**Research Study No 2009/ 1**

# THE IMPACT OF MACRO MANAGEMENT OF AGRICULTURE SCHEME IN HARYANA

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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 Haryana.

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 HARYANA

## 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 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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the Institute for Social and Economic Change (ISEC), Bangalore. The present report pertains to the state of Haryana.

### 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 Haryana, 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 Kurukshetra district of Haryana. Three blocks – Thanesar, Shahbad and Pehowa 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 Kurukshetra 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 Kurukshtera, Haryana**

| **Block** | **Village** | **Sample Size** |
|---|---|---|
| Thanesar | Bidmathana | 15 |
| | Kohlapur | 15 |
| | Mundakhera | 15 |
| Shahbad | Nalvi | 15 |
| | Deeg | 15 |
| | Jhanderi | 15 |
| Pehowa | Arnai | 15 |
| | Sainsa | 15 |
| | Tuker | 15 |
| **Total** | **9** | **135** |

## 2. Macro Management Program in Haryana

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, Haryana has taken up several state relevant schemes under the program. During the last four years, the total allocations (centre share and state's contribution) under the MM program have risen from Rs 1778 lakh in 2005-06 to Rs 2332 lakhs in 2006-07 and to Rs 2500 lakh in 2007-08. In the current year

2008-09 the allocations have been reduced somewhat and are now slightly upwards (at Rs 1878 lakhs) of the level prevailing in 2005-06.

During the period under study the State has not only changed allocations amongst different schemes but has also discontinued some schemes and started new ones according to the felt needs of the state. However the four core schemes – Popularization and use of certified seeds, Promotion of agricultural mechanization, integrated pest management and integrated nutrient management – continue to get a substantial proportion of total funds available in a year. Popularization and use of certified seeds is the most important component of the MM program with financial allocation for this component alone accounting for almost one fourths of the total allocations in three of the four years.

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

Allocations for several schemes have been discontinued. Scheme for strengthening of agricultural extension, one of the most relevant program, have been discontinued from 2007-08. Similarly scheme for conservation of natural resources after being allocated huge amounts of money during 2005-06 and 2006-07 has been discontinued. Another scheme which has been discontinued is the scheme on on farm water management.

Several new schemes have been taken up from 2007-08. Scheme for integrated watershed management in catchment of flood prone areas, national watershed development for flood prone areas, scheme for reclamation of degraded soils etc have been taken up for implementation.

Several ad-hoc schemes over the years were initiated but were discontinued after implementing for one year. Some of the schemes taken up but discontinued shortly after being taken up include –strengthening of hydro geological network stations, scheme for promotion of organic farming, assessment and monitoring of groundwater in the state etc.

## 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.

### a. Popularization of Use of certified seeds

**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.
- The adoption of certified seeds is not restricted only to large farms – farmers of all size groups of farms have adopted cultivation of certified seeds though the extent of adoption may have been different across different farm size groups. Almost 88 percent of the sampled respondents reported cultivation of certified seeds of both paddy and wheat crops (Table 2).

**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 | 37 | 27 (79.4) | 23 (85.2) | 3 (11.1) | 1(3.7) |
| Small | 40 | 34 (85.0) | 32 (94.1) | 0 | 2 (5.9) |
| Medium | 19 | 18 (94.7) | 16 (88.9) | 2 (11.1) | 0 |
| Large | 39 | 37 (94.9) | 31(83.8) | 2(5.4) | 4(10.8) |
| **Total** | **135** | **116(85.9)** | **102(88.0)** | **7(6.0)** | **7(6.0)** |

Note :Figures in parentheses denote percentages

- A perusal of the differences 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 and wheat both, while the extent of adoption by large size group of farmers was higher in the pre MM period as compared to post MM period, in the case of the other three size groups of farms, the extent of adoption during post MM period was much higher than that in the pre MM period. This holds true for both paddy and wheat. 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.

- A majority of the farmers cultivating certified seeds of both paddy and wheat reported procuring these seeds from the open market rather than from the government authorized shops. The most important reason for this tendency was the non availability of certified seeds with the authorized dealers at the time when these seeds were required by the farmers. Coupled with non availability, farmers reported either no or little

difference between the seed price at the authorized shops and the price at which these seeds were available in the open market as an additional reason for depending more on market. Some farmers also cited non availability of any authorized shop/dealer in the vicinity of their village as a reason for relying on open market. However majority of the farmers did not cite difference in quality of seed available in the open market and authorized dealer as a reason for relying on market. No farmer cited any problems relating to the procedure/ process involved in procuring seeds from the government/ authorized shop.

- On the reasons for use of certified seeds by the farmers, the results obtained suggest that it is not the availability of subsidy or the difference in price between certified and traditional seeds that have *per se* driven the farmers to use certified seeds. 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. The non significance of subsidy as the driver for adoption of certified seeds however does not imply that subsidy has played no role in encouraging adoption of certified seeds. The availability of subsidy has helped in bringing price of certified seeds both in the authorized shop initially and open market subsequently to affordable level and this reduction/ equalization in prices seems to have facilitated at least in part to adoption of certified seeds.

- Most of the non users of certified seeds belong to marginal and small farmers category. Of the various reasons cited for non adoption the important ones relate to either non availability of subsidy or lack of availability of seeds in the vicinity of their village. A very small number of farmers (3 farmers) reported lack of awareness about the certified seeds also as the reason for non adoption.

- Of the total paddy area sown by the sampled farmers, certified seeds were sown on about 58 percent of the area while in the case of wheat, area cultivated with certified seeds constituted about 53 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 adoption of 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, much larger efforts need to be made to ensure the availability of required quantity of certified seeds at a time when these are required by the farmers. The network of authorsied shops/ sales depots need to be enhanced so that farmers can procure the seeds conveniently either within or near their own village. 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.

### 3.1.1 Hybrid Seed Technology Demonstration Program

**Main Findings**

- Based on the responses received from the sampled farmers and keeping in view the financial allocations made in different years for this component, the participation rate of sampled farmers in the technology demonstration program appears satisfactory

- Of the various reasons cited by the sampled farmers, the most important reasons for not participating in this program, are the small size of the farm and lack of awareness about the program. A significant number of sampled respondents also cited wrong time at which the program is held and long distance of the place at which the program was held as other reasons for not participating in the program.

- A perusal of the across farm size group differences for non participation suggest that while in the case of marginal and small farms the most important reason cited was small size of the farm and lack of awareness about the program, in the case of large farmers also lack of awareness about the program was cited as the most important reason for their non participation

- Although a small proportion of farmers reported cultivation of hybrid seeds on their farms, however none of the farmers reported having received any subsidy from the official agencies. While we could not formally ascertain the reasons for not availing subsidy by the farmers our interaction with farmers suggest possible lack of awareness about the subsidy on hybrid seeds as an important factor.

- The results obtained suggest that of the farmers who participated in the technology demonstration/ training program, a significant proportion of farmers are producing hybrid seeds on their farms. However of those who attended the program only a few reported applying lessons learnt in the training program in their production program.

**Suggested Interventions/ Actions**

- Efforts to promote hybrid seeds technology program need to be strengthened. More efforts need to be made in creating awreness about the program. Careful planning about the timing of holding the demonstration/training program may help increase participation rates of farmers in such programs.

- The contents of the training program and method of imparting training also needs to be strengthened so that farmers are able to effectively apply the lessons learnt during the training in their production programs.

- There appears to be lack of knowledge about the availability of subsidy on producing hybrid seeds by the farmers. Making farmers aware of this incentive is likely to help increase adoption of their cultivation by the farmers.

**3.2 Promotion of Agricultural Mechanisation**

**Main Findings**

- During the period between 2001 and 2009, of the 135 farmers only 36 farmers bought any agricultural implement/ equipment. These 36 farmers in between them bought a total of 45 implements. Of these 45 implements/equipment bought by the sampled farmers during this period, 24 implements were not eligible for availing of subsidy under either the MM scheme or the state scheme. Of the remaining 21 implements eligible

for subsidy, the farmers could avail of the subsidy on 12 implements (constituting 57 percent) under the MM/ state 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. 17 of the 36 farmers (constituting 47 percent of farmers) 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 : increase in cultivated area, increase in cropped area through 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.

- The results obtained suggest lack of knowledge about the availability of subsidy on some of the equipment had been an important reason for not availing the subsidy. The second most important reason cited was the exhaustion of the subsidy quota for the year in which they wanted to buy equipment. Some farmers however reported non cooperation of the officials in providing subsidy. However only a few farmers had any complaints either about the cumbersomeness of the procedure

prescribed for availing of the subsidy or the corruption in the process of disbursal of the subsidy.

- A 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. Of the various equipment cited, the two most important equipment preferred by the farmers are rotavators and tractors.

**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 list of implements eligible for subsidy may be expanded to include some of the traditional but most demanded implements such as a tractor etc. Further the allocation of subsidy amongst different implements currently eligible for subsidy to allocate larger funds for equipment most in demand (such as a rotavator) will contribute to better utilization of the subsidy.
- 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.

### 3.3 Scheme for Integrated Pest Management (IPM)

**Main Findings**

- The participation in IPM demonstration/ training programs has not been very encouraging. Of the total sampled farmers only about 13 percent have reported participation in any demonstration/ training program on IPM ever since it was introduced (Table 3)

**Table 3 : Number of farmers practicing IPM**

| Size Group | Total farmers | Number who attended program | Number of farmers actually practicing IPM |
|---|---|---|---|
| Marginal | 37 | 2 | 1 |
| Small | 40 | 3 | 0 |
| Medium | 19 | 2 | 0 |
| Large | 39 | 10 | 1 |
| **Total** | **135** | **17** | **2** |

- Non participation by a large proportion of farmers was due to non dissemination of the program information. This holds true across all size groups of farms. Other important reasons cited by a relatively large number of farmers included – small size of the farm, wrong time at which the program is held due to which they can not participate, and the program not held in the vicinity of their village.

- Of the total 17 farmers who underwent training/ participated in the demonstration programs of IPM only 2 reported actually practicing it on their farm

**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.

- The low adoption of IPM practices by even those farmers who actually attended the training program/demonstration program point to either the ineffectiveness of the training imparted or lack of post training support and/or non availability of necessary equipment such as pheromone traps etc. The perceived lack of effectiveness of IPM technology if adopted by only a few of the farmers in a village could be another reason for its low adoption.

- 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.

## 3.4 Strengthening of Agricultural Extension Services

**Main Findings**

- Relatively small proportion of farmers (about 28 percent) reported having participated in one or the other program on agricultural extension services

- Apart from the small size of the farm, other important reasons cited by farmers for non participation include – wrong time of the year at which the program is held , improper dissemination of information about the date and timings of the program and program held at a village/place distant from their village.

- The farmers however did not cite non effectiveness of the methods of training being used to impart training in these programs, or the problems often associated with cumbersomeness of the process involved with participation in such programs or the high cost of participation in such programs as the reasons for their non participation in these programs.

## Suggested Interventions/ Actions

- Revitalization of agricultural extension services is an important component of the MM scheme in Haryana and going by the financial allocations made under the program, the program appears to have done well in the State. The farmers reported their satisfaction with the method of training imparted and did not complain about the procedures for participation in such training programs. Much more efforts however still need to be made to extend the reach of the program and make participation in the program more widespread and effective.

- More wider and timely dissemination about the dates of the training and synchronizing these dates with the convenience of the farmers would help in increasing the participation rate amongst farmers and in making participation more effective. Specific programs according to their felt needs for marginal and small farmers would encourage their larger participation.

### 3.5 Program on promoting Integrated Nutrient Management

**Main Findings**

- Soil testing : The program on promoting and encouraging soil testing as part of integrated nutrient management program under the MM scheme appears to have been taken up in all its earnest by farmers. The program on popularization of use of vermin compost does not seem to have got any significant start. Much larger efforts need to be invested in creating awareness about the utility of use of vermin compost and in providing the right incentives for them to adopt using it.

- Dhaincha crop : The awareness about the usefulness of dhaincha crop in the region is already there. However its adoption by the farmers has not been very widespread.

- Apart from the constraints on availability of water some farmers doubt its financial viability as well.

- Providing subsidy on dhaincha seed to encourage its adoption is a right strategy but the dispersal of subsidy has not been effective either due to lack of knowledge on the part of the intended beneficiaries or in the process of disbursal of subsidy.

- Bio fertilizers : Being a relatively new input the bio fertilizer program has not taken up at the level at which it should ideally be.

- Despite participation in training/demonstration by a fairly large number of farmers its adoption has not been up to the expected level.

**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 soil testing.

- More efficient arrangement for dispersal of subsidy on dhaincha seeds needs to be evolved to give a fillip to the cultivation of dhaincha crop by the farmers.

- While reasons for non adoption of bio fertilizers by farmers need to be enquired in to, our interactions suggest a reorientation of the program and making the awareness/ training more effective and relevant.

## 3.6 New Initiative

### 3.61. Program on Rodent Control

**Main Findings**

- The program on making rodenticides available to farmers on subsidy/free of cost has been very effective and a large number of farmers have benefited from the program.

**Suggested Interventions/ Actions**

The program needs to be continued and further improved upon

### 3.6.2 Bee Keeping

**Main Findings**

- The participation of our sampled farmers in these training program has been quite low – less than 7 percent of the sampled farmers reported having participated in training on bee keeping.

- Of the 9 farmers who underwent training in bee keeping however none has actually started practicing bee keeping

**Suggested Interventions/ Actions**

- The programme on Bee-keeping has not picked up amongst the farmers. While we could not ascertain the reasons for lack of

enthusiasm amongst the farmers to this program we believe that part of this lack of enthusiasm could be due to meager efforts made in the MM program to promote this activity by the farmers.

- While the reasons for non adoption of this activity by 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.

### 3.6.3 Program on control of congress grass

**Main Findings**

- Of the 38 farmers who underwent training in control of congress grass 34 farmers (89 percent) reported following the practices learnt during the training.

- Almost all the farmers who have reported adopting the practices learnt during the training opined that the practices learnt during the training have been very effective in achieving the desired purpose.

**Suggested Interventions/ Actions**

- The program on providing training for control of congress grass by farmers in their fields has been effective though its reach so far has been somewhat limited. Continued and more vigorous efforts in imparting training could help increase the coverage of the otherwise effective program.

# 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.

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

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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 Haryana, 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 Kurukshetra district of Haryana. Three blocks – Thanesar, Shahbad and Pehowa 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 Kurukshetra 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 Kurukshtera, Haryana**

| **Block** | **Village** | **Sample Size** |
|---|---|---|
| Thanesar | Bidmathana | 15 |
| | Kohlapur | 15 |
| | Mundakhera | 15 |
| Shahbad | Nalvi | 15 |
| | Deeg | 15 |
| | Jhanderi | 15 |
| Pehowa | Arnai | 15 |
| | Sainsa | 15 |
| | Tuker | 15 |
| **Total** | **9** | **135** |

### 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 27 percent are marginal, 30 percent small, 14 percent medium and 29 percent large.

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

| Size Class (Acres) | Category | No. of Households | Percent to Total |
|---|---|---|---|
| | | | |
| <=2.50 | Marginal | 37 | 27.41 |
| 2.51-5.00 | Small | 40 | 29.63 |
| 5.01-12.50 | Medium | 19 | 14.07 |
| 12.51 & above | Large | 39 | 28.89 |
| **Total** | | **135** | **100.00** |

#### 1.3.1 Size of Holding

The average size of ownership holding of the sampled farmers was 8.92 acres while the average size of operational holding was 10.47 acres (Table 1.3). The average size of operational holding in the four size groups of farms was 1.70, 4.35, 8.84 and 25.86 acres respectively. While leasing in of land by marginal and small farmers was almost absent, leasing in by medium and large farmers was evident. In the medium category of farms, leased in land comprised 18.4 percent of the operated area while in the case of large farms leased in land constituted about 17.4 percent of the operated land. 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)**

| Size Group | Owned | Leased-in | Leased-out | Operated |
|---|---|---|---|---|
| Marginal | 1.64 | 0.06 | 0 | 1.70 |
| Small | 4.33 | 0.02 | 0 | 4.35 |
| Medium | 7.21 | 1.63 | 0 | 8.84 |
| Large | 21.37 | 4.49 | 0 | 25.86 |
| **Total** | **8.92** | **1.55** | **0** | **10.47** |

### 1.3.2 Distribution of Sampled Households according to caste

A majority of the sampled farmers (58.5 percent) belong to general caste. OBCs constitute more than 30 percent of the sampled farmers (Table 1.4). In all the size groups of farms general category farmers constitute the majority. The proportion of farmers belonging to OBC category in the marginal (35.1 percent) and large (35.9 percent) category farmers was much higher than in the other two size groups of farms.

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

| Size Group | General | SC | ST | OBC | Total |
|---|---|---|---|---|---|
| Marginal | 19(51.4) | 5(13.5) | 0 | 13(35.1) | 37 (100.0) |
| Small | 25(62.5) | 4(10.0) | 0 | 11(27.5) | 40(100.0) |
| Medium | 14(73.6) | 1(5.3) | 1(5.3) | 3(15.8) | 19(100.0) |
| Large | 21(53.8) | 4(10.3) | 0 | 14(35.9) | 39(100.0) |
| **Total** | **79(58.5)** | **14(10.4)** | **1(0.7)** | **41(30.4)** | **135(100.0)** |

### 1.3.3 Education Level of Sampled Farmers

The literacy rate amongst sampled farmers was quite high. About 80 percent of the sampled farmers were literate. While more than 42 percent farmers have had studied up to middle standard, about 38 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 of sampled farmers belonging to medium and large categories had obtained education beyond high school as compared to farmers belonging to marginal and small farmers. More than 35 percent of marginal farmers were illiterate.

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

| Size Group | Illiterate | Up to Middle | Up to High School | Upto Graduation | Total |
|---|---|---|---|---|---|
| Marginal | 13(35.1) | 18(48.6) | 5(13.5) | 1(2.7) | 37 (100.0) |
| Small | 7(17.5) | 20(50.0) | 10(25.0) | 3(7.5) | 40(100.0) |
| Medium | 2(10.5) | 5(26.3) | 11(57.9) | 1(5.3) | 19(100.0) |
| Large | 5(12.8) | 14(35.9) | 17(43.6) | 3(7.7) | 39(100.0) |
| **Total** | **27(20.0)** | **57(42.2)** | **43(31.9)** | **8(5.9)** | **135(100.0)** |

### 1.3.4 Extent of irrigation

Almost the entire operated area of the sampled farmers was irrigated (Table-1.6). While the sampled farmers of the first three size groups of farmers reported 100 percent coverage of their operated area by irrigation, in the case of large size groups of farms 99 percent of the operated area was irrigated.

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

| Size Group | Total operated area | Operated Area Irrigated | % Operated Area Irrigated |
|---|---|---|---|
| Marginal | 62.75 | 62.75 | 100.0 |
| Small | 174.00 | 174.00 | 100.0 |
| Medium | 168.00 | 168.00 | 100.0 |
| Large | 1008.5 | 998.5 | 99.0 |
| **Total** | **1413.25** | **1403.25** | **99.3** |

### 1.3.5 Sources of Irrigation

The entire operated area irrigated in all the size groups of farms was irrigated by groundwater – either by owned tubewells or hired tubewells.

### 1.3.6 Family Size and Availability of Family Labor

The average family size of the sampled households was 7.12 (Table 1.7). The average family size in the medium and large category farms was much higher than that in the marginal and small farms. Of the average number of family members of 7.12, the number of farm family workers was 2.24 or about 31 percent. The availability of farm family workers generally shows an increasing trend with farm size. A similar pattern holds true for availability of permanent labor on the farm. The average number of permanent labor hired by sampled households was 0.21.

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

| Size Group | Family Size | Workers | |
|---|---|---|---|
| | | Farm family | Permanent labor |
| Marginal | 5.81 | 1.76 | 0.03 |
| Small | 6.40 | 2.05 | 0.10 |
| Medium | 8.63 | 2.84 | 0.11 |
| Large | 8.36 | 2.59 | 0.54 |
| **Total** | **7.12** | **2.24** | **0.21** |

## 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 Haryana 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 Kurukshetra. 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 Haryana

### 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 2nd installment, the unspent balance over and above 10% will be deducted from the release of 1st 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 heath 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 Haryana**

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, Haryana has taken up several state relevant schemes under the program. During the last four years, the total allocations (centre share and state's contribution) under the MM program have risen from Rs 1778 lakh in 2005-06 to Rs 2332 lakhs in 2006-07 and to Rs 2500 lakh in 2007-08. In the current year 2008-09 the allocations have been reduced somewhat and are now slightly upwards (at Rs 1878 lakhs) of the level prevailing in 2005-06 (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 schemes and started new ones according to the felt needs of the state. However the four core schemes – Popularization and use of certified seeds, Promotion of agricultural mechanization, integrated pest management and integrated nutrient management – continue to get a substantial proportion of total funds available in a year. Popularization and use of certified seeds is the most important component of the MM program with financial allocation for this

component alone accounting for almost one fourths of the total allocations in three of the four years.

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

Allocations for several schemes have been discontinued. Scheme for strengthening of agricultural extension, one of the most relevant program, have been discontinued from 2007-08. Similarly scheme for conservation of natural resources after being allocated huge amounts of money during 2005-06 and 2006-07 has been discontinued. Another scheme which has been discontinued is the scheme on on farm water management. Development of weed infested water bodies was taken up for one year only in 2006-07 and then discontinued.

Several new schemes have been taken up from 2007-08. Scheme for integrated watershed management in catchment of flood prone areas, national watershed development for flood prone areas, scheme for reclamation of degraded soils etc have been taken up for implementation.

**Table 2.1 : Financial allocations of different schemes during 2005-06 to 2008-09 (Rs in Lakhs)**

| Sr No | Scheme | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
|---|---|---|---|---|---|
| 1 | Assessment, monitoring, survey and analysis/recharge of groundwater in state | 3 | | | |
| 2 | Strengthening of Agricultural Extension Services | 109 | 140 | | |
| 3 | Popularization and use of certified seeds | 409.78 | 517 | 355.2 | 500 |
| 4 | Integrated Nutrient Management | 87 | 157 | 424.45 | 45 |
| 5 | Promotion of agricultural mechanization | 190 | 567 | 440 | 400 |
| 6 | Integrated Pest Management | 96 | 71.38 | 101.04 | 56.86 |
| 7 | Sustainable development of sugarcane based cropping systems | 126 | 129 | 208.85 | 195 |
| 8 | Conservation of natural resources | 560 | 530 | | |
| 9 | Improved on farm water management | 100 | 100 | | |
| 10 | Establishment of quality control lab for fertilizers | 87 | | | |
| 11 | Strengthening of Agmark laboratories | 10 | 5 | | |
| 12 | Strengthening of hydro geological network station | | 20 | | |
| 13 | State Land use Board | | 35.75 | 35 | 19 |
| 14 | Development of weed infested water bodies | | 60 | | |
| 15 | Scheme for promotion of organic farming | | | 50 | |
| 16 | Integrated watershed management in catchment of flood prone area | | | 220 | 200 |
| 17 | National watershed development for rain fed areas | | | 200 | 180 |
| 18 | Scheme for reclamation of degraded alkali soils | | | 180 | 200 |
| 19 | New Initiatives | | | 235.46 | 71.91 |
| 20 | Monitoring and evaluation | | | | 10 |
| | **TOTAL** | **1777.78** | **2332.13** | **2500** | **1877.77** |

Several ad-hoc schemes over the years were initiated but were discontinued after implementing for one year. Some of the schemes taken up but discontinued shortly after being taken up include –strengthening of hydro geological network stations, scheme for promotion of organic farming, assessment and monitoring of groundwater in the state etc.

**Table 2.2 Changing composition of financial allocations amongst different schemes during 2005-06 to 2008-09 ( Percentages)**

| Schemes | 2005-06 | 2006-07 | 2007-08 | 2008-09 |
|---|---|---|---|---|
| Strengthening of Agricultural Extension Services | 6.13 | 6.00 | 0.00 | 0.00 |
| Popularization and use of certified seeds | 23.05 | 22.17 | 14.21 | 26.63 |
| Integrated Nutrient Management | 4.89 | 6.73 | 16.98 | 2.40 |
| Promotion of agricultural mechanization | 10.69 | 24.31 | 17.60 | 21.30 |
| Integrated Pest Management | 5.40 | 3.06 | 4.04 | 3.03 |
| Sustainable development of sugarcane based cropping systems | 7.09 | 5.53 | 8.35 | 10.38 |
| Other Schemes | 42.75 | 32.19 | 38.82 | 36.26 |
| TOTAL | 100.00 | 100.00 | 100.00 | 100.00 |

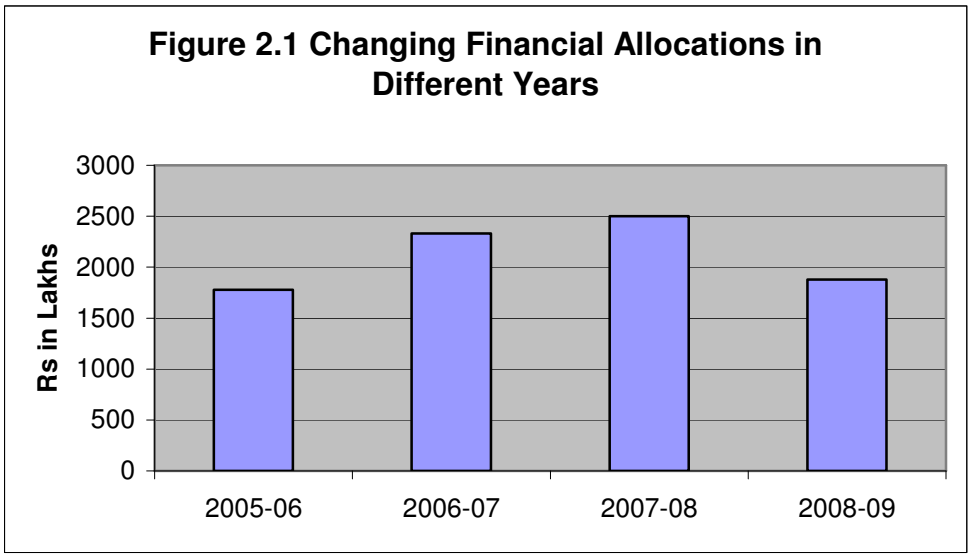


**Figure 2.2 Changing Proportion of Allocations on Different Schemes- Popularisation and Use of Certified seeds**

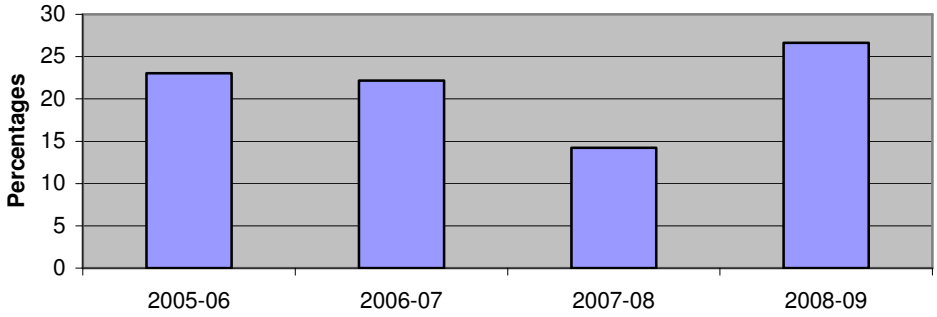



**Figure 2.3 Changing proportion of allocationns amongst different schemes - Integrated Nutrient Management**

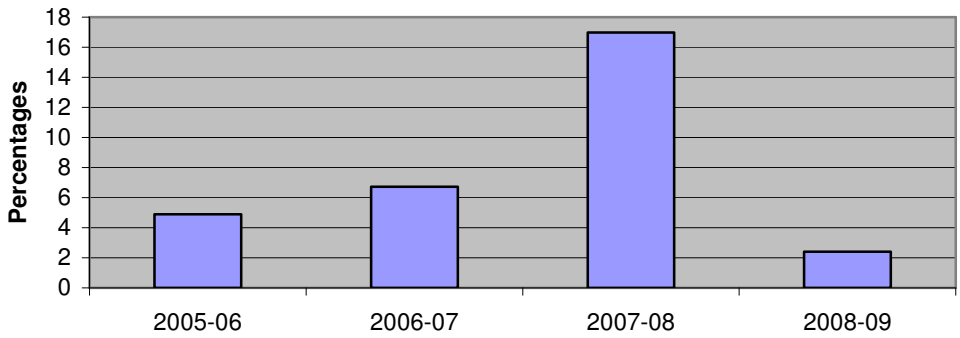


**Figure 2.4 Changing Proportion of Allocations Amongst Different Schemes- Promotion of agricultural mechanisation**

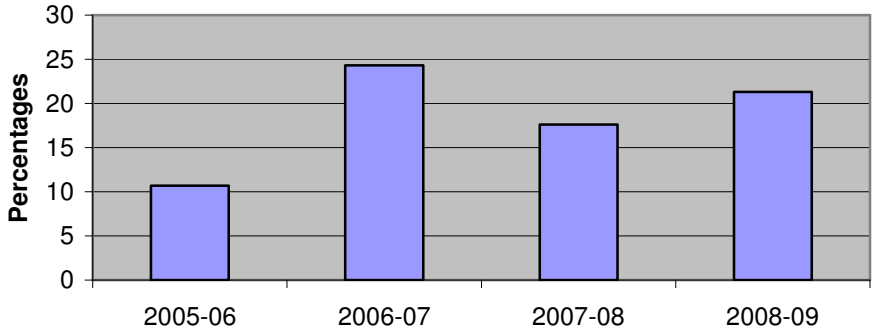
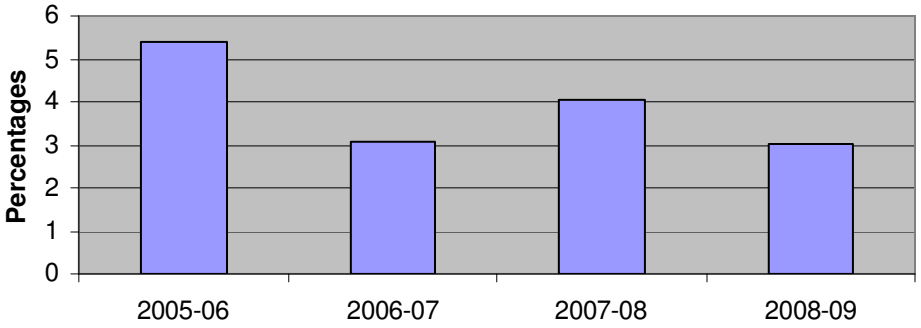



**Figure 2.5 Changing proportion of allocations amongst different schemes - Integrated Pest Management**



## Section III

## Impact of Select Schemes under the Macro Management of Agriculture in Haryana

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 Haryana. 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 Haryana. 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 (i) Popularization of use of Certified Seeds, (ii) Promotion of Agricultural Mechanization; (iii) Integrated Pest Management; (iv) Strengthening of Agricultural Extension Services; (v) Integrated Nutrient 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) subsidy on rodent control; (ii) bee keeping; and (iii) control of congress grass.

### 3.1 Popularization of Use of certified seeds

Promoting the cultivation of certified seeds is one of the largest and most important component of 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 Haryana. The main objectives of this component of MM program as being practiced in Haryana are :

1. Quick spread of the certified seeds of new released varieties
2. Promotion of hybrid seeds production technology amongst the farmers.

Under the scheme farmers are provided assistance for the purchase of certified seeds of paddy, wheat, bajra and barley @ Rs 200 per quintal by targeting seed replacement rates in different years. The assistance under the scheme is provided only on latest varieties which are not older than 10 years.

Hybrids have been evolved by State Agricultural University and ICAR particularly in crop like bajra. The problem encountered by the state in the spread of hybrid seeds relate to lack of seed production program undertaken by institutional agencies and farmers. The crop productivity can be increased by 20-25 percent by the use of hybrids. The State intends to make hybrid seeds production a thrust area under the MM scheme. Initially this program has been piloted on a small scale and is likely to be enhanced in subsequent years depending upon the availability of hybrids and expansion in area under hybrid

seed production. The subsidy under the scheme is provided for hybrid seed production to seed producing agencies and farmers at the rate of Rs 1000 per quintal for bajra and Rs 400 per quintal for paddy.

In Haryana the focus on promotion of cultivation of certified seeds is restricted primarily to four crops viz paddy, wheat, bajra and barley. While in irrigated and agriculturally advanced areas of the state the focus is on promoting certified seeds of paddy and wheat, in the case of districts with low coverage of irrigation the focus has been on promoting cultivation of certified seeds of bajra and barley.

### 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, 116 farmers, constituting 86 percent of the total number of farmers selected, reported practicing cultivation of certified seeds of at least one crop (Table 3.1). The remaining 16 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 | 37(100.0) | 27(73.0) | 10(27.0) |
| Small | 40(100.0) | 34(85.0) | 6(15.0) |
| Medium | 19(100.0) | 18(94.7) | 1(5.3) |
| Large | 39(100.0) | 37(94.9) | 2(5.1) |
| **Total** | **135(100.0)** | **116(85.9)** | **19(14.1)** |

Note :Figures in parentheses denote percentages

A perusal of the extent of adoption of certified seeds across different size groups of farms indicate that adoption of certified seeds is not restricted only to large farms – farmers of all size groups of farms have adopted cultivation of certified seeds though the extent of adoption may have been different across different farm size groups. Thus while the extent of adoption was almost 95 percent in the case of medium and large size groups of farms, it was 85 percent in the case of small farmers and 73 percent in the case of marginal farms.

Of the 116 farmers reporting use of certified seeds of at least one crop, almost 88 percent reported cultivation of certified seeds of both paddy and wheat (Table 3.2). Remaining 6 percent of the sampled farmers each reported cultivation of certified seeds of paddy only or wheat only crops. The rate of adoption of certified seeds in respect of both or single crops did not differ across different farm size groups.

**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 And wheat** | **Paddy only** | **Wheat only** |
| Marginal | 37 | 27 (79.4) | 23 (85.2) | 3 (11.1) | 1(3.7) |
| Small | 40 | 34 (85.0) | 32 (94.1) | 0 | 2 (5.9) |
| Medium | 19 | 18 (94.7) | 16 (88.9) | 2 (11.1) | 0 |
| Large | 39 | 37 (94.9) | 31(83.8) | 2(5.4) | 4(10.8) |
| **Total** | **135** | **116(85.9)** | **102(88.0)** | **7(6.0)** | **7(6.0)** |

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 seems to have accentuated after the introduction of MM scheme. Of the 109 farmers reporting cultivation of certified seeds of paddy more than 62 percent reported having started its cultivation after reporting cultivation of certified the introduction of MM scheme in 2001 (Table 3.3) . Similarly of the 109 farmers seeds of wheat more than 63 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 and wheat both, while the extent of adoption by large size groups of farmers was higher in the pre MM period as compared to post MM period, in the case of the other three size groups of farms, the extent of adoption during post MM period was much higher than that in the pre MM period. This holds true for both paddy and wheat. 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.

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

| Size Group | Paddy Total users | Before 2001 | From 2001 | Wheat Total users | Before 2001 | From 2001 |
|---|---|---|---|---|---|---|
| Marginal | 26(100.0) | 10(38.5) | 16(61.5) | 24(100.0) | 10(41.7) | 14(58.3) |
| Small | 32(100.0) | 7(21.9) | 25(78.1) | 34(100.0) | 8(23.5) | 26(76.5) |
| Medium | 18(100.0) | 5(27.8) | 13(72.2) | 16(100.0) | 4(25.0) | 12(75.0) |
| Large | 33(100.0) | 19(57.6) | 14(42.4) | 35(100.0) | 18(51.4) | 17(48.6) |
| **Total** | **109(100.0)** | **41(37.6)** | **68(62.4)** | **109(100.0)** | **40(36.7)** | **69(63.3)** |

### 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.

Of the 135 sampled households in survey about less than 3 percent farmers using certified seeds of paddy and about 7 percent using certified seeds of wheat reported procuring the required quantity of certified seeds from government

authorized shops (Table 3.4). The remaining farmers reported procuring these seeds from the open market.

**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 | | Total | Procuring from | |
| | | Govt Approved Shop | Open Market | | Govt Approved Shop | Open Market |
| Marginal | 26 | 0 | 26 | 24 | 0 | 24 |
| Small | 32 | 2 | 30 | 34 | 3 | 31 |
| Medium | 18 | 0 | 18 | 16 | 1 | 15 |
| Large | 33 | 1 | 32 | 35 | 4 | 31 |
| **Total** | **109** | **3 (2.7)** | **106(97.3)** | **109** | **8(7.3)** | **101(92.7)** |

Since a large majority of sampled farmers reported procuring certified seeds from open market rather than from authorized shops 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 that non availability of certified seeds with the authorized dealers at the time when these seeds are required by the farmers as the most important reason for farmers procuring seeds from the open market rather than from the authorized dealer (Table 3.5). Coupled with non availability, farmers reported either no or little difference between the subsidized price at which the seeds are available with authorized shops and price at which these seeds are available in the open market as an additional reason for depending more on market. Some farmers also cited non availability of any authorized shop/dealer in the vicinity of their village as a reason for relying on open market.

However majority of the farmers did not cite difference in quality of seed available in the market and authorized dealer as a reason for relying on market. No farmer cited any problems relating to the procedure/ process involved in procuring seeds from the government/ authorized shop.

### 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 it is not the availability of subsidy or the difference in price between certified and traditional seeds that have solely driven the farmers to use certified seeds. 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. Other important factors that have facilitated adoption of certified seeds by the farmers include no seed treatment requirement and their resistance to pest attack. The non significance of subsidy as the driver for adoption of certified seeds however does not imply that subsidy has played no role in encouraging adoption of certified seeds. The availability of subsidy has helped in bringing price of certified seeds both in the authorized shop initially and open market subsequently to affordable level and this reduction/ equalization in prices seems to have facilitated at least in part to adoption of certified 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 | 4 | 10 | 1 | 11 | | 4 | 1 |
| Small | 4 | 7 | 3 | 14 | | 8 | |
| Medium | 5 | 3 | 1 | 9 | | 4 | |
| Large | 5 | 13 | 4 | 13 | | 3 | |
| **Total** | **18** | **33** | **9** | **47** | | **19** | **1** |

**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 | 1 | | 10 | 5 | 11 | 10 | 4 | 2 |
| Small | 2 | | 13 | 3 | 12 | 24 | 7 | 1 |
| Medium | | | 10 | 2 | 4 | 10 | 5 | |
| Large | 2 | 1 | 15 | 6 | 14 | 19 | 3 | 2 |
| **Total** | **5** | **1** | **48** | **16** | **41** | **63** | **19** | **5** |

**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 14 percent of the farmers reported non use of certified seeds of either paddy or wheat. 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. While some users advanced one reason which they consider as the most important reason for non adoption others indicated more than one reason which jointly contributed to their non adoption. The results obtained presented in Table 3.7 suggest that most of the non users belong to marginal and small farmers category. Of the various reasons cited for non adoption the important ones relate to either non availability of subsidy or lack of availability of seeds in the vicinity of their village. A very small number of farmers (3 farmers) reported lack of awareness about the certified seeds also as the reason for non adoption.

### 3.1.7 Extent of Adoption of Certified Seeds

The adoption of certified seeds of at least one crop by almost 86 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 58 percent of the area while in the case of wheat, area cultivated with certified seeds constituted about 53 percent of the sown area (Table 3.8) . In the case of both paddy and wheat the proportion of area cultivated with certified seeds shows a declining trend with increase in farm size. The proportion of total area sown under paddy with certified seeds in the case of marginal farmers was about 75 percent as

compared to about 56 percent in the case of large farmers. The corresponding figures in the case of wheat were 67 and 50 percent respectively. Thus the adoption rate has been much higher in the case of marginal and small farmers as compared to medium and large farms.

**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 | 3 | | 1 | 2 | | 4 | 1 | 1 | 3 | 1 |
| Small | 1 | | | 1 | | 3 | 1 | 1 | 1 | 1 |
| Medium | | | | | | 1 | | | | |
| **Large** | | | | | | | | 1 | | |
| **Total** | **4** | | **1** | **3** | | **8** | **2** | **3** | **4** | **2** |

**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

**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 | 44.25 | 33.25 | 75.1 | 39.25 | 26.25 | 66.9 |
| Small | 137.50 | 89.50 | 65.1 | 148.50 | 87.50 | 58.9 |
| Medium | 149.50 | 89.00 | 59.5 | 135.50 | 79.0 | 58.3 |
| Large | 864.0 | 482.0 | 55.8 | 811.50 | 403.0 | 49.7 |
| **Total** | **1195.25** | **693.75** | **58.0** | **1134.75** | **595.75** | **52.5** |

### 3.1.9 Hybrid Seed Technology Demonstration Program

Hybrid seed technology demonstration program is one of the important components of the scheme for promotion of certified seeds program being undertaken in Haryana under the MM scheme. The program aims to popularize cultivation of hybrid seeds by organizing demonstration programs for technology dissemination. The program also envisages provisioning of subsidy on production of hybrid seeds by farmers.

**Table 3.9 : Participation in hybrid seeds technology demonstration program**

| Size Group | Participated | Not Participated | Total |
|---|---|---|---|
| Marginal | 3(8.1) | 34(91.9) | 37(100.0) |
| Small | 5(12.5) | 35(87.5) | 40(100.0) |
| Medium | 3(15.8) | 16(84.2) | 19(100.0) |
| Large | 10(25.6) | 29(74.4) | 39(100.0) |
| **Total** | **21(15.6)** | **114(84.4)** | **135(100.0)** |

Based on the responses received from the sampled farmers and keeping in view the financial allocations made in different years for this component, the participation rate of sampled farmers in the technology demonstration program appears satisfactory. Of the 135 sampled households about 16 percent participated in the demonstration programs (Table 3.9). The participation amongst medium and large farmers was however much higher than that in the case of marginal and small farmers.

Since a large proportion of sampled farmers (more than 84 percent) had not participated in any of these demonstration programs we tried to ascertain the reasons for their not doing so. While some farmers advanced one reason others attributed multiple reasons for not participating in the demonstration program. Of the various reasons cited by the sampled farmers, the most important reasons for not participating, as reported by the largest number of farmers, are the small size of the farm and lack of awareness about the program (Table 3.10). A significant number of sampled respondents also cited wrong time at which the program is held and long distance of the place at which the program was held as other reasons for not participating in the program.

A perusal of the across farm size group differences for non participation suggest that while in the case of marginal and small farms the most important reason cited was small size of the farm and lack of awareness about the program, in the case of large farmers also lack of awareness about the program was cited as the most important reason for their non participation.

**Table 3.10 : Reasons for not participation in hybrid seeds technology demonstration program**

| Size Group | Reasons | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Marginal | 7 | 23 | 9 | 1 | 1 | 2 | 2 | 2 | 1 | |
| Small | 5 | 13 | 14 | 3 | 3 | 4 | 4 | 4 | 2 | |
| Medium | 2 | 4 | 2 | 3 | 3 | 5 | 5 | 1 | 5 | |
| Large | 3 | | 10 | 7 | 2 | 7 | 2 | 2 | 7 | |
| **Total** | **17** | **40** | **35** | **14** | **9** | **18** | **13** | **9** | **15** | **0** |

**Reasons:**
1:Not interested;
2. Small farm size;
3. Not aware of program;
4. Aware but Information on program not disseminated in advance;
5. Aware but donot know about procedure for participation;
6. Aware but have no time to attend because program held at wrong time;
7. Expensive to participate- no money;
8. Wanted to attend but cumbersome participation procedure;
9. Program held at distant place;
10. Method of instruction not effective

### 3.1.10 Production of Hybrid Seeds by farmers and availing of subsidy by the farmers

Participation or non participation in hybrid seeds demonstration program organized by the official agencies is however not a necessary precondition for practicing cultivation of hybrid seeds. In our sample about 10 percent of the farmers reported cultivation of hybrid seeds on their farms (Table 3.11). The maximum proportion of farmers practicing cultivation of hybrid seeds of course belongs to large size category. However none of the farmers reporting cultivation of hybrid seeds reported having received any subsidy from the official agencies. While we could not formally ascertain the reasons for not

availing subsidy by the farmers our interaction with farmers suggest possible lack of awareness about the subsidy on hybrid seeds as an important factor.

**Table 3.11 : Production of Hybrid seeds (HS) by farmers and Availability of Subsidy on production of hybrid seeds**

| Size Group | Number of farmers Producing HS | Not producing HS | Total | Number of producing farmers getting subsidy |
|---|---|---|---|---|
| Marginal | 1(2.7) | 36(97.3) | 37(100.0) | 0 |
| Small | 2(5.3) | 38(94.7) | 40(100.0) | 0 |
| Medium | 3(15.8) | 16(84.2) | 19(100.0) | 0 |
| Large | 7(17.9) | 32(82.1) | 39(100.0) | 0 |
| **Total** | **13(9.6)** | **122(90.4)** | **135(100.0)** | **0** |

### 3.1.11 Effectiveness of the Demonstration/ Training Imparted in the Hybrid Seeds Program

We attempted to ascertain from the farmers, who have had attended the demonstration/ training program on hybrid seeds, the effectiveness and/or the usefulness of the training imparted. The effectiveness of the training received was judged on the basis of two criterion (i) in terms of number of farmers who are actually producing hybrid seeds as a proportion of those who participated in the program, and (ii) of those who participated in the program and practicing cultivation of hybrid seeds actually applying the lessons learnt in the program.

The results obtained suggest that of the 21 farmers who participated in the technology demonstration/ training program, 13 (or 62 percent) are producing hybrid seeds on their farms. Of the 13 who are cultivating hybrid seeds, only 3

farmers (23 percent) reported applying lessons learnt in the training program in their production program while the remaining 77 percent reported not applying the lessons learnt (Table 3.12).

**Table 3.12 : Effectiveness of Training/ Demonstration of Hybrid Seeds Program (Number)**

| Size Group | Total farmers | Number attended program | Number producing HS | Applying lessons learnt at the program? | |
|---|---|---|---|---|---|
| | | | | Yes | No |
| Marginal | 37 | 3(8.1) | 1 | 1 | 2 |
| Small | 40 | 5(12.5) | 2 | 0 | 5 |
| Medium | 19 | 3(15.8) | 3 | 1 | 2 |
| Large | 39 | 10(25.6) | 7 | 1 | 9 |
| **Total** | **135** | **21(15.6)** | **13** | **3** | **18** |

### 3.2 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 dal mill 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 to the purchase of following equipment : Zero-till cum fertilizer drill, rotavator, bed planter (multi crop), potato planter, potato digger, self propelled power weeder/ reaper/sprayer, ridger seeder, straw reaper, post hole digger, gender friendly equipment, pedal operated paddy thresher, power tiller, reaper binder, tractor mounted sprayer etc. The rate of subsidy on most of the equipment is 25 percent of the cost 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 3.13).

A comparison across different size groups of farms reveal that while about 62 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 (3 percent) and small (13 percent) farmers.

**Table 3.13 : 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 any implement |
| Marginal | 37(100.0) | 1(2.7) | 36(97.3) |
| Small | 40(100.0) | 5(12.5) | 35(87.5) |
| Medium | 19(100.0) | 6(31.6) | 13(68.4) |
| Large | 39(100.0) | 24(61.5) | 15(38.5) |
| **Total** | **135(100.0)** | **36(26.7)** | **18(73.3)** |

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 45 such implements (Table 3.14). 32 of these 45 implements bought (about 71 percent) were bought by large farmers and 16 percent were bought by medium farmers. The remaining 13 percent of the total implements purchased were bought by marginal and small farmers.

**Table 3.14 : Number of implements bought by farmers**

| Size Group | Number of farmers who bought implements | Number of implements bought by these farmers |
|---|---|---|
| Marginal | 1 | 1 |
| Small | 5 | 5 |
| Medium | 6 | 7 |
| Large | 24 | 32 |
| **Total** | **36** | **45** |

### 3.2.1 Nature of Implements bought

Of the 45 total implements bought by the sampled farmers, tractor was the most important (Table 3.15). Tractors constituted more than 53 percent of the total

implements bought by the farmers. Rotatvator (11 percent) and straw reaper (7 percent) were the other important equipment bought by the sampled farmers. 22 of the 24 tractors purchased during the period by the sampled farmers were purchased by medium and large farmers while all the 5 rotavators bought during the period were bought by medium and large farmers.

**Table 3.15 : Nature and number of implements bought by sampled farmers during the period 2001-09**

| Size Group | Tractor | Bed Planter | Ridger seeder | Seed cum fert drill | Straw Reaper | Rota-vator | Potato Planter | Other power driven implements | Bullock Cultiva-tor | Mini Dal Mill |
|---|---|---|---|---|---|---|---|---|---|---|
| Marginal | 1 | | | | | | | | | |
| Small | 1 | | | 1 | 2 | | | | | 1 |
| Medium | 4 | | | | | 1 | | 2 | | |
| Large | 18 | 1 | 1 | | 1 | 4 | 1 | 5 | 1 | |
| Total | 24 | 1 | 1 | 1 | 3 | 5 | 1 | 7 | 1 | 1 |

### 3.2.2 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 45 implements (including those on which subsidy under MM program is not available) bought during the entire period, 21 (about 47 percent) were bought during the first five years of the implementation of MM scheme while the remaining 24 (about 53 percent) during the later four years implying a slight step

up in the purchase of equipment during the later period (Table 3.16). While most of the equipment bought by marginal, small and medium farmers was bought during the first five years of the scheme, most of the equipment bought by larger farmers was during more recent years.

**Table 3.16 : Period of Purchase of implements by sampled farmers**

| Size Group | Total number of implements bought | Implements bought between 2001-2005 | 2006-09 |
|---|---|---|---|
| Marginal | 1 | 0 | 1 |
| Small | 5 | 4 | 1 |
| Medium | 7 | 6 | 1 |
| Large | 32 | 11 | 21 |
| **Total** | **45** | **21** | **24** |

### 3.2.3 Subsidy availed on purchase of agricultural implements

Of the total 45 implements/equipment bought by the sampled farmers during this period, 24 implements were not eligible for availing of subsidy under either the MM scheme or the state scheme. Of the remaining 21 implements eligible for subsidy, the farmers could avail of the subsidy on 12 implements (constituting 57 percent) under the MM/ state scheme.

We tried to enquire from the farmers if they would have bought the equipment they actually bought had there been no subsidy available on them. 17 of the 36 farmers (constituting 47 percent of farmers) 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 3.17 : 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 | 1 | 0 | 0 | 0 |
| Small | 5 | 2 | 1 | 4 |
| Medium | 6 | 2 | 2 | 3 |
| Large | 24 | 8 | 14 | 13 |
| **Total** | **36** | **12** | **17** | **20** |

### 3.2.4 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 : increase in cultivated area, increase in cropped area through an increase in cropping intensity and more timely completion of various operations (Table 3.18). 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.

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

**A**s 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 disbursal 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 disbursal 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 lack of knowledge about the availability of subsidy on some of the equipment had been an important reason for not availing the

subsidy (Table 3.19). Of the 8 farmers who reported lack of knowledge as the reason, 5 belonged to large size farm category. The second most important reason cited was the exhaustion of the subsidy quota for the year in which they wanted to buy equipment. Four farmers however reported non cooperation of the officials in providing subsidy. However only a few farmers had any complaints either about the cumbersomeness of the procedure prescribed for availing of the subsidy or the corruption in the process of disbursal of the subsidy.

**Table 3.18 : 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 | Higher crop yields |
|---|---|---|---|---|---|---|---|
| Marginal | 1 | 2 | | | | | |
| Small | 1 | 1 | 1 | | 3 | 2 | |
| Medium | 2 | 2 | 2 | 1 | 2 | 1 | |
| Large | 11 | 7 | 4 | 1 | 3 | 11 | 1 |
| **Total** | **15** | **12** | **7** | **2** | **8** | **14** | **1** |

**Table 3.19 : Reasons for not availing subsidy by farmers who bought agricultural implements but did not get subsidy**

| Size Group | Lack of knowledge about the subsidy | Officials refused to provide subsidy | Annual subsidy quota on the implement exhausted | Implement not available with the authorized dealer | Lengthy and cumbersome process | Lot of corruption | Others |
|---|---|---|---|---|---|---|---|
| Marginal | | 1 | 1 | | | | |
| Small | | 1 | 2 | | | | |
| Medium | 3 | | | | 1 | 1 | |
| Large | 5 | 1 | 2 | 1 | 2 | 1 | |
| **Total** | **8** | **4** | **5** | **1** | **3** | **2** | **0** |

### 3.2.6 Demand for Subsidy

A 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. 33 of the 135 farmers (about 24 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 such as tractors. Of the various equipment cited, the two most important equipment preferred by the farmers are rotavators (preferred by 48 percent of farmers willing to buy) and tractors (preferred by about 39 percent) (Table 3.20).

**Table 3.20 : Number of farmers who wanted to buy implements but did not buy because subsidy was not available**

| Size Group | Total Number of farmers | Number of farmers who wanted to buy some implements had subsidy been available | Nature of implements which the farmers wanted to buy had the subsidy been available | | | | |
|---|---|---|---|---|---|---|---|
| | | | Tractor | Seed-cum Fert drill | Rotavator | Straw Reaper | others |
| Marginal | 37 | 2 | 1 | | 1 | | |
| Small | 40 | 9 | 3 | | 6 | | |
| Medium | 19 | 10 | 4 | 1 | 5 | | |
| Large | 39 | 12 | 5 | | 4 | 2 | 1 |
| **Total** | **135** | **33** | **13** | **1** | **16** | **2** | **1** |

### 3.3 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.

#### 3.3.1 Participation in IPM Demonstration/Training Programs

The participation in IPM demonstration/ training programs has not been very encouraging. Of the total sampled farmers only about 13 percent have reported participation in any demonstration/ training program on IPM ever since it was introduced (Table 3.21). There are however substantial across farm size group differences in participation in these programs. While more than one fourth of the sampled large farmers reported their participation , only about 5 percent of marginal farmers, 7 percent of small farmers and about 11 percent of medium farmers reported having attended any IPM demonstration/ training program.

**Table 3.21 : Participation in IPM demonstration/training program**

| Size Group | Total farmers | Number who attended program | Percent attending program |
|---|---|---|---|
| Marginal | 37 | 2 | 5.4 |
| Small | 40 | 3 | 7.5 |
| Medium | 19 | 2 | 10.5 |
| Large | 39 | 10 | 25.6 |
| **Total** | **135** | **17** | **12.6** |

### 3.3.2 Reasons for non Participation in IPM Demonstrations/Training Programmes

Non participation by almost 87 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 3.22). This holds true across all size groups of farms. Other important reasons cited by a relatively large number of farmers included – small size of the farm, wrong time at which the program is held due to which they can not participate, and the program not held in the vicinity of their village.

**Table 3.22: Reasons for not participating in IPM training/demonstration program by farmers who have not attended any program (number of farmers)**

| **Size** | **REASONS** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Group** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| Marginal | 1 | 4 | 1 | 1 | | 4 | | 3 | 3 | | | 5 |
| Small | 3 | 13 | 2 | | 3 | 8 | 1 | 13 | 10 | 1 | | 3 |
| Medium | 1 | 3 | 4 | 1 | 1 | 3 | 1 | 6 | 2 | | 3 | |
| Large | | 2 | | 2 | 3 | 3 | | 8 | 7 | | | 1 |
| **Total** | **5** | **22** | **7** | **4** | **7** | **18** | **2** | **30** | **22** | **1** | **3** | **9** |

**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

### 3.3.3 Farmers Practicing IPM

While training/ demonstration of a technology is one part of the story, its successful adoption by the farmers is another part. There could often be a lag between the time the training is imparted and the farmers actually start adopting the technology. Without allowing for this time lag we tried to ascertain from the farmers as to how many of them have actually been practicing IPM. Of the total 17 farmers who underwent training/ participated in the demonstration programs of IPM only 2 reported actually practicing it on their farm (Table 3.23).

**Table 3.23 : Number of farmers practicing IPM**

| Size Group | Total farmers | Number who attended program | Number of farmers actually practicing IPM |
|---|---|---|---|
| Marginal | 37 | 2 | 1 |
| Small | 40 | 3 | 0 |
| Medium | 19 | 2 | 0 |
| Large | 39 | 10 | 1 |
| **Total** | **135** | **17** | **2** |

### 3.4 Strengthening of Agricultural Extension Services

Faced with a steep decline in the quality of agricultural extension services provided to the farmers in the state over the years and revisiting the relevance of agricultural extension zservices in delivery of technology and for achieving increases in cop output there has been a renewed interest in revitalizing the agricultural extension services not only in Haryana but in many other parts of the country. Haryana has taken up the task of strengthening of agricultural extension services in the state as a New Initiative program under the MM scheme. Under this scheme the government organizes demonstrations/ training programs on various aspects of agricultural production process and these services are provided free of cost to the farmers.

In our sample 38 of the 135 farmers (constituting about 28 percent) reported having participated in one or the other program on agricultural extension services (Table 3.24). The participation rate however differed significantly across different farm size groups with maximum participation reported by farmers belonging to large size group. The participation rate in the other three size groups was much lower with marginal farmers reporting least participation rate of about 16 percent.

**Table 3.24 : Strengthening of Agricultural Extension Services**

| Size Group | Total farmers | Number of farmers who participated any program on extension services | Percentage |
|---|---|---|---|
| Marginal | 37 | 6 | 16.2 |
| Small | 40 | 10 | 25.0 |
| Medium | 19 | 2 | 10.5 |
| Large | 39 | 20 | 51.3 |
| **Total** | **135** | **38** | **28.1** |

Of the various lessons learnt from participation in different training programs organized under this scheme, the largest number of farmers reported having learnt about water management (28 farmers) followed by information on new crop varieties (by 19 farmers) (Table 3.25). Other important lessons learnt during the training related to use of agricultural implements ( 16 farmers), new cultivation methods (14 farmers) and use of bio fertilizers ( 14 farmers).

### 3.4.1 Reasons for not participation in extension programs

Since a very large number of sampled farmers reported not having participated in any of the various programs organized to strengthen extension services we tried to ascertain from such farmers the important reason(s) for their not doing so. The results obtained suggest that a large number of farmers (31 farmers) ascribed their non participation to the small size of their farm and therefore their perception about the non utility of such programs for them (Table 3.26). Apart from the small size of the farm (cited by 31 farmers) other important reasons cited by farmers for non participation include – wrong time of the year at which the program is held (cited by 25 farmers), improper dissemination of information about the date and timings of the program (cited by 23 farmers) and program held at a village/place distant from their village (cited by 16 farmers). The farmers however did not cite non effectiveness of the methods of traing being used to impart training in these programs, or the problems often associated with cumbersomeness of the process involved with participation in such programs or the high cost of participation in such programs as the reasons for their non participation in these programs.

**Table 3.25 : Lessons learnt from participation in programs aimed at strengthening extension services**

| Size Group | Use of new crop varieties | New cultivation technology | Hybrid rice produc-tion | Use of agricul -tural imple-ments | INM includin g micro nutrients | Water manage -ment | Bio fertilisers | Others |
|---|---|---|---|---|---|---|---|---|
| Marginal | 4 | 2 | | 3 | | 6 | 3 | |
| Small | | 2 | | | 1 | 3 | 2 | 2 |
| Medium | | 1 | | 2 | | 2 | 1 | |
| Large | 15 | 9 | 4 | 11 | | 17 | 8 | 1 |
| **Total** | **19** | **14** | **4** | **16** | **1** | **28** | **14** | **3** |

**Table 3.26 : Reasons for not participating in programs aimed at strengthening extension services**

| Size Group | REASONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
| Marginal | 5 | 18 | 3 | | 7 | 6 | | 2 | 4 |
| Small | 4 | 10 | 7 | | 11 | 8 | | 1 | 3 |
| Medium | 2 | 3 | 4 | | 4 | 3 | 1 | 1 | 1 |
| Large | 3 | 0 | 2 | | 1 | 8 | | 1 | 3 |
| **Total** | **14** | **31** | **16** | **0** | **23** | **25** | **1** | **5** | **11** |

**Reasons:**

1. Not interested
2. Small farm size
3. No program in Village vicinity
4. Expensive to participate
5. Information about program not disseminated
6. Wrong time at which program held
7. Method of training not effective
8. Cumbersome procedure for participation
9. Others

### 3.5 Program on promoting Integrated Nutrient Management

As part of the objective of promoting practices of integrated nutrient management the government has been providing awareness services and training to the farmers under the MM scheme. Several components of the program such as strengthening of soil testing program, development of bio villages and promotion of green manuring (dhaincha crop) in summer paddy, popularization of bio fertilizers such as Azotobactor, PSB and other organic formulations, setting up of quality control laboratories for fertilizers etc have been taken up under the MM scheme.

Of the 135 sampled farmers 53 farmers ( 39 percent) reported having got their soil tested in the recent past (Table 3.27). The proportion of large farmers who got their soil tested was much higher than those belonging to the other three size groups.

While about 19 percent of these households who got their soils tested had got it done before the start of the MM scheme. The remaining almost 81 percent of such farmers however got their soil sample tested after the introduction of MM program.

**Table 3.27 : 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 | 37 | 9(24.3) | 0 | 4 | 5 |
| Small | 40 | 16(40.0) | 2 | 6 | 8 |
| Medium | 19 | 7(36.8) | 1 | 5 | 1 |
| Large | 39 | 21(53.8) | 7 | 6 | 8 |
| **Total** | **135** | **53(39.3)** | **10 (18.9)** | **21(39.6)** | **22(41.5)** |

### 3.5.1 Production and Use of vermin compost

Along with the need for undertaking soil test, the integrated nutrient management approach 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 not been effective in enthusing farmers to use vermin compost. Only 2 of the 135 farmers reported use of vermin compost on their farms (Table 3.28). Both the users of vermi compost however reported not having received any subsidy from the government on this account.

**Table 3.28 : Integrated Nutrient Management: Production and Use of Vermi Compost**

| Size Group | Total number of farmers | Number of farmers who produce and/or use vermin compost on their farm | Number of farmers who got subsidy |
|---|---|---|---|
| Marginal | 37 | 1 | 0 |
| Small | 40 | 0 | 0 |
| Medium | 19 | 0 | 0 |
| Large | 39 | 1 | 0 |
| **Total** | **135** | **2** | **0** |

### 3.5.2 Cultivation of Dhaincha

Another component of the strategy for promoting integrated nutrient management is encouraging farmers to cultivate dhaincha crop- a green manure. The awareness about the usefulness of dhaincha crop is already there

in the region but it is not being cultivated on any significant scale. About 33 percent of the sampled farmers reported cultivation of dhaincha crop on their farms (Table 3.29). However only about one third of those cultivating dhaincha actually got subsidy for cultivating dhaincha. While the cultivation of dhaincha crop was reported by all size groups of farms, the proportion of farmers cultivating dhaincha in large size group farms was much higher than in the other three size groups of farms.

Our interaction with the farmers suggest that while farmers are convinced about the utility of cultivation of dhaincha crop and are willing to adopt it on a large scale even without availability of subsidy, the main constraint in expanding its cultivation is the constraint on availability of water for cultivating dhaincha.

**Table 3.29 : 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 | 37 | 5(13.5) | 0 (0) |
| Small | 40 | 12(30.0) | 6(50.0) |
| Medium | 19 | 4 (21.1) | 1(25.0) |
| Large | 39 | 23(59.0) | 9(39.1) |
| **Total** | **135** | **44(32.6)** | **16(36.4)** |

### 3.5.3 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 been promising. Of the 135 sample households 27 farmers (or about 20 percent)

reported having participated in one of the demonstration/ training program on use of bio fertilizers (Table 3.30). Of the 27 farmers who attended one of these programs, 6 farmers reported having used bio fertilizers on their farm.

**Table 3.30 : Integrated Nutrient Management: Bio Fertilisers**

| Size Group | Total number of farmers | Number of farmers who attended any program on use of bio fertilizers | Number of farmers using bio fertilizers on crops |
|---|---|---|---|
| Marginal | 37 | 4(10.8) | 2 |
| Small | 40 | 6(15.0) | 1 |
| Medium | 19 | 0 | 0 |
| Large | 39 | 17(43.6) | 3 |
| **Total** | **135** | **27(20.0)** | **6** |

## 3.7 Schemes Undertaken Under New Initiatives of the State Government

As part of the New Initiative, the State government is allowed to take up certain schemes relevant to a particular state. In the following paras we briefly evaluate three of such schemes initated by the government of Haryana as part of the broader MM scheme.

### 3.7.1 Subsidy on Rodent Control

As part of its efforts to control rodents, the government has launched a program under the New Initiatives component of the MM scheme to provide subsidy on use of rodenticides. Almost 72 percent of the sampled farmers reported having received rodenticieds on subsidised rates/free of cost from the official agencies (Table 3.31). Receipt of rodenticides by farmers on such high scale implies high success rate of this program.

**Table 3.31 : Subsidy on Rodent Control**

| Size Group | Total farmers | Number who got subsidised/ free supply of rodenticides | Percent |
|---|---|---|---|
| Marginal | 37 | 27 | 73.0 |
| Small | 40 | 25 | 62.5 |
| Medium | 19 | 11 | 57.9 |
| Large | 39 | 34 | 87.2 |
| **Total** | **135** | **97** | **71.9** |

### 3.7.2 Bee Keeping

The government has been organizing training programs on bee keeping to promote cross pollinisation in groups. The participation of our sampled farmers in these training program has been quite low – less than 7 percent of the sampled farmers reported having participated in training on bee keeping (Table 3.32). Of the 9 farmers who underwent training in bee keeping however none has actually started practicing bee keeping.

**Table 3.32 : Bee-keeping**

| Size Group | Total farmers | Number of farmers who underwent any training on bee keeping | Number of farmers who underwent training practicing bee-keeping |
|---|---|---|---|
| Marginal | 37 | 1 | 0 |
| Small | 40 | 0 | 0 |
| Medium | 19 | 2 | 0 |
| Large | 39 | 6 | 0 |
| **Total** | **135** | **9** | **0** |

### 3.7.3 Control of Congress Grass

Under the MM scheme the government has launched a program for control of congress grass in the farmers fields. As part of this scheme the government provides training to farmers in controlling congress grass. Of the 135 sampled farmers, 38 farmers (28 percent) reported participation in training program for control of congress grass (Table 3.33). The participation by farmers was much higher in the large size group of farms as compared to the other three size groups.

An important indicator of the success of the training imparted is provided by the number of farmers who actually start following the practices learnt during the training. Of the 38 farmers who underwent training in control of congress grass 34 farmers (89 percent) reported following the practices learnt during the training. Almost all the farmers who have reported adopting the practices learnt during the training opined that the practices learnt during the training have been very effective in achieving the desired purpose.

**Table 3.33 : Program on control of congress grass**

| Size Group | Total farmers | Number of farmers who underwent training on control of congress grass | Number of farmers who follow the practices learnt during training | Number of farmers reporting positive effectiveness of the practices learnt |
|---|---|---|---|---|
| Marginal | 37 | 6 (16.2) | 5 (83.3) | 5 (100.0) |
| Small | 40 | 10(25.0) | 9(90.0) | 9(100.0) |
| Medium | 19 | 2 (10.5) | 2(100.0) | 2(100.0) |
| Large | 39 | 20(51.3) | 18(90.0) | 17(94.4) |
| **Total** | **135** | **38 (28.1)** | **34(89.5)** | **33(97.1)** |

## 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 Haryana, 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 Kurukshetra in Haryana.

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

**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.
- The adoption of certified seeds is not restricted only to large farms – farmers of all size groups of farms have adopted cultivation of certified seeds though the extent of adoption may have been different across different farm size groups. Almost 88 percent of the sampled respondents reported cultivation of certified seeds of both paddy and wheat crops.

- A perusal of the differences 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 and wheat both, while the extent of adoption by large size group of farmers was higher in the pre MM period as compared to post MM period, in the case of the other three size groups of farms, the extent of adoption during post MM period was much higher than that in the pre MM period. This holds true for both paddy and wheat. 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.

- A majority of the farmers cultivating certified seeds of both paddy and wheat reported procuring these seeds from the open market rather than from the government authorized shops. The most important reason for this tendency was the non availability of certified seeds with the authorized dealers at the time when these seeds were required by the farmers. Coupled with non availability, farmers reported either no or little difference between the seed price at the authorized shops and the price at which these seeds were available in the open market as an additional reason for depending more on market. Some farmers also cited non availability of any authorized shop/dealer in the vicinity of their village as a reason for relying on open market. However majority of the farmers did not cite difference in quality of seed available in the open market and authorized dealer as a reason for relying on market. No farmer cited any problems relating to the procedure/ process involved in procuring seeds from the government/ authorized shop.

- On the reasons for use of certified seeds by the farmers, the results obtained suggest that it is not the availability of subsidy or the difference

in price between certified and traditional seeds that have *per se* driven the farmers to use certified seeds. 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. The non significance of subsidy as the driver for adoption of certified seeds however does not imply that subsidy has played no role in encouraging adoption of certified seeds. The availability of subsidy has helped in bringing price of certified seeds both in the authorized shop initially and open market subsequently to affordable level and this reduction/ equalization in prices seems to have facilitated at least in part to adoption of certified seeds.

- Most of the non users of certified seeds belong to marginal and small farmers category. Of the various reasons cited for non adoption the important ones relate to either non availability of subsidy or lack of availability of seeds in the vicinity of their village. A very small number of farmers (3 farmers) reported lack of awareness about the certified seeds also as the reason for non adoption.

- Of the total paddy area sown by the sampled farmers, certified seeds were sown on about 58 percent of the area while in the case of wheat, area cultivated with certified seeds constituted about 53 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 adoption of 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, much larger efforts need to be made to ensure the availability of required quantity of certified seeds at a time when these are required by the farmers. The network of authorsied shops/ sales depots need to be enhanced so that farmers can procure the seeds conveniently either within or near their own village. 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.

### 4.1.1 Hybrid Seed Technology Demonstration Program

**Main Findings**

- Based on the responses received from the sampled farmers and keeping in view the financial allocations made in different years for this component, the participation rate of sampled farmers in the technology demonstration program appears satisfactory
- Of the various reasons cited by the sampled farmers, the most important reasons for not participating in this program, are the small size of the farm and lack of awareness about the program. A significant number of

sampled respondents also cited wrong time at which the program is held and long distance of the place at which the program was held as other reasons for not participating in the program.

- A perusal of the across farm size group differences for non participation suggest that while in the case of marginal and small farms the most important reason cited was small size of the farm and lack of awareness about the program, in the case of large farmers also lack of awareness about the program was cited as the most important reason for their non participation

- Although a small proportion of farmers reported cultivation of hybrid seeds on their farms, however none of the farmers reported having received any subsidy from the official agencies. While we could not formally ascertain the reasons for not availing subsidy by the farmers our interaction with farmers suggest possible lack of awareness about the subsidy on hybrid seeds as an important factor.

- The results obtained suggest that of the farmers who participated in the technology demonstration/ training program, a significant proportion of farmers are producing hybrid seeds on their farms. However of those who attended the program only a few reported applying lessons learnt in the training program in their production program.

**Suggested Interventions/ Actions**

- Efforts to promote hybrid seeds technology program need to be strengthened. More efforts need to be made in creating awreness about the program. Careful planning about the timing of holding the demonstration/training program may help increase participation rates of farmers in such programs.

- The contents of the training program and method of imparting training also needs to be strengthened so that farmers are able to effectively apply the lessons learnt during the training in their production programs.
- There appears to be lack of knowledge about the availability of subsidy on producing hybrid seeds by the farmers. Making farmers aware of this incentive is likely to help increase adoption of their cultivation by the farmers.

**4.2 Promotion of Agricultural Mechanisation**

**Main Findings**

- During the period between 2001 and 2009, of the 135 farmers only 36 farmers bought any agricultural implement/ equipment. These 36 farmers in between them bought a total of 45 implements. Of these 45 implements/equipment bought by the sampled farmers during this period, 24 implements were not eligible for availing of subsidy under either the MM scheme or the state scheme. Of the remaining 21 implements eligible for subsidy, the farmers could avail of the subsidy on 12 implements (constituting 57 percent) under the MM/ state 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. 17 of the 36 farmers (constituting 47 percent of farmers) 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 : increase in cultivated area, increase in cropped area through 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.

- The results obtained suggest lack of knowledge about the availability of subsidy on some of the equipment had been an important reason for not availing the subsidy. The second most important reason cited was the exhaustion of the subsidy quota for the year in which they wanted to buy equipment. Some farmers however reported non cooperation of the officials in providing subsidy. However only a few farmers had any complaints either about the cumbersomeness of the procedure prescribed for availing of the subsidy or the corruption in the process of disbursal of the subsidy.

- A 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. Of the various equipment cited, the two most important equipment preferred by the farmers are rotavators and tractors.

**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 list of implements eligible for subsidy may be expanded to include some of the traditional but most demanded implements such as a tractor etc. Further the allocation of subsidy amongst different implements currently eligible for subsidy to allocate larger funds for equipment most in demand (such as a rotavator) will contribute to better utilization of the subsidy.
- 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.

## 4.3 Scheme for Integrated Pest Management (IPM)

**Main Findings**

- The participation in IPM demonstration/ training programs has not been very encouraging. Of the total sampled farmers only about 13 percent

have reported participation in any demonstration/ training program on IPM ever since it was introduced

- Non participation by a large proportion of farmers was due to non dissemination of the program information. This holds true across all size groups of farms. Other important reasons cited by a relatively large number of farmers included – small size of the farm, wrong time at which the program is held due to which they can not participate, and the program not held in the vicinity of their village.
- Of the total 17 farmers who underwent training/ participated in the demonstration programs of IPM only 2 reported actually practicing it on their farm

**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.
- The low adoption of IPM practices by even those farmers who actually attended the training program/demonstration program point to either the ineffectiveness of the training imparted or lack of post training support and/or non availability of necessary equipment such as pheromone traps etc. The perceived lack of effectiveness of IPM technology if adopted by

only a few of the farmers in a village could be another reason for its low adoption.

- 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.

## 4.4 Strengthening of Agricultural Extension Services

### Main Findings

- Relatively small proportion of farmers (about 28 percent) reported having participated in one or the other program on agricultural extension services
- Apart from the small size of the farm, other important reasons cited by farmers for non participation include – wrong time of the year at which the program is held , improper dissemination of information about the date and timings of the program and program held at a village/place distant from their village.
- The farmers however did not cite non effectiveness of the methods of training being used to impart training in these programs, or the problems often associated with cumbersomeness of the process involved with participation in such programs or the high cost of participation in such programs as the reasons for their non participation in these programs.

### Suggested Interventions/ Actions

- Revitalization of agricultural extension services is an important component of the MM scheme in Haryana and going by the financial

allocations made under the program, the program appears to have done well in the State. The farmers reported their satisfaction with the method of training imparted and did not complain about the procedures for participation in such training programs. Much more efforts however still need to be made to extend the reach of the program and make participation in the program more widespread and effective.

- More wider and timely dissemination about the dates of the training and synchronizing these dates with the convenience of the farmers would help in increasing the participation rate amongst farmers and in making participation more effective. Specific programs according to their felt needs for marginal and small farmers would encourage their larger participation.

## 4.5 Program on promoting Integrated Nutrient Management

### Main Findings

- Soil testing : The program on promoting and encouraging soil testing as part of integrated nutrient management program under the MM scheme appears to have been taken up in all its earnest by farmers. The program on popularization of use of vermin compost does not seem to have got any significant start. Much larger efforts need to be invested in creating awareness about the utility of use of vermin compost and in providing the right incentives for them to adopt using it.

- Dhaincha crop : The awareness about the usefulness of dhaincha crop in the region is already there. However its adoption by the farmers has not been very widespread.
- Apart from the constraints on availability of water some farmers doubt its financial viability as well.
- Providing subsidy on dhaincha seed to encourage its adoption is a right strategy but the dispersal of subsidy has not been effective either due to lack of knowledge on the part of the intended beneficiaries or in the process of disbursal of subsidy.
- Bio fertilizers : Being a relatively new input the bio fertilizer program has not taken up at the level at which it should ideally be.
- Despite participation in training/demonstration by a fairly large number of farmers its adoption has not been up to the expected level.

**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 soil testing.
- More efficient arrangement for dispersal of subsidy on dhaincha seeds needs to be evolved to give a fillip to the cultivation of dhaincha crop by the farmers.
- While reasons for non adoption of bio fertilizers by farmers need to be enquired in to, our interactions suggest a reorientation of the program and making the awareness/ training more effective and relevant.

## 4.6 Programmes Undertaken under New Initiatives

### 4.6.1 Program on Rodent Control

**Main Findings**

- The program on making rodenticides available to farmers on subsidy/free of cost has been very effective and a large number of farmers have benefitted from the program.

**Suggested Interventions/ Actions**

The program needs to be continued and further improved upon

### 4.6.2 Bee Keeping

**Main Findings**

- The participation of our sampled farmers in these training program has been quite low – less than 7 percent of the sampled farmers reported having participated in training on bee keeping.
- Of the 9 farmers who underwent training in bee keeping however none has actually started practicing bee keeping

**Suggested Interventions/ Actions**

- The programme on Bee-keeping has not picked up amongst the farmers. While we could not ascertain the reasons for lack of enthusiasm amongst the farmers to this program we believe that part of this lack of enthusiasm could be due to meager efforts made in the MM program to promote this activity by the farmers.
- While the reasons for non adoption of this activity by 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.

### 4.6.3 Program on control of congress grass

**Main Findings**

- Of the 38 farmers who underwent training in control of congress grass 34 farmers (89 percent) reported following the practices learnt during the training.

- Almost all the farmers who have reported adopting the practices learnt during the training opined that the practices learnt during the training have been very effective in achieving the desired purpose.

**Suggested Interventions/ Actions**

- The program on providing training for control of congress grass by farmers in their fields has been effective though its reach so far has been somewhat limited. Continued and more vigorous efforts in imparting training could help increase the coverage of the otherwise effective program.

# APPENDIX TABLES

**Table A1: Work Plan on Macro Management Scheme – Physical targets and Financial Allocations During 2005-06 – Haryana**

| Sr No | Programme | Units | Physical targets | Financial Outlays (Rs in Lakhs) |
|---|---|---|---|---|
| 1 | **Scheme for assessment, monitoring, survey and analysis/ Recharge of groundwater in the state** | | | 3.00 |
| 2. | **Strengthemning of Agricultural Extension Services** | | | 109.00 |
| | Exchange visits of farmers | No | 6 | 3.40 |
| | Framer –Scientist interaction at all RRS, HAU | No | 16 | 1.60 |
| | Training of farmers on improved cultivation operations, water management etc | No | 140 | 7.00 |
| | Demonstration on latest production technology on paddy, bajra, wheat | No | 280 | 2.80 |
| | Training aids and material for farmers at CAO level | No | 15 | 7.50 |
| | Exposure of farmers to production technology in Krishi expos etc | | | 9.70 |
| | Organisation of seminars, workshops, training etc | No | 4 | 3.00 |
| | Information Technology | | | 40.00 |
| | Agri Business | | | 4.00 |
| | Maintenance and POL | | | 10.00 |
| | Strenbtening of R and D in priority areas- dissemination of technology on rock phosphate / improved population of Munjal breed of sheep | | | 20.00 |
| 3. | **Popularisation of Use of certified Seeds** | | | 409.78 |
| | Subsidy on certified seed of paddy, bajra, barley and wheat | Lakh qtls | 1.97 | 393.28 |
| | Subsidy for hybrid seed production to seed producing agencies and farmers | | | 10.00 |
| | 300 demons on maize crop | | | 3.00 |
| | Strengthemning of seed testing labs | | | 3.50 |

| | | | | |
|---|---|---|---|---|
| 4 | **Integrated Nutrient Management** | | | 87.00 |
| | Strengthening of Soil Testing Programme | | | 45.00 |
| | Promotion of vermin compost assistance to farmers for production and use of vermin compost | No | 2000 | 24.00 |
| | Supply of Dhaincha seeds for demonstration | acres | 3800 | 8.00 |
| | Supply of azectobactor/ rhizobium culture/ PSB for demonstration | Acres | 3800 | 4.00 |
| | Demonstration on use of bio-fertilisers in kharif/rabi crops | Hect | 6000 | 6.00 |
| 5 | **Promotion of Agricultural Mechanisation** | | | 190.00 |
| | Subsidy on zero seed cum fertilizer drill | No | 2000 | 85.00 |
| | Subsidy on Bed Planter | No | 100 | 8.00 |
| | Subsidy on Potato Planter | No | 150 | 9.00 |
| | Subsidy on seed cum fertilizer drill (multi crop) | No | 50 | 1.25 |
| | Subsidy on Ridger Seeder | No | 80 | 2.50 |
| | Subsidy on potato digger | No | 50 | 3.00 |
| | Subsidy on self propelled power weeder/ reaper/ sprayer | No | 15 | 2.25 |
| | Subsidy on reverse Ridger machine capacity 250 mt | No | 1 | 64.00 |
| | Subsidy on Mini Dal mill, hand ridger etc | | | 15.00 |
| 6. | **Integrated Pest Management (IPM)** | | | 96.30 |
| | IPM villages on paddy (200 hcet each @ Rs 500 per hect) | Ha | 1600 (8 No) | 8.00 |
| | FFS | No | 20 | 3.40 |
| | Subsidy on popularization of light traps | Nos | 1000 | 3.00 |
| | Subsidy on Popularization of light trap | Ha | 1000 | 3.00 |
| | Monitoring of pesticide residue | No | 1 | 1.00 |
| | Rodent control | Lakh Ha | 3.50 | 5.00 |
| | Supply of insecticides and repair of PP equipment | Ha | 7000 | 10.50 |
| | Monitoring of pesticide residue | | | 1.00 |

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|---|---|---|---|---|
| 7 | **Sustainable Development of Sugarcane Based Cropping System** | | | 126.00 |
| | Field Demonstrations | Nos | 500 | 25.00 |
| | IPM Demonstrations | Nos | 500 | 27.00 |
| | IPM Villages | Nos | 18 | 27.00 |
| | State Level Training | Nos | 2 | 0.50 |
| | Farmer training camps | Nos | 100 | 1.50 |
| | Tractor drawn Agricultural implements | Nos | 134 | 20.00 |
| | Assistance to sugar mills for multiplication of early maturing seeds | Ha | 20 | 2.00 |
| | Demonstrations on pit sowing method | Ha | 150 | 15.00 |
| | Multiple Ratooning | Ha | 400 | 8.00 |
| 8 | **Conservation of Natural Resources** | | | 560.00 |
| | Integrtaed watershed management in catchment of flood prone river (Ghaggar) | | | 180.00 |
| | National watershed development project for rainfed areas | | | 180.00 |
| | Scheme for reclamation of degraded alkali soils | Ha | 10526 | 200.00 |
| 9. | **Improved On Farm Water Management** | | | 100.00 |
| | Subsidy on installation of sprinkler sets | | | 50.00 |
| | For flat topographic areas under rice-wheat and cotton-wheat cropping systems- subsidy for laying of underground pipeline | Ha | 800 | 50.00 |
| 10 | **Strengthening of new quality control laboratories of fertilisers** | | | 87.00 |
| 11 | **Strengthening of Agmark Laboratories** | | | 10.00 |
| | **GRAND TOTAL** | | | **1777.78** |
| | | | | |

**Table A2 : Work Plan on Macro Management Scheme – Physical targets and Financial Allocations During 2006-07 – Haryana**

| Sr No | Programme | Units | Physical targets | Financial Outlays (Rs in Lakhs) |
|---|---|---|---|---|
| 1 | Strengthening of Hydro Geological Network Stations | | | 20.00 |
| 2. | Strengthening of Agricultural Extension Services | | | 140.00 |
| | Exchange visits of farmers | No | 6 | 0.30 |
| | Training of farmers on improved cultivation operations, water management etc | No | 140 | 7.00 |
| | Demonstration on latest production technology on paddy, bajra, wheat | No | 280 | 2.80 |
| | Training aids and material for farmers at CAO level | No | 20 | 10.00 |
| | Exposure of farmers to production technology in Krishi expos etc | | | 7.70 |
| | Organization of seminars, workshops, training etc | No | 6 | 4.50 |
| | Information Technology | | | 50.00 |
| | Agri Business | | | 50.00 |
| | Maintenance and POL | | | 5.00 |
| 3. | **Popularisation of Use of certified Seeds** | | | 517.00 |
| | Subsidy on certified seed of paddy, bajra and wheat | Lakh qtls | 500 | 500.00 |
| | Subsidy for hybrid seed production to seed producing agencies and farmers | Lakh Qtls | 10 | 10.00 |
| | 300 demons on maize crop | | 3 | 3.00 |
| | Strengthemning of seed testing labs | | | 4.00 |
| 4 | **Integrated Nutrient Management** | | | 157.00 |
| | Strengthening of Soil Testing Programme | | | 15.00 |
| | Promotion of vermin compost assistance to farmers for production and use of vermin compost | No | 2000 | 24.00 |
| | Supply of Dhaincha seeds for | acres | 3800 | 8.00 |

| | | | | |
|---|---|---|---|---|
| | demonstration | | | |
| | Supply of azectobactor/ rhizobium culture/ PSB for demonstration | Acres | 3800 | 4.00 |
| | Demonstration on use of bio-fertilisers in kharif/rabi crops | Hect | 6000 | 6.00 |
| | Setting up of a new quality control fertilizer lab and strengthening of existing quality control labs | | | 100.00 |
| 5 | **Promotion of Agricultural Mechanisation** | | | 567.00 |
| | Subsidy on zero seed cum fertilizer drill | No | 1500 | 64.00 |
| | Subsidy on Rotavator | No | 2500 | 375.00 |
| | Subsidy on Bed Planter | No | 50 | 4.00 |
| | Subsidy on Potato Planter | No | 100 | 4.00 |
| | Subsidy on seed cum fertilizer drill (hybrid cotton) | No | 50 | 1.75 |
| | Subsidy on potato digger | No | 100 | 6.25 |
| | Subsidy on self propelled power weeder/ reaper/ sprayer | No | 15 | 2.25 |
| | Subsidy on Ridger seeder | No | 100 | 3.375 |
| | Subsidy on straw reaper | No | 300 | 75.00 |
| | Subsidy on post hole digger | No | 50 | 4.375 |
| | Subsidy on Mini Dal mill | No | 400 | 25.00 |
| | Subsidy on pedal operated paddy thresher | No | 320 | 2.00 |
| 6. | **Integrated Pest Management (IPM)** | | | 71.38 |
| | IPM villages on paddy (200 hcet each @ Rs 500 per hect) | Ha | 4000 (20 No) | 20.00 |
| | FFS | farmers | 900 (30 No) | 5.10 |
| | Subsidy on popularization of light traps | Nos | 100 | 0.30 |
| | Supply of insecticides and repair of PP equipment | Ha | 20000 | 30.00 |
| | Monitoring of pesticide residue | No | 1 | 1.00 |
| | Rodent control | Ha | 1060000 | 10.00 |
| | Bee keeping (training of farmers- 20 training camps) | No | 1000 farmers | 4.28 |
| | Control of congress grass (training of farmers) | No | 1000 farmers | 0.70 |

| | | | | |
|---|---|---|---|---|
| 7 | **Sustainable Development of Sugarcane Based Cropping System** | | | 129.00 |
| | Field Demonstrations | Nos | 600 | 30.00 |
| | IPM Demonstrations | Nos | 500 | 30.00 |
| | IPM Villages | Nos | 21 | 31.50 |
| | State Level Training | Nos | 2 | 0.50 |
| | Farmer training camps | Nos | 100 | 1.50 |
| | Assistance to sugar mills for multiplication of early maturing seeds | Ha | 25 | 2.50 |
| | Demonstrations on pit sowing method | Ha | 150 | 15.00 |
| | Multiple Ratooning | Ha | 500 | 10.00 |
| | Moist head treatment plant | Nos | 4 | 8.00 |
| 8 | **Conservation of Natural Resources** | | | 530.00 |
| | Integrated watershed management in catchment of flood prone river (Ghaggar) | | | 180.00 |
| | National watershed development project for rainfed areas | | | 150.00 |
| | Scheme for reclamation of degraded alkali soils | Ha | 10526 | 200.00 |
| 9. | **Improved On Farm Water Management** | | | 100.00 |
| | Subsidy on installation of sprinkler sets | | | 50.00 |
| | For flat topographic areas under rice-wheat and cotton-wheat cropping systems- subsidy for laying of underground pipeline | Ha | 800 | 50.00 |
| 10 | **Strengthening of Agmark Laboratories** | | | 5.00 |
| 11 | **Scheme for Strengthening of State Land Use Board** | | | 35.75 |
| 12. | Development of weed infested water bodies | Ha | 1200 | 60.00 |
| | **GRAND TOTAL** | | | **2332.13** |
| | | | | |

**Comments by the coordinator and responses thereon**[1]

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 rep[ort 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.

[1] Since the comments received pertained to either Haryana and/or Uttrakahand 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 king 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, andtheir 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 presented clearly and specifically thronging 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 blaocks 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.