 MT)				
	Nitrogen (N)	2007-08	115	14419	0.8
	Phosphorus (P)	2007-08	25	5515	0.4
	Potash (K)	2007-08	10	2636	0.4
	Total	2007-08	150	22570	0.7
4.	Production of principal crops (MT)				
	a) Wheat	2008-09	7.97	807	1.0
	b) Paddy	2008-09	5.81	992	0.6
	c) Total cereals	2008-09	17.26	2199	0.8
	d) Total pulses	2008-09	0.39	146	0.3
	e) Total food grains	2008-09	17.65	2345	0.8
	f) Total oilseeds	2008-09	0.25	288	0.1
	g) Sugarcane	2008-09	55.32	2850	1.9
	h) Potato	2007-08	4.84	285	1.7

Chapter III

Production and Marketing of Apples

As stated in chapters I and II, MIS basically is operationalized when market price of the commodity goes below the level of minimum support price and farmers are forced to sell below that level. The Governments (Centre as well as state) activate the nodal agency to procure the identified commodity at the MSP till the market price comes up to the level of MSP. Wheat and paddy are covered under price support system. The basic difference between the two, i.e., PSS and MIS is that MIS remains in operation only for the period the market price levels with the MSP whereas the PSS remains in operation irrespective of the difference between the market price and the MSP. The purpose of both appears to be the same. But PSS also helps to maintain the food security, as the government procures food grains for the public distribution system (PDS). However, there are tricks with procurement agencies if they do not want to procure under the PSS. Directly the agency does not refuse but many other pleas are invented such as the moisture content being above the permissible limit or the shortage of bags etc. which was happening for a couple of years with regard to procurement of wheat.

The only commodity under MIS in Uttarakhand is Apple 'c' grade. Apple (*Malus pumila*) is commercially the most important temperate fruit and is fourth among the most widely produced fruits in the world after banana, orange and grape. China is the largest apple producing country in the world. The grading of apples started in 1915 in the US, the state established the first grade standards in the nation for apples. The US department of Agriculture adopted national grade standards for apples 8 years later in 1923. The "United States Standards for Grades of Apples" as it is known now, generally has three grades: 51.300 U.S. Extra Fancy, 51.301 U.S. Fancy, 51.302 U.S. No. 1. They add US No.1 hail also. Further Washington has its own grades but on the same lines. But Washington Fancy has higher standards has than the US Fancy. Similarly New York has its own names and grades but specification wise they also follow US standards. Canada has termed grades for their apples as Canada Extra Fancy, Canada Fancy, Canada Commercial, Canada Hailed, Canada Commercial Cookers, Canada No. 1 Peelers and Canada No. 2 Peelers. Many more countries New Zealand, Australia etc. have set their standards. India on her part categorizes apples into three grades 'A', 'B' and 'C' with the following specification. Along with other specifications like colour, maturity, freshness, un-punctured skin etc, diameter of the fruit is an important criterion. 'A' grade apples have more than 80 mm diameter, 'B' grade apples have between 65 and 80 mm and all those with less than 65mm are graded as 'C'. Generally consumers prefer medium or larger size fruits, therefore 'C' grade apples do not fetch proper market price. But that does not mean they are in any way less in nutrition, or bad in taste, or have any other negative feature. On the other hand these types of apples are most suitable for Murabba making.⁵ As 'C' grade apples do not fetch prices as better as 'A' or 'B' grade, farmers suffer losses. Because all the produce cannot be graded as 'A' or 'B', farmers have to

⁵ Murabba is aurvedic system of preservation of fruits. The process also increases nutrition quality of the fruit. Fruit is first poked and then mixed with thick liquid prepared from sugar and water. Then the fruit along with sugar paste is packed.

bear the cost of 'C' grade apples at par with 'A' and 'B' grade apples, but in return get no price or almost negligible. Many times the price of 'C' grade apples is too low to meet the cost of cultivation, rather not even the cost of transportation to the market. Therefore to help them government intervenes and sets minimum prices for such grade apples which is the lowest, but certainly helpful to farmers in recovering some of their costs. This price cannot be compared with MSP of other crops which is announced at the beginning of the sowing season.

In Himachal Pradesh HPMC buys at the stipulated price, processes then sells. But in Uttarakhand, it is the horticulture department⁶ which along with Kumaun Mandal Vikas Nigam and Garhwal Mandal Vikas Nigam⁷ is entrusted by the government to buy 'c' grade apples from the farmers at the stipulated price whenever they feel that apple 'c' grade needs to be procured.

A couple of points need to be underlined, one, in the case of apples there is no MSP in the sense that the procurement price of apple 'c' grade is nowhere related with cost of cultivation. Two, procurement price is announced when the selling season has already started. It is not like MSP of other crops which is announced before the sowing of the crop starts so that farmers could adjust area under different crops keeping in mind the economics of each crop. Three, in the case of apples it is the state government which takes the initiative and it is the state level agencies which buy apple 'c' grade, and four, the buying agency, HPMC in Himachal Pradesh unlike Department of Horticulture in Uttarakhand, processes the produce and sells through retail outlets. It is like HAFED buying sunflower on behalf of NAFED and storing it, and then releasing in the market without any value addition in the form of processing that Department of Horticulture buys apple 'c' grade and sells in the market without any processing or value addition. The following table gives details of other commodities and states where MIS is applicable.

Table 3.1 below adapted from B. Jha, 2012⁸ shows the commodities under MIS and PSS in different states.

⁶ Directorate of Horticultural is entrusted to operate MIS through its mobile teams known as Horticultural Mobile Team (HMT) which basically are supposed to provide extension services related with agronomical issues to the farmers.

⁷ Garhwal and Kumaun Vikas Mandals are two divisional development corporations of the state govt supposed to work in the respective divisions of the state. So far none of them has bought or processed any quantity of apple 'c' grade under the MIS.

⁸ Brajesh Jha, 2012 Study proposal Evaluation of Price Support and Market Intervention Scheme

Table 3.1: Commodities under MIS and PSS in different states

<i>State</i>	<i>Commodities under MIS</i>	<i>Commodities under PSS</i>
Andhra Pradesh	Oil palm, Chilly	Milling copra, Cotton, Sunflower, tur
Haryana	-	Sunflower, Mustard
Himachal Pradesh	Apple-‘C’ grade	-
Karnataka	Oil palm, Arecanut	Ball copra, Sunflower, Safflower, Tur
Kerala	Black Pepper	Milling copra, Ball copra
Madya Pradesh		Urad, Mustard
Maharashtra		Tur, Sunflower, Safflower
Mizoram	Chillies, Ginger, passion fruit, Chow- chow (Iskut)	
Rajasthan	Onion, Garlic	Gram, Mustard
Uttar Pradesh	Potato	Groundnut, Mustard
Uttarakhand	Apple-‘C’ grade	
West Bengal	Potato	Sesamum

We discuss in detail marketing of apple ‘c’ grade in the state, after making a brief discussion of apple at the national level. In table 3.2 area and production of fruits and vegetables in the country is presented.

Table 3.2: Area and production of fruit and vegetables in India, (area ‘000 ha, prod ‘000 Mt)

Year	Fruits		vegetables	
	Area	Production	Area	Production
1991-92	2874	28632	5593	58532
2001-02	4010	43001	6156	88622
2002-03	3788	45203	6092	84815
2003-04	4661	45942	6082	88334
2004-05	5049	50867	6744	101246
2005-06	5324	55356	7213	111399
2006-07	5554	59563	7581	114993
2007-08	5857	65587	7848	128449
2008-09	6101	68466	7981	129077
2009-10	6329	71516	7985	133738
2010-11	6383	74878	8495	146554
cgr	0.060	0.069	0.041	0.065
avg	5305.6	58037.9	7217.7	112722.7
cv	17.40	20.14	12.43	19.15

Source: National Horticulture Board statistics

Area under fruits from 1991-91 to 2001-02 increased by around 40%, production of fruits by around 50%, whereas production of vegetables increased during the same period as much as fruits but area expansion was around 10% during this period in the case of vegetables in comparison to 40% under fruits. If we look at annual compounded growth rate of area under fruits from 2001-02 to 2010-11 it increased by around 6%, production of fruits by around 7%, whereas area under vegetables increased by around 4% while production by 6.5%. Not only that, area under vegetables has been more stable with 12% variation in comparison to 17% variation in area under fruits.

Table 3.3: Area and Production of major fruits in India
(area '000 ha, prod. '000 mt)

Crops	2010-11		2011-12		2012-13		% change in 2011-12 over 2010-11	
	Area	Prod.	Area	Prod.	Area	Prod.		
			Final		(Adv.Estimates)			
Apple	289	2891	322	2203	325	1897	11.34	-23.77
Banana	830	29780	797	28455	771	27055	-4.09	-4.45
Ber	22	188	34	252	34	300	50.23	34.38
Grapes	111	1235	116	2221	115	2519	4.09	79.85
Guava	205	2462	220	2510	233	2619	7.35	1.95
Litchi	78	497	80	538	83	575	3.60	8.21
Mango	2297	15188	2378	16196	2464	17291	3.54	6.64
Papaya	106	4196	117	4457	129	5190	11.17	6.23
Peach	18	92	20	91	21	99	10.89	-1.29
Pear	41	300	48	294	49	308	17.95	-1.97
Pineapple	89	1415	102	1500	106	1500	15.36	5.98
Plum	14	32	26	72	27	81	89.62	123.98
Pomegranate	107	743	112	772	113	784	4.58	3.95
Sapota	160	1424	163	1426	164	1497	2.08	0.12
Walnut	114	187	150	284	157	277	31.27	52.02
Others	913	5447	889	4991	952	5703	-2.70	-8.37

Source: National Horticulture Board

During the last three years, however, we find that area under apples has increased by around 11% whereas production declined by about 24%. Major increase has been in area and production of plums (table 3.3).

Table 3.4 gives details of area, production and yield of apple in the country. Share of Uttarakhand in area during 2008-09 was around 6%, whereas in production it was 3.3% much less than the area. Naturally it was due to low yield. Average yield in Uttarakhand was around 4 metric tonne/ hectare as compared to national average of 7 metric tonne. During 2009-10, area and production of apples in Uttarakhand declined in comparison to the preceding year, share in area came down to 5.73% and production to around 3.2% of the total national area and production respectively. Similarly both area and production further declined in 2010-11, share in area came down to 5.71% and in production to 2.6% of apples in Uttarakhand during 2010-11.

**Table 3.4: State wise area production and yield of apple
(area '000 ha, prod. 000 mt, yield mt/ha)**

State	2008-09			2009-10			2010-11			% change in 2010-11 over 2008-09		
	area	Prod.	yield	area	Prod.	yield	area	Prod.	yield	area	Prod.	yield
J &K	133.7	1332.8	10	138.1	1373	9.9	141.7	1852.4	13.1	5.98	38.99	31.00
HP	97.2	510.2	5.2	99.6	280.1	2.8	101.5	892.1	8.8	4.42	74.85	69.23
Ukhand	32.7	132.3	4.1	32.4	114	3.5	33	135.9	4.1	0.92	2.72	0.00
Aruachal	10.8	9.8	0.9	12.8	10	0.8	12.8	10.0	0.8	18.52	2.04	-11.11
Others	0	0.1	1.4	0.1	0.2	2.2	0.1	0.2	2.7		100	92.86
Total	274.4	1985.1	7.2	282.9	1777.2	6.3	289.1	2890.6	10	5.36	45.61	38.89
%share of UKhand	5.96	3.33	14.24	5.73	3.21	13.73	5.71	2.35	10.38	2.61	1.03	0.00

Source: National Horticulture Board

Table 3.5: District wise percent of area and production of apple in Uttarakhand

District	2008-09		2009-10		2010-11	
	Area (ha)	Prod. (MT)	Area (ha)	Prod. (MT)	Area (ha)	Prod. (MT)
Nainital	24.19	22.40	24.09	26.35	23.64	22.40
Almora	4.87	10.83	4.85	12.41	4.75	10.41
Bageshwar	0.73	0.35	0.66	0.00	0.50	0.13
Pithauragarh	4.86	1.38	4.88	1.40	4.83	2.39
Champawat	1.74	0.57	1.77	0.53	1.76	0.45
<i>Kumaun(region)</i>	<i>36.38</i>	<i>35.53</i>	<i>36.26</i>	<i>40.69</i>	<i>35.48</i>	<i>35.79</i>
Dehradun	14.28	6.29	14.23	7.22	14.26	9.43
Pauri	3.77	2.96	2.91	2.16	3.08	1.98
Tehri	9.83	1.97	10.10	2.33	10.38	2.02
Chamoli	11.73	17.35	12.21	19.88	12.32	17.22
Rudra Prayag	1.08	0.76	1.10	0.52	1.11	0.30
Uttarkashi	22.94	35.14	23.18	27.19	23.36	33.26
<i>Garhwal(region)</i>	<i>63.62</i>	<i>64.47</i>	<i>63.74</i>	<i>59.31</i>	<i>64.52</i>	<i>64.21</i>
Total	100.00	100.00	100.00	100.00	100.00	100.00

Uttarakhand at a glance

In the country, Uttarakhand may not be well placed in terms of production and productivity of apples, but district Uttarkashi is ahead of many districts in the state. For example, during 2008-09 with about 23% area under apples it produced about 35% of apples in the state. Similarly in 2009-10 with 23 % area it was successful in producing about 27% apples, though it was not as much as in the preceding year. It increased marginally its performance in 2010-11 by producing 33% of apple from about 23% area in the state. Block wise information is given table 3.6

Table 3.6: Block wise Area (ha) and production (mt) of fruits in Uttarkashi

Block	Apple		Pear		Peach		Plum		Khurmani		Walnut		Total	
	Area	Prod.	Area	Prod	Area	Prod	Area	Prod	Area	Prod	Area	Prod	Area	Prod
Mori	3270	19857	290	2022	24	198	261	152	74	448	30	118	3949	22795
% share	82.81	87.11	7.34	8.87	0.61	0.87	1.87	1.97	0.76	0.52	6.61	0.67	100.0	100.00
Purola	799	4113	283	1973	15	210	175	133	129	658	28	260	1429	7347
Nugaon	2502	15430	304	2125	75	300	305	221	143	830	31	300	3360	19206
Dunda	293	1332	163	1112	39	200	207	189	127	708	19	192	848	3733
Chinyalisor	301	1351	187	1255	28	200	231	155	126	668	16	150	889	3779
Bhatwari	549	3120	230	1588	41	190	197	158	116	668	21	212	1154	5936
Uttarkashi	7714	45203	145	1007	222	129	1376	1008	715	3980	145	1232	1162	62796
% share distt	66.33	71.98	12.5	16.04	1.91	2.07	6.15	6.34	1.25	1.96	11.8	1.61	100	100
Share of	42.39	43.93	19.9	20.07	10.81	15.2	18.97	15.08	10.35	11.26	20.6	9.58	33.96	36.30

Table 3.6 gives the details of area and production of major fruits in Uttarkashi district. Block Mori is our sample block for the study. From the table its importance in area and production of apple is underlined. For example, apple covers about 66% area and 72% of production of apple among all the fruits produced in the district, whereas in block Mori area under apples is about 83% of all the fruits in the block and production about 87%. However, in the district Mori block covers about 42% area under apple and about 44% of production. Thus a little less than half of apple in district Uttarkashi is produced in block Mori. In other words, about 14% of total apple in the state is produced in Block Mori alone.

Increasing production through expansion of area or through improvement of yield or through both can lead to more income to the farmers provided the market conditions do not change. But unfortunately that is the weakest link of Indian agriculture in general and horticultural crops in particular. Further hill areas are if most favoured for production of horticultural crops due to weather and moisture content, there are hurdles of transport, storage, processing and good marketing facilities. Uttarakhand in general and being the top north district Uttarkashi district in particular, suffer from the absence of good marketing infrastructure.

First we look at the regulated market conditions in the state vis-à-vis India. Table 3.7 below gives the number of regulated markets in the country state wise.

As would be clear from table 3.8, the number of regulated markets in the state nowhere matches with requirement. At least 12 times more regulated (principal as well as submarket yards are required. Area covered by each regulated market in the state is more than 960 square kilo meters.

Only in Sikkim, Meghalaya and Himachal Pradesh more area is served by each regulated market than that in Uttarakhand.

Table 3.7: Wholesale regulated markets in India (as on 31.3.2011)

Sr. No.	STATE/U.TS	NUMBER OF MARKETS			REGULATED MARKETS		
		Whole - Sale	Rural Primary	Total	Principal	Submarket Yards	Total
1	Andhra Pradesh	329	576	905	329	576	905
2	Arunachal Pradesh	6	63	69	16	113	129
3	Assam	405	735	1140	20	206	226
4	Bihar *	325	1169	1794	* APMR	Act	Repealed
5	Jharkhand	205	603	808	28	173	201
6	Goa	4	24	28	1	7	8
7	Gujarat	207	129	336	196	218	414
8	Haryana	284	189	473	106	178	284
9	Himachal Pradesh	42	35	77	10	38	48
10	Jammu & Kashmir	26	8	34	APMR	Act not yet	implemented
11	Karnataka	504	730	1234	152	352	504
12	Kerala	348	1014	1362	APMR	Act not	enacted
13	Madhya Pradesh	241	1321	1562	241	276	517
14	Chhattisgarh	2	1132	1134	73	112	185
15	Maharashtra	880	3500	4380	299	581	880
16	Manipur	20	98	118	APMR	Act not	enacted
17	Meghalaya	35	84	119	2	-	2
18	Mizoram	10	105	115	APMR	Act not	implemented
19	Nagaland	19	174	193	18	Nil	18
20	Orissa	398	1150	1548	45	269	314
21	Punjab	488	115	603	139	349	488
22	Rajasthan	431	312	743	129	302	431
23	Sikkim	7	12	19	1	-	1
24	Tamil Nadu	300	677	977	277	15	292
25	Tripura	84	554	638	21	-	21
26	Uttar Pradesh	584	3464	4048	249	356	605
27	Uttarakhand	36	30	66	25	33	58
28	West Bengal	279	2925	3204	43	641	684
29	A & N Island	0	0	0	APMR	Act not	enacted
30	Chandigarh	1	0	1	1	-	1
31	D & N Haveli	0	8	8	APMR	Act not	enacted
32	Daman & Diu	0	2	2	Reported	Nil	
33	Delhi	30	0	30	8	13	21
34	Lakshadweep	0	0	0	APMR	Act not	enacted
35	Puducherry	9	0	9	4	5	9
	Total	6539	21238	27777	2433	4813	7246

Note: -- * Bihar Agril. Produce Marketing (Regulation) Act Repealed from 1st September, 2006.

Table 3.8: Details of regulated markets in India (31.3.2011)

Sr No	Name of the State/UT	Area in Sq. Kms. *	Total Population *	Total Regulated Markets	Area covered by each Market in Sq. Kms. (Col. 3 / 5)	Requirement of Markets ** (Col. 3 / πr^2)	Population Served by each Market (Col. 4 / 5) (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Andhra Pradesh	275045	76210007	905	303.92	3501	84210
2	Arunachal Pradesh	83743	1097968	129	649.17	1066	8511
3	Assam	78438	26655528	226	347.07	998	117945
4	Bihar	94163	82998509	Act Repealed	0.00	1198	0
5	Jharkhand	79714	26945829	201	396.59	1015	134059
6	Goa	3702	1347668	8	462.75	47	168459
7	Gujarat	196024	50671017	414	473.49	2495	122394
8	Haryana	44212	21144564	284	155.68	563	74453
9	Himachal Pradesh	55673	6077900	48	1159.85	709	126623
10	Jammu & Kashmir	222236	10143700	0	0.00	2829	0
11	Karnataka	191791	52850562	504	380.54	2441	104862
12	Kerala	38863	31841374	0	0.00	495	0
13	Madhya Pradesh	308346	60385118	517	596.41	3924	116799
14	Chhattisgarh	135191	20833803	185	730.76	1721	112615
15	Maharashtra	307713	96878627	880	349.67	3916	110089
16	Manipur	22327	2388634	0	0.00	284	0
17	Meghalaya	22429	2318822	2	11214.50	285	1159411
18	Mizorum	21081	891058	0	0.00	268	0
19	Nagaland	16579	1990036	18	921.06	211	110558
20	Orissa	155707	36804660	314	495.88	1982	117212
21	Punjab	50362	24358999	488	103.20	641	49916
22	Rajasthan	342239	56507188	431	794.06	4356	131107
23	Sikkim	7096	56473122	1	7096.00	90	56473122
24	Tamil Nadu	130058	62405679	292	445.40	1655	213718
25	Tripura	10486	3199203	21	499.33	133	152343
26	Uttar Pradesh	240928	166197921	605	398.23	3066	274707
27	Uttarakhand	55845	8489349	58	962.84	711	146368
28	West Bengal	88752	80221171	684	129.75	1130	117282
29	A&N Islands	8249	356265	0	0.00	105	0
30	Chandigarh	114	900914	1	114.00	1	900914
31	D & N Haveli	491	220490	0	0.00	6	0
32	Daman and Diu	112	158204	0	0.00	1	0
33	Delhi	1483	13850507	21	70.62	19	659548
34	Lakshdweep	32	60650	0	0.00	0	0
35	Puducherry	492	974345	9	54.67	6	108261
	TOTALS	3289716	1084849391	7246	29305.44	41868	61895486

*SOURCE : - Statistical Abstract India 2007 Published by Central Statistical Organization, Ministry of Statistics & Programme implementation, Govt. of India.

**One Market in the Radius of 5 kms as per National Commission on Agriculture.

NOTE : -- Bihar Agril. Produce Marketing (Regulation) Act Repealed from 1st September,2006.

Not only the state lacks in number of regulated markets but also as would be clear from table 3.7 and 3.8 it lacks proper facilities therein.

In Uttarakhand there are 66 wholesale markets in total. But number of regulated markets is less, 25 principal regulated markets yards and 33 submarket yards are regulated. Out of 25 markets 20 are functional as of now. The difference between the principal and sub market yard is with regard to control by Agricultural Produce Market Committee (APMC). There is separate APMC for each principal regulated market elected as per the Uttar Pradesh Regulated Markets act 1964, adopted by the state in 2000, and where the arrivals are less and separate APMC cannot be established, the market functions as sub market yard of the respective APMC. Depending upon the turnover, one or two employees of the APMC supervise the marketing operations, collect market fee and deposit with the APMC. There can be more than one submarket yard with each APMC. For example, there are 5 submarkets yards with Haldwani APMC and 3 with Champawat APMC. These APMCs are guided and function as per the directions of the state agricultural marketing board, which in Uttarakhand is known as Uttarakhand Krushi Utpadan Mandi Parishad.

Uttarakhand Krushi Utpadan Mandi Parishad (Uttarakhand Agriculture Produce Marketing Board – (UKUMP) was established on 27-12-2000 under the Uttar Pradesh Mandi Adhiniyam (Uttar Pradesh regulated Markets Act), 1964, adopted by the state of Uttarakhand. Regulated markets in Uttarakhand are classified on the basis of mandi’s annual income as ‘A special’, ‘A’, ‘B’ and ‘C’ category. The regulated markets with annual income of more than Rs.120 lakhs are categorized as ‘A special’ and regulated markets with annual income of Rs.120 lakhs to 60 lakhs as ‘A’ category. ‘B’ category markets have annual income of Rs.30 lakhs to 60 Lakhs and with annual income up to Rs. 30 lakhs markets are categorized as ‘C’ category markets. Table 3.7 gives category wise names of the regulated markets in the state.

Table 3.9: Category wise markets in Uttarakhand

	Mandi	Mandi Samitee
1.	“A” Special	Haldwani, Rudrapur, Kashipur, Sitarganj, Kiccha, Gadarpur and Dehradun
2.	“A”	Khatima, Jaspur and Haridwar Union
3.	“B”	Ramnagar, Bazpur, Tanakpur, Vikasnagar, Rishikesh, Manglore and Roorkee
4.	“C”	Chakrata, Laksar and Kotdwar

Source: Uttarakhand Mandi Darpan, (2008)

There are eleven regulated markets in Kumaun division and nine regulated markets in Garhwal division which are functional. Out of these Haldwani in Kumaun division and Dehradun in Garhwal division are the major fruit and vegetable markets on the basis of annual arrivals of fruits and vegetables. These markets receive fruit and vegetables from hills as well as vegetables from plains and act as primary, secondary as well as major retail markets for fruit and vegetables. Though, the entire hill region is covered under the provision of Agricultural Produce Market Act, 1964, the provisions of regulation are yet to be effectively implemented in five districts of the region namely Almora, Chamoli, Pithoragarh, Tehri and Uttarkashi as these markets are still non-functional. District wise details of markets are given below in table 3.10

**Table 3.10: Principal Markets, Submarket Yards and Weekly Agricultural Markets
(Haat/ Painth) in Uttarakhand**

S.No	District	Principal Market	Submarket Yards	Weekly Agricultural Markets
1.	Nainital	1. Haldwani	1. Mukhani 2. Lamachaur 3. Lalkuan 4. Kaladungi 5. Bhawali	
		1. Ramnagar 2. Shankarpur 3. Pirumdara 1. Haldua 2. Tanda 3. Pirumdara 4. Shankarpur		
2.	Udham Singh Nagar	1. Rudrapur		
		1. Kashipur		
		1. Jaspur		
		1. Sitarganj		
		1. Khatima		
		1. Kichcha		
		1. Gadarpur 2. Chandayan		
		1. Bajpur 2. Sultanpur Patti 3. Kilakhera		
3.	Champawat	11.Tanakpur	1. Banbasa 2. Champawat 3. Lohaghat	
4.	Dehradun	12. Dehradun	1. Doiwala 2. Massoori 1. Sailkui	
		13.Vikasnagar		1. Raiwala 2. Chidarwala 3. IDPL
		14.Chakrata	1. Sahiya 1. Rani Pokhri 2. Baniyawala 3. Shyampur	
5.	Haridwar	15.Rishikesh		1. Ganganagar
		16.Manglore	1. Ghabrera 2. Narsan	
		17. Laksher	1. Landora 2. Rayse 3. Gobardhanpur 4. Bhikampur	
		18.Haridwar Union	1. Bahdarabad 1. Bahdarabad 2. Shahpur	
		19.Roorkee	1. Bhagwanpur	
6.	Pauri	20.Kotdwar	1. Dugadda	
7.	Chamoli	21.Chamoli	Not Functional	
8.	Uttarkashi	22.Uttarkashi	Not Functional	
9.	Tehri Garhwal	23.Tehri Garhwal	Not Functional	
10.	Almora	24.Almora	Not Functional	
11.	Pithoragarh	25.Pithoragarh	Not Functional	

Source: Uttarakhand Mandi Darpan, (2008)

In Uttarkashi though there is a regulated market established in the district headquarters but it was not a functional regulated market, therefore, most of the fruit and vegetables are sold in Dehradun and Kanpur. Some are bought by private traders through the contractors. Secondly, the large size orchard owners do not stay in Uttarkashi. Their workers do most of upkeep of the trees, harvesting and marketing. Probably absence of working regulated market is a cause and effect that there are no storage and processing facilities in Uttarkashi. Block Mori is a part of the district, no regulated market exists there too. Hence, the produce is collected and transported largely to Dehradun and a small portion to Kanpur, where it is sold.

Marketing practices:

Before intervention of the Mother Dairy and some private players, almost entire horticultural produce of the area was either consumed locally or was collected by some contractors on behalf of the wholesale purchasers in Dehradun, Kanpur and Delhi. But after the Mother Dairy intervened and started its processing units at places like Ramgarh in Nainital and some private players like Shri Jagdamba Samiti, Reliance, Birla, Chirag etc. the marketing has changed if not totally, then certainly to a significant extent. The access to distant markets has increased and with that change in cropping pattern, farmers' income and expenses too. Apple, particularly, 'A' and 'B' grade, from Uttarkashi is mainly marketed in Dehradun, Kanpur, Lucknow and to some extent in Delhi. But for the private players most of the produce comes to Dehradun. Private traders as mentioned above directly take to their own destinations, viz. stores and retail markets. So far as 'C' grade apple is concerned, if not bought by private processing units it is generally sold in the market but mostly at throw away prices. The author has personally seen at the Dhalli Mandi, Shimla in 2004⁹ when some poor farmers were not offered any bid by the buyers and they requested their commission agent to do something. After their pitiful appeal the commission agent just gave a chit mentioning Rs. 20 for each bag of about 20 kgs and to collect that amount from his shop.

In such a situation, when there is no local market for the produce and in the regulated market producers are not sure whether the produce will be sold or not, MIS becomes important. It happens when the state government orders procurement which is effected at the MIS purchase/ collection centres, established particularly for the purpose. The list of centres in the districts is given in Table 3.11

It is obvious that during the entire history of MIS for apple 'c' grade in Uttarakhand only in 3 years apple 'c' grade was purchased under MIS and that too not on regular basis and also not in substantial quantity (table 3.12). In other words, MIS is applied only when farmers are unable to sell the produce at reasonable rates. On the other hand in the neighbouring state Himachal Pradesh during a number of years farmers could sell the produce in the market at higher than MIS price. In Himachal Pradesh government has to announce procurement price under MIS for the cooperative sector processing corporations like HPMC, HIMFED etc. In Himachal Pradesh private sector processing units also purchase. Which Uttarakhand has not been able to develop so far, neither the cooperative sector processing units like HPMC nor private sector. A comment about Shri Jagdamba Samiti (SJS), a private enterprise will follow in next chapter.

⁹ Bhupal. D.S. Working of regulated Markets in and around Delhi , AERC, Delhi, 2004

Table 3.11: Selected districts under MIS and collection centre/ store

Sl. No.	District	Collection centre/ store	Sl. No.	District	Collection centre/ store
1	Nainital	1.Ramgarh 2. Hartola 3.Mukteshwar 4.Dhanachuli	5.	Dehradun	1.Tiwni 2.Koti 3.Kathiyani
2	Almora	1.Saharphatak 2. Dunagiri	6.	Chamoli	1.Helang 2.Joshimath 3.Tapoban 4.Malari
3	Pithauragarh	1.Pithuragarh 2.Thal 3.Munshiari 4.Dharachula 5.Berinag	7.	Uttarkashi	1.Naugaon 2.Sangkari 3.Arakot 4.Naitwad 5.Harshil
4	Champawat	1.Champawat 2. Lohaghat			

For the farmers of Mori block apple 'C' grade is generally purchased at the Arakot centre and to some extent in Naugaon.

Through the history of apple 'C' grade marketing under the MIS, the few instances, countable on fingertips, when the MIS was operationalized, are given below in table 3.12

Table 3.12: Apple marketing under Market Intervention scheme

Year	Rate, Rs./kg	Quantity (MT)	Amt. Lakh Rs.	Agency
2005-06	3.5	Nk	Nk	HMT/KGMVN ¹⁰
2006-07	0	0	0	Na
2007-08	4.5	114.95	5.17	do
2008-09	4.5	86.46	3.89	HMT
2009-10	0	0	0	Na
2010-11	6	33.25	1.99	HMT
2011-12	0	0	0	Na

HTM : Horticulture Mobile Team; KGMVN: Kumaun Garhwal Mandal Vikas Nigam; Nk: not known; Na: not applicable

¹⁰ KGMVN are two divisional development corporations named after two divisions of the state- one Kumaun Mandal Vikas Nigam and the other Garhwal Mandal Vikas Nigam. GMVN has remained engaged in other than food processing or fruit procurement activities.

No serious analysis can be carried out with just some observations of the scheme. Except that (a) there were no regular purchases made under the MIS, (b) no data about the amount spent and quantity purchased in the year 2005-06 were available, (c) the purchases made under the MIS were by the Horticulture Mobile Team (HMT), without any involvement of the Garhwal Mandal Vikas Nigam (GMVN), (the Garhwal Divisional Development Corporation), (d) The HMT is a section of the horticultural department of the government of Uttarakhand. As its name suggests, it is a team of few officials with a mobile van supposed to attend calls made by the users of their services. Its main function is to provide extension services and carrying out MIS operations is a supplementary task assigned, (e) As far as GMVN is concerned its main function is to promote tourism, Yoga, pilgrimage and adventure sports. It has never entered any purchase /sale business of apple and nor it is involved in any food processing/ selling/ storing/transportation activity, (f) considering the total output of apple and a certain proportion of it always being apple 'c' grade, a very small amount of apple 'c' grade has been purchased under the MIS, (g) also as would be seen there is declining trend in procurement under the MIS starting from 115 Metric tonnes to 86 and finally to 33 metric tonnes, and finally, (h) the low price offered under the MIS though may be useful from the point of view that otherwise the fruit may go waste if not procured under the MIS, but certainly it is far below the economic value of the processed apple 'c' grade. In all forms of processing, Murabba, Sauce, Jam, or Juice, its value is far more than the purchase price. For example, market price of Murabba is between Rs. 140-150 per kg, and with one kg apple 'c' grade 2 -3 kg murabba can be prepared, rest being thick liquid of sugar and water. Even if the packing, processing, marketing expenses are 5 times more than the price of apple 'c' grade, the market price of murabba is about 50 times more than the input and marketing costs. There must be some strong reasons that price of apple 'c' grade under MIS or procurement price is so less. The grass root information can give some clue to the issues. Therefore, it would be more appropriate to look into the grass root level issues confronting the farmers with regard to marketing of apple, which are discussed below:

Household Level details of apple marketing:

As mentioned in chapter I, we had two types of sample farmers for this study – one those who benefitted under the MIS and the others who either could not or did not benefit from the scheme, both marked as beneficiary and non-beneficiary respectively. The sample size of both types of farmers could not be strictly observed as per the directions of the coordinator, due to non-availability of the owner / respondents in the orchards and in absence of them their workers were not able to provide the information related with economics of apple production and marketing. The background details of the beneficiary households are given in Table 3.13 and those of non-beneficiary in Table 3.13 (a).

On comparison of tables 3.13 and 3.13 (a) for beneficiary and non-beneficiary households, it would be clear that in the case of marginal, small and medium farmers there is not much difference with regard operational size of the holdings. In both the cases marginal households operate about half of a hectare each, in the case of small farmers, the size is about one and half hectares and in the case of medium size of holdings it is about 3 and half and 3 hectares respectively. But it is only in the case of large farmers, that none of them was a beneficiary

**Table 3.13: Assets of sample farmers in District: Uttarkashi
(Beneficiary households)**

Assets	Marginal	Small	Medium	Large
Sample hhs	21	7	2	0
Total land	9.62	10.10	6.60	0.00
-Leased in	1.18	0.00	0.00	0.00
-Leased out	0.00	0.00	0.00	0.00
-Total	10.80	10.10	6.60	0.00
Land per hh	0.51	1.44	3.30	0
Avg cropped Area	0.076	0.200	0.000	0
Avg Orchard Area	0.481	1.443	3.300	0
- irrigated	1.82	0	1.54	0
-Unirrigated	8.98	10.1	5.06	0
Milch Animals/hhs	2.190	4.429	2.000	0
Pump sets	0	0	0	0
Tractor (HHs)	0	0	0	0
Home				
---Thatched	2	0	0	0
---Concrete Roof	18	7	2	0
---Other	1	0	0	0

Figures in the red are per households

therefore no land size whereas in the case of non-beneficiary the size was about 9 and half hectares. Similarly there is no significant difference between the two sample groups with regard to area under crops in the case marginal (about 0.08 hectares), small about 0.2 and 0.1 hectares and no area under crops in the case of medium farmers. The area under orchards also does not differ much in both categories of sample farmers of all size groups. The negligible difference can be attributed to sampling errors. But there is a huge difference in the case of milk animals in two sample groups. In the case of beneficiary households both marginal and medium size farmers own two milk animals each and the number doubles to about 4 in the case of small farmers. But in the case of non-beneficiary households, per household number of milk animals is 2 and half in the case of marginal and large farmers, one in the case of medium farmers and a huge more than 62 in the case of small farmers. In fact in this size group there was one household with 300 goats due to which the average has gone up.

There were no pump sets, tractors and barring 3 households in both the sample groups no thatched houses. Most of the respondents have houses with concrete roofs. On this count there is some possibility that beneficiary farmers may not be having compatible resources because in a sample of 30 there are 2 households with thatched houses in comparison to 1 out of 39 in the non-beneficiary section.

**Table 3.13 (a): Assets of sample farmers in District: Uttarkashi
(Non-Beneficiary households)**

Assets	Marginal	Small	Medium	Large
Sample hhs	29	5	2	3
Size of land	14.18	8.17	5.59	18.45
-Leased in	0.31	0.00	0.00	10.00
-Leased out	0.00	0.00	0.00	0.00
-Total	14.49	8.17	5.59	28.45
Land per hhs	0.50	1.63	2.80	9.48
Avg Crops Area	0.082	0.100	0.000	2.000
Avg Orchard Area	0.443	1.340	2.795	7.483
- irrigated	0.32	0.00	0.00	0.00
-Unirrigated	13.91	8.17	5.59	28.45
Milch Animals/hhs	2.448	62.20	1.000	2.667
Pump sets	0	0	0	0
Tractor (HHs)	0	0	0	0
Home ---Thatched	1	0	0	0
---Concrete Roof	26	5	2	0
---Other	2	0	0	3

Figures in the red are per households

**Table 3.14: Borrowing by different Categories of sample farmers in Uttarkashi
(Beneficiary households)**

Details of debt	Marginal	Small	Medium	Large	Avg.
Amount of loan taken (Rs.)	831000	290000	200000	0	44033@
No. of HHs taken loan	10	2	1	0	
Source: Commercial Banks*	9	2	1	0	
Purpose of loan (for Prod.)	10	2	1	0	
Rate of interest (per annum)	not available				

* 1-Cooperative Bank in Marginal size group,@ based on 30 hhs

**Table 3.14 (a) : Borrowing by different Categories of sample farmers in Uttarkashi
(Non-Beneficiary households)**

Details of debt	Marginal	Small	Medium	Large	Avg.
Amount of loan taken (Rs.)	825000	250000	0	210000	32949@
No. of HHs taken loan	8	3	0	2	
Source: Commercial Banks	8	3	0	2	
Purpose of loan (for Prod.)	8	3	0	2	
Rate of interest (per annum)	not available				

@ based on 39 hhs

Tables 3.14 and 3.14 (a) are constructed to discuss loan position of the households. Two –three points need to be mentioned: One – with about total 26 lakhs of loan amount 69 families are running their economies, agriculture, horticulture, animal husbandry all put together, Two – with

this meager amount they are running an annual economy of lakhs of rupees.. Three – with this small loan they are providing food, shelter, health, education etc. to 1115 persons. If we reduce number of children and senior citizens, then they are providing employment to about 800 persons. No industrial set up can provide so much economic and productive benefits with this amount of loan. Second important issue is per household amount of loan in both the beneficiary and non-beneficiary households works less than 33 thousand in the case of non-beneficiary households and about 44 thousand in the case of beneficiary households. Though we have seen there are large farms in the non-beneficiary section, still it appears those who benefit from public sector loan can benefit from MIS as well. Another issue is loan from other sources, i.e., from private money lenders, contract buyers of apple etc. and the rate of interest charged by public sector banks from the above loan was arranged. In fact, the literature suggests that a substantial number of orchard owners take money from contractors/ traders to sell the entire crop to them in lieu of that. Remarks made by SJS will be reproduced in chapter IV.

Clearly the conclusion will suggest that lot of efforts are needed by public sector banks to come forward for providing capital, fixed as well as working capital so that farmers and the economy could benefit.

**Table 3.15: Cropping pattern of farmers for Agriculture year (July-June)
Uttarkashi Beneficiary**

2010-11					2011-12				
Crop	Total Area (Ha)				Crop	Total Area (Ha)			
	Marg.	Small	Medium	Large		Marg.	Small	Medium	Large
Apple	0.90	1.10	2.00	0.00	Apple	6.10	8.50	4.20	0.00
Pear	0.05	0.00	0.50	0.00	Pear	0.11	0.20	0.30	0.00
Peach	0.02	0.00	0.10	0.00	Peach	0.25	0.00	0.70	0.00
Khurmani	0.01	0.00	0.00	0.00	Khurmani	0.08	0.00	0.00	0.00
Walnut	0.03	0.00	0.00	0.00	Walnut	0.04	0.00	0.00	0.00
Lemon	0.03	0.00	0.00	0.00	Lemon				
Potato	0.00	0.10	0.00	0.00	Potato				
Nuts					Nuts	0.03	0.20	0.00	0.00
Rajma					Rajma	0.12	0.04	0.00	0.00
Gahat					Gahat	0.02	0.02	0.00	0.00
Urad					Urad	0.00	0.02	0.00	0.00
Maize					Maize	0.04	0.02	0.00	0.00
Plum					Plum	0.26	0.00	0.60	0.00
Wheat					Wheat	0.38	0.00	0.00	0.00
Tomato					Tomato	0.16	0.00	0.00	0.00
Suran					Suran	0.04	0.00	0.00	0.00
Mandua					Mandua	0.04	0.00	0.00	0.00
Ginger					Ginger	0.02	0.00	0.00	0.00
Pomegranate					Pomegranate	0.00	0.00	0.80	0.00
<i>Total (ha.)</i>	1.03	1.20	2.60	0.00	<i>Total (ha.)</i>	7.69	9.00	6.60	0.00

By looking at cropping pattern (table 3.15) for beneficiary and non- beneficiary households respectively two –three point emerge, one, that area under crops has gone up in 2011-12 as compared to 2010-11, and that too in all size groups of holdings, in the case of marginal farmers from 1.03 hectares to 7.69 hectares, in the case of small farmers from 1.2 hectares to 9 hectares

and in the case of medium households from 2.6 hectares to 6.6 hectares. Two, the increased area has gone to new crops in the latest year, twelve new crops have been introduced. Three, area has also gone up in the case of many existing crops. Four, only in 3 crops, area has either gone completely for example, lemon and potato and in one case of pear it has been reduced and lastly the new crops are mostly fruits and vegetables. In the non-horticultural only pulses can be considered and the case of maize is doubtful whether it was for cereal production or for baby or sweet corn. Because we have seen in an earlier study (2009) maize was grown for vegetable purposes.

However, important point is that the area mentioned in the table is total area for the entire sample households. Per household it would be just like kitchen garden like agriculture. The changes confirm our earlier comment that rural economy of the region is witnessing changes with regard to area under crops and production.

**Table 3.15 (a): Cropping pattern of farmers for Agriculture year (July-June)
Uttarkashi Non-Beneficiary**

2010-11					2011-12				
Crop	Area (Ha)				Crop	Area (Ha)			
	Marg.	Small	Medium	Large		Marg.	Small	Medium	Large
Apple	2.06	1.63	5.59	10.65	Apple	14.64	6.43	0.00	2.50
Pear	0.06	0.20	0.00	0.00	Pear	0.60	0.30	0.00	0.01
Peach	0.02	0.00	0.00	0.00	Peach	0.05	0.00	0.00	0.00
Khurmani	0.01	0.04	0.00	0.00	Khurmani	0.07	0.05	0.00	0.00
Walnut	0.02	0.00	0.00	0.00	Walnut	0.20	0.30	0.00	0.02
Potato	0.00	0.00	0.00	0.50	Potato				
Mandua	0.00	0.00	0.00	0.50	Mandua				
Pea	0.00	0.00	0.00	0.25	Pea				
Cashew nuts	0.00	0.05	0.00	0.00	Cashew nuts	0.01	0.05	0.00	0.00
Nuts					Nuts	0.02	0.01	0.00	0.00
Rajma					Rajma	0.15	2.00	0.00	0.01
Gahat					Gahat	0.00	0.40	0.00	0.00
Pulan					Pulan	0.00	0.00	0.00	0.00
Maize					Maize	0.24	0.00	0.00	0.00
Horsegram					Horsegram	0.00	0.00	0.00	0.00
Lentils					Lentils	0.13	0.01	0.00	0.00
Black Lentil					Black lentil	0.01	0.00	0.00	0.00
White Lentil					WhiteLentil	0.01	0.00	0.00	0.00
Paddy					Paddy	0.54	0.01	0.00	0.00
Barley					Barley	0.02	0.00	0.00	0.00
Arbi					Arbi	0.02	0.00	0.00	0.00
Brinjal					Brinjal	0.02	0.00	0.00	0.00
Rai					Rai	0.02	0.00	0.00	0.00
Vegetable					Vegetable	0.00	0.50	0.00	0.00
Total (ha.)	2.15	1.91	5.59	11.9	Total (ha.)	16.74	10.05	0.00	2.53

Unlike the case of beneficiary households, we find that in the case of non-beneficiary households [table 3.15(a)] area under crops has gone up in marginal and small size groups from 2.15 hectares to 16.74, in the case of marginal farms and from 1.91 to 10 hectares in the case of small farms. But in the case of medium size farms it disappeared from 5.59 hectares and in the case of large size households declined from 11.9 to 2.53 hectares. 15 new crops gained area in the year 2011-12 and three lost. Apples suffered most from 5.59 hectares in the case of medium households to 0 and in the case of large farms area under apples declined from 10.65 hectares to 2.50 hectares. Though overall there is an increase of more than 18% in the area under apples.

Table 3.16: Production Cost apple (in Rs./ ha) Uttarkashi beneficiary farmers reference year 2011-12

<i>Detail of cost items</i>	<i>Beneficiary</i>	Cost (Rs)/ ha
Land preparation Cost/ Age of orchards		82875
Cost of Material (Seed, fertilizers, chemicals)		107794
Cost of irrigation		0
Cost of labour		40280
Cost of hired equipment		18963
Other cost (if any)		2234
Total costs		252146

The above data from the beneficiary households may not be without variation with the data available in the horticulture department. Secondly, the agency which was assigned the field work did not complete the work and preferred not to claim the balance amount. They could not collect data on the costs from the non-beneficiary households as the orchard owners were not available in Uttarkashi and their workers were not aware of the costs etc. therefore we lack the comparison.

Issues at farmers' level:

In the following paragraphs we take up issues related with marketing of apple. The first and issue relates with grading of apple. Because all the apples cannot be similar in size, shape, colour, ripeness, freshness and without skin damage or without blemishes, hence, grading becomes important. Moreover, MIS is applicable to grade 'c' apples which can be sorted out after grading. Since there are no standard guidelines or parameters of grading, people grade as per their experience or requirement.

Table 3. 17: Grading of apple at farmers' level beneficiary farmers

	<i>% of Farmers Reported</i>
According to size and shape	93
According to maturity level	43
According to variety	57
Any other (Damage, dis-colour)	53

The farmers were asked about the practice of grading of apples for the purpose of marketing. The responses obtained are presented in Table 3.17. Almost all the farmers 93% graded their apples according to size and shape, 43 % used maturity as a basis. The purpose was to sell as quickly as possible more mature or ripen fruit so that loss could be minimized in case they do not sell early. Close to 57% farmers preferred variety wise sorting of the fruit so that the buyers could be easily convinced and the produce be sold. More than 50% respondents chose external damage, skin bruises, or injured fruits to be sorted out.

On the whole all the farmers have traditional wisdom to identify the weakness of the produce and remove it.

Table 3.17 (a): Grading of apple at farmers' level non- beneficiary farmers

	% of Farmers Reported
According to size and shape	97
According to maturity level	28
According to variety	79
Any other (Damage, colour)	46

As far as non-beneficiary farmers were concerned, 97% preferred to sort out the produce on the basis of size and shape, 28% according to maturity, 79% as per the variety and 46% on the basis of colour etc.

Overall we can say size and shape play very important role in grading and sorting of the fruit and most of the farmers follow this method.

Table 3.18: Apple produced by farmers and its disposal pattern Uttarkashi (Beneficiary)

Crops	Production (qtls)	Kept for home consumption (qtls)		Marketed (qts) under			Price (Rs./kg) through	
		2010-11	% of prod.	Other	MIS	% sold under MIS	MIS	Other
Marginal	1127	28	2.48	1027	73	7.11	6.5	36.4
Small	1067	8	0.75	999	61	6.11	6.5	37.5
Medium	816	7	0.86	790	19	2.41	6.5	36.3
Large	0	0		0	0	0	0	
All Sizes	3010	43	1.43	2816	152	5.40	6.5	36.75

About the pattern of disposal following points need to be made. First, as per the requirement of the coordinated study data for the last two years were to be collected for this table. But we have to stop at one year because there was no MIS for apple 'c' grade during the year 2009-10.

Secondly and importantly, during the year 2010-11 total 33.25 MT or 332.5 quintals of apple ‘c’ grade was purchased. Out of that 152 quintals or about 46% were sold by our respondents. Therefore, sample covers about 50% of the apple ‘c’ grade sold under the MIS. The results, viz., opinions, difficulties, perceptions etc. can be treated with full confidence. Largest share of produce sold under MIS comes from marginal farmers, followed by small farmers. However, the prices received from other than MIS process do not vary significantly, neither size group wise and nor as per the marketing place. It may be probably that average has removed such difference. Still one can visualize there is 6 times difference in price received through MIS and that received for other category of the produce that is for ‘A’ and ‘B’ category fruit. The argument that in absence of MIS even this much returns will not be possible, may be true, but it should be considered in terms of utility and value of processed category ‘c’ grade apples. For example, we know for murrabba, only small size apples of any quality are much better, they are mixed with sugar liquid and sold at Rs. 150/ - a kg. in the market. Therefore higher price, more than MIS, offered for small size apples by Patanjali Yogpeeth could be easily understood. It underlines the need of processing of ‘c’ grade apples into jams, jellies, squashes, juices, murabba etc.

Table 3.19: Different Marketing Channels for sample farmers of Apple Uttarkashi (Beneficiary)

Targeted Crops	Marketing channel	% sold	Price (Rs./qtl)
Apple'c'grade	MIS Apple'c'grade	5.05	6.5
Apple	Other	93.5	36.75

For selling apple ‘c’ grade only one marketing channel has been followed, and that is, the department of Horticulture through its mobile team collects the produce at the collection centres, where farmers bring their produce and after making very light inspection or sorting, the produce is weighed and recorded. The farmers are given the slips and if the money has been received by the department, it is paid to the farmers otherwise the produce was taken to Dehradun and sold. The money if not paid in advance is transferred to the farmers or is deposited with the government.

For other than ‘c’ grade apple, farmers assemble the produce at predetermined places, if the contract buyers come the produce is recorded with them, for example, the mother dairy, and they take it to their destination for selling the produce and pay the farmers as per their records and as per the selling records, or if sold to private traders, they themselves judge the quality and make the payment with small amount retained as a risk factor, which is cleared in the next trip like mother dairy. The third channel is that other larger farms who have their own means of transport, hired or owned, take the produce to the market of choice. On the other hand, small and marginal farmers assemble the produce at pre determined places, hire a common vehicle and take the produce mostly to Dehradun and sell their in the market.

However, as per the household data (table 3.19) about 93% produce which was of good quality was sold at Rs. 36.75 a kg and about 5% was sold as 'c' grade at the predetermined price of Rs. 6.5 per kg.

**Table 3.20: Channel wise Marketing cost of targeted crop at farmers levels (Rs./qtl)
Uttarkashi, Beneficiary**

Cost incurred	Channel 1	Channel 2 MIS
Picking, filling boxes/bags/container	625.5	625.5
Depreciation of container	0	0
Transportation costs	547.5	0
Labour charges loading/ unloading	15.2	0
Octroi/marketing tax	0.0	0
Commission in market	355	0
Other expenses if any	0	0
Sub total	1543	625.5
Price received	3675	650

If we consider the marketing costs of 'A', 'B' and 'C' grade apples, one thing would be obvious that costs incurred on picking, filling boxes etc would be same, i.e., Rs. 625.5 per quintal irrespective of the quality of the produce. And there are no other expenses except the farmers' own labour on selling the produce to the department of horticulture, and if we assume that some labour cost, may be 5-10 Rs per quintal, is incurred on that count too, then by selling at Rs. 6.5 per kg. the farmer does get nothing for the name sake of returns, may be Rs. 10 or 20 per quintal and that will not be sufficient to meet his own labour's opportunity cost. Hence considering the alternative uses of apple 'c' grade after processing and farmers' costs, MIS prices of apple 'C' grade need to be increased reasonably. Proper study can be conducted to work out proportion of category wise production, and entire costs and benefits and exact MIS price need to be worked out.

By looking at table 3.21 one can argue that rejection by government agencies was higher in comparison to rejection by private traders. But it has to be kept in mind that rejection by government agencies has been with regard to apple 'c' grade, because they bought only that quality of apple whereas private traders bought apples of grade 'A' and 'B'. So this comparison may not be conclusive.

Table 3.21: Farmers perceptions about MIS (Beneficiary

Rejection of produce by buyers	% of sample farmer reporting
Output rejected	
By Government agency %Output	30
%Farmers Reported	43
By Private traders % of Output	15
%Farmers Reported	20
Rejection stage of produce	
At the level of field	100
In the market	0
Possible reasons for exclusion of farmers from MIS/PSS	
Farmers not aware of MIS/PSS	47
Farmers not interested in selling through MIS	70
Perception about the results/outputs of MIS/PSS	
MIS/PSS helped in increasing area under targeted crop	10
MIS/PSS covered cost of production of targeted crop	33
Increase in farm income after implementation of MIS/PSS	7

Secondly whatever, rejection has been reported that has happened at the field or collection centre level, and not in the market, which could have been more painful to farmers. But many times in the market instead of complete rejection, produce is bought at throw away prices as was the case at Dhalli market, Shimla. If we agree with the responses, that about 47% farmers were not aware of the MIS, we also have to keep in mind that government intervenes with limited resources and particularly, when there seems to be crisis and not like the case of MSP and procurement of cereals. About 10 % farmers saying that increase in area has taken place after MIS, about 1/3rd agreeing that it covers cost of production and 7% saying increase in farmers' income after MIS should be an indicator, that MIS needs to be implemented effectively, regularly and more resources need to be allocated for the purpose. Also it would be more useful if some processing of 'C' grade apples and other fruit is undertaken in the area.

In such a situation, when there is no local market for the produce and in the regulated markets located far away at places like Dehradun, Lucknow, Kanpur or Delhi producers are not sure whether that 'c' grade apple will be sold or not, MIS becomes important. It happens when the state government orders procurement which is effected at the MIS purchase/ collection centres,

established particularly for the purpose. There are 5 such centres established in Uttarkashi. Most of our respondents sold their produce at purchase centre located at Arakot.

Sum Up

Status of apple in the sample area:

Though contribution of Uttarakhand in production of apples is not as much as other states like Himachal Pradesh, but about 45% of apple produced in the state is from district Uttarkashi alone. In Uttarkashi our sample district for the study, apple covers about 66% area and 72% of production among all the fruits produced in the district, whereas in block Mori, our sample block, area under apples is about 83% of all the fruits and production about 87%. However, in the district, Mori block covers about 42% area under apple and about 44% of production. Thus a little less than half of apple in district Uttarkashi is produced in block Mori.

Production, how so ever may be in quantity and quality, per se cannot improve the income and living standard of the producers unless it is efficiently marketed. In which the state, selected district Uttarkashi and further selected block Mori lack because of lack of roads, storage, processing units along with good market yards. Also, about 15-20% apple which cannot attain 'A' or 'B' grades due to many reasons is not the preferred choice of consumers and buyers hence, it requires price support under MIS.

Status of marketing infrastructure:

There are total 66 wholesale markets in the state. But number of regulated markets is 58.. There are 25 principal regulated markets yards and 33 submarket yards. Out of 25 markets 20 are functional as of now. Unfortunately district Uttarkashi is one such district where there is only one regulated market in the district head quarters and that too is non-functional. Therefore, most of the fruit and vegetables are sold in Dehradun and Kanpur. There is no processing or storage facility for apple in the district. Therefore from the point of view of market infrastructure, district Uttarkashi is far behind than other districts of Uttarakhand. Probably that is the reason that procurement is made under MIS in the district. So far as apple 'C' grade is concerned, if not bought by private processing units it is generally sold in the market but mostly at throw away prices

Coverage of MIS with respect to farmers of apple 'c' grade:

Apple is grown in almost all the hill districts of the state and in every orchard 'c' grade type is also sorted out. But MIS has been applicable to one district Uttarkashi, rather in one of its blocks, Mori and also to a very limited extent. Further from the 8 villages selected for the study little less than 50% of apple 'c' grade was purchased under the MIS. In other words, MIS is not applicable to a larger body of farmers from other blocks of the district and from any other block of the remaining districts. Secondly, so far only 3-4 times purchases of a little quantity of apple 'c' grade have been made under MIS. Thus coverage of farmers, area, quantity of apple purchased and years in which MIS was operational has been very limited. It is natural that when small quantity was purchased, a small sum was to be spent on the purchases thus made which might have made a very limited impact on the farmers' income and certainly no significant impact on cropping pattern etc.

Factors that influence coverage of villages and farmers in MIS:

This question has two closely related aspects- one, why farmers sell under MIS and why in some villages it was operational. The answer to that is finite and that is because they cannot sell apple 'c' grade to anybody else even at that meager price and secondly the villages are in remote area hence, the government agency buys to help the specific villagers.

The other important aspect of the question is why the farmers and villages do not sell under the MIS. In other words, what are the factors which impact the coverage of MIS. Obviously one is size of holding, as we have seen none of the large farmers was selling under the MIS and that was due to the price offered under MIS was too low. Secondly, these farmers were having their own arrangement to sell to other players and markets. Instead of taking the produce to purchase centre they might have disposed of in the far off markets. As far as non-coverage of other villages and districts was concerned, that was purely due to government policy of helping those farmers and villages from where no private player was buying and that is why a large quantity was purchased from few villages of one block. Also in districts like Nainital some fruit processing is already going on from where mother dairy and other private players were buying. Obviously, government policy and lack of processing facilities were important factors to influence coverage under MIS.

Problems of different stakeholders:

The main stake holders with regard to MIS have been only two, the farmers and the purchasing agency HMT. Farmers were facing problems not with the MIS but more without it, that is, in absence of MIS. Because being in the remote area, devoid of good infrastructure in the form of markets, roads, lack of processing of fruits, storage etc. Though average area covered under metalled roads was slightly less in the district as compared to some other districts, but in other districts processing facilities was an added advantage. Also, purchase of a little quantity and that too occasionally were the problems of the farmers. As far payment, rejection, etc. was concerned that was hardly an issue with the farmers.

Another stakeholder was HMT. It needs to be emphasized that HMT is government run department of Directorate of Horticulture mainly responsible for implementation of extension services related with agronomical issues. Operation of MIS was something new to them in which neither they were trained nor it was their mandate. For them it was like following of a government order, buying apple 'c' grade in designated centres, making records of the quantity bought, sellers etc and transporting the produce to the designated markets, selling at the market price, clearing the dues of the farmers and then sending the details to the government. They do not have any storage arrangement, or any commodity related specific packaging or transport which clearly are the impediments in the effective implementation of MIS. The solution therefore lies in starting processing of the fruit by some organization like HPMC in Himachal Pradesh.

Effect of MIS on the market price of apple 'c' grade:

If the MIS is operationalized in a few villages of one block to buy almost negligible quantity and that too occasionally as was the case under MIS of apple 'c' grade, it is hard to believe that it

will make any dent on the market price of a commodity like fresh fruit, apple 'c' grade, which cannot be stored to be sold in future. If there is no processing or any value adding activity in the area or nearby which should have some inelastic demand, the situation will not change much with limited operation of buying under MIS. Moreover, limited MIS activity will not make even that much effect on the market price of apple 'c' grade as could have been made on market price of sunflower in Haryana, where other buyers might have increased the purchase price of sunflower to meet their mills' requirement. In the case of apple 'c' grade, the only slight effect could have been on the income of the beneficiary farmers who were able to sell a portion of apple 'c' grade which in absence of MIS could have been converted to waste.

Clearly the conclusion will suggest that lot of efforts are needed for regular intervention through MIS and to a larger extent. Also, lot of efforts are needed by financial institutions like public sector banks for providing capital, fixed as well as working capital so that farmers and the economy could benefit. Thirdly, processing of fruits on the pattern of HPMC probably will be the best effort for productively solving the problems of marketing of apple of the region. MIS per se will not be able to address the real issues.

A detailed comment about the policy options and brief summary of the report will follow in the next chapter.

Chapter IV

Summary and Broad Conclusions

Introduction:

Half-hearted economic reforms in the field of agriculture did not bring in much needed investment from the private sector and public investment in agriculture could not maintain its earlier tempo. Consequently, there is no stability in agricultural production, large scale disparity in distribution of income, imbalance in demand and supply of basic agricultural commodities resulting in high food inflation at times and so on. Horticultural crops though are gaining importance, but due to change in income, consumption pattern thus due to increased demand are largely blamed for high food inflation.

The environmental degradation along with over exploitation of soil and water in major food producing states has been other concern.

Need of change in cropping pattern from low value crops to high value crops like fruit and vegetables has been time and again emphasized to meet these challenges as well as to increase rural income.

In view of least control over input and output markets, farmers' main emphasis has been on increasing production, resulting many times in crash in output prices, thus necessitating government intervention in the form of procurement at MSP under PSS and MIS.

The reforms agenda in agricultural sector, in fact, focused on food processing, change in cropping pattern, development of rural infrastructure in the form of roads, storage, better availability of modern transport for transportation of delicate/ perishable crops etc. Four major steps like liberal import and exports of agricultural commodities, change in APMC act, permission to contract farming and establishment of SEZ were taken up. Some important changes in the form of enhancement in area under horticulture crops and production thereof can be noted. Secondly, consumption pattern also is reported to be changing. Studies also point out that people are replacing cereal food grains with more horticultural crops.

In developing economies like India, where 2/3rd population is totally dependent upon agriculture, land holdings are tiny and alternative sources of rural livelihood are yet to develop consequences of market failure can be disastrous for producers and consumers. Government therefore intervenes in agricultural market for the sake of protection of producers and consumers and to maintain food security for its public distribution system.

In India Price Support Scheme (PSS) and Market Intervention Scheme (MIS) are important government interventions. In the PSS government besides announcing MSP for 25 major agricultural commodities defends the said price by procurement. Whereas in the case of MIS particularly apple 'C' grade no MSP is announced. State governments in consultation with central government announce the procurement price and ask its agency/s to buy at that price.

The present study is planned to evaluate direct role of the state in the marketing of Apple 'c' grade with reference to maintenance of price stability, particularly during the peak of arrivals because due to obvious reasons a huge percentage of farmers cannot withhold the produce for the prices to move up. Moreover, apple 'c' grade gets lowest preference of the buyers. And the farmers in remote areas like Uttarkashi cannot bring the commodity like apple 'c' grade to

distant markets and risk even the recovery of transport costs, leave apart the cost of production and opportunity cost of their labour. But for the purchases made by some processing units like Patanjli Yogpeeth, Mother Dairy, Shree Jagdamba Samiti (SJS) etc. for murabba, sauces, jams and juices farmers in cases have to throw away the produce as waste. Therefore the market intervention scheme and price support system play crucial role.

Objectives:

The specific objectives of this study were as follows:

- To analyze the extent of coverage of MIS with respect to farmers of apple ‘c’ grade in Uttarakhand.
- To ascertain the socio-economic factors that influence coverage of villages and farmers in MIS.
- To understand problems of different stakeholders in operation of MIS.
- To study the effect of MIS on the market price of commodity in Uttarakhand, and,
- To suggest policy measures to improve operations of MIS.

III Data and Methodology:

It was noticed from the information that only in one district Uttarkashi MIS for apple ‘c’ grade was operationalized, though apple is grown in many other districts like Pithoragarh, Champawat Nainital etc. Therefore the one district where MIS was operational was selected. Not only in one district, in fact the MIS was operational in one block, Mori, so block Mori has to be chosen. From block Mori 8 villages and ‘Toks’ (small hamlets) namely Thunara, Kiranu, Arakot, Bhutanu, Gokool, Jhatodee, Kaleech, and Makuri were selected. In fact in the entire state a major part of procurement of apple ‘c’ grade took place in these villages. As would be seen from the sample data, more than 45% procurement was from the sample households. Further for purpose of analysis a sample of non-beneficiary farmers was also taken.

Sampling Framework:

The finer details of sample are as given in table 4.1

Table 4.1 Sample size

Item	Uttarakhand	Total
Selected Distt.	Uttarkashi	1
Tehsil/ block	Mori	1
Crops	Apple ‘C’ grade	
Beneficiary farmers	30 (8)	30 (8)
Non – beneficiaries	39 (11)	39 (11)
District schedules	1	1
Village schedules	8	8

Note: this table is reproduced from chapter –I for sake of easy access to the reader.() no. of villages

As the MIS in the state is implemented in a very limited way, the sampling design as proposed by the coordinator could not be strictly applied. Rather we have taken the entire Universe as our sample.

In India apples are categorized into three grades 'A', 'B' and 'C'. Along with other specifications like colour, maturity, freshness, un-punctured skin, brands varieties etc, diameter of the fruit is an important criterion. 'A' grade apples have more than 80 mm diameter, 'B' grade apples have between 65 and 80 mm and all those less than 65mm are graded as 'C'. 'C' grade apples are most suitable for Murabba making. Because it is small in size and too cheap, it is most suited for processing into jams, sauces and even juice preparation due to low cost.

In Himachal Pradesh HPMC buys at the stipulated price, processes then sells. But in Uttarakhand, the horticulture department along with Kumaun Mandal Vikas Nigam and Garhwal Mandal Vikas Nigam (as the case may be) is entrusted by the government to buy 'c' grade apples from the farmers at the stipulated price. Moreover in Uttarakhand MIS is not a regular feature. However, both the corporations are not at all involved in food processing or procurement.

Coverage under MIS

Uttarakhand plays a minor role in area and production of apple on the country. During 3 years from 2008-09 to 2010-11, share of Uttarakhand in area under apples has been between 5-6% while in production only between 2-3%. Naturally in yield it is behind other states.

However, in the state share of district Uttarkashi has been about 23% in area under apples and about 32% in production during the three years.

Further, in Block Mori, about 83% of area under fruits is under apple cultivation. Share of apple in total fruits is about 87 % and 13% are rest all fruits. Moreover, in the district Mori block covers about 42% area under apple and about 44% of production. Thus a little less than half of apple in district Uttarkashi is produced in block Mori. Thus overall about 14% of apple produced in the state comes from block Mori alone.

The hill areas are if most favoured for production of horticultural crops due to weather and moisture content, there are hurdles of transport, storage, processing and good marketing facilities. Uttarakhand in general and being the top north district Uttarkashi district in particular, suffer from the absence of good marketing infrastructure.

There are 66 wholesale markets in total in the state. But number of regulated markets is 58 only, with 25 principal regulated markets yards and 33 submarket yards. Out of 25 markets 20 are functional as of now. In district Uttarkashi none of the regulated market is functional. Therefore, most of the fruits and vegetables are sold in Dehradun and Kanpur. Some are bought by private traders through the contractors. Block Mori is a part of district Uttarkashi, therefore, no regulated market exists there too. Hence, the produce is collected and transported largely to Dehradun and a small portion to Kanpur.

Marketing practices:

Before liberalization, and before intervention of the Mother Dairy and some private players, like SJS¹¹ almost entire horticultural produce of the area was either consumed locally or was collected by some contractors on behalf of the wholesale purchasers in Dehradun, Kanpur and

¹¹ See annexure 4.1

Delhi. But after the intervention of Mother Dairy and other private players like Reliance, Birla, Chirag, SJS etc. the marketing has changed. The access to distant markets has increased. So far as 'C' grade apple is concerned, if not bought by private processing units it is generally sold in the nearby market but mostly at throw away prices. Many times farmers not sure of even recovery of transport costs do not bring to the market. In such a situation, when there is no local market for the produce and in the regulated market producers are not sure whether the produce will be sold or not, MIS becomes important. The scheme takes shape when the state government orders procurement which is effected at the MIS purchase/ collection centres, established particularly for the purpose. In district Uttarkashi 5 such centres have been established. For the farmers of Mori Block , apple 'C' grade is generally purchased at the Arakot centre.

It is obvious that during the entire history of MIS for apple 'c' grade in Uttarakhand only in 3-4 years apple 'c' grade was purchased under MIS and that too not on regular basis and also not in substantial quantity. In other words, MIS has not played any effective role so far in coverage of the sale of apple 'C' grade. On the other hand in the neighbouring state Himachal Pradesh not only MIS has been more or less regular but HPMC plays a major role in processing of apples.

Based upon the information provided by the respondents, it can be said that about 18% to 20% of fruit turns into 'C' grade, depending upon the snowfall, rainfall, setting of the fruit, pollination etc. If we roughly take 15% average, we can say that during the years 2008-09 and 2010-11 when only 86.46 and 33.25 metric tonnes of apple 'C' grade was procured out of production of 4-5 000 metric tonnes and 6-8 000 metric tonnes of apple 'c' grade during these years respectively, which works out 2.1% to 1.7% in 2008-09 and between 0.55% to 0.41% in the year 2010-11. Therefore, that requires much more to be done.

Table 4.2 gives details of MIS procurement during the years.

Table 4.2: Apple marketing under Market Intervention scheme

Year	Rate, Rs./kg	Quantity (MT)	Amt. Lakh Rs.	Agency
2007-08	4.5	114.95	5.17	HMT/KGMVN*
2008-09	4.5	86.46 (4-5k)@	3.89	HMT
2009-10	0	0	0	Na
2010-11	6	33.25 (6-8k)@	1.99	HMT
2011-12	0	0	0	Na

*HTM : Horticulture Mobile Team; KGMVN: Kumaun Garhwal Mandal Vikas Nigam; Nk: not known; Na: not applicable
 (@) rough estimates of apple 'c' grade as 15% - 18% of total apple production during the years.

Note this table is reproduced from chapter -III for sake of easy access to the reader.

About the pattern of disposal by the respondents under the MIS following points need to be made. First, as per the requirement of the coordinated study data for the last two years were to be collected for this table. But we have to stop at one year because there was no MIS for apple 'c' grade during the year 2009-10. Secondly and importantly, during the year 2010-11 when the apple 'c' grade was purchased under MIS, total 33.25 MT or 332.5 quintals of apple 'c' grade was purchased. And out of that 152 quintals or about 46% were sold by our respondents.

Therefore, sample covers about 50% of the targeted crop hence, the results, viz., opinions, difficulties, perceptions etc. can be treated with confidence. Largest share of produce sold under MIS comes from marginal farmers, followed by small farmers. There is 6 times difference in price received through MIS and that received for other category of the produce that is for 'A' and 'B' category fruits.

Another important issue is that the respondents sold about 50% of the total procurement made under the MIS, however that covers only 5.4% of their total production. If 15-18% of the produce turns out to be 'C' grade then even the respondents were left with 2/3rd of the produce still to be marketed. (table 4.3). One can consider the position of other farmers of the Mori block who were not our respondents, other blocks in the district and other districts in the state, in other words, what happens to their 'c' grade produce. Overall thus at current level of procurement MIS covers almost nothing and fails to make any effect. Therefore, the argument that in absence of MIS even this much returns will not be possible, may be true,

However for the MIS to make a significant effect it should be more regular and some reasonably good quantity of apple needs to be procured. Moreover, the procurement price should be considered in terms of utility and value of processed category 'c' grade apples. For example, we know for murrabba, only small size apples are most suited and used, and that too of any quality and the murabba which contains sugar paste and sold at Rs. 140-150/ - a kg., then paying Rs. 6 or 7 per kg of apple 'c' grade is totally unjustified. Then if Patanjali Yogpeeth has agreed to buy 'c' grade apples at higher price than MIS could be easily understood. It underlines the need of processing of 'c' grade apples into jams, jellies, squashes, juices, murabba etc.

Though there is nothing wrong in buying by private processors at higher price but looking at the profit margins (for example, in Delhi one kg. apple Murabba is being sold for Rs. 150 kg. which contains hardly 300 grams of apple rest is sugar and water. Thus with 1 kg apple 'c' grade 2.5 to 3 kg murrabba worth Rs.400-450 is prepared. The NGO like SJS has earned profit keeping the margin very low and with all liberal expenses on its staff and producers/ farmers (Annexure 4.1). In other words, there is lot of scope to increase the procurement price of apple 'c' grade.

**Table 4.3 : Apple produced by farmers and its disposal pattern
Uttarkashi, Beneficiary**

Crops	Production (qtls)	Kept for home consumption (qtls)		Marketed (qts) under			Price (Rs./kg) through	
		2010-11	% of prod.	Other	MIS	% sold under MIS	MIS	Other
Marginal	1127	28	2.48	1027	73	7.11	6.5	36.4
Small	1067	8	0.75	999	61	6.11	6.5	37.5
Medium	816	7	0.86	790	19	2.41	6.5	36.3
Large	0	0	0	0	0	0	0	0
All Sizes	3010	43	1.43	2816	152	5.40	6.5	36.75

Note this table is reproduced from chapter -III for sake of easy access to the reader.

Another important issue which needs to be underlined from the household data is limited availability of credit. Rupees 26 lakhs loan was available to total 69 sample households

(beneficiary and non-beneficiary) and with that they were running their economies, agriculture, horticulture, animal husbandry all put together, an annual economy of lakhs of rupees. With this small loan they were providing food, shelter, health, education etc. to 1115 persons. After deducting number of children and senior citizens, they were providing employment to about 800 persons. Second important issue is per household amount of loan in both the beneficiary and non-beneficiary households which works less than 33 thousand in the case of non-beneficiary households and about 44 thousand in the case of beneficiary households. Hence, time, quantity and cost of availability of loan are other issues. One important point is that this loan was for production and not for marketing of the produce.

Clearly the conclusion will suggest that lot of efforts are needed for arranging loans from public sector financial institutions/ banks for providing fixed as well as working capital. In absence of availability of credit in reasonable quantity and at reasonable rates of interest and at proper times, there is very possibility that MIS alone will not serve the purpose.

Policy options:

In the light of the above following points will be helpful in improving the production and marketing of apple in the region.

1. Production of apple, particularly through yield enhancement needs to be improved. For that agronomical efforts (quality plants, proper care, and nursing etc.) along with provision of easy and adequate credit need to be made.
2. High quality seeds and extension services for the proper care of the plants need to be emphasized, so that ratio of 'C' grade apple to that of 'A' and 'B' is reduced.
3. The state lacks in marketing infrastructure, particularly in number of required regulated markets, which need consideration. In districts like Uttarkashi not a single regulated market is functional.
4. Along with markets, proper storage, transportation and packing etc. need to be improved.
5. As production, howsoever may be in quantity and quality, per se cannot improve the income and living standard of the producers unless it is efficiently marketed, therefore, processing, in the area needs to be taken up.
6. If 'C' grade apple is not bought by private processing units and under the MIS it is either sold in the market at throw away prices or it turns into waste. Therefore, processing facility under private public partnership along with one like HPMC needs to be considered. There is no dearth of demand of processed apple with handsome margins, hence, it would be beneficial to the economy of the state as well.
7. As far as MIS is concerned, with this negligible intervention in the market, the role of MIS in influencing, cropping pattern, farmers' income, market price etc. cannot be significant. But that cannot be construed that it might not have affected the farmers' returns. Hence, the concept of MIS needs to be emphasized keeping in mind the total production of 'C' grade apples and its purchase by private agencies. It would be worthwhile that after the purchases made by the private agencies, entire left over produce should be procured and processed by the government under MIS at a reasonable rate.
8. It would be worthwhile if the minimum price of apple 'c' grade is determined by keeping in mind not only the cost of cultivation but also the market value of its processed products.

In sum, Lot of efforts are needed for regular intervention through MIS and to a larger extent. Also, lot of efforts are needed by financial institutions like public sector banks for providing fixed as well as working capital so that farmers and the economy could benefit with higher and quality output. Moreover, there is no provision to provide credit for marketing of the produce which needs urgent attention. Processing of fruits on the pattern of HPMC along with providing basic infrastructure for marketing, storage, transportation etc., probably will be the best effort for productively solving the problems of marketing of apple of the region. Along with all these steps MIS can be expected to make impact on production, farmers' income, cropping pattern and market price.

Annexure 4.1

Shri Jagdamba Samiti

Stichting Het Groene Woud (SHGW) a family foundation of Netherlands and Shri Jagdamba Samiti (SJS) came together in 2006 to work on business driven social development in India. SHGW, Fresh Food Technology (FFT) and AOFG collaborated with Shri Jagdamba Samiti (SJS), an NGO functioning in Uttarakhand on the Apple project in 2007. FFT was entrusted as the consortium leader of organizations working with the SHGW's initiative in India. By December 2008, SJS was entrusted as the supporting agency to coordinate the apple project. SJS (In apple project) by now has set up six collection centers functioning under Joint Venture Companies (of fresh food technology India and participating farmer trusts) these farmer trusts are the representing legal entities of the collectives of small and marginal farmers in the areas of Dhari, Purola, Pissaun, Tyuni , Harshil and Jhala (Uttarakhand) India. Approximately 500-700 farmers are associated with one trust and thus far 3800 farmers have been registered as primary suppliers and beneficiaries of the project. Each collection centre has a facility to sort and pre-cool apples to a capacity of 500 Metric Tons (MT) in one harvesting season (Aug. to Oct.). A Controlled Atmosphere (CA) Storage facility has been constructed in Naugaoan with a capacity of 1000 MT to store apples for fetching more prices by selling off-season. An opportunity for women farmers also created by organizing 1200 women in women trust for processing of left out fruits for fresh juice and other processed item in the form of juice processing facility adjoining to the long term apple storage. Stichting Het Groene Woud (SHGW) and Shri Jagdamba Samiti (SJS) initiated an inclusive business model by engaging the small and marginal farmers in apple value addition business chain. This would result in creating more employment, income, technical skill and local capacity for the apple growing farmers of Tyuni, Purola, Nogaon, Harshil and Taknor of Uttarakhand, India.

After getting a financial assistance of Rs 15 crore from the SHGW a few years ago, the SJS launched the apple project to eliminate well-organized intermediaries who controlled the entire process from credit supply for farm inputs, transportation to the marketing of the produce. In this business model, the farmer organizations become equal business partners with the private sector parties and a social investor.

In this model Farmer Trusts has been formed for the purpose of handling of produce and value addition by a farmer organization. Farmer Organizations function at the area level to bring together farmers from different villages. The Farmer Organizations strive to organize farmers to get eventual ownership owning a Joint Venture value-addition enterprise through the legally registered Farmer Trust created by this Association and the facilitating development organization (SJS). This trust shall distribute the benefits and shareholding of the enterprise on the basis of patronage.

During the apple season of 2011, 880 participating farmers got prices of Rs 40 to Rs 55 per kg from the collection point companies. A total of 430 MT of apples were procured and these apples were sold to the storage company at the rate of Rs 55 to Rs 65 per kg. FFT Himalayan Fresh Fruit sold these apples between February and April 2012 in the markets of Varanasi, Delhi, Dehradun and Jaipur at the rate of Rs 75 to Rs 85 per kg. A net profit of Rs 7 lakh (Rs 1.80 per

kg) was earned in this regard by the company. The collection centres also earned a net profit of Rs 5 lakh (Rs 1 per kg).

Out of Rs 1, the collection point joint venture distributed a premium of Rs 0.25 per kg in cash on August 15, 2012, with a shareholding of Rs 0.25 per kg. The remaining Rs 0.50 went to the collection point company for capitalization through a decision of the Board of Directors.

The board also decided that of the total profit of Rs 7 lakh earned by the FFT Himalayan, a premium of Rs 0.50 per kg would be given to the farmers. Besides, a shareholding of Rs 1 per kg would also be given to the 880 participating farmers. The farmers will get Rs 2 per kg as added price as additional payment for their apples, besides other benefits like immediate cash payments, training support, saving of time and risk in selling apples to the middlemen.

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27-08-2013

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III. DATE OF RECEIPT OF REPORT: Aug 12, 2013

IV. DATE OF DESPATCH OF SECOND COMMENTS: August 25, 2013

V. Methodology: Interestingly MIS in apple has been operational in Uttarakhand only in Uttarkashi district and again in UKashi it is being undertaken in a block named Mori. This hardly provides any scope of comment on the methodology of the study.

VI. Data / Information: The bulk of information in the report is on the background of study area, production of apple in India and the state. Many tables suggested by coordinators for the present study / report are missing. Several objectives of study remain untouched in the current version of the report.

VII. Results and Discussion:

There is hardly any information to explain/ illustrate operation efficiency of MIS implementing agencies or working of MIS in the state. The current version of Report is silent about the problems of different stakeholders: implementing agencies, farmers, etc. Report is very weak on policy recommendation to improve implementation of MIS in the state.

The objective of the coverage of MIS will remain incomplete if it is not discussed with the data on various determinants of the coverage of MIS. Some of the possible determinants of coverage of MIS can be importance of crop, infrastructure especially marketing and processing related facilities for target crop.

Some of the table specific problems are presented below:

- i) Kindly check the title of the Table 2.5, also Anx Table 2.1
- ii) In Table 2.9, S.No. in the first column of the table is not understandable.
- iii) Area under fruits and vegetables is not mentioned in Table 2.10; it is in the Table 2.13. Any information that can present area under fruits/vegetables vis-à-vis cropped area, geographical area will be very useful.

VIII. Conclusions: The current report needs to be revised in the light of the above comments.

with thanks and regards,

sincerely

brajesh jha

Action taken

I–III affiliation, name etc.

IV: Dispatch date is misleading. The email dispatch date is 27th August. Also earlier comments were on other report/ part “Evaluation of PSS (sunflower in Haryana)”

V: No action is needed

VI. The tables which could not be constructed due to non-existence of data are left out. For example, table based upon MIS operations during last 2 years, or tables based upon MIS operations in other districts, blocks etc.

Objectives: only one objective viz. ‘to study the effect of MIS on the market price of apple ‘C’ grade in Uttarakhand’ which cannot be worked out due to a few number of observations of MIS operations, only 3, and that too not in regular years, has been left out. Rest of the specific objectives have been revisited/ revised

VII. Results and discussion:

Three issues are mentioned in the comments: problems of stakeholders have been revisited /revised in the light of the comments and with the available data.

Comments about tables have been acted upon.

As far as recommendations and improvement of MIS are concerned, one has to keep in mind the basic objectives and need of the scheme and that is to maintain the minimum price level of the commodity. For that need of processing on the pattern of HPMC, purchase of the entire commodity at reasonable rates keeping in mind the demand and value of processed products and improvement of infrastructure – transport, roads, storage etc., making the markets functional (only one regulated market at Uttarkashi and that too being non-functional) and providing adequate capital along with encouraging private entrepreneurs have been suggested. We have redrafted these recommendations more specifically.

However, the coordinator’s recommendation of any other strong policy options on the basis of information available from other states which we lack, would be welcome.

As far as operational efficiency of the MIS implementing agency is concerned, there were two reasons for not doing that – one, the MIS has been implemented by a government department rather by a section “Horticulture Mobile Team” of the Horticulture department of the government, whose main function is to provide extension services to the farmers. Two, the MIS operations have been in 3 years and that also not in regular years and at miniscule levels- coverage of districts, blocks, villages etc., total quantity procured and total amount spent.

This itself shows the working of the MIS.

The other agencies which were to be involved in the MIS were Garhwal Mandal Vikas Nigam (for Garhwal Division) and Kumaun Mandal Vikas Nigam (for Kumaun division), both again are government departments. The Garhwal Mandal Vikas Nigam with which this study should have been concerned as MIS was operational in Garhwal Mandal (Division) has nothing to do with MIS or procurement or food processing. Till date it has remained focused on tourism, pilgrimages, adventure sports and Yoga.

However, the draft report which should have been revisited otherwise also has been revised keeping in mind the observations of the coordinator.