

Research Study No 2009/ 2

**THE IMPACT OF MACRO MANAGEMENT OF AGRICULTURE SCHEME IN UTTARAKHAND**

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## ACKNOWLEDGEMENTS

To complement the efforts of the state governments in accelerating the growth of agricultural production and productivity, the Central government has been providing assistance to the states in various forms – both direct and indirect. Chief amongst the direct interventions have been in the form of providing financial and technical assistance. While some of this assistance has been in the nature of unbridled support, other has been in the nature of centrally sponsored schemes. Under the latter form of assistance, the Department of Agriculture & Cooperation of the Union Ministry of Agriculture formulates and implements National Policies and Programmes aimed at achieving rapid agricultural growth and development through optimum utilization of the country's land, water, soil and plant resources and implements it through states. Under this arrangement there were until recently 27 centrally sponsored schemes which were being implemented.

An appraisal of the mode of funding the states through centrally sponsored schemes of late led to the realization that this top down approach has had many rigidities and leave very little scope for the states to do any maneuvering and fine tune some of the components of the scheme either with some of the states' own schemes or according to the needs and priorities of the individual states. Some of the schemes in addition had some overlapping and common components and objectives. In addition monitoring of the different components of such a large number of schemes was proving to be difficult. As a result the effectiveness of the various schemes in attaining the desired objectives left much to be desired and a need was felt to devise an alternative strategy for funding and implementing the centrally sponsored schemes.

In response to these felt needs, the Macro Management of Agriculture (MMA) Scheme was launched in 2000-01, by integrating 27 centrally sponsored schemes, thus paving the way for moving away from a programmatic to a macro management mode of assistance to the States. The scheme is operationalised in the form of Work Plans, which are prepared by the States and implemented in a spirit of partnership with the States. The scheme has been conceived to provide sufficient autonomy and initiative to State Governments to develop programmes and activities as per their felt needs and priorities. The scheme has thus replaced the schematic rigid approach by a Work Plan based approach in an interactive mode to supplement/ complement States' efforts in the agriculture sector. The MMA scheme is perceived as a major step towards decentralization, allowing States the

flexibility to choose suitable interventions from the various components in addition to their own efforts towards growth of the agriculture sector.

Ever since the implementation of Macro Management of Agriculture Scheme, any study on the impact of some of its important components has not been carried out. To make an assessment of the impact the scheme has made so far, the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India asked various Agro Economic Research Centres located in different states to carry out an impact evaluation study of the Macro Management Scheme. The study has been designed and coordinated by Agricultural Development and Rural Transformation (ADRT) Unit of the Institute for Social and Economic Change (ISEC), Bangalore. The present report pertains to the state of Uttarakhand.

We would like to thank Professor R.S.Deshpande , Director, ISEC for framing the study design and for coordinating the study. The field work of the study was done by M/S Vimarsh Consultancy Services, Gurgaon and we are grateful to them for this.

April, 2009

R.P.S.Malik

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## Executive Summary of the study

### THE IMPACT OF MACRO MANAGEMENT OF AGRICULTURE SCHEME IN UTTARAKHAND

#### 1. Introduction : Scope and Objectives of the study

Macro management of agriculture scheme was launched in late 2000 to move away from schematic approach to Macro Management mode by integrating 27 centrally sponsored schemes. The previous pattern of rigid uniformly structured Centrally Sponsored Schemes , permitting little or no flexibility, which resulted in large unutilized balances with states was dispensed with. Integration of Centrally Sponsored Schemes under Macro Management Mode was expected to enhance the productivity of support programs and accord greater flexibility to State governments to develop and pursue activities on the basis of regional priorities. Macro Management is being seen as a major step towards achieving decentralization in pursuance of restoring primacy of states in agricultural development. Under this mode of assistance the Central Government now supplements the efforts of the state governments through regionally differentiated work plans comprising crop/area/target group specific interventions, formulated in an interactive mode and implemented in spirit of partnership with the states. The focus is to sharpen the impact of the ongoing schemes through a coordinated approach and to that extent the scheme has a distinctive focus.

Ever since the implementation of Macro Management of Agriculture Scheme, any study on the impact of some of its important components has not been carried out. To make an assessment of the impact the scheme has made so far, the Directorate of Economics and Statistics, Ministry of Agriculture, Government of India asked various Agro Economic Research Centres located in different states to carry out an impact evaluation study of the Macro Management Scheme. The study has been designed and coordinated by Agricultural Development and Rural Transformation (ADRT) Unit of the Institute for Social and Economic Change (ISEC), Bangalore. The present report pertains to the state of Uttarakhand.

## **1.1 Objectives of the study**

The specific objectives of the present study as suggested by the coordinating centre include:

1. To assess the impact the important interventions, made under the specific state relevant sub schemes subsumed under the Macro Management of Agriculture in the state of Uttarakhand, have made on the farm economy
2. To analyse the impact of efforts made by the state in increasing the seed replacement rates in terms of ensuring timely availability of sufficient quantity of good quality seeds, and
3. To analyse the impact of the activities to promote Balanced Integrated Nutrient Management to maintain soil fertility and environment.

## **2. Methodology and Data Sources**

The study utilizes both secondary as well as primary sources of data collected from various published and unpublished sources both at the level of state and at the national level. For collection of primary data the study envisages collection of the required information from a sample of respondents selected according to an appropriate sampling scheme.

Based on the analysis of secondary data, discussions with State and District officials, and following an appropriate sampling design, the final sample of farmers respondents for canvassing the questionnaire was selected in the following manner. Based on the discussion with State officials it was decided to carry out this study in Udham Singh Nagar district of Uttarakhand. Three blocks – Khatima, Kashipur and Jaspur were selected in consultation with district officials. From each of the three selected blocks three villages were selected. From each of the three selected villages in each of the three blocks a random sample of 15 farming households were selected giving due consideration to the size group of holding. In all thus the study in Udham Singh Nagar district covers three blocks, nine villages and 135 farming households. The details of blocks and villages selected and the sample size are given in the table below.

**Table 1 : Details of Sample selection from District Udham Singh Nagar, Uttarakhand**

<b>Block</b>	<b>Village</b>	<b>Sample Size</b>
Khatima	Kumroha	15
	Jhankat	15
	Kutra	15
Kashipur	Kundeswari	15
	Kachnalgazi	15
	Dakia Kalan	15
Jaspur	Gulargoji	15
	Shivrajpur	15
	Megawala	15
<b>Total</b>	<b>9</b>	<b>135</b>

## 2. Macro Management Program in Uttarakhand

In consonance with implementation of macro management of agriculture program in other states, Haryana has also shifted to this mode of agriculture management. Taking advantages of flexibilities permitted in taking up different schemes under the program and making appropriate allocations between the different schemes, Uttarakhand has taken up several state relevant schemes under the program. During the last three years, the total allocations (centre share and state's contribution) under the MM program have risen from Rs 1889 lakh in 2005-06 to Rs 2971 lakhs in 2006-07 and to Rs 2944 lakhs in 2007-08.

During the period under study the State has not only changed allocations amongst different schemes but has also discontinued some of the sub schemes within each of the broad schemes listed and started new ones according to the felt needs of the state. The allocations to ICDP have risen from Rs 179 lakhs in 2005-06 to 497 lakhs in 2007-08. Similarly the allocations to agricultural mechanisation have increased more than four folds from Rs 123 lakhs in 2005-06 to Rs 576 lakhs in 2007-08. The allocations made to programs taken up under the New Initiatives scheme of the state have declined from Rs 482 lakhs in 2005-06 to Rs 319 lakhs in 2006-07 and to Rs 285 lakhs in 2007-08.

In terms of proportional financial allocations amongst different components over the years the proportional allocations to ICDP have increased from less than 9.5 percent to almost 17 percent. Allocations to promotion of agricultural mechanization have gone up from 6.5 percent to 19.6 percent. Allocations for new initiatives have however declined from almost one fourths of the total finances available to less than 10 percent.

The allocations on integrated nutrient management have fluctuated sharply in the four years. From total allocation of Rs 87 lakhs in 2005-06, the allocations increased to Rs157 lakhs in 2006-07. In the next year the allocations suddenly jumped to Rs 424 lakhs while in 2008-09 the allocations plummeted to just 45 lakhs. Similarly financial allocations for promotion of agricultural mechanization have also fluctuated sharply in these four years from Rs 190 lakhs in 2005-06 to Rs 567 lakhs in 2006-07, Rs 440 lakhs in 2007-08 and down to Rs 400 lakhs in 2008-09

### **3. Main Findings and Suggestions for Consideration**

In the following paras we present the scheme wise main findings and suggested interventions/ actions that need to be undertaken to make the program more effective.

#### **3.1 Production and distribution of Quality seeds of cereals**

- Measuring the success of the certified seeds program by the proportion of farmers practicing cultivation of certified seeds, the results obtained show that this component of MM program has achieved great success
- A perusal of the extent of adoption of certified seeds across different size groups of farms indicate that the adoption of certified seeds is not restricted only to a specific size group of farms. While farmers of all size groups have adopted cultivation of certified seeds the proportion of marginal cultivators reporting adoption of certified seeds is much smaller than the other three size groups of farms. While the adoption rate in the case of small, medium and large farms was 100 percent, in the case of marginal farmers this was 64 percent



- Of the 117 farmers reporting use of certified seeds of at least one crop, almost 93 percent reported cultivation of certified seeds of both paddy and wheat
- The results obtained suggest that pace of cultivation of certified seeds by farmers has definitely accentuated after the introduction of MM scheme.
- A perusal of the difference in extent of adoption of certified seeds of paddy and wheat by farmers of different size groups of farms before and after the introduction of MM program present some interesting results. In the case of paddy while the pace of adoption by medium and large size groups of farms was higher in the pre MM period, in the case of the other

**Table 2 : Use of certified seeds of Paddy and Wheat**

Size Group	Total number of farmers	Number of farmers using certified seeds of at least one crop	Number of farmers using certified seeds of		
			Both Paddy And wheat	Paddy only	Wheat only
Marginal	50	32(64.0)	27(84.4)	4(12.5)	1(3.1)
Small	31	31(100.0)	29(93.5)	2(6.5)	0(0)
Medium	31	31(100.0)	31(100.0)	0(0)	0(0)
Large	23	23(100.0)	22(95.7)	1(4.3)	0(0)
<b>Total</b>	<b>135</b>	<b>117(86.7)</b>	<b>109(93.2)</b>	<b>7(6.0)</b>	<b>1(0.8)</b>

Note :Figures in parentheses denote percentages

two size groups- marginal and small farmers the pace of adoption increased quite substantially after switching over to MM mode of implementation. In the case of wheat , while the extent of adoption in the large size category of farms was higher in the pre MM period, in the other three size groups of farms the adoption seems to have picked up after switching over to MM mode. The results obtained thus suggest that shifting to MM program mode for supporting the states has helped in contributing to more egalitarian distribution of benefits in so far as promoting cultivation of certified seeds is concerned.

- More than 66 percent of the sampled farmers reported procuring seeds of both paddy and wheat from the government approved shops/depots
- Since about one third of the sampled farmers reported procuring certified seeds from open market rather than government approved shops/ depots we tried to ascertain from the farmers the reasons for this inclination. The major factors cited for preferring open market over government shops for procuring seeds are : not much difference in price between subsidized seeds available in the government shops and in open market; quality of seeds available in government shops is not good; and that seeds in government shops are not available at a time when these are required. No farmer however cited any problems relating to the procedure/ process involved in procuring seeds from the government/ authorized shop or the lack of an authorized shop in the vicinity of their village.
- On reasons for use of certified seeds by the farmers a majority of the farmers cited higher crop yield obtainable with certified seeds with same level of inputs, as used with traditional seeds, as the most important reason for use of certified seeds. Another almost equally important reason cited was the resistance of these seeds to pest attack. Other important factors that have facilitated adoption of certified seeds by the farmers include no seed treatment requirement, low seed rate and of course availability of subsidy on these seeds.
- Of the total paddy area sown by the sampled farmers, certified seeds were sown on about 59 percent of the area while in the case of wheat, area cultivated with certified seeds constituted about 62 percent of the sown area

#### **Suggested Interventions/ Actions**

- The results obtained underline the direction in which some of the corrective steps need to be undertaken to promote still larger coverage of paddy and wheat area with certified seeds by the farmers. From the farmers perspective while there are no major issues relating to the way this component of the program is being implanted by the state or the non availability of an authorized shop selling certified seeds in the vicinity of the village,

much larger efforts need to be made to ensure the availability at government shops/ depots of required quantity and quality of certified seeds at a time when these are required by the farmers. This is likely to help further step up the area cultivated with certified seeds.

- While the program on providing subsidy on certified seeds has in very large part helped in encouraging adoption of certified seeds by the farmers and in helping bring down open market prices of such seeds, there are several other advantages of using certified seeds such as higher crop yields which most of the farmers have started realizing. Given the constraints on availability of funds and the clear financial advantages of using certified seeds to the farmers, the authorities, after continuing with the subsidy program for some more time, may like to revisit the need for providing subsidy on this component on a continuing basis.

### **3.2 IPNM Program**

#### **Main Findings**

- **Soil Testing** : Introduction of MM program has had a very significant impact in encouraging farmers get their soil samples tested. Almost 88 percent of the sampled farmers reported having got their soil tested in the recent past. All the farmers, who had got their soil tested, reported having got their soil tested after the introduction of MM program in 2001.
- **Cultivation of Dhaincha Crop** : The program aimed at promoting cultivation of dhaincha crop by farmers has done well. About 54 percent of the sampled farmers reported cultivation of dhaincha crop on their farms. Almost all the farmers reporting cultivation of dhaincha crop also reported having received subsidy on dhaincha seed from the government agencies.

### Integrated Nutrient Management: Use of Dhaincha

Size Group	Total number of farmers	Number of farmers who cultivated Dhaincha crop	Number of farmers who got subsidy on Dhaincha seed
Marginal	50	23	21
Small	31	15	15
Medium	31	19	18
Large	23	16	15
<b>Total</b>	<b>135</b>	<b>73(54.1)</b>	<b>69(94.5)</b>

- **Use of Bio-fertilisers** : The results relating to program on promoting use of bio fertilizers show that the impact of the program has not so far been very promising. Of the 135 sample households, only 3 farmers reported having participated in one of the demonstration/ training program on use of bio fertilizers.
- **Use of Bio Pesticides** : Like the program on bio fertilizers, the program on promoting use of bio pesticides has not so far been very effective. Of the 135 sampled farmers only 5 farmers reported use of bio pesticides . Of the 5 users, only 3 reported getting subsidy on bio pesticides.
- **Use of Micro Nutrients** : In contrast to some of the other programs under promoting IPNM the program on encouraging use of micro nutrients has been very effective. About 87 percent of the sampled farmers reported using micro nutrients on their farms. Of the farmers using micro nutrients almost 95 percent reported having received the subsidy on the use of micro nutrients.
- **Use of Vermi Compost**: The results on this component of IPNM indicate that so far the scheme has been quite effective in enthusing farmers to use vermin compost. 35 of the 135 farmers ( about 26 percent) reported use of vermin compost on their farms

#### Suggested Interventions/ Actions

- Further strengthening of the program on soil testing by providing larger number of soil testing laboratories and their modernization would encourage still larger proportion of farmers to go in for more frequent soil testing.

- Efforts to promote various components of IPNM program need to be strengthened further. More efforts need to be made in creating awareness about the program. Careful planning about the timing of holding the demonstration/training program as also larger amounts of financial allocations both for organizing various programs as also for disbursement of subsidy on various components may help increase adoption rates of farmers in these programs.
- While we could not ascertain the reasons for lack of enthusiasm amongst the farmers to some of the components of IPNM which are not performing well, we believe that part of this lack of enthusiasm could be due to meager efforts made in the MM program to promote these activities by the farmers.
- While the reasons for non adoption of some of the activities by the farmers, including the benefit-cost stream of investing in this activity, need to be probed in to we feel that larger and more focused efforts under the MM could help enhance its adoption rate by the farmers.

### **3.3 Promotion of Agricultural Mechanisation**

#### **Main Findings**

- During the period between 2001 and 2009, of the 135 farmers only 36 farmers (about 27 percent) bought one or more agricultural implement/ equipment. A comparison across different size groups of farms reveal that while about 61 percent of the large farmers reported having bought one or more equipment during this period, the proportion of such farmers is very low amongst marginal (6 percent) and small (23 percent) farmers.
- Of the total 36 farmers who purchased the agricultural implements during the period 2001-09, 24 farmers (i.e about 67 percent) could get subsidy one or more of the equipment purchased by them .
- These 36 farmers amongst themselves however bought 80 implements. Of the total 80 implements/ equipment bought by these 36 sampled farmers, farmers could get subsidy on 37 (or about 46 percent) implements under the central/ state MM scheme.

- To ascertain the extent to which availability of subsidy acts as a pulling factor for purchase of any equipment, we tried to ascertain from the farmers if they would have bought the equipment they actually bought had there been no subsidy available on them. 30 of the 36 farmers (constituting about 83 percent) who bought any implement during the period responded that they would have in any case bought the implement they bought irrespective of the availability or otherwise of the subsidy. A large number of farmers however do agree that availability of subsidy does provide an incentive to buy that particular implement.
- The results obtained suggest that the three most important impacts farmers perceive as having emanated from the use of the purchased equipment have been : shifts in cropping pattern, increase in cropped area leading to an increase in cropping intensity and more timely completion of various operations . While it is not possible to quantify the impact these benefits would have made to both increases in agricultural production and value of production, these would have definitely added to farmers profitability
- A number of farmers who did not avail of the subsidy on agricultural implements informed that they did not avail of the subsidy because the open market price of the equipment was lower than the subsidized price at which it was available with the authorized dealer . Several farmers also attributed this to dissatisfaction with the quality of equipment that was available with the authorized dealer. However none of the farmers had any complaints either about the cumbersomeness of the procedure prescribed for availing of the subsidy or the corruption in the process of disbursement of the subsidy.

#### **Suggested Interventions/ Actions**

- Subsidy on expensive and new agricultural implements do provide an incentive for farmers to invest in such equipment and therefore needs to continue
- The purpose of grant of subsidy on the identified equipment was to encourage adoption of these implements by the farmer and through more timely and efficient performance of different operations contribute to increased agricultural production and improved farm income. To that extent the objective for grant of subsidy has been well achieved.

- Dissemination of information on the list of implements eligible for grant of subsidy and the number of different implements on which subsidy could be given in a year would go a long way in improved adoption of implements on which subsidy is being made available as also in better utilization of the available subsidy.
- Improvement in quality of equipment available with the authorized dealers and more attractive pricing schemes will enable larger number of farmers to take advantage of the available subsidy.

### **3.4 Scheme for Integrated Pest Management (IPM)**

- Going by the responses of the farmers, the participation in IPM demonstration/ training programs has so far been almost a complete failure.
- The results obtained from our sample survey suggest that non dissemination of the program information was cited by the maximum number of households as the main reason for their non participation. Other important reasons cited by a relatively large number of farmers included – wrong time at which the program is held due to which they can not participate, the program not being held in the vicinity of their village and therefore expensive to participate in such programs as other reasons.

### **Suggested Interventions/ Actions**

- The program on Integrated Pest Management (IPM) needs to be strengthened substantially if the objective is to encourage its adoption by the farmers on a large scale. More wider dissemination of the information about training/demonstration programs, scheduling these programs in accordance with the convenience of timings of the farmers and organizing these programs at a place not far off from the village of the intended beneficiaries would help in much larger participation.
- Half hearted efforts through provision of limited budgets for the purpose and organization of ad-hoc training programs actually translate in to providing only a lip service to otherwise a powerful technology and thereby ineffectiveness and low adoption by

farmers. The IPM program needs to be reoriented and strengthened very substantially if the program is to make any significant impact.

### **3.5 Programs undertaken under New Initiatives**

#### **3.5.1 Pulses and Oilseeds Development Programs**

##### **Main Findings**

- The program on production of foundation seeds of pulses and oilseeds seems to have picked up. About 13 percent of the sampled farmers reported producing foundation seeds of either pulses and/or oilseeds. 9 of the 12 farmers reporting cultivation of pulses and 3 of the 7 farmers reporting cultivation of oilseed crops also reported having received subsidy.
- The efforts on encouraging farmers use certified/foundation seeds in cultivation of pulses/oilseed crops seems to be picking up. About 13 percent of the farmers reported using certified seeds of pulses and/or oilseeds in their production program . 72 percent of the farmers reporting use of certified seeds of pulses and/or oilseeds reported having received the subsidy.
- The results obtained suggest that thrust given to this program under the MM initiative has encouraged farmers to use certified seeds . Of the 22 farmers reporting cultivation of certified seeds of any pulse or oilseed crop, 20 reported having started its cultivation after 2001 the year in which MM program commenced.
- The coverage of area under certified seeds however needs to grow further. In the case of two of the important crops viz Masur and Rapeseed-Mustard the proportion of area sown with certified seeds as proportion of total sown area under the crop was 47.5 and 57.5 percent respectively.

##### **Suggested Interventions/ Actions**

- Efforts to promote production of foundation seeds and promote cultivation of certified seeds of pulses and oilseeds need to be strengthened. More efforts need to be made in creating awareness about the program.



- Larger financial allocations coupled with more promotional efforts/ awareness creation may help increase adoption rates of farmers in such programs.

### **3.5.2 Promoting the Use of soil ameliorants**

#### **Main Findings**

- The results on use of soil ameliorants by sampled farmers suggest that about 23 percent of the sampled farmers reported use of soil ameliorants on their farms. The use of soil ameliorants was reported by all size groups of farmers
- All the 31 users of soil ameliorants reported having received subsidy on this.

#### **Suggested Interventions/ Actions**

- The program appears to be doing well and being executed very efficiently. Larger financial allocations will encourage still larger adoption of soil ameliorants by farmers.
- The program needs to be continued and further improved upon

### **3.5.3 Use of Weedicides**

#### **Main Findings**

- The usage of weedicides to control weeds was reported by about 64 percent of the sampled farmers . The usage of weedicides was not restricted to any particular group of farmers – all size groups of farmers reported use of weedicides.
- Of the 86 farmers who reported use of weedicides, 62 farmers ( or 72 percent) reported having received subsidy on use of weedicides.

#### **Suggested Interventions/ Actions**

- The program on promoting use of weedicides appears to be doing well and being executed very efficiently. Larger financial allocations will encourage still larger adoption of weedicides by the farmers and needs to be expanded.

## **Main Report**

### **Section I**

#### **Introduction : Scope and Objectives of the study**

Macro management of agriculture scheme was launched in late 2000 to move away from schematic approach to Macro Management mode by integrating 27centrally sponsored schemes. The previous pattern of rigid uniformly structured Centrally Sponsored Schemes , permitting little or no flexibility, which resulted in large unutilized balances with states was dispensed with. Integration of Centrally Sponsored Schemes under Macro Management Mode was expected to enhance the productivity of support programs and accord greater flexibility to State governments to develop and pursue activities on the basis of regional priorities. Macro Management is being seen as a major step towards achieving decentralization in pursuance of restoring primacy of states in agricultural development. Under this mode of assistance the Central Government now supplements the efforts of the state governments through regionally differentiated work plans comprising crop/area/target group specific interventions, formulated in an interactive mode and implemented in spirit of partnership with the states. The focus is to sharpen the impact of the ongoing schemes through a coordinated approach and to that extent the scheme has a distinctive focus.

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### **1.1 Objectives of the study**

The specific objectives of the present study as suggested by the coordinating centre include:

4. To assess the impact the important interventions, made under the specific state relevant sub schemes subsumed under the Macro Management of Agriculture in the state of Uttarakhand, have made on the farm economy
5. To analyse the impact of efforts made by the state in increasing the seed replacement rates in terms of ensuring timely availability of sufficient quantity of good quality seeds, and
6. To analyse the impact of the activities to promote Balanced Integrated Nutrient Management to maintain soil fertility and environment.

### **1.2 Methodology and Data Sources**

The study utilizes both secondary as well as primary sources of data collected from various published and unpublished sources both at the level of state and at the national level. For collection of primary data the study envisages

collection of the required information from a sample of respondents selected according to an appropriate sampling scheme detailed below.

### 1.2.1 Sampling Design : Selection of Respondents

Based on the analysis of secondary data, discussions with State and District officials, and following an appropriate sampling design, the final sample of farmers respondents for canvassing the questionnaire was selected in the following manner.

Based on the discussion with State officials it was decided to carry out this study in Udham Singh Nagar district of Uttarakhand. Three blocks – Khatima, Kashipur and Jaspur were selected in consultation with district officials. From each of the three selected blocks three villages were selected. From each of the three selected villages in each of the three blocks a random sample of 15 farming households were selected giving due consideration to the size group of holding. In all thus the study in Udham Singh Nagar district covers three blocks, nine villages and 135 farming households. The details of blocks and villages selected and the sample size are given in the table below.

**Table 1.1 : Details of Sample selection from District Udham Singh Nagar, Uttarakhand**

<b>Block</b>	<b>Village</b>	<b>Sample Size</b>
Khatima	Kumroha	15
	Jhankat	15
	Kutra	15
Kashipur	Kundeswari	15
	Kachnalgazi	15
	Dakia Kalan	15
Jaspur	Gulargoji	15
	Shivrajpur	15
	Megawala	15
<b>Total</b>	<b>9</b>	<b>135</b>

### 1.3 Some Basic Characteristics of the sampled Households

The sampled households have been divided in to four farm size groups based on the size of their operational holding. The four size groups of farms are : Marginal (less than equal to 2.50 acres), Small (2.51 to 5.00 acres), Medium (5.01 to 12.50 acres) and Large (greater than 12.50 acres). We present in Table 1.2 the distribution of sampled households according to the size of operational holding. Thus of the total number of sampled households, about 37 percent were marginal, 23 percent small, 23 percent medium and remaining 17 percent large.

**Table 1.2 : Distribution of sampled households according to size group of operational holding (acres)**

<b>Size Class (Acres)</b>	<b>Category</b>	<b>No. of Households</b>	<b>Percent to Total</b>
<=2.50	Marginal	50	37.04
2.51-5.00	Small	31	22.96
5.01-12.50	Medium	31	22.96
12.51 & above	Large	23	17.04
<b>Total</b>		<b>135</b>	<b>100.00</b>

#### 1.3.1 Size of Holding

The average size of ownership holding of the sampled farmers was 5.95 acres while the average size of operational holding was 7.84 acres (Table 1.3). The average size of operational holding in the four size groups of farms was 1.64, 3.99, 8.61 and 25.48 acres respectively. Leasing in of land by all size groups of farms was evident albeit to different extent. The leased in land as a proportion of operated land in the four size categories of farms comprised 5, 8, 18 and 33 percent respectively. In all the four categories of farms, leasing out was absent with none of the farmers reporting any leasing out of their land.

**Table 1.3 : Average size of ownership and operational holding (acres)**

<b>Size Group</b>	<b>Owned</b>	<b>Leased-in</b>	<b>Leased-out</b>	<b>Operated</b>
Marginal	1.56	0.08	0	1.64
Small	3.67	0.32	0	3.99
Medium	7.06	1.55	0	8.61
Large	17.09	8.39	0	25.48
<b>Total</b>	<b>5.95</b>	<b>1.89</b>	<b>0</b>	<b>7.84</b>

**1.3.2 Distribution of Sampled Households according to caste**

Farmers belonging to SC and ST comprised almost 60 percent of the total number of sampled farmers (Table 1.4). One third of the total sampled farmers were from general category while the remaining about 17 percent belonged to OBC. The proportion of general category farmers increased with an increase in the size class of farms while the proportion of SC and ST category farms showed a decline. About 17 percent of the farmers in the large size group belonged to OBC category.

**Table 1.4 : Distribution of sampled households according to caste**

<b>Size Group</b>	<b>General</b>	<b>SC</b>	<b>ST</b>	<b>OBC</b>	<b>Total</b>
Marginal	8(16.0)	23(46.0)	15(30.0)	4(8.0)	50 (100.0)
Small	8(25.8)	13(41.9)	9(29.0)	1(3.2)	31(100.0)
Medium	14(45.2)	11(35.5)	6(19.4)	0(0)	31(100.0)
Large	15(65.2)	2(8.7)	2(8.7)	4(17.4)	23(100.0)
<b>Total</b>	<b>45(33.3)</b>	<b>49(36.3)</b>	<b>32(23.7)</b>	<b>9(6.7)</b>	<b>135(100.0)</b>

### 1.3.3 Education Level of Sampled Farmers

The literacy rate amongst sampled farmers was quite high. About 86 percent of the sampled farmers were literate. While more than 30 percent farmers have had studied up to middle standard, about 56 percent had attained education up to high school and beyond (Table 1.5). The extent of education amongst different size groups of farmers differ. Relatively larger proportion (more than 60 percent) of sampled farmers belonging to small, medium and large categories had obtained education beyond high school as compared to farmers belonging to marginal farmers where about 44 percent had education of high school and beyond. Almost 24 percent of the marginal farmers were illiterate as compared to less than 9 percent of illiterate farmers in the large size group of farm.

**Table 1.5 : Distribution of sampled households according to level of education**

<b>Size Group</b>	<b>Illiterate</b>	<b>Up to Middle</b>	<b>Up to High School</b>	<b>Up to Graduation</b>	<b>Total</b>
Marginal	12 (24.0)	16(32.0)	19(38.0)	3(6.0)	50 (100.0)
Small	4(12.9)	7 (22.6)	15(48.4)	5(16.1)	31(100.0)
Medium	1(3.2)	11(35.5)	13(41.9)	6(19.4)	31(100.0)
Large	2(8.7)	7(30.4)	7(30.4)	7(30.4)	23(100.0)
<b>Total</b>	<b>19(14.1)</b>	<b>41(30.4)</b>	<b>54(40.0)</b>	<b>21(15.5)</b>	<b>135(100.0)</b>

### 1.3.4 Extent of irrigation

Almost the entire operated area of the sampled farmers was irrigated (Table 1.6). While the sampled farmers belonging to small and large size groups of farms reported 100 percent coverage of their operated area by irrigation, in

the case of marginal farmers it was 99 percent and for medium farmers the proportion of area irrigated was 97 percent.

**Table 1.6: Extent of operated area Irrigated**

<b>Size Group</b>	<b>Total operated area</b>	<b>Operated Area Irrigated</b>	<b>% Operated Area Irrigated</b>
Marginal	82	81	98.8
Small	123.75	123.75	100.0
Medium	267	258	96.6
Large	586	586	100.0
<b>Total</b>	<b>1058.75</b>	<b>1048.75</b>	<b>99.1</b>

### **1.3.5 Family Size and Availability of Family Labor**

The average family size of the sampled households was 6.74 (Table 1.7). The average family size in the large category farms was much higher than that in the marginal farms. Of the average number of family members of 6.74, the number of farm family workers was 2.72 or about 40 percent. Hiring in of farm workers as permanent labors was reported by farmers belonging to medium and large category. The average number of permanent labor hired in by these categories of farmers was 0.16 and 0.43 workers. The average number of permanent labor hired by sampled households was 0.12.



**Table 1.7 : Average Family Size and availability of labor (Number)**

Size Group	Family Size	Workers	
		Farm family	Permanent labor
Marginal	5.74	2.12	0.02
Small	7.19	3.31	0
Medium	6.87	3.00	0.16
Large	8.13	2.87	0.43
<b>Total</b>	<b>6.74</b>	<b>2.72</b>	<b>0.12</b>

#### **1.4 Organisation of the Report**

The report is organized as follows. In the next Section we describe in some more detail the salient features of the MM scheme in general and how it has been working in Uttarakhand in particular during the last three to four years. This is followed by results on impact assessment based on the data collected from the sampled households from District Udham Singh Nagar. The last section gives the summary and conclusions emanating from the study.

## Section II

### **Macro Management of Agriculture : The Scheme, its Relevance and its Implementation in Uttarakhand**

#### **2.1 Introduction**

To complement the efforts of the state governments in accelerating the growth of agricultural production and productivity, the Central government has been providing assistance to the states in various forms – both direct and indirect. Chief amongst the direct interventions have been in the form of providing financial and technical assistance. While some of this assistance has been in the nature of unbridled support, other has been in the nature of centrally sponsored schemes. Under the latter form of assistance, the Department of Agriculture & Cooperation of the Union Ministry of Agriculture formulates and implements National Policies and Programmes aimed at achieving rapid agricultural growth and development through optimum utilization of the country's land, water, soil and plant resources and implements it through states. Under this arrangement there were until recently 27 centrally sponsored schemes which were being implemented.

An appraisal of the mode of funding the states through centrally sponsored schemes of late led to the realization that this top down approach has had many rigidities and leave very little scope for the states to do any maneuvering and fine tune some of the components of the scheme either with some of the states' own schemes or according to the needs and priorities of the individual states. Some of the schemes in addition had some overlapping and common components and objectives. In addition monitoring of the different components of such a large number of schemes

was proving to be difficult. As a result the effectiveness of the various schemes in attaining the desired objectives left much to be desired and a need was felt to devise an alternative strategy for funding and implementing the centrally sponsored schemes.

In response to these felt needs, the Macro Management of Agriculture (MMA) Scheme was launched in 2000-01, by integrating 27 centrally sponsored schemes, thus paving the way for moving away from a programmatic to a macro management mode of assistance to the States. The scheme is operationalised in the form of Work Plans, which are prepared by the States and implemented in a spirit of partnership with the States. The scheme has been conceived to provide sufficient autonomy and initiative to State Governments to develop programmes and activities as per their felt needs and priorities. The scheme has thus replaced the schematic rigid approach by a Work Plan based approach in an interactive mode to supplement/ complement States' efforts in the agriculture sector. The MMA scheme is perceived as a major step towards decentralization, allowing States the flexibility to choose suitable interventions from the various components in addition to their own efforts towards growth of the agriculture sector.

Subsequent to the launch of the MMA scheme, a separate National Horticulture Mission was launched by the Government in 2005-06. As a sequel to that, 10 components under MMA relating to horticulture were excluded from the MMA scheme. The MMA scheme thus comprised the following 17 components, or sub-schemes, focusing on rice, wheat, coarse cereals, sugarcane, soil health, nutrient and pest management, farm mechanization and watershed development: The 17 schemes subsumed under the MMA program comprise:

1. Integrated Cereal Development Programmes in Rice Based Cropping System Areas
2. Integrated Cereal Development Programmes in Wheat Based Cropping System Areas
3. Integrated Cereal Development Programmes in Coarse Cereals Based Cropping System Areas
4. Special Jute Development Programme
5. Sustainable Development of Sugarcane Based Cropping System
6. Balanced and Integrated Use of Fertilizer
7. Promotion of Agricultural Mechanization among Small Farmers
8. National Watershed Development Project for Rainfed Areas
9. Scheme for Foundation and Certified Seed Production of Vegetable Crops
10. Soil Conservation in Catchments of River Valley Projects and Flood Prone Rivers
11. Reclamation and Development of Alkali Soils
12. State Land Use Board
13. Assistance to Cooperatives of Weaker Section
14. Assistance to Women Cooperatives
15. Non-overdue Cover Scheme
16. Agriculture Credit Stabilization Fund
17. Special Scheme for SC/ST

## **2.2 Recent Revisions in the MMA Scheme**

The MMA scheme as formulated above was implemented during the 10th Five Year Plan (2002-07) with an expenditure of Rs. 4,154 crore, inter alia, achieving treatment of 24.13 lakh hectares of degraded land on watershed

basis, 10.39 lakh hectares of land in river valleys and flood prone rivers, 7.36 lakh hectares of alkali soil and distribution of 17.14 lakh farm equipment.

In the backdrop of recent launch of new initiatives by the Government, namely, the National Food Security Mission (NFSM) and the Rashtriya Krishi Vikas Yojana (RKVY), it became imperative to revise the existing MMA scheme to improve its efficacy in supplementing and complementing the efforts of the States towards enhancement of agricultural production and productivity, in the larger context of broad based inclusive growth highlighted in the 11th Five Year Plan Document as well as the National Policy on Farmers, 2007. In the Revised Macro Management of Agriculture (MMA) Scheme, the role of the scheme has been redefined to avoid overlapping and duplication of efforts with the new Government initiatives and to make it more relevant to the present agriculture scenario in the States to achieve the basic objective of food security and to improve the livelihood system for rural masses. Accordingly the Revised MMA Scheme attempts to:

- (i) avoid overlap with the activities under the two major initiatives launched during 2007-08, namely, the National Food Security Mission (NFSM) and the Rashtriya Krishi Vikas Yojana (RKVY)
- (ii) revise and rationalize the cost and subsidy norms vis a vis other schemes to bring about uniformity and avoid confusion at the field level.
- (iii) provide an alternative window of funding to the States till RKVY stabilizes fully.
- (iv) make it more relevant to the present agriculture scenario in the States to achieve the basic objective of food security and to improve the livelihood system for rural masses.

### **2.3 Salient Features of the Revised MMA Scheme: Allocation Criteria**

The practice of making allocation of funds to the States on historical basis under the erstwhile MMA Scheme has been replaced by a new allocation criteria based on the following two parameters:

- a) 50% weightage to the gross cropped area, and
- b) 50% weightage to the area under small and marginal holdings in the State.

Thus the new criteria is envisaged to facilitate allocation of more resources to the States having larger cropped area and also larger concentration of small and marginal farmers. It would apply to all States other than Special Category States of Himachal Pradesh, Jammu & Kashmir and Uttarakhand, States in the North Eastern region and UTs. The allocation of funds to the North Eastern States (including Sikkim), the Union Territories (UTs) and the Special Category States of Himachal Pradesh, Jammu & Kashmir and Uttarakhand would continue to be made as before, ensuring that none of these States/UTs gets funds less than their existing proportion of allocation compared to the total allocation. Under the Revised MMA scheme, at least 33% of the allocation would have to be made for small, marginal and women farmers. The allocation to SC/ST farmers will have to be made proportionate to their population. This should mainstream assistance to these groups.

### **2.4 Funding pattern**

Under the MMA the pattern of financial assistance is 90% Centre's share and 10% States' share (except in case of the North-Eastern States), which is to continue in the revised formulation. The present system of release of the first

installment upon the approval of the Work Plan, and release of the 2nd installment after utilization of at least 60% of the funds released earlier, would continue to be followed. Only 10% of the total unspent balance will be allowed to be carried forward to the next financial year. The remaining unspent balance will be adjusted in the amount to be released as the 2nd installment. In case a State Government does not seek release of the 2<sup>nd</sup> installment, the unspent balance over and above 10% will be deducted from the release of 1<sup>st</sup> installment during the next fiscal. Further, submission of performance reports in terms of the physical and financial achievements would be necessary before the release of the 2nd installment. Instead of the system of imposing a monthly graded cut of 10% for proposals for release of 2nd installment after December presently being followed, no release of 2nd installment would be made after January; only the re-allocated funds will be released to the better performing States. These measures would help in timely and optimum utilization of resources.

## **2.5 Number of components or sub-schemes under Revised MMA Scheme**

The list of components, or sub-schemes, included under the Revised MMA scheme have further been revised and are as follows:

- (i) Integrated Cereal Development Programmes in Rice Based Cropping System Areas (ICDP - Rice)
- (ii) Integrated Cereal Development Programmes in Wheat Based Cropping System Areas (ICDP - Wheat)
- (iii) Integrated Cereal Development Programmes in Coarse Cereals Based Cropping System Areas (ICDP - Coarse Cereal)
- (iv) Integrated Development Programme for Pulses and Oilseeds
- (v) Sustainable Development of Sugarcane Based Cropping System Areas (SUBACS)

- (vi) Balanced & Integrated Use of Fertilizer and Pesticides
- (vii) Promotion of Agricultural Mechanization among Farmers
- (viii) National Watershed Development Project for Rainfed Areas (NWDPRA)
- (ix) Soil Conservation in Catchments of River Valley Projects & Flood Prone Rivers (RVP & FPR)
- (x) Reclamation & Development of Alkali and Acidic Soils, and
- (xi) State Land Use Board (SLUB)

## **2.6 Some of the Major Activities under MMA**

In order to give focused attention, through specific interventions, for enhancement of production and productivity by reducing yield gaps of major crops on a sustainable basis, financial assistance would be provided under the Revised MMA Scheme for the following broad activities under the sub schemes mentioned above:

- (i) Distribution of hybrid/high yielding variety seeds not older than ten year. The older varieties which are having higher yield may also be distributed. Emphasis would also be on production of seeds where involvement of private sector will be encouraged.
- (ii) Distribution of seed minikits. The size of minikit should be 1/10th of the recommended seed rate of different crops. Variety/hybrid of seeds included in the minikit should not be older than five years.
- (iii) Demonstration of improved package, system of rice intensification (SRI), hybrid seeds, resource conservation technology, i.e., zero tillage, Furrow Irrigated Raised Bed System (FIRB).
- (iv) Distribution of micronutrients, bio-fertilizers, bio-pesticides/liquid bio-pesticides, gypsum/ pyrite/lime application/green manuring.



- (v) Promotion of agricultural mechanization equipment, especially small farm implements like cono weeder, zero till machine, rotavators, improved hand-tools, i.e., gender friendly equipment, bullock drawn implements and power operated equipment etc. At least 25% of the overall allocation for the agricultural mechanization should be earmarked only for the new technology equipment recommended by ICAR.
- (vi) Training through Farmer's Field Schools, exposure visits of farmers/officials of the State, video conferencing, use of print and electronic media.
- (vii) Skill development in the farming community, including training of farmers in modern methods of agriculture as well as imparting the skills relevant for related non-agricultural activities.
- (viii) Strengthening and creation of infrastructure for soil, fertilizer, and pesticide testing facilities, distribution of soil health cards, training of manpower etc.
- (ix) Decentralized production and use of biofertilizers, organic farming and vermin compost.
- (x) Primary processing of crops for value addition to the farm produce.
- (xi) Primary market activities at village level to avoid distress sale of the farm produce.
- (xii) Other extension activities to facilitate crop production for which PPP model may be used, wherever possible.
- (xiii) Frontline demonstrations on rice, wheat, coarse cereals, pulses, oilseeds, sugarcane, by, ICAR, State Agriculture Universities, Research Institutions etc., organizing National and State Level Workshop/ Seminars, conducting evaluation studies etc. under the Direct Funded Component by Crop Development Directorates.

The above list is indicative in nature. The State Governments are free to include other item(s) based on the local felt needs and circumstances. For instance, seed treatment and pest surveillance in view of their importance for enhancement of crop production and productivity and saving the crops from pest attack may be taken up. Keeping in view the recently launched NFSM, it has been decided to implement the crop production programme for rice and wheat under the Revised MMA Scheme only in the districts not covered under the NFSM.

### **2.7 Inclusion of new components under the Revised MMA Scheme**

Under the Revised MMA Scheme, it has been decided to enhance the permissible ceiling for New Initiatives" from the existing 10% to 20% of the total allocation to facilitate the State Governments to implement new activities/innovations as per the felt needs of the State, especially with regard to the activities for gender empowerment and development of risk prone/backward/tribal areas. Schemes which encourage group formation among women/SC/ST farmers would have to be included in the Work Plan, and preference given to these.

In order to give a boost to the production of pulses and oilseeds to meet the food and nutritional security, it has been decided to include pulses and oilseeds as one of the crop production programmes under the Revised MMA Scheme. This would also address a long-standing demand of a number of States. However, to avoid overlapping, it has been decided that the crop production programme for pulses, oilseeds and maize will only be implemented in the areas not covered under the Integrated Scheme of Oilseeds, Pulses, Oil palm and Maize (ISOPOM).

To address the problem of acidic soils, it has been decided to introduce a new component "Reclamation of Acidic Soil" along with the existing component of "Reclamation of Alkali Soil" under the Revised MMA Scheme.

## **2.8 Preparation of Work Plan**

The present system of preparation and submission of Work Plan by the Agriculture Department of the State Government to the Department of Agriculture & Cooperation, Government of India for examination, discussion and its final approval will continue. However, the States would have to ensure that the Work Plan under the Revised MMA scheme is suitably integrated with the District Agriculture Plans (DAPs) and the State Agriculture Plan (SAP) and also to certify that there will be no overlapping of the activities undertaken, including those taken up under RKVY.

The Work Plan would be an integral part of the State Agricultural Plan (SAP), which, in turn, will be based on the District Agricultural Plans (DAPs). The Work Plan, inter alia, would have to (i) incorporate the physical and financial targets, year-wise, sought to be achieved by the end of the 11th Five Year Plan; (ii) enumerate the expected outcomes, year wise, under each scheme; (iii) contain a concrete action plan to achieve these targets and outcomes; and (iv) comprehensively set benchmarks/parameters against which the performance under the scheme could be evaluated during the 11th Plan.

## **2.9 Implementing Agency**

The Agriculture Department would continue to be the nodal agency at the State level for implementation of the Revised MMA Scheme in close coordination and cooperation with other Departments/agencies. The Department will be responsible for preparation of the Work Plan,

coordination between various Departments within the State Government, management of fund and submission of performance reports and utilization certificates within the stipulated time frame.

However, the State Government may appoint an implementing agency with sufficient flexibility, as in case of the RKVY, for implementation of this scheme.

### **2.10 Involvement of Panchayati Raj Institutions (PRIs)**

The State Government / implementing agency would have to ensure active participation of the PRIs of all tiers in the implementation of the Revised MMA Scheme. Some of the activities under which PRIs could be involved are elucidated below.

### **2.11 Rationalization of Subsidy Pattern and Cost Norms**

The need for rationalization of the subsidy and cost norms has arisen as the input prices and costs have gone up substantially impacting the viability of farming activity adversely. Moreover, the differing subsidy norms under various schemes have caused confusion in implementation and there is a unanimous demand from the States to rationalize these norms.

Under the Revised MMA Scheme an attempt has been made to rationalize the subsidy structure to make the pattern of subsidy uniform under all the schemes implemented by the Department of Agriculture and Cooperation for smooth implementation at the ground level. However, it may be noted that the revised subsidy norms would be the maximum permissible. States may either retain the existing norms, or increase them to a reasonable level provided that the norms do not exceed the revised upper limits specified. States have been advised to consider this aspect carefully since higher subsidy/cost norms will curtail delivery to farmer beneficiaries. It is also

suggested that in determining these norms preference may be given to group activity among SC/ST/women provided this does not exceed the upper limits above.

## **2.12 Macro Management Program in Uttarakhand**

In consonance with implementation of macro management of agriculture program in other states, Uttarakhand has also shifted to this mode of agriculture management. Taking advantages of flexibilities permitted in taking up different schemes under the program and making appropriate allocations between the different schemes, Uttarakhand has taken up several state relevant schemes under the program. During the last three years, the total allocations (centre share and state's contribution) under the MM program have risen from Rs 1889 lakh in 2005-06 to Rs 2971 lakhs in 2006-07 and to Rs 2944 lakhs in 2007-08. (Table 2.1 and Figure 2.1).

The scheme wise details and financial components for each of the sub components of different schemes for different years are given in Appendix Tables A1 to A3. The salient features of financial allocations amongst different schemes during these years are presented in Tables 2.1 and 2.2 and depicted in figures.

During the period under study the State has not only changed allocations amongst different schemes but has also discontinued some of the sub schemes within each of the broad schemes listed and started new ones according to the felt needs of the state. The allocations to ICDP have risen from Rs 179 lakhs in 2005-06 to 497 lakhs in 2007-08. Similarly the allocations to agricultural mechanisation have increased more than four folds from Rs 123 lakhs in 2005-06 to Rs 576 lakhs in 2007-08. The allocations made to programs taken up under the New Initiatives scheme of the state have declined from Rs 482 lakhs in 2005-06 to Rs 319 lakhs in 2006-07 and to Rs 285 lakhs in 2007-08.

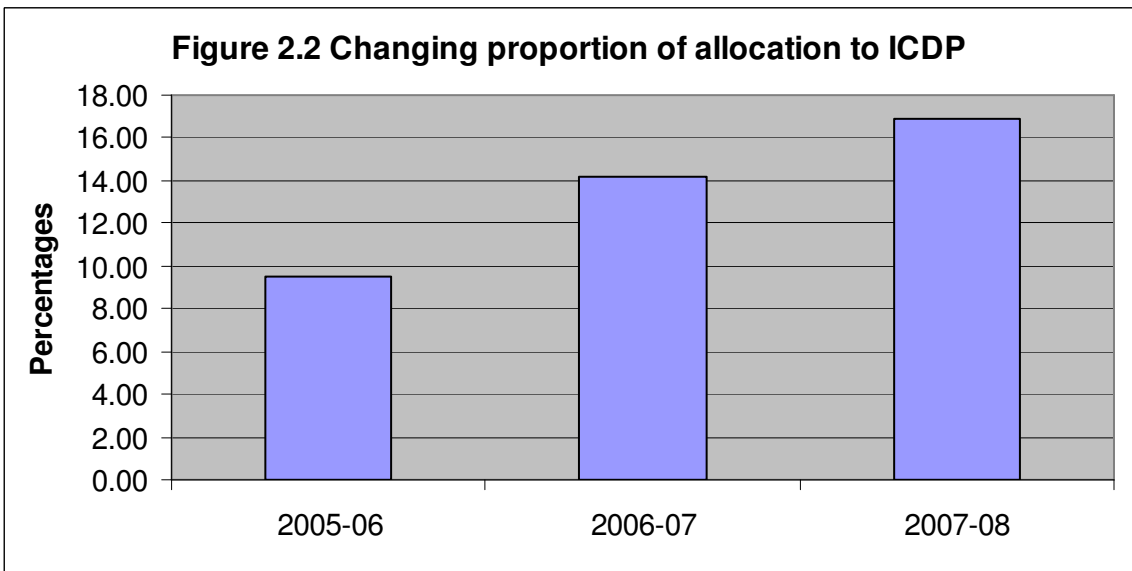
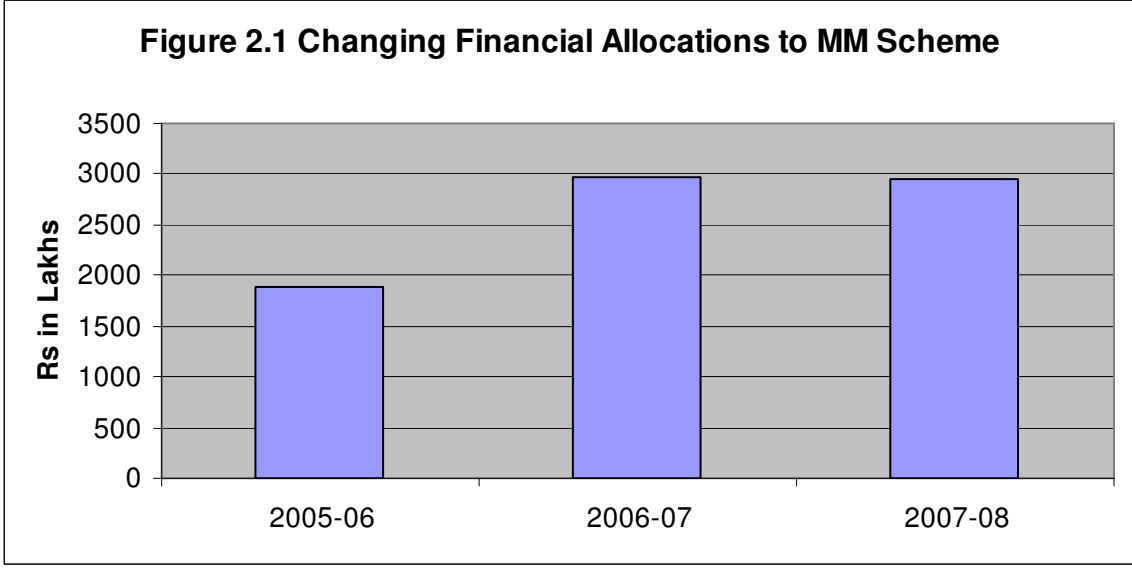
In terms of proportional financial allocations amongst different components over the years the proportional allocations to ICDP have increased from less than 9.5 percent to almost 17 percent. Allocations to promotion of agricultural mechanization have gone up from 6.5 percent to 19.6 percent. Allocations for new initiatives have however declined from almost one fourths of the total finances available to less than 10 percent.

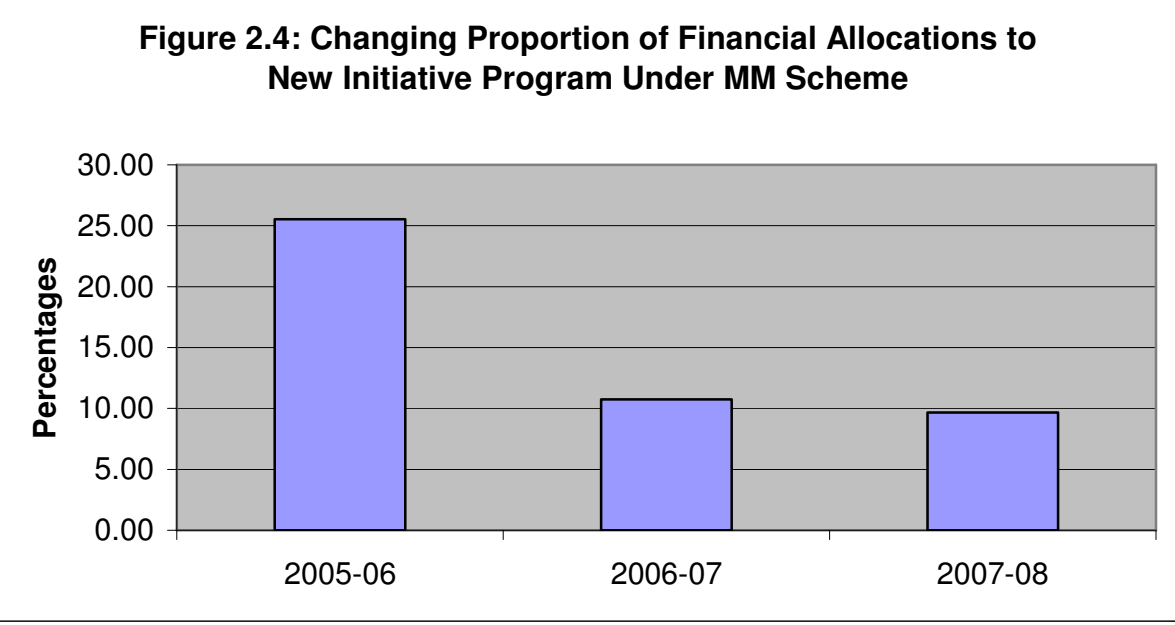
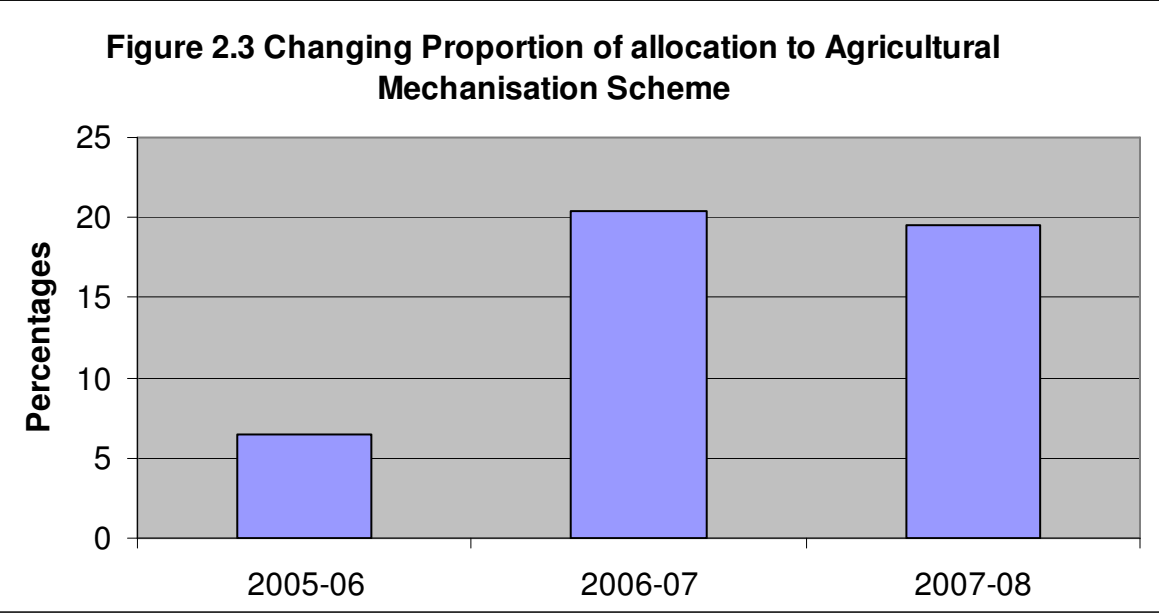
**Table 2.1 : Financial allocations of different schemes during 2005-06 to 2007-08 (Rs in Lakhs)**

<b>Sr No</b>	<b>Scheme</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>
1	Integrated Cereal development Program	178.96	422.36	4986.80
2	Promotion of Agricultural Mechanisation	123.00	604.40	576.27
3	NWDPR	850.80	1125.00	1054.55
4	RVP/FPR	235.00	450.00	456.40
5	Sugarcane Production Program	18.80	50.00	75.73
6	New Initiatives	482.29	319.11	284.69
	<b>TOTAL</b>	<b>1888.89</b>	<b>2970.87</b>	<b>2944.44</b>

**Table 2.2 Changing composition of financial allocations amongst different schemes during 2005-06 to 2007-08 ( Percentages)**

<b>Sr No</b>	<b>Schemes</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>
1	Integrated Cereal development Program	9.47	14.22	16.87
2	Promotion of Agricultural Mechanisation	6.51	20.34	19.57
3	NWDPR	45.04	37.87	35.81
4	RVP/FPR	12.44	15.15	15.50
5	Sugarcane Production Program	1.00	1.68	2.57
6	New Initiatives	25.53	10.74	9.67
	<b>TOTAL</b>	<b>100</b>	<b>100</b>	<b>100</b>







### **Section III**

#### **Impact of Select Schemes under the Macro Management of Agriculture in Uttarakhand**

In this Section we attempt to make an assessment of some of the schemes which have been taken up for implementation under the MM program in Uttarakhand. It may be important to mention here that the nature of the schemes, the various components taken up under each scheme and the emphasis laid on different schemes (in terms of financial allocations made for different schemes/ components) has been shifting over the years during which this program has been in operation in Uttarakhand. Additionally, the various schemes currently under operation may not have been under operation for similar number of years. The following assessment is based on the cumulative impact the program has been able to make ever since its launch and may to some extent also reflect the impact that each of the components may have made when they were being implemented as individual components as part of centrally sponsored scheme prior to the introduction of MM program.

In the following sections we evaluate the following schemes which have been undertaken under the cereal development program of the MM program (i) Production and distribution of quality seeds of cereals, (ii) IPNM, (iii) Promotion of Agricultural Mechanization; (iv) Integrated Pest Management. In addition we very briefly also evaluate some small components undertaken by the State government under the “New Initiative”. The components that have been evaluated are (i) pulses and oilseeds development program; (ii) promoting use of soil ameliorants; and (iii) use of weedicides.

### **3.1 Production and distribution of Quality Seed of Cereals**

Promoting the cultivation of certified and foundation seeds is one of the largest and most important component of the ICDP under the MM program. The role of good quality seeds of promising varieties in enhancing productivity of different crops needs no emphasis. The efforts invested in developing new seed varieties bear fruit only when such seeds are made available to farmers and cultivated by them. In order to popularize the new seed varieties, minimize the time gap between development and adoption by the farmers, make the new seeds affordable for the farmers and thereby encourage its widespread adoption, the MM scheme provides subsidy to farmers for purchase of these seeds. Providing assistance for seeds is one of the most important component of the MM program in Uttarakhand.

Under the scheme, farmers are provided assistance for the purchase of certified/ foundation seeds. The subsidy on certified seeds is given at the rate of Rs 200 per quintal in the case of rice, wheat and barley and at the rate of Rs 400 per quintal in the case of Mandua, Madira, Maize, Ramdana, Buck wheat etc. The assistance under the scheme is provided only on latest varieties which are not older than 10 years. In the study district of Udham Singh Nagar however the emphasis is primarily on promoting use of certified seeds of paddy and wheat.

#### **3.1.1 Extent of Adoption of Certified Seeds by Farmers**

Measuring the success of the certified seeds program by the proportion of farmers practicing cultivation of certified seeds, the results obtained show that this component of MM program has achieved great success. Of the total 135 sampled farmers in our survey, 117 farmers, constituting 87 percent of the total number of farmers selected, reported practicing cultivation of certified seeds of

at least one crop (Table 3.1). The remaining 13 percent of the sampled farmers reported non use of certified seeds of any crop.

**Table 3.1 : Use of Certified Seeds by Sampled Farmers**

Size Group	Total number of farmers	Number of farmers	
		Using certified seeds of at least one crop	Not using certified seeds
Marginal	50(100.0)	32(64.0)	18(36.0)
Small	31(100.0)	31(100.0)	0(0)
Medium	31(100.0)	31(100.0)	0(0)
Large	23(100.0)	23(100.0)	0(0)
<b>Total</b>	<b>135(100.0)</b>	<b>117(86.7)</b>	<b>18(13.3)</b>

Note :Figures in parentheses denote percentages

A perusal of the extent of adoption of certified seeds across different size groups of farms indicate that the adoption of certified seeds is not restricted only to a specific size group of farms. While farmers of all size groups have adopted cultivation of certified seeds the proportion of marginal cultivators reporting adoption of certified seeds is much smaller than the other three size groups of farms. While the adoption rate in the case of small, medium and large farms was 100 percent, in the case of marginal farmers this was 64 percent

Of the 117 farmers reporting use of certified seeds of at least one crop, almost 93 percent reported cultivation of certified seeds of both paddy and wheat (Table 3.2). Remaining 6 percent of the sampled farmers reported cultivation of certified seeds of paddy only and about 1 percent of wheat only crops. Again, of the farmers reporting use of certified seeds of any crop, the proportion of marginal farmers reporting adoption of certified seeds of both the crops was much less than that in the other three classes of households.

**Table 3.2 : Use of certified seeds of Paddy and Wheat**

Size Group	Total number of farmers	Number of farmers using certified seeds of at least one crop	Number of farmers using certified seeds of		
			Both Paddy	Paddy only And wheat	Wheat only
Marginal	50	32(64.0)	27(84.4)	4(12.5)	1(3.1)
Small	31	31(100.0)	29(93.5)	2(6.5)	0(0)
Medium	31	31(100.0)	31(100.0)	0(0)	0(0)
Large	23	23(100.0)	22(95.7)	1(4.3)	0(0)
<b>Total</b>	<b>135</b>	<b>117(86.7)</b>	<b>109(93.2)</b>	<b>7(6.0)</b>	<b>1(0.8)</b>

Note :Figures in parentheses denote percentages

### 3.1.2 Length of Cultivation of Certified seeds

Efforts at promoting cultivation of certified seeds by farmers has been going on for quite some time. Prior to the introduction of MM scheme in 2001, promoting cultivation of certified seeds was one of the many important centrally sponsored schemes. To ascertain whether the extent of adoption of certified seeds has accelerated after the introduction of MM program, we ascertained from the sampled farmers the year since when they have been cultivating certified seeds of paddy and wheat. The results obtained suggest that pace of cultivation of certified seeds by farmers has definitely accentuated after the introduction of MM scheme. Of the 116 farmers reporting cultivation of certified seeds of paddy more than 74 percent reported having started its cultivation after the introduction of MM scheme in 2001 (Table 3.3) . Similarly of the 111 farmers reporting cultivation of certified seeds of wheat more than 64 percent reported having started its cultivation after the introduction of MM scheme.

A perusal of the difference in extent of adoption of certified seeds of paddy and wheat by farmers of different size groups of farms before and after the introduction of MM program present some interesting results. In the case of paddy while the pace of adoption by medium and large size groups of farms was higher in the pre MM period, in the case of the other two size groups- marginal and small farmers the pace of adoption increased quite substantially after switching over to MM mode of implementation. In the case of wheat , while the extent of adoption in the large size category of farms was higher in the pre MM period in the other three size groups of farms the adoption seems to have picked up after switching over to MM mode.

**Table 3.3: Distribution of Sampled households according to period of use of certified seeds (Number)**

Size Group	Paddy			Wheat		
	Total users	Before 2001	From 2001	Total users	Before 2001	From 2001
Marginal	31(100.0)	4(12.9)	27(87.1)	29(100.0)	4(13.8)	25(86.2)
Small	31(100.0)	10(32.3)	21(67.7)	29(100.0)	10(34.5)	19(65.5)
Medium	31(100.0)	16(51.6)	15(48.4)	31(100.0)	13(41.9)	18(58.1)
Large	23(100.0)	12(52.2)	11(41.8)	22(100.0)	13(59.1)	9(40.9)
<b>Total</b>	<b>116(100.0)</b>	<b>42(36.2)</b>	<b>74(63.8)</b>	<b>111(100.0)</b>	<b>40(36.0)</b>	<b>71(64.0)</b>

The results obtained thus suggest that shifting to MM program mode for supporting the states has helped in contributing to more egalitarian distribution of benefits in so far as promoting cultivation of certified seeds is concerned.

### **3.1.3 Source of Procurement of Certified Seeds by Farmers**

To propagate the cultivation of certified seeds by the farmers, the government and its agencies have made arrangements for making certified seeds available at subsidized prices from the authorized/ government approved shops in different areas of the state. In the initial phase when the availability of certified seeds was in short supply the seeds were generally available with such dealers/shops only. However with some ease in availability of certified seeds, the seeds are now available relatively more easily and widely. In addition to government authorized shops the certified seed is now also available with private dealers. Similarly with ease in availability of supply the open market prices have also come down and open market prices of certified seeds now compare favorably with the subsidized price seeds available at approved shops. As a result of ease in supply and competitive open market prices, the farmers no longer have to depend solely on government approved shops for procuring the needed certified seeds, though government approved shops, because of their quality assurance of seeds, still remain preferred choice for procuring seeds.

Of the 135 sampled households in our sample more than 66 percent of the farmers reported procuring seeds of both paddy and wheat from the government approved shops/depots (Table 3.4). The remaining about 34 percent of the farmers cultivating paddy and wheat procured the certified seeds from the open market. The pattern of procurement of seeds across different size groups of farms remain by and large similar though there are some variations across different size groups as also between the two crops.

**Table 3.4 : Source of Procurement of Certified seeds as reported by sampled Farmers (numbers)**

Size Group	Paddy Certified Seed Users			Wheat Certified Seed Users		
	Total	Procuring from Govt Approved Shop	Open Market	Total	Procuring from Govt Approved Shop	Open Market
Marginal	31	23(74.2)	8(25.8)	29	22(75.9)	7(24.1)
Small	31	19(61.3)	12(38.7)	29	17(58.6)	12(41.4)
Medium	31	19(61.3)	12(38.7)	31	21(67.7)	10(32.3)
Large	23	16(70.0)	7(30.0)	22	14(63.6)	8(36.4)
<b>Total</b>	<b>116</b>	<b>77 (66.4)</b>	<b>39(33.6)</b>	<b>111</b>	<b>74(66.7)</b>	<b>37(33.3)</b>

Since about one third of the sampled farmers reported procuring certified seeds from open market rather than government approved shops/ depots we tried to ascertain from the farmers the reasons for this inclination. While some farmers attributed this tendency to one of the several listed factors, others attributed this tendency to more than one factor.

The results obtained suggest multiple of factors responsible for procuring seeds from market. A majority of farmers attributed this to both price and non price factors. The major factors that determine the choice of procuring seeds from open market rather than government shops are : not much difference in price between subsidized seeds available in the government shops and in open market; quality of seeds available in government shops is not good; and that seeds in government shops are not available at a time when these are required. No farmer however cited any problems relating to the procedure/ process involved in procuring seeds from the government/ authorized shop or the lack of an authorized shop in the vicinity of their village.

### 3.1.4 Reasons for Using Certified Seeds

Is the availability of subsidy on certified seeds *per se* the primary reason which has encouraged farmers to start using certified seeds of the important crops paddy and wheat or are there any other reasons as well? In order to ascertain the reasons for use of certified seeds by the farmers we asked the certified seed using farmers to give reasons which have encouraged them to use certified seeds. While some farmers gave one reason others cited multiple reasons for using certified seeds. The results obtained presented in Table 3.6 suggest that a majority of the farmers cited higher crop yield obtainable with certified seeds with same level of inputs, as used with traditional seeds, as the most important reason for use of certified seeds. Another almost equally important reason cited was the resistance of these seeds to pest attack. Other important factors that have facilitated adoption of certified seeds by the farmers include no seed treatment requirement, low seed rate and of course availability of subsidy on these seeds.

**Table 3.5 : Reasons for not procuring certified seeds from authorized shops by farmers using certified seeds**

Size Group	Reasons						
	1	2	3	4	5	6	7
Marginal	7	5	5	4	2		
Small	2	8	8	9	4		
Medium	4	9	5	4	4		1
Large	3	6	4	2	1		
<b>Total</b>	<b>16</b>	<b>28</b>	<b>22</b>	<b>19</b>	<b>11</b>	<b>0</b>	<b>1</b>

Reasons:

- 1: Market price of certified seed less than subsidized price at authorized shop;
- 2: Not much difference in market and subsidized price;
- 3: Quality of seed at authorized shop not good;



4. Seed not available at authorized shop at the required time;
5. Cumbersome procedure to get seeds from authorized shop;
6. No authorized shop in the vicinity of the village;
7. Other reasons

**Table 3.6 : Reasons for using certified seeds by farmers**

Size Group	Reasons							
	1	2	3	4	5	6	7	8
Marginal	10	6	13	12	18	19	10	
Small	9	11	16	10	22	22	7	
Medium	14	6	10	7	17	24	7	
Large	8	6	7	12	18	18	3	
<b>Total</b>	<b>41</b>	<b>29</b>	<b>46</b>	<b>41</b>	<b>75</b>	<b>83</b>	<b>27</b>	<b>0</b>

Reasons:

- 1: Because of availability of subsidy on certified seeds;
2. Cheaper than non certified seeds;
3. Does not require seed treatment;
4. Requires low seed rate;
5. More resistant to pest attack;
6. Gives higher yield with same inputs;
7. Output fetches higher price than normal seed crop;
8. Others

### 3.1.6 Reasons for non use of certified seeds by some farmers

Of the 135 sampled farmers about 13 percent of the farmers reported non use of certified seeds of either paddy or wheat. Incidentally all the non adopters belong to the marginal size group of farms. Given the otherwise widespread adoption rate and advantages of cultivating certified seeds as reported by the users of such seeds, it is interesting to ascertain why this sub group of sampled farmers were not cultivating certified seeds of any of the

crops. We tried to ascertain from such non users the possible reasons for non adoption. The results obtained presented in Table 3.7 suggest that of the various reasons cited for non adoption, the most important relates to non availability of seeds at the time when these are required by the farmers.

**Table 3.7 : Reasons for not using certified seeds of either crop by non certified using farmers**

Size Group	Reasons									
	1	2	3	4	5	6	7	8	9	10
Marginal		1			8	4	1	2	2	1
Small	0	0	0	0	0	0	0	0	0	0
Medium	0	0	0	0	0	0	0	0	0	0
Large	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	8	4	1	2	2	1

Reasons:

- 1: Not aware of certified seeds;
2. Inferior yield performance;
3. Requires more seed treatment;
4. Not resistant to pest;
5. More expensive;
- 6.Subsidy not available;
7. Shortage of seed supply;
8. Not available on time;
- 9.Not available in village;
10. Not interested

### **3.1.7 Extent of Adoption Extent of Certified Seeds**

The adoption of certified seeds of at least one crop by almost 87 percent of the sampled farmers however does not necessarily imply that the adoption rate as measured by the proportionate area sown with certified seeds is equally high. The results obtained confirm this. Of the total paddy area sown

by the sampled farmers, certified seeds were sown on about 59 percent of the area while in the case of wheat, area cultivated with certified seeds constituted about 62 percent of the sown area (Table 3.8) . In the case of both paddy and wheat the proportion of area cultivated with certified seeds was higher in the marginal size group of farms as compared to the other size groups. The proportion of total area sown under paddy with certified seeds in the case of marginal farmers was about 82 percent as compared to about 54 percent in the case of small farms, 51 percent in the case of medium farms and 62 percent for large farms. The corresponding figures in the case of wheat were 87 percent in the case of marginal farms and 55, 54 and 64 percent respectively in the other three size groups.

**Table 3.8 : Extent of certified seeds use by certified seeds using farmers**

Size Group	Paddy			Wheat		
	Total Area Sown	Area sown with certified seeds	%	Total Area Sown	Area sown with certified seeds	%
Marginal	47.10	38.60	82.0	39.0	34.0	87.2
Small	106.50	57.50	54.0	90.50	50.0	55.2
Medium	205.50	104.50	50.9	204.0	110.0	53.9
Large	496.0	307.0	61.9	476.0	305.0	64.1
<b>Total</b>	<b>855.10</b>	<b>507.6</b>	<b>59.4</b>	<b>809.5</b>	<b>499.0</b>	<b>61.6</b>

### 3.2 IPNM Program

As part of the objective of promoting practices of integrated plant nutrient management the government has been providing awareness services, training and incentives to the farmers under the MM scheme. The integrated nutrient management program has several sub components – adoption of villages for green manuring which inter-alia involves analysis of soil samples for macro and micronutrients and providing subsidy on Dhaincha/Sunhemp seed at the rate of 25 percent of the cost. The other component of the IPNM includes promotion of usage of bio fertilizers and bio pesticides which apart from other promotional

activities include grant of subsidy at the rate of 25 percent of the cost on use of bio fertilizers, bio pesticides and micro nutrients. In the following paras we make an assessment of the working of some of these components of IPNM program.

### 3.2.1 Soil Testing

Of the 135 sampled farmers 119 farmers ( 88 percent) reported having got their soil tested in the recent past (Table 3.9). The proportion of farmers who got their soil tested do not differ substantially across farm size groups. This is an important achievement and all efforts should be made to encourage farmers who have not got their soil tested to do so.

On the timings of soil testing, all the farmers, who had got their soil tested, reported having got their soil tested after the introduction of MM program in 2001. In fact 116 of the 119 farmers (more than 97 percent) who got their soil tested reported having got it very recently - done after 2004.

**Table 3.9 : Integrated Nutrient Management : Soil Testing**

Size Group	Total number of farmers	Number of farmers who got their soil tested	Number who got their soil tested		
			Before 2001	2001-04	2005-08
Marginal	50	44(88.0)	0	1	43
Small	31	27(87.1)	0	1	26
Medium	31	28(90.3)	0	0	28
Large	23	20(87.0)	0	1	19
<b>Total</b>	<b>135</b>	<b>119(88.1)</b>	<b>0(0.0)</b>	<b>3(2.5)</b>	<b>116(97.5)</b>

### 3.2.2 Cultivation of Dhaincha

Another component of the strategy for promoting integrated nutrient management is encouraging farmers to cultivate dhaincha/sunhemp crop- a

green manure. The awareness about the usefulness of dhaincha/ sunhemp crop is already there in the region but for some reasons it is not being cultivated by all the farmers. About 54 percent of the sampled farmers reported cultivation of dhaincha crop on their farms (Table 3.10). The cultivation of dhaincha is not restricted to any particular size group of farms – in fact all size groups of farmers reported cultivation of dhaincha crop though the proportion of farmers in different size groups cultivating dhaincha crop differ. Almost all the farmers reporting cultivation of dhaincha crop reported having received subsidy on dhaincha seed from the government agencies.

**Table 3.10 : Integrated Nutrient Management: Use of Dhaincha**

<b>Size Group</b>	<b>Total number of farmers</b>	<b>Number of farmers who cultivated Dhaincha crop</b>	<b>Number of farmers who got subsidy on Dhaincha seed</b>
Marginal	50	23	21
Small	31	15	15
Medium	31	19	18
Large	23	16	15
<b>Total</b>	<b>135</b>	<b>73(54.1)</b>	<b>69(94.5)</b>

### **3.2.3 Use of Bio-fertilisers**

The government agencies have been trying to promote the use of bio fertilizers as part of their strategy to promote integrated nutrient management. To encourage farmers adopt bio fertilizers the government has been organizing demonstration programs and providing training on different aspects of use of bio fertilizers. The results of our survey show that the results have so far not been promising. Of the 135 sample households, only 3 farmers reported having participated in one of the demonstration/ training program on use of bio

fertilizers (Table 3.11). Of the 3 farmers who attended one of these programs, only one farmer reported having used bio fertilizers on his farm.

**Table 3.11 : Integrated Nutrient Management: Bio Fertilisers**

<b>Size Group</b>	<b>Total number of farmers</b>	<b>Number of farmers who attended any program on use of bio fertilizers</b>	<b>Number of farmers who got subsidy on bio fertilizers</b>
Marginal	50	0	0
Small	31	1	1
Medium	31	1	0
Large	23	1	0
<b>Total</b>	<b>135</b>	<b>3</b>	<b>1</b>

### 3.2.4 Use of Bio Pesticides

Promoting the use of bio pesticides is a relatively new component of IPNM. Of the 135 sampled farmers only 5 farmers reported use of bio pesticides (Table 3.12). Of the 5 users only 3 reported getting subsidy on bio pesticides. Most of the users belong to large size group of farm.

**Table 3.12 : Integrated Nutrient Management: Bio Pesticides**

<b>Size Group</b>	<b>Total number of farmers</b>	<b>Number of farmers using bio pesticides</b>	<b>Number of farmers who got subsidy</b>
Marginal	50	0	0
Small	31	1	0
Medium	31	1	1
Large	23	3	2
<b>Total</b>	<b>135</b>	<b>5</b>	<b>3</b>

### 3.2.5 Use of micro nutrients

Due to deficiency of micro nutrients as a result of their continuing depletion, the farmers in the region are well aware of the importance of applying micro nutrients. The Government under the MM program has been providing subsidy at the rate of 25 percent to the farmers to encourage them use micro nutrients and overcome micro nutrient deficiency.

Of the 135 sampled farmers about 87 percent reported using micro nutrients on their farms (Table 3.13). Of the farmers using micro nutrients almost 95 percent reported having received the subsidy on the use of micro nutrients. The use of micro nutrients by farmers as well as the proportion of farmers receiving subsidy does not differ substantially across different size groups of farms.

**Table 3.13: Integrated Nutrient Management: Use of Micro Nutrients**

<b>Size Group</b>	<b>Total number of farmers</b>	<b>Number of farmers using micro nutrients</b>	<b>Number of farmers who got subsidy</b>
Marginal	50	35	33
Small	31	31	30
Medium	31	30	29
Large	23	21	19
<b>Total</b>	<b>135</b>	<b>117(86.7)</b>	<b>111(94.9)</b>

### 3.2.6 Production and Use of vermin compost

Along with the other components, the integrated plant nutrient management program advocates production and use of vermin compost by the farmers. Under the scheme the government provides subsidy to the farmers for producing and using vermin compost on their farm. To assess the extent to

which this program has been taken up by the farmers we collected the necessary information from our sampled farmers. The results obtained show that so far the scheme has been quite effective in enthusing farmers to use vermin compost. 35 of the 135 farmers ( about 26 percent) reported use of vermin compost on their farms (Table 3.14). The use of vermin compost is not restricted to large farmers only- all size groups of farmers reported use of vermin compost though the proportion of users differ across farm size groups.

Of the 35 users of vermin compost, more than half reported having received the subsidy from the government. In fact all the four marginal farmers practicing vermin compost also reported having received the subsidy on this account.

**Table 3.14 : Integrated Nutrient Management: Production and Use of Vermi Compost**

<b>Size Group</b>	<b>Total number of farmers</b>	<b>Number of farmers who produce and/or use vermin compost on their farm</b>	<b>Number of farmers who got subsidy</b>
Marginal	50	4	4
Small	31	13	7
Medium	31	9	4
Large	23	9	3
<b>Total</b>	<b>135</b>	<b>35(25.9)</b>	<b>18(51.4)</b>

### **3.3 Promotion of Agricultural Mechanisation**

One of the most significant and consistent component of the MM program has been promoting use of certain agricultural implements – power driven, bullock driven, hand driven and some other miscellaneous implements/ equipment (such as plant protection equipment etc) – by providing subsidy on purchase of



these identified implements/ equipment. In the case of some of the implements the subsidy is made available under both MM scheme as well as under state scheme. The idea behind providing subsidy for promoting agricultural mechanization has been that agricultural mechanization – latest technology machines and implements- form the basis of effective management of inputs and timely completion of farm operations and this consequently leads to higher crop yields. The quantum of subsidy to be disbursed in a year on this scheme, as in the case of other programs under the MM scheme, is fixed at the beginning of the year. As a result it is not possible to run it as an open ended scheme and therefore all farmers buying such equipment in a year may or may not be able to get subsidy. However since the MM program has been running since 2001 a number of farmers over the years are expected to have received the benefit of subsidy available under the scheme.

The subsidy under the scheme is restricted amongst others to the purchase of following equipment : tractor, power tiller, tractor trolley, self propelled reaper, tractor drawn reaper, paddy transplanter, power thresher, power thresher, maize shellor, Zero-till cum fertilizer drill, rotavator, bed planter, potato planter, potato digger, ridger seeder, straw reaper, diesel engine, water lifting pumps etc. In addition several bullock drawn implements such as puddler, cultivator etc and manually operated implements such as paddy planter, maize shellor etc are also eligible for grant of subsidy. In addition some of the plant protection equipment also qualify for grant of subsidy. The rate of subsidy on most of the equipment is fixed as percentage of purchase price subject to an upper limit which varies from equipment to equipment. The total amount of subsidy to be disbursed for each of these components in a given year is fixed which implies that under the scheme a fixed number of each of the above equipment can be made available on subsidized price.

To ascertain what type of agricultural implements/ equipments the farmers have bought over the years and which of the equipments bought is eligible for subsidy under the MM scheme, we collected the information on purchase of all agricultural implement/ equipment the sampled farmers have made since 2001, the year from which MM scheme came in to effect. The results obtained suggest that of the 135 sampled households 36 (or 27 percent) farmers reported having bought one or the other equipment/implement during this period (Table 3.15).

A comparison across different size groups of farms reveal that while about 61 percent of the large farmers reported having bought one or more equipment during this period, the proportion of such farmers is very low amongst marginal (6 percent) and small (23 percent) farmers.

**Table 3.15 : Purchase of agricultural implements by sampled farmers from 2001 onwards**

Size Group	Total farmers	Number of farmers who	
		Bought any implement	Did not buy any implement
Marginal	50(100.0)	3(6.0)	47(94.0)
Small	31(100.0)	7(22.6)	24(77.4)
Medium	31(100.0)	12(38.7)	19(61.3)
Large	23(100.0)	14(60.9)	9(39.1)
<b>Total</b>	<b>135(100.0)</b>	<b>36(26.7)</b>	<b>99(73.3)</b>

Note : Figures in parentheses denote percentages

The 36 farmers, who reported having bought any agricultural implement during the period 2001-09, amongst themselves in all bought 80 such implements (Table 3.16). 34 of these 80 implements bought (about 43 percent) were bought by large farmers, 30 (or about 38 percent) by medium farmers, 13 (or 16 percent) by small farmers and the remaining about 4 percent were bought by marginal farmers.

**Table 3.16 : Number of implements bought by farmers**

<b>Size Group</b>	<b>Number of farmers who bought implements</b>	<b>Number of implements bought by these farmers</b>
Marginal	3	3 (3.7)
Small	7	13 (16.3)
Medium	12	30(37.5)
Large	14	34(42.5)
<b>Total</b>	<b>36</b>	<b>80(100.0)</b>

### 3.3.1 Nature of Implements bought

The sampled farmers bought a variety of agricultural implements during the period. Of the 80 total implements bought by the sampled farmers, tractor was the most important bought by about 29 percent of the sampled households (Table 3.17). Power threshers was the second most important implement bought by about 15 percent of the sampled households. Zero till cum fertilizer drill, bullock cultivators etc were some of the other implements preferred by the farmers. 18 of the 23 tractors purchased during the period by the sampled farmers were purchased by medium and large farmers while all the 6 zero till cum fertiliser drills bought during the period were bought by medium and large farmers.

**Table 3.17 : Nature and number of implements bought by sampled farmers during the period 2001-09**

Size Group	Tractor	Power tiller	Tractor trolley	Tractor Reaper	Paddy transplanter	Power thresher	Zero till cum fert drill	Rotavator	Bed Planter	Straw Reaper	Other power driven	Bullock Cultivator	Other Bullock Driven	Power driven PP equip
Marginal	0												1	2
Small	5					2		2			1	1	2	
Medium	10	1		1		6	2		1		5	2	1	1
Large	8	1	1		2	4	4			1	6	2	4	1
Total	23	2	1	1	2	12	6	2	1	1	12	5	8	4

### 3.3.2 Period of Purchase of Equipment

To ascertain if the pace of program on agricultural implements has undergone any significant changes during the early and later periods of the elapsed time period of the MM scheme, we ascertained the required information about the year of purchase of equipment by the sampled farmers who had purchased equipment during this period. The results obtained suggest that of the 80 implements (including those on which subsidy under MM program is not available) bought during the entire period, 14 (about 18 percent) were bought during the first five years of the implementation of MM scheme while the remaining 66 (about 82 percent) were bought during the later four years implying a significant step up in the purchase of equipment during the later period (Table 3.18). Across all size groups of farms most of the equipment was bought during more recent years as compared to the initial years of implementation of MM program .

**Table 3.18 : Period of Purchase of implements by sampled farmers**

Size Group	Total number of implements bought	Implements bought between	
		2001-2	2006-09
Marginal	3	0	3
Small	13	4	9
Medium	30	7	23
Large	34	3	31
<b>Total</b>	<b>80(100.0)</b>	<b>14(17.5)</b>	<b>66(82.5)</b>

### 3.3.3 Subsidy availed on purchase of agricultural implements

Of the total 36 farmers who purchased the agricultural implements during the period 2001-09, 24 farmers (i.e about 67 percent) could get subsidy one or more of the equipment purchased by them (Table 3.19). Thus of the total 80

implements/equipment bought by these 36 sampled farmers, farmers could get subsidy on 37 (or about 46 percent) implements under the central/ state MM scheme. Across size groups while marginal farmers could get subsidy on about 67 percent of the equipment purchased by them, small farmers could get subsidy on 38 percent of the equipment, medium on 43 percent and large on 50 percent of the equipment.

We tried to enquire from the farmers if they would have bought the equipment they actually bought had subsidy not been available on them. 30 of the 36 farmers (constituting about 83 percent) who bought any implement during the period responded that they would have in any case bought the implement they bought irrespective of the availability or otherwise of the subsidy. A large number of farmers however do agree that availability of subsidy does provide an incentive to buy that particular implement.

**Table 3.19 : Disbursal of subsidy on agricultural implements**

Size Group	Number of farmers who bought implements	Number of farmers who availed of the subsidy	Number of farmers who would have bought even if subsidy was not available	Number of farmers who agree that availability of subsidy provide an incentive for purchase of implements
Marginal	3(3)	2(2)	2	2
Small	7(13)	4(5)	6	4
Medium	12(30)	9(13)	11	11
Large	14(34)	9(17)	11	13
<b>Total</b>	<b>36(80)</b>	<b>24(37)</b>	<b>30</b>	<b>30</b>

Note- Figures in parentheses denote number of implements bought/ on which subsidy could be availed.

### 3.3.4 Impact of Purchased Equipment on Farm Economy

The rationale behind provision of subsidy on the equipment is to encourage greater mechanization of agriculture and enable farmers realize higher crop

production and higher profitability through better input management and more timely completion of various agricultural operations. While the impact of use of the purchased equipment may not necessarily show up in the short run, it may have the desired impact in the medium to long run. To ascertain the impact, in terms of certain identified parameters, the purchased equipment has had made on the farm economy we collected the necessary information from such farmers. Since the impact of the use of the equipment can be on one or more than one of the identified parameters, we got multiple responses from some of the farmers interviewed. The results obtained suggest that the three most important impacts farmers perceive as having emanated from the use of the purchased equipment have been : shifts in cropping pattern, increase in cropped area leading to an increase in cropping intensity and more timely completion of various operations (Table 3.20). Other important impacts of these equipment reported by the farmers have been changes in employment of human labor and an increase in cultivated area. While it is not possible to quantify the impact these benefits would have made to both increases in agricultural production and value of production, these would have definitely added to farmers profitability.

### **3.3.5 Reasons for not availing subsidy by farmers who purchased equipment eligible for subsidy but did not get subsidy**

As already discussed the scheme of subsidy on agricultural implements is not an open ended scheme and the amount of subsidy that can be distributed in a year is fixed in advance. In fact the state government further divides this subsidy amount and fixes the quantum of subsidy for each of the identified equipment. Given not too large an amount of funds available for disbursement of subsidy on agricultural implements it is but natural that all those buying a particular equipment in a given year will not be able to get the subsidy on the equipment purchased. Thus while limits on availability of funds for disbursement of subsidy could

be an important reason for non availability of subsidy to some of the farmers who bought the equipment eligible for subsidy but did not get the subsidy, are there any other reasons also which limit the reach of the subsidy to the buyers of equipment. To ascertain the possible reasons for not having been able to get subsidy on the equipment purchased we collected the necessary information from the farmers who had purchased such equipment but did not get the subsidy.

The results obtained suggest that the maximum number of farmers reported that they did not avail of the subsidy because the open market price of the equipment was lower than the subsidized price at which it was available with the authorized dealer (Table 3.21). Several farmers also attributed this to dissatisfaction with the quality of equipment that was available with the authorized dealer. However none of the farmers had any complaints either about the cumbersomeness of the procedure prescribed for availing of the subsidy or the corruption in the process of disbursement of the subsidy.

**Table 3.20 : Impact purchased agricultural implements have made on the farm economy**

Size Group	Increase in cultivated area	Increase in C.I.	Changes in Cropping Pattern	Increase in labor employment	Reduction in labor employment	Timely completion of agricultural operations	Reduction in use of weedicides	Higher crop yields
Marginal	1	2	1		1			
Small	4	3	3	1	3	3		
Medium	4	4	7	4	5	7	1	1
Large	4	8	7	9	5	7	0	5
<b>Total</b>	<b>13</b>	<b>17</b>	<b>18</b>	<b>14</b>	<b>14</b>	<b>17</b>	<b>1</b>	<b>6</b>



**Table 3.21 : Reasons for not availing subsidy by farmers who bought agricultural implements but did not get subsidy**

Size Group	Reasons									
	1	2	3	4	5	6	7	8	9	10
Marginal						1	1	0	0	0
Small	1				1	1	2	0	0	0
Medium	1		3	1	4		3	0	0	0
Large		1	1	2	2		2	0	0	0
<b>Total</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>

Reasons:

1. Lack of knowledge about the subsidy
2. Officials refused to provide subsidy
3. Annual subsidy quota on the implement exhausted
4. No subsidy on specific implement
5. Not satisfied with quality of equipment with dealer
6. Implement not available with the authorized dealer
7. Market price lower than subsidized price
8. Lengthy and cumbersome process
9. Lot of corruption
10. Others

### **3.2.6 Demand for Subsidy**

A very small number of farmers reported their desire to buy some agricultural equipment, both currently listed as eligible under the subsidy scheme as also those not currently listed under the scheme, if they could be provided subsidy on these equipment. Only 5 the 135 farmers (about 4 percent) expressed their desire to buy one or more of the equipment if either the subsidy being made available on such equipment under the MM scheme could be made available to them or the scheme of subsidy could be extended to cover some additional equipment currently not covered under the subsidy scheme (Table 3.22).

**Table 3.22 : Number of farmers who wanted to buy implements but did not buy due to non availability of subsidy**

<b>Size Group</b>	<b>Total Number of farmers</b>	<b>Number of farmers who wanted to buy some implements had subsidy been available</b>
Marginal	50	1
Small	31	2
Medium	31	2
Large	23	0
<b>Total</b>	<b>135</b>	<b>5</b>

### **3.4 Scheme for Integrated Pest Management (IPM)**

This scheme envisages the implementation of IPM program on paddy crop through various activities such as organizing demonstrations on the use of bio agent/ bio pesticide on compact area of villages which are regarded as IPM villages, organizing Farmers Field Schools (FFSs), conducting training of farmers, distributing plant protection equipments and chemicals on subsidized rates, monitoring of pesticide residue etc. In this section we try to ascertain how effective some of these components of this scheme have been in our study area.

#### **3.4.1 IPM Demonstrations**

The IPM demonstration program envisages training of farmers in the use of IPM technology through organization of Farmer Field Schools (FFS) and encouraging adoption of IPM through provision of subsidy on light traps and feroman traps, and provision of subsidy on pesticides used for seed treatment.

Going by the responses of the farmers, the participation in IPM demonstration/ training programs has so far been almost a complete failure. None of the 135 sampled farmers reported participation in any demonstration/ training program on IPM ever since it was introduced (Table 3.23).

**Table 3.23 : Participation in IPM demonstration/training program**

<b>Size Group</b>	<b>Total farmers</b>	<b>Number who attended program</b>
Marginal	50	0
Small	31	0
Medium	31	0
Large	23	0
<b>Total</b>	<b>135</b>	<b>0</b>

### **3.4.2 Reasons for non Participation in IPM Demonstrations/Training Programs**

Non participation by 100 percent of the sampled households in any demonstration/ training program of IPM prompted us to enquire about the reasons for the same. While some farmers who had not attended any such program attributed their non participation to one single important reason others attributed this to more than one reason. Counting for multiple responses, the results obtained suggest that non dissemination of the program information was cited by the maximum number of households as the main reason for their non participation (Table 3.24). This holds true across almost all size groups of farms. Other important reasons cited by a relatively large number of farmers included – wrong time at which the program is held due to which they can not participate, the program not being held in the vicinity of their village and therefore expensive to participate in such programs.

### **3.4.3 Farmers Practicing IPM**

While participation in training/ demonstration of a technology provides one the necessary knowledge and skills to try a new technology, however participation in such a training/demonstration program is not a necessary condition for adopting the technology. Farmers could have learnt about the technology

either from some other sources or may be practicing on their own. To ascertain if any of the sampled farmers, irrespective of their having undergone any training/ participation in demonstration of IPM have actually been practicing IPM we collected the necessary information from the sampled farmers. The results obtained indicate that none of the farmers have been practicing IPM in their farms (Table 3.25).

**Table 3.24: Reasons for not participating in IPM training/demonstration program by farmers who have not attended any program (number of farmers)**

Size Group	REASONS											
	1	2	3	4	5	6	7	8	9	10	11	12
Marginal		4				13	5	12	13	3	0	
Small	1	8			2	9	11	25	22	8	0	1
Medium	3	2	1			8	17	19	5	0	0	
Large						13	10	12	13	6	0	
<b>Total</b>	<b>4</b>	<b>14</b>	<b>1</b>		<b>2</b>	<b>43</b>	<b>43</b>	<b>68</b>	<b>53</b>	<b>17</b>	<b>0</b>	<b>1</b>

**Reasons:**

1. Not interested
2. Small farm size
3. IPM not effective
4. Do not cultivate crops suitable for IPM
5. No pest problem
6. No program near the village
7. Expensive to participate
8. Program Information not disseminated
9. Wrong time at which program held
10. Method of instruction not effective
11. Cumbersome procedure attend to attend
12. Others

**Table 3.25 : Number of farmers practicing IPM**

<b>Size Group</b>	<b>Total farmers</b>	<b>Number who attended program</b>	<b>Number of farmers actually practicing IPM</b>
Marginal	50	0	0
Small	31	0	0
Medium	31	0	0
Large	23	0	0
<b>Total</b>	<b>135</b>	<b>0</b>	<b>0</b>

#### **3.4.4 Subsidy on pesticides for Seed Treatment**

As part of its efforts to promote IPM, the government has been providing subsidy on pesticides used for seed treatment. Since the IPM program as such has been almost a non starter one would not expect many farmers to have used this facility available under IPM. Our results confirm this. Only one of the 135 farmers reported having taken the subsidy on pesticides used for seed treatment (Table 3.26).

**Table 3.26 : Subsidy on Pesticides for Seed Treatment**

<b>Size Group</b>	<b>Total farmers</b>	<b>Number who got subsidy on pesticides for seed treatment</b>
Marginal	50	0
Small	31	1
Medium	31	0
Large	23	0
<b>Total</b>	<b>135</b>	<b>1</b>

### **3.5 Programs undertaken Under the New Initiatives Component of the MM scheme**

Under the new initiatives component of the MM scheme the government has taken up several programs which include pulses development program, oilseed development program, promotion of pigeon pea cultivation, reclamation of water logged areas, distribution of weedicides, distribution of soil ameliorants, establishment of agro climatic planning and information banking etc. These program are generally small programs both in terms of financial allocations as well as in terms of coverage under the program intended to be achieved. We attempted to make an assessment of some of these programs initiated under the New Initiative component of the MM program.

#### **3.5.1 Pulses and Oilseeds Development Program**

**As** part of the New Initiative program of the state, the state has been trying to propagate cultivation of improved varieties of pulses and oilseeds. Though this program is not as large as some of the other programs under the MM program, still the state has taken some initiative to promote cultivation of pulses and oilseeds. The state provides subsidy on production of foundations seeds of pulses and oilseed crops at the rate of Rs 500 per quintal, provides subsidy on seed production at the rate of 25 percent subject to a maximum of Rs 500 per quintal, provides subsidy on distribution of certified seeds of pulse crops (Urd, Mung, Gahat, Arhar, Rajmah, Gram, Pea and Lentil) and oilseed crops (Soyabean, Groundnut, Til, Rapeseed-Mustard and Toria) at the rate of 25 percent subject to a maximum of Rs 800 per quintal, imparts training on IPM through organizing FFS and provides IPNM demonstrations for certain pulse and oilseed crops. We attempted to ascertain how the program on promotion of pulses and oilseeds has been performing.

### Production of Foundation Seeds

The program on production of foundation seeds of pulses and oilseeds seems to have picked up. 18 of the 135 sampled farmers (constituting about 13 percent) reported producing cultivation of foundation seeds of either pulses and/or oilseeds (Table 3.27 ). This program has been taken up by all the size group of farmers excepting the marginal farmers.

**Table 3.27 : Production of foundation seeds of pulses and oilseeds**

Size Group	Total number of farmers	Number of farmers	
		Producing foundation seeds	Not producing seeds
Marginal	50	1	49
Small	31	5	26
Medium	31	8	23
Large	23	4	19
<b>Total</b>	<b>135</b>	<b>18(13.3)</b>	<b>117(86.7)</b>

Of the 18 farmers who reported cultivation of foundation seeds of pulses or oilseeds, one farmer, belonging to large size group, reported cultivation of foundation seeds of both pulses and oilseeds (Table 3.28 ). Thus of the 18 farmers 11 farmers reported cultivation of foundation seeds of pulses only, 6 reported cultivation of oilseeds only and 1 reported cultivation of both pulses and oilseeds. Masur amongst the pulses and Rapeseed-Mustard amongst the oilseeds were the two most important crops. 9 of the 12 farmers reporting cultivation of pulses and 3 of the 7 farmers reporting cultivation of oilseed crops also reported having received subsidy.

**Table 3.28: Number of farmers producing foundation seeds of different crops and number of farmers who received subsidy on their production**

Size Group	Total number of farmers	Masur(Number)		Moong(Number)		Gram(Number)		Rapeseed(Number)	
		Cultiv	Subsidy	Cultiv	Subsidy	Culti	Subsidy	Cultivatin	Subsidy
Marginal	50					1	1		
Small	31	4	3					1	0
Medium	31	3	2	1	0			4	1
Large*	23	2	2	1	1			2	2
Total	135	9	7	2	1	1	1	7	3

\*One largefarmer reported cultivation of foundation seeds of both pulses and oilseeds

### Use of certified/foundation seeds of pulses and oilseeds

The efforts on encouraging farmers use certified/foundation seeds in cultivation of pulses/oilseed crops seems to be picking up. About 13 percent of the farmers reported using certified seeds of pulses and/or oilseeds in their production program (Table 3.29). Of the 18 farmers reporting use of certified seeds of pulses and/or oilseeds, 72 percent reported having received the subsidy.

**Table 3.29 : Use of certified/foundation seeds of pulses and oilseeds**

Size Group	Total number of farmers	Number of farmers using certified/foundation seeds of pulses/ oilseeds	Percentage	Number of farmers who got subsidy
Marginal	50	1	2.0	1
Small	31	5	16.1	5
Medium	31	8	25.8	3
Large	23	4	17.4	4
<b>Total</b>	<b>135</b>	<b>18</b>	<b>13.3</b>	<b>13(72.2)</b>

To ascertain the extent to which MM program has helped in accelerating the use of certified seeds amongst the farmers we collected the information on the year of use of certified seeds from the certified using farmers. The results obtained suggest that thrust given to this program under the MM initiative has



encouraged farmers to use certified seeds (Table 3.30). Of the 22 farmers reporting cultivation of certified seeds of any pulse or oilseed crop, 20 reported having started its cultivation after 2001.

**Table 3.30: Distribution of Sampled households according to period of use of certified/foundation seeds of pulses and oilseeds(Number)**

Size Group	Total number of farmers	Number of farmers using certified/ foundation seeds of pulses/ oilseeds	Using certified seeds since when	
			Before 2001	After 2001
Marginal	50	1		1
Small	31	5		7*
Medium	31	8	2	6
Large	23	4		4
<b>Total</b>	<b>135</b>	<b>18</b>	<b>2</b>	<b>20</b>

\*Number is more than number of users of certified use because some farmers reported use of certified seed of more than one pulse and/or oilseed crop

### Extent of Use of certified seeds

Reported use of certified seeds by a farmer does not necessarily imply its use on the entire area under cultivation of that crop. In the case of two of the important crops viz Masur and Rapeseed-Mustard the proportion of area sown with certified seeds as proportion of total sown area under the crop was 47.5 and 57.5 percent respectively (Table 3.31).

**Table 3.31: Extent of use of certified/foundation seeds of pulse/oilseed crops (Area in Acres)**

Size Group	Masur		Moong		Gram		Rapeseed	
	Total	Cert	Total	Cert.	Total	Cert	Total	Cert
Marginal					1.0	1.0		
Small	7.0	2.60					9.0	4.60
Medium	3.0	3.0					8.50	7.50
Large	6.0	2.0	0.5	0.5			14.0	6.0
<b>Total</b>	<b>16.0</b>	<b>7.6(47.5)</b>	<b>0.5</b>	<b>0.5(100)</b>	<b>1.0</b>	<b>1.0(100)</b>	<b>31.5</b>	<b>18.1(57.5)</b>

### 3.5.2 Promoting the Use of soil ameliorants

Use of soil ameliorants such as gypsum, pyrites, lime, rock phosphate etc by farmers is being encouraged to enable farmers improve their soil productivity. Under this program the farmers are provided soil ameliorants at a subsidy of 25 percent of the cost subject to a maximum of Rs 500 per hectare.

The results on use of soil ameliorants by sampled farmers suggest that 31 of the 135 sampled households ( about 23 percent) reported use of soil ameliorants on their farms (Table 3.32). While the use of soil ameliorants was reported by all size groups of farmers the proportion of users differed across different size groups. However all the 31 users of soil ameliorants reported having received subsidy on this.

**Table 3.32 : Use of Soil Ameliorants**

<b>Size Group</b>	<b>Total number of farmers</b>	<b>Number of farmers using soil ameliorants</b>	<b>Number of farmers who got subsidy</b>
Marginal	50	5	5
Small	31	5	5
Medium	31	10	10
Large	23	11	11
<b>Total</b>	<b>135</b>	<b>31(23.0)</b>	<b>31(100.0)</b>

### 3.5.3 Use of Weedicides

Use of weedicides to control growth of weeds in important crops is being propagated amongst farmers. This program has been taken up as part of New Initiatives program of the state. Under this program, farmers are provided weedicides at a subsidy of 25 percent of the unit cost or Rs 250 per hectare whichever is less.

The usage of weedicides to control weeds was reported by about 64 percent of the sampled farmers (Table 3.33). The usage of weedicides was not restricted to any particular group of farmers – all size groups of farmers reported use of weedicides. Of the 86 farmers who reported use of weedicides, 62 farmers ( or 72 percent) reported having received subsidy on use of weedicides.

**Table 3.33: Use of Weedicides**

<b>Size Group</b>	<b>Total number of farmers</b>	<b>Number of farmers using weedicides</b>	<b>Number of farmers who got subsidy</b>
Marginal	50	26	24
Small	31	21	13
Medium	31	21	13
Large	23	18	12
<b>Total</b>	<b>135</b>	<b>86(63.7)</b>	<b>62(72.1)</b>

## Section IV

### Summary and Conclusions

The present study attempts to make an assessment of the impact, some of the components subsumed under the Macro Management program, being implemented in Uttarakhand, have been able to make on the farm economy. The assessment is based largely on the basis of data collected from a sample of farming households selected according to an appropriate sampling scheme from District Udham Singh Nagar in Uttarakhand.

In this Section we summarize some of the salient findings of the study and based on the results obtained draw inferences and discuss possible interventions that could help make the program more effective in meeting the desired objectives. We discuss these on the basis of individual schemes.

#### 4.1 Popularization of Use of Certified Seeds by Farmers

##### Main Findings

- Measuring the success of the certified seeds program by the proportion of farmers practicing cultivation of certified seeds, the results obtained show that this component of MM program has achieved great success
- A perusal of the extent of adoption of certified seeds across different size groups of farms indicate that the adoption of certified seeds is not restricted only to a specific size group of farms. While farmers of all size groups have adopted cultivation of certified seeds the proportion of marginal cultivators reporting adoption of certified seeds is much smaller than the other three size groups of farms. While the adoption rate in the

case of small, medium and large farms was 100 percent, in the case of marginal farmers this was 64 percent

- Of the 117 farmers reporting use of certified seeds of at least one crop, almost 93 percent reported cultivation of certified seeds of both paddy and wheat
- The results obtained suggest that the pace of cultivation of certified seeds by farmers has definitely accentuated after the introduction of MM scheme.
- A perusal of the difference in extent of adoption of certified seeds of paddy and wheat by farmers of different size groups of farms before and after the introduction of MM program present some interesting results. In the case of paddy while the pace of adoption by medium and large size groups of farms was higher in the pre MM period, in the case of the other two size groups- marginal and small farmers the pace of adoption increased quite substantially after switching over to MM mode of implementation. In the case of wheat , while the extent of adoption in the large size category of farms was higher in the pre MM period, in the other three size groups of farms the adoption seems to have picked up after switching over to MM mode. The results obtained thus suggest that shifting to MM program mode for supporting the states has helped in contributing to more egalitarian distribution of benefits in so far as promoting cultivation of certified seeds is concerned.
- More than 66 percent of the sampled farmers reported procuring seeds of both paddy and wheat from the government approved shops/depots
- Since about one third of the sampled farmers reported procuring certified seeds from open market rather than government approved shops/

depots we tried to ascertain from the farmers the reasons for this inclination. The major factors cited for preferring open market over government shops for procuring seeds were : not much difference in price between subsidized seeds available in the government shops and in open market; quality of seeds available in government shops is not good; and that seeds in government shops are not available at a time when these are required. No farmer however cited any problems relating to the procedure/ process involved in procuring seeds from the government/ authorized shop or the lack of an authorized shop in the vicinity of their village.

- On reasons for use of certified seeds by the farmers a majority of the farmers cited higher crop yield obtainable with certified seeds with same level of inputs, as used with traditional seeds, as the most important reason for use of certified seeds. Another almost equally important reason cited was the resistance of these seeds to pest attack. Other important factors that have facilitated adoption of certified seeds by the farmers include no seed treatment requirement, low seed rate and of course availability of subsidy on these seeds.
- Of the total paddy area sown by the sampled farmers, certified seeds were sown on about 59 percent of the area while in the case of wheat, area cultivated with certified seeds constituted about 62 percent of the sown area

### **Suggested Interventions/ Actions**

- The results obtained underline the direction in which some of the corrective steps need to be undertaken to promote still larger coverage of paddy and wheat area with certified seeds by the farmers. From the

farmers perspective while there are no major issues relating to the way this component of the program is being implanted by the state or the non availability of an authorized shop selling certified seeds in the vicinity of the village, much larger efforts need to be made to ensure the availability at government shops/ depots of required quantity and quality of certified seeds at a time when these are required by the farmers. This is likely to help further step up the area cultivated with certified seeds.

- While the program on providing subsidy on certified seeds has in very large part helped in encouraging adoption of certified seeds by the farmers and in helping bring down open market prices of such seeds, there are several other advantages of using certified seeds such as higher crop yields which most of the farmers have started realizing. Given the constraints on availability of funds and the clear financial advantages of using certified seeds to the farmers, the authorities, after continuing with the subsidy program for some more time, may like to revisit the need for providing subsidy on this component on a continuing basis.

## 4.2 IPNM Program

### Main Findings

- **Soil Testing** : Introduction of MM program has had a very significant impact in encouraging farmers get their soil samples tested. Almost 88 percent of the sampled farmers reported having got their soil tested in the recent past. All the farmers, who had got their soil tested, reported having got their soil tested after the introduction of MM program in 2001.

- **Cultivation of Dhaincha Crop** : The program aimed at promoting cultivation of dhaincha crop by farmers has done well. About 54 percent of the sampled farmers reported cultivation of dhaincha crop on their farms. Almost all the farmers reporting cultivation of dhaincha crop also reported having received subsidy on dhaincha seed from the government agencies.
- **Use of Bio-fertilisers** : The results relating to program on promoting use of bio fertilizers show that the impact of the program has not so far been very promising. Of the 135 sample households, only 3 farmers reported having participated in one of the demonstration/ training program on use of bio fertilizers.
- **Use of Bio Pesticides** : Like the program on bio fertilizers, the program on promoting use of bio pesticides has not so far been very effective. Of the 135 sampled farmers only 5 farmers reported use of bio pesticides . Of the 5 users, only 3 reported getting subsidy on bio pesticides.
- **Use of Micro Nutrients** : In contrast to some of the other programs under promoting IPNM the program on encouraging use of micro nutrients has been very effective. About 87 percent of the sampled farmers reported using micro nutrients on their farms. Of the farmers using micro nutrients almost 95 percent reported having received the subsidy on the use of micro nutrients.
- **Use of Vermi Compost:** The results on this component of IPNM indicate that so far the scheme has been quite effective in enthusing farmers to use vermin compost. 35 of the 135 farmers ( about 26 percent) reported use of vermin compost on their farms



### **Suggested Interventions/ Actions**

- Further strengthening of the program on soil testing by providing larger number of soil testing laboratories and their modernization would encourage still larger proportion of farmers to go in for more frequent soil testing.
- Efforts to promote various components of IPNM program need to be strengthened further. More efforts need to be made in creating awareness about the program. Careful planning about the timing of holding the demonstration/training program as also larger amounts of financial allocations both for organizing various programs as also for disbursement of subsidy on various components may help increase adoption rates of farmers in these programs.
- While we could not ascertain the reasons for lack of enthusiasm amongst the farmers to some of the components of IPNM which are not performing well, we believe that part of this lack of enthusiasm could be due to meager efforts made in the MM program to promote these activities by the farmers.
- While the reasons for non adoption of some of the activities by the farmers, including the benefit-cost stream of investing in this activity, need to be probed in to we feel that larger and more focused efforts under the MM could help enhance its adoption rate by the farmers.

### **4.3 Promotion of Agricultural Mechanisation**

#### **Main Findings**

- During the period between 2001 and 2009, of the 135 farmers only 36 farmers (about 27 percent) bought one or more agricultural implement/equipment. A comparison across different size groups of farms reveal that while about 61 percent of the large farmers reported having bought one

or more equipment during this period, the proportion of such farmers is very low amongst marginal (6 percent) and small (23 percent) farmers.

- Of the total 36 farmers who purchased the agricultural implements during the period 2001-09, 24 farmers (i.e about 67 percent) could get subsidy one or more of the equipment purchased by them .
- These 36 farmers amongst themselves however bought 80 implements. Of the total 80 implements/ equipment bought by these 36 sampled farmers, farmers could get subsidy on 37 (or about 46 percent) implements under the central/ state MM scheme.
- To ascertain the extent to which availability of subsidy acts as a pulling factor for purchase of any equipment, we tried to ascertain from the farmers if they would have bought the equipment they actually bought had there been no subsidy available on them. 30 of the 36 farmers (constituting about 83 percent) who bought any implement during the period responded that they would have in any case bought the implement they bought irrespective of the availability or otherwise of the subsidy. A large number of farmers however do agree that availability of subsidy does provide an incentive to buy that particular implement.
- The results obtained suggest that the three most important impacts farmers perceive as having emanated from the use of the purchased equipment have been : shifts in cropping pattern, increase in cropped area leading to an increase in cropping intensity and more timely completion of various operations . While it is not possible to quantify the impact these benefits would have made to both increases in agricultural production and value of production, these would have definitely added to farmers profitability

- A number of farmers who did not avail of the subsidy on agricultural implements informed that they did not avail of the subsidy because the open market price of the equipment was lower than the subsidized price at which it was available with the authorized dealer . Several farmers also attributed this to dissatisfaction with the quality of equipment that was available with the authorized dealer. However none of the farmers had any complaints either about the cumbersomeness of the procedure prescribed for availing of the subsidy or the corruption in the process of disbursement of the subsidy.

### **Suggested Interventions/ Actions**

- Subsidy on expensive and new agricultural implements do provide an incentive for farmers to invest in such equipment and therefore needs to continue
- The purpose of grant of subsidy on the identified equipment was to encourage adoption of these implements by the farmer and through more timely and efficient performance of different operations contribute to increased agricultural production and improved farm income. To that extent the objective for grant of subsidy has been well achieved.
- Dissemination of information on the list of implements eligible for grant of subsidy and the number of different implements on which subsidy could be given in a year would go a long way in improved adoption of implements on which subsidy is being made available as also in better utilization of the available subsidy.
- Improvement in quality of equipment available with the authorized dealers and more attractive pricing schemes will enable larger number of farmers to take advantage of the available subsidy.

#### **4.4 Scheme for Integrated Pest Management (IPM)**

- Judging by the responses of the farmers, the participation in IPM demonstration/ training programs has so far been almost a complete failure.
- The results obtained from our sample survey suggest that non dissemination of the program information was cited by the maximum number of households as the main reason for their non participation. Other important reasons cited by a relatively large number of farmers included – wrong time at which the program is held due to which they can not participate, the program not being held in the vicinity of their village and therefore expensive to participate in such programs as other reasons.

#### **Suggested Interventions/ Actions**

- The program on Integrated Pest Management (IPM) needs to be strengthened substantially if the objective is to encourage its adoption by the farmers on a large scale. More wider dissemination of the information about training/demonstration programs, scheduling these programs in accordance with the convenience of timings of the farmers and organizing these programs at a place not far off from the village of the intended beneficiaries would help in much larger participation.
- Half hearted efforts through provision of limited budgets for the purpose and organization of ad-hoc training programs actually translate in to providing only a lip service to otherwise a powerful technology and thereby ineffectiveness and low adoption by farmers. The IPM program needs to be reoriented and strengthened very substantially if the program is to make any significant impact.

## **4.5 Pulses and Oilseeds Development Programs**

### **Main Findings**

- The program on production of foundation seeds of pulses and oilseeds seems to have picked up. About 13 percent of the sampled farmers reported producing foundation seeds of either pulses and/or oilseeds. 9 of the 12 farmers reporting cultivation of pulses and 3 of the 7 farmers reporting cultivation of oilseed crops also reported having received subsidy.
- The efforts on encouraging farmers use certified/foundation seeds in cultivation of pulses/oilseed crops seems to be picking up. About 13 percent of the farmers reported using certified seeds of pulses and/or oilseeds in their production program . 72 percent of the farmers reporting use of certified seeds of pulses and/or oilseeds reported having received the subsidy.
- The results obtained suggest that thrust given to this program under the MM initiative has encouraged farmers to use certified seeds . Of the 22 farmers reporting cultivation of certified seeds of any pulse or oilseed crop, 20 reported having started its cultivation after 2001 the year in which MM program commenced.
- The coverage of area under certified seeds however needs to grow further. In the case of two of the important crops viz Masur and Rapeseed-Mustard the proportion of area sown with certified seeds as proportion of total sown area under the crop was 47.5 and 57.5 percent respectively.

### **Suggested Interventions/ Actions**

- Efforts to promote production of foundation seeds and promote cultivation of certified seeds of pulses and oilseeds need to be

strengthened. More efforts need to be made in creating awareness about the program.

- Larger financial allocations coupled with more promotional efforts/ awareness creation may help increase adoption rates of farmers in such programs.

#### **4.6 Promoting the Use of soil ameliorants**

##### **Main Findings**

- The results on use of soil ameliorants by sampled farmers suggest that about 23 percent of the sampled farmers reported use of soil ameliorants on their farms. The use of soil ameliorants was reported by all size groups of farmers
- All the 31 users of soil ameliorants reported having received subsidy on this.

##### **Suggested Interventions/ Actions**

- The program appears to be doing well and being executed efficiently. Larger financial allocations will encourage still larger adoption of soil ameliorants by farmers.
- The program needs to be continued and further improved upon

#### **4.7 Use of Weedicides**

##### **Main Findings**

- The usage of weedicides to control weeds was reported by about 64 percent of the sampled farmers . The usage of weedicides was not restricted to any particular group of farmers – all size groups of farmers reported use of weedicides.

- Of the 86 farmers who reported use of weedicides, 62 farmers ( or 72 percent) reported having received subsidy on use of weedicides.

**Suggested Interventions/ Actions**

- The program on promoting use of weedicides appears to be doing well and being executed very efficiently. Larger financial allocations will encourage still larger adoption of weedicides by the farmers and needs to be expanded.

## **APPENDIX TABLES**



**Table A 1 : Work Plan on Macro Management Scheme – Physical targets and Financial Allocations During 2005-06 – Uttarakhand**

Sr No	Programme	Units	Physical targets	Financial Outlays (Rs in Lakhs)
1	<b>Cereal development Programme</b>			178.96
	Production and Distribution of seed			153.75
	Purchase of Breeder seeds	Qtl	80	1.75
	Subsidy on production of Foundation seed @ Rs 500/qtl	Qtl		
	Subsidy on distribution of foundation and certified seed @Rs 200/ qtl (Rice, wheat, barley) and @ Rs 400/qtl (Mandua, Madira, Maize, Ramdana, etc)	Qtl	70000	140.00
	Green manuring subsidy on Dhaincha/ Sunhemp seed @ 25% of total cost	qtl	5000	10.00
	<b>Development of Sugarcane</b>			
	Seed Multiplication	ha	100	2.00
	<b>IPNM Programme</b>			12.74
	Distribution of micro nutrients at 25% subsidy max Rs 200 per ha	ha	5000	10.00
	Distribution of bio fertilizers at 25% subsidy	LS		1.24
	Distribution of soil health cards	No	25000	1.50
C	<b>IPM</b>			12.51
	IPM Demonstrations@ Rs 6000/ demo	No	105	6.30
	FFS @ Rs 17000 per FFS	No	13	2.21
	Distribution of weedicides at subsidy @ 25%	ha	4000	4.00
11	<b>Agricultural Mechanisation</b>			123.00
	Nasuda, Garden tools, winnowing fan, hansia, Donala, Seed storage bin etc @ subsidy 25%	No	5000	5.00
	Tractor (35 HP) at subsidy of 25% subject to max of Rs 30000	No	104	31.20
	Bullock/Manually driven implements/ tools subsidy @ 25% max Rs 2000	No	300	6.00
	Power driven implements subsidy @25% max Rs 10000	No	200	20.00
	Zero till cum fert drill subsidy @25% max Rs 6000	No	150	9.00
	Power tillers subsidy @25% max Rs 30000	No	25	7.50
	Distribution of plant protection equipment (1000), Portable water lifting pump sets (50),	No	1150	16.50

	sprinkler sets (100) at 25% subsidy max to Rs 6000			
	Use of plastics in agriculture, distribution of water conveninec delivery pipe at 25% subsidy			4.05
	Mandua thresher with 2 HP motor at 25% subsidy max to Rs 30000	No	25	0.75
	Bullock/Manual driven	No	400	6.00
	Tractor Driven	No	170	17.00
III	<b>National Watershed Development Programme for Rainfed Area (NWDPR)</b>	ha	1200	710.09
IV	<b>RVP/FPR</b>	Ha	2200	235.00
V	<b>Development of Sugarcane</b>			
	Field Demonstrations	Ha	60	6.00
	State level training	No	2	0.20
	Farmers training	No	20	0.60
	Establishment of HMAT Plant	No	6	12.00
	<b>New Interventions</b>			79.00
	Pulses Development Programme			18.50
3	Oilseed Development Programme			31.50
	Agr Export Zone for Basmati Rice			30.00
	<b>GRAND TOTAL</b>			1344.89

**Table A 2 : Work Plan on Macro Management Scheme – Physical targets and Financial Allocations During 2006-07 - Uttarakhand**

Sr No	Programme	Units	Physical targets	Financial Outlays (Rs in Lakhs)
1	<b>Integrated Cereal development Programme (ICDP)</b>			422.36
A	<b>Production and Distribution of quality seed of cereals</b>			
	Purchase of Breeder seeds	Qtl	80	1.75
	Subsidy on production of Foundation seed @ Rs 500/qtl	Qtl	2500	12.50
	Subsidy on distribution of foundation and certified seed @Rs 200/ qtl (Rice, wheat, barley) and @ Rs 400/qtl (Mandua, Madira, Maize, Ramdana, Buck Wheat etc)	Qtl	100000	200.00
I	<b>Adoption of villages for green manuring</b>	No.	100 viilages	
	(a) Analysis of soil samples for macro and micro nutrients – 10 samples each for macro and micro nutrient/ village	No	1000	0.58
	(b) subsidy on Dhaincha/ Sunhemp seed @ 25% of total cost	Qtl	5000	17.00
ii	<b>Promotion of usage of Bio-Fertilisers and Bio- Pesticides</b>			
	Adoption of village for the use of bio-fertiliser and bio-pesticide	No	670 viilages	
	Analysis of soil samples for macro and micro nutrients (10 samples each for macro and micro nutrient per village)	No	6700	3.89
	Awareness programme at pre sowing and post harvest @ Rs 2000/ training	No	1340	26.80
Iii	Subsidy on Bio-fertilisers @ 25% of total cost	Ha	10000	10.00
Iv	Subsidy on Bio-pesticides @25% of total cost	Ha	10000	15.00
V	Use of micro nutrients- 25% subsidy on micronutrient max Rs 200/ha	Ha	40500	81.05
Vi	Distribution of soil health cards	No	100000	15.00
Vii	Crop demonstration based on INPM @Rs 1000/demo/acre	No	1340	13.40
C	<b>IPM Demonstrations</b>			
	<b>IPM Demonstrations through FFS@ Rs 17000/ FFS</b>	No		

	Rice (30 ha) FFS @ Rs 17000/FFS	No	95	16.15
	Maize (10 ha) FFS @ Rs 17000/FFS	No	10	1.70
<b>D</b>	<b>Promotion of Basmati Rice Production</b>			
	Fratmers training at block level 2 training at each block @Rs 3000/training	No	40	1.20
	Crop demonstration based on INPM@ Rs 1000/demo/acre	No	280	2.80
	IPM demonstration through FFS@ Rs 17000/ FFS	No	12	2.04
	Distribution of gypsum- subsidy @25% max Rs 500/ha	Ha	2300	11.50
<b>11</b>	<b>Agricultural Mechanisation</b>			604.40
	Manual driven implements/tools subsidy @ 25% max Rs 2000	No	10000	40.00
	Bullock driven implements/ tools subsidy @ 25% max Rs 2000	No	2000	40.00
	Power driven implements subsidy @25% max Rs 10000	No	1000	100.00
	Zero till cum fert drill subsidy @25% max Rs 6000	No	300	18.00
	Power thresher subsidy @25% max Rs 10000	No	300	30.00
	Water lifting pump including suction and delivery pipe subsidy @25% max Rs 8000	No	500	40.00
	<b>6- Sprinkler Set</b>			
	a- for small, marginal, SC,St and Women Farmers –subsidy @25% subject to max Rs 15000	No	100	15.00
	b- for other farmers up to 2 ha subsidy @25% subject to a maximum Rs 10000	No	100	10.00
	Power tiller subsidy @25% max Rs 30000	No	200	60.00
	Tractor (max 35 HP) subsidy 25% max Rs 30000	No	400	120.00
	<b>Plant Protection Implements</b>			
	Manual driven subsidy @ 25% limited to Rs 800	No	5000	40.00
	Power driven subsidy @25% limited to Rs 2000	No	50	1.00
	Tractor driven subsidy @ 25% limited to Rs 4000	No	10	0.40
	Self propelled reaper, paddy transplanter and other automatic machines subsidy @ 25% max Rs 30000	No	100	30.00
	Specific power driven machines- raised bed	No	200	60.00

	planter, sugarcane cutter planter, potato planter, potato digger, groundnut digger, rotavator, straw reaper, strip till drill, tractor drawn reaper, cleaner cum grader, dryer, stubble saver, mobile fruit harvester, power weeder etc subsidy @ 25% max Rs 20000			
III	<b>National Watershed Development Programme for Rainfed Area (NWDPR) @ Rs 6000 per ha</b>	ha	19475	1125.00
IV	<b>RVP/FPR</b>	Ha		450.00
V	<b>Sugarcane Production Programme</b>			50.00
	Field Demonstrations	Ha	60	6.00
	Seed multiplication	Ha	10000	2.00
	Distribution of Agricultural Implements	No		
	a- Bullock/Manual Driven	No	300	4.53
	b- Tractor Driven	No	165	16.50
	State level training	No	2	0.25
	Farmers training	No	24	0.72
	Establishment of HMAT Plant	No	10	20.00
	<b>New Initiatives</b>			319.11
	<b>Pulses Development Programme</b>			
1	Purchase of breeder seeds	qtl	15	0.74
	Production of Foundation seed – subsidy @ Rs 500/gtl	qtl	50	0.25
	Seed production programme- subsidy @ 25% max Rs 500/qtl	qtl	1000	5.00
	Distribution of certified seeds of pulse crops viz Urd, Mung, Gahat, Arhar, Rajmah, Gram, Pea, Lentil – subsidy @ 25% max Rs 800/qtl	qtl	1000	8.00
	INPM Crop demonstrations of –Urd, Mung, Gahat, Lentil @ Rs 1500/demo/acre and Rajmah, Gram and Pea @ Rs 2000/demo- 1 acre (2 demo/block in Kharif and Rabi)	No	380	6.65
	IPM through FFS @Rs 17000/FFS	No	10	1.70
	Farmers training @ Rs 10000/Training for 50 farmers	No	13	1.30
2	<b>Promotion of Pigeon Pea cultivation through ICRISAT</b>	LS		2.40
	Demonstration @ Rs 1000/ demonstration	No	130	1.30
	Training at district level @ Rs 8500 per training	No	13	1.10
3	<b>Oilseed Development Programme</b>			32.57
	Purchase of breeder seeds	Qtl	10	0.47

Production of foundation seeds- subsidy @ Rs 500/ qtl	qtl	150	0.75
Seed production programme – subsidy @ 25% max Rs 500/ qtl	qtl	150	7.50
Distribution of certified seed of oilseed crops viz soyabean, groundnut, til, rapeseed- mustard and Toria – subsidy @ 25% max Rs 800/ qtl	qtl	2000	16.00
IPM through FFS@ Rs 17000 per FFS	No	5	0.85
Farmers training @ Rs 10000/ Training for 50 farmers	No	13	1.30
IPNM crop demonstration Soyabean and Groundnut @ Rs 2000/demo/acre and Til, Toria and Mustard @ Rs 1000/demo – 1 acre (2 demo/block in kharif and rabi)	No	380	5.70
<b>Extension and Awareness Programme under Basmati Export Zone</b>			4.20
Exposure visit of growers and extension workers	No	4	2.40
Buyer-Seller meet	No	4	1.20
State level workshop cum Seminar	No	1	0.60
<b>D(ii) Strengthening of Extension Programme in Non Selected districts for CSS ATMA Project @ Rs 3.00 lakh/block as per cafeteria of support of state extension programme for Extension reforms</b>			71.34
a- Village level training @ Rs 8500/training for a group of 25 farmers for 3 days	No	58	4.93
b- Demonstrations @ Rs 1000 each (4 per block)	No	116	1.16
c-Exposure visits @ Rs 50000	No	29	14.50
d- Mobilisation of farmers groups – capacity building, skill development, and support services + seed money/ revolving fund @ Rs 15000	No	58	8.70
e-Kissan Mela/Exhibition	No	29	29.00
f- Information dissemination through printed leaflets etc and local advertisement Rs 100000/ district	LS		5.80
g- farmer- scientist interaction – Rs 10000 per interface		29.	2.90
h- Kisan Goshtis Rs 15000 per Goshti per block	No	29	4.35
<b>E- distribution of weedicides – subsidy @</b>	No	10000	24.98

	<b>25% of the unit cost or Rs 250/ha whichever is less</b>			
	<b>F- establishment of Agro Climatic Planning and Information Bank</b>	LS		100.26
	<b>G- Reclamation of water logged area of Haridwar district</b>			59.72
	<b>GRAND TOTAL</b>			2970.87

**Table A 3 : Work Plan on Macro Management Scheme – Physical targets and Financial Allocations During 2007-08 - Uttarakhand**

Sr No	Programme	Units	Physical targets	Financial Outlays (Rs in Lakhs)
1	<b>Integrated Cereal development Programme (ICDP)</b>			496.80
A	<b>Production and Distribution of quality seed of cereals</b>			
	Purchase of Breeder seeds	Qtl	319.44	4.38
	Subsidy on production of Foundation seed @ Rs 200/qtl	Qtl	7500	15.00
	Subsidy on distribution of foundation and certified seed @Rs 200/ qtl (Rice, wheat, barley) and @ Rs 400/qtl (Mandua, Madira, Maize, Ramdana, Buck Wheat etc)	Qtl	10000	100.00
B	<b>IPNM Programme</b>			
I	Adoption of villages for green manuring	No.	100 villages	
	(a) Analysis of soil samples for macro and micro nutrients – 10 samples each for macro and micro nutrient/ village	No	1000	0.58
	(b) subsidy on Dhaincha/ Sunhemp seed @ 25% of total cost	qtl	10000	40.00
ii	<b>Promotion of usage of Bio-Fertilisers and Bio- Pesticides</b>			
	Adoption of village for the use of bio-fertiliser and bio-pesticide	No	670 villages	
	Analysis of soil samples for macro and micro nutrients (10 samples each for macro and micro nutrient per village)	No	6700	3.89
	Awareness programme one in each nyaya panchayat @ Rs 2000/ training	No	670	13.40
Iii	Subsidy on Bio-fertilisers @ 25% of total cost	Ha	20000	6.00
Iv	Subsidy on Bio-pesticides @25% of total cost	Ha	8000	12.00
V	Use of micro nutrients- 25% subsidy on micronutrient max Rs 200/ha	Ha	60000	80.00
Vi	Subsidy on compost inoculum distributions @ 25%	No	60000	15.00
Vii	Crop demonstration based on INPM@ Rs 2000/acre for paddy and wheat	No	1775	35.51
Viii	Establishment of compost production plants			



	NADEP compost pit subsidy @25% max Rs 1500/unit	No	5000	75.00
	WINDROW Vermi compost/Bamboo NADEP compost for hilly and plain areas @Rs 1500/unit	No	2000	10.00
Ix	Training for staff of soil testing lab	LS		1.50
X	Establishment of demonstration unit of NADEP compost for hilly areas and plain areas @Rs 1500/unit	No	1154	17.30
C	<b>IPM Demonstrations</b>			
	<b>IPM Demonstrations through FFS@ Rs 17000/ FFS</b>			
	Rice (30 ha) FFS @ Rs 17000/FFS	No	95	16.15
	Maize (10 ha) FFS @ Rs 17000/FFS	No	5	0.85
	Distribution of light trap @25% subsidy	No	10000	15.00
	Distribution of feromean trap @25% subsidy	Ha	5000	15.00
	Subsidy on pesticides used for seed treatment	Ha	75000	10.00
D	<b>Promotion of Basmati Rice Production</b>			
	Fratmers training at block level 2 training at each block @Rs 3000/training	No	40	1.20
	Crop demonstration based on INPM@ Rs 1000/demo/acre	No	700	7.00
	IPM demonstration through FFS@ Rs 17000/ FFS	No	12	2.04
11	<b>Agricultural Mechanisation</b>			576.27
	Manual driven implements/tools subsidy @ 25% max Rs 2000	No	10000	10.00
	Bullock driven implements/ tools subsidy @ 25% max Rs 2000	No	2000	30.00
	Power driven implements subsidy @25% max Rs 10000	No	2500	163.77
	Zero till cum fert drill subsidy @25% max Rs 6000	No	300	18.00
	Power thresher subsidy @25% max Rs 10000	No	200	55.00
	Water lifting pump including suction and delivery pipe subsidy @25% max Rs 8000	No	1000	45.00
	Manual driven chaff cutter – subsidy @25% max Rs 2000	No	2000	20.00
	Diesel engine- 5 to 10 HP for agriculture purpose	No	150	7.50
	Power tiller subsidy @25% max Rs 30000	No	300	90.00
	Tractor (max 35 HP) subsidy 25% max Rs	No	100	30.00

	30000			
	Tractor Trolley @ Rs 10000 per unit	No	125	12.50
	<b>Plant Protection Implements</b>			
	Manual driven subsidy @ 25% limited to Rs 800	No	6000	27.00
	Power driven subsidy @25% limited to Rs 2000	No	70	1.00
	Tractor driven subsidy @ 25% limited to Rs 4000	No	50	2.00
	Self propelled reaper, paddy transplanter and other automatic machines subsidy @ 25% max Rs 30000	No	100	30.00
	Specific power driven machines- raised bed planter, sugarcane cutter planter, potato planter, potato digger, groundnut digger, rotavator, straw reaper, strip till drill, tractor drawn reaper, cleaner cum grader, dryer, stubble saver, mobile fruit harvester, power weeder etc subsidy @ 25% max Rs 20000	No	173	34.50
III	<b>National Watershed Development Programme for Rainfed Area (NWDPPRA) @ Rs 6000 per ha</b>	ha	17575	1054.55
IV	<b>RVP/FPR</b>	Ha	3593	456.40
V	<b>Sugarcane Production Programme</b>			75.73
	Field Demonstration including seed distribution	Ha	240	12.40
	Seed multiplication	Ha	100	2.00
	Distribution of Agricultural Implements (Tractor Driven)	No	500	50.00
	State level training		1	0.25
	Farmers training	No	24	1.08
	HMAT Plant	No	5	10.00
	<b>New Initiatives</b>			284.69
VI	<b>Pulses Development Programme</b>			
1	Purchase of breeder seeds	qtl	10	0.60
	Production of Foundation seed – subsidy @ Rs 500/qtl	qtl	50	0.25
	Seed production programme- subsidy @ 25% max Rs 500/qtl	qtl	750	3.75
	Distribution of certified seeds of pulse crops viz Urd, Mung, Gahat, Arhar, Rajmah, Gram, Pea, Lentil – subsidy @ 25% max Rs 800/qtl	qtl	1000	8.00
	IPM through FFS @Rs 17000/FFS	No	10	1.70

	Farmers training @ Rs 10000/Training for 50 farmers	No	13	1.30
	IPNM crop demonstration of Rajmah, Gram, Pea @Rs 2000/demo/acre and Urad/Moong and Gahat @Rs 1500/ demo/acre	No	300	5.15
	Lentil demonstration in selected villages under crop rotation Paddy-Wheat- Mandua-Fallow @Rs 1500/demo/acre	No	200	3.00
2	<b>Promotion of Pigeon Pea cultivation through ICRISAT</b>	LS		
	Seed production and distribution	No		9.00
	Demonstration @ Rs 1000/ demonstration	No	375	3.75
	Training at district level @ Rs 8500 per training	No	13	1.10
	State level training	LS	2	3.65
3	<b>Oilseed Development Programme</b>			
	Purchase of breeder seeds	qtl	10	0.40
	Production of foundation seeds- subsidy @ Rs 500/ qtl	qtl	150	0.75
	Seed production programme – subsidy @ 25% max Rs 500/ qtl	qtl	1000	5.00
	Distribution of certified seed of oilseed crops viz soyabean, groundnut, til, rapeseed- mustard and Toria – subsidy @ 25% max Rs 800/ qtl	qtl	2000	16.00
	IPM through FFS@ Rs 17000 per FFS	No	5	0.85
	Farmers training @ Rs 10000/ Training for 50 farmers	No	13	1.30
	IPNM crop demonstration Soyabean and Groundnut @ Rs 2000/demo/acre and Til, Toria and Mustard @ Rs 1000/demo – 1 acre (2 demo/block in kharif and rabi)	No	380	5.70
4	<b>Reclamation of water logged area at Haridwar</b>			71.50
5	<b>Distribution of weedicides- subsidy @ 25% of the unit cost or Rs 250/ per ha whichever is less</b>	No	10000	25.00
6	<b>Distribution of Gypsum/ rock phosphate/ slaged lime- subsidy @ 25% max Rs 500/ha</b>	Ha	5000	11.50
7	<b>Establishment of Agro Climatic Planning and Information banking</b>	LS		75.44
8	<b>Strengthening of seed production farm</b>	LS		30.00
	<b>GRAND TOTAL</b>			2944.44

### Comments by the coordinator and responses thereon<sup>1</sup>

1. As per the study design and methodology suggested, the study should have been conducted in four blocks of the state of Haryana by selecting 240 farmers @ 60 farmers in each block and under each of the four schemes implemented in the state. The study has deviated from the suggested design and methodology for the state of Haryana and has submitted the report with three blocks details covering 135 sample farmers. Since this is a coordinated study involving many states and many research centres, it is necessary to strictly comply with the study design and methodology suggested. So that the impacts of the schemes are better captured and flaws identified in different states by scheme.

The study methodology as suggested by the coordinator implicitly implied that different schemes were being carried out in different blocks and therefore a specified sample was to be selected from different blocks to cover each scheme. In Haryana in a given block/district at a given point of time several schemes are being implemented concurrently. Further the nature of schemes implemented in different districts, the relative importance given to different schemes (and to various components of a given scheme) in a given district over different years sometimes differ substantially. The sample size for the present study was determined based on these characteristics and ground situation. With this the sample size for each of the schemes studied is larger than that suggested.

2. Integrated Pest Management (IPM) is one of the sub components under most of the MMA schemes. In fact, IPM is one of the Demonstrations and not a separate scheme under MMA and particularly these Demonstrations are conducted for various crops. But the study report has evaluated the demonstration as one of the separate scheme and has carried out analysis accordingly. This discrepancy needs to be looked in to by the researcher. Similarly Hybrid Seed Technology demonstration has also been evaluated separately under Macro Management Scheme. But in reality it is not so. Hybrid seed technology demonstration is one of the sub components and hence there is no need to treat and assess it separately.

That is not true. Integrated Pest Management is indeed a separate scheme with separate financial allocation under the MM Scheme in Haryana. For example in 2005-06 there were 11 Schemes implemented, of which Integrated Pest Management is one with financial allocation of Rs 96 lakhs. Similarly in Uttarakhand IPM is a separate scheme. Hybrid Seeds Technology Demonstration Program in Haryana has not been treated as a separate program but is evaluated as part of the program of Popularization of Certified Seeds

3. It is necessary that each of the scheme needs to be presented as an independent chapter in order to clearly trace the impact of the same by each component where as the study reports have mixed up all the schemes. This may be organized.

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<sup>1</sup> Since the comments received pertained to either Haryana and/or Uttarakhand reports the responses have also been addressed accordingly.

The chapter scheme followed in the report is in accordance with the suggested format as communicated by the coordinator vide letter dated January 23, 2008. However for making the presentation more clearer each of the scheme has now been given different section numbers within the Chapter.

4. The draft reports have discussed the MMA Schemes and their achievements largely at the national level rather than assessing their implementation and impact at their respective state level.

Since the guidelines of the MMA have emanated from the Centre level these have broadly been followed by respective states. The study specifically focuses impact evaluation at the respective state level rather than at the national level. All the primary data analysed in the report to assess the impact of MMA is from respective states only.

5. For the states of Uttarakhand and Haryana 3 and 4 schemes are expected to be studied and assesses their impact respectively. The reports instead of focusing on these schemes discussed the subcomponents like Agricultural Extension programs, Rodent Control, Bee Keeping and Control of Parthenium weeds (Congress Grass). Therefore it is suggested to change the focus as per the schemes implemented.

The components of Rodent control, bee keeping and control of congress grass were initiated in Haryana under the “New Initiative” component which is permitted to be initiated by the State under the MM Scheme. These have been covered for evaluation as additional components and not as a substitute for the Four main schemes analysed for Haryana. To avoid any confusion discussion on these sub sections have been shifted.

In Haryana “Strengthening of Agricultural Extension Services” is a separate scheme and not a sub component.

In addition to the explanation on this issue given in Item 2 above and the reorganization done in accordance with Item 3 above, the necessary modifications have been done at respective places to take in to account the coordinator’s suggestion.

6. It is strongly suggested to clearly demarcate the procurement of certified seeds by their source. But the study reports have confined to only one source (Government) and not indicated about any other source of procurement of Certified seeds. This kind of presentation will always miss leads over the ground realities

Necessary corrections have been done.

7. The schematic details of the various schemes in terms of the year of introduction, physical and financial targets and achievements, and their excising status have not been clearly brought out by both the reports.

The information on this aspect already given has been further strengthened and more clearly stated at relevant places in the report. It must however be kept in view that the emphasis on different schemes in different years and for different components within a given scheme has varied quite substantially over different years.

8. The socio economic and demographic profile of the farmers selected needs to be presented clearly and specifically throwing light on these aspects

The information available on socio economic and demographic aspects of sampled farmers is given in Section I of the report.

9. According to the original proposal the study centres are expected to identify the districts and blocks by taking the highest physical and financial targets and achievements for their study. This criterion has not been compiled with by the report and it appears that the selection of the blocks is done on random basis. It has been suggested to clearly state the rationale behind the selection of sample blocks.

In the original study proposal dated January 23, 2008 circulated by the coordinator the selection criteria for selection of blocks was not mentioned anywhere. The selection has not been done on random basis and the criterion followed for selection of the district and blocks for the present studies is clearly stated in the report.

10 It was suggested that all the participating centres are allowed to modify the format of the questionnaire according to the design of implementation of the schemes in their respective states, as there were many changes affected at the state level. It appears that your centre has retained the questionnaire sent by us without making any changes. In view of this you are requested to incorporate any changes introduced to the schemes in the states of Uttarakhand and Haryana

It would have been more appropriate had the coordinator first seen the questionnaire used by us before making his observations on quality of our questionnaire.