

EVALUATION OF MICRO IRRIGATION SCHEME IN KARNATAKA IMPLEMENTED DURING THE PERIOD 2007 - 08 TO 2009 - 10



Submitted to

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EXECUTIVE SUMMARY

Water is a renewable resource. However over exploitation by various human activities has resulted in depletion of ground water table. The ever increasing demand for water from various sectors has rendered water a scarce commodity. Availability of water in appropriate quantity for both industrial and irrigation purposes is under severe stress.

Agriculture is an inevitable activity for survival of human race. Agriculture sector consumes 80% of the country's exploitable water resources. The overall development of the agriculture sector is largely dependent on judicious use of the available water resources.

The inefficient conventional methods of conveyance water adopted in irrigation has led not only in wastage of water but also to several ecological problems like water logging, salinization and soil degradation rendering agriculture lands unproductive.

Efforts were on in various countries to find suitable solution to minimize wastage of water in irrigation. It has been recognised that use of modern irrigation methods are the only alternative for efficient use of surface as well as ground water resources. Therefore, Micro irrigation has been prioritized as the singular factor contributing to the overall development of agriculture sector.

Government of India Initiative:

Government of India is aware of the fact that in spite of having the largest irrigated area in the world, the coverage of irrigation is only 40 percent of the gross cropped area. Considering the water availability for future use and the increasing demand from various sectors, Government of India has introduced a number of demand management strategies and programmes to increase water use efficiency; However the net impact of these strategies in increasing the water use efficiency is not very impressive till date.

One of the strategies introduced recently to control water consumption in Indian agriculture is "**Micro-irrigation**" (MI) which includes mainly drip and sprinkler irrigation method.

Micro-irrigation refers to low-pressure irrigation systems that spray, mist, sprinkle or drip. The term “Micro-irrigation” describes a family of irrigation systems that apply water through small devices delivering water very near to the plant or below the soil into the plant root zone.

Conveying water in an efficient manner has influenced growers, producers and landscapers to adapt micro irrigation systems to suit their needs for precision water application.

Micro-irrigation in Agriculture is used extensively for row crops, mulched crops, orchards, gardens, greenhouses and nurseries

Micro irrigation systems are immensely popular both in arid regions & humid and sub humid zones where water supplies are limited or water is expensive.

Micro irrigation facilitates Water savings, Energy savings, Weed and disease reduction, Automation, Improved production on marginal land etc.

Micro-irrigation systems normally have greater maintenance requirements. Animals, rodents and insects may cause damage to some components. Even though the investment cost would be high Micro-irrigation systems are ideal for high value crops such as orchards, vineyards, greenhouses and nurseries where traditional irrigation methods may not be practical.

Micro irrigation is introduced primarily to save water and to increase water use efficiency in agriculture. It delivers many other economic and social benefits to the society. The reduction in water consumption due to drip irrigation ranges from 30 to 70 percent for different crops. The productivity gain is estimated to be in the range of 20 to 90 percent for different crops. Since Drip irrigation is a new technology and capital-intensive venture, both Central and State government operates schemes with subsidy for promoting drip method of irrigation.

Trends and Achievements so far:

Central scheme was started during 1982-83 (during the Sixth plan). Through this scheme Government of India provided a subsidy of 50 percent to the farmers with matching contribution from the State governments for installation of micro-irrigation devices. During the seventh plan the subsidy was limited to only small and marginal farmers.

However, due to capital paucity, this group could not afford the drip systems even at the subsidised rate and hence the progress during seventh plan was very negligible.

All though remarkable growth has been achieved over the last two decades in adopting micro irrigation, its share to the gross irrigated area of the country is only negligible percent as of today.

Capital-intensive nature of Micro irrigation system is the main reason for the slow progress in adoption of this new technology. Further, there were many restrictions such as the limits in area that a beneficiary could cover under the scheme, cost structure etc that acted as deterrents for wider coverage.

However the Micro-Irrigation Scheme has undergone lot of changes over the years. This is visible in the policy initiative taken by Government of India on Micro-irrigation scheme for the 10th five year plan.

To bring more area under irrigation new techniques viz. Micro and Sprinkler Irrigation for economizing the use of water and increase productivity per unit of water is the best available option. This technology also arrests water logging and secondary salinization problems of the canal command areas and check the receding water table and deteriorating water quality in the well command areas. The estimated potential for the new Technology in the country is 27 & 42.5 Million hectares respectively. It is proposed to implement a Centrally Sponsored Scheme, on Micro Irrigation during the Tenth Five Year Plan covering an area of 1.5 million hectares under drip irrigation and 0.5 million hectares under sprinkler irrigation.

The objective of the scheme is to increase the coverage of area under micro irrigation in the country for improving crop productivity with efficient use of water resources. Micro irrigation is to be viewed with a different perspective as a total plant support system starting with planting material to post harvest management and marketing.

The scheme will be available to all the farming community in the country and the focus will be for the efficient utilization of various inputs as water, fertilizer etc. & increase in productivity & quality of produce.

It is proposed to provide financial assistance @50% of the unit cost for various spaced crops. The financial assistance of 50% would be jointly shared by the centre and state governments in the ratio of 80:20.

The outlay proposed for covering 2 Million hectares under micro/sprinkler irrigation during the Tenth Plan Period will be Rs.7600 Crores

Central government sanctioned the Central Sector Scheme for Micro irrigation during the fag end of financial year 2006-07 and therefore actual implementation of scheme has started from the financial year 2007-08.

Key features of the Micro irrigation (MI) Scheme:

It will be a Centrally Sponsored Scheme under which out of the total cost of MI system, 40% will be borne by the Central Government, 10% by the State Government and the remaining 50% will be borne by the beneficiary either through his/her own resources or soft loan from financial institutions.

Assistance to farmers will be for covering a maximum area of five ha per beneficiary family.

The Panchayati Raj Institutions (PRIs) will be involved in selecting the beneficiaries. All categories of farmers are covered under the Scheme. However, at least 25% of the beneficiaries are to be small & Marginal farmers.

The focus will be on horticultural crops being covered under National Horticulture Mission. A cluster approach will be adopted.

There will be a strong HRD input for the farmers, field functionaries and other stake holder at different levels.

The Scheme will be implemented by an Implementing Agency (IA) appointed by the State Government; Registration of System Manufacturers will be done by the SMIC for use of the Districts

Payment will be made through crossed cheque. If the cheque is in the name of the system supplier, the same will be delivered through the farmer/beneficiary.

Supply of good quality system having BIS marking, proper after sales services to the satisfaction of the farmer is paramount.

The main objectives of Micro-irrigation Scheme:

1. To increase the area under irrigation.
2. To increase the coverage of area under micro irrigation.
3. To promote efficient use of water resources.
4. To increase the yield/productivity of the crop.
5. To improve the economic status of farmers in the region.

Farmers, Drip/Sprinkler companies approved by concerned SMIC and State Department of Horticulture/Agriculture are the main stakeholders in the scheme

Initially, the focus will be on horticulture crops; with emphasis on potential belts/regions in the States suiting to the agro-climatic conditions.

KARNATAKA SCENARIO:

Karnataka State Department of Horticulture has been promoting Drip system of irrigation from the year 1991-92. Since to the end of the year 2004-05, an area of 2.27 lakh hectares belonging to 1.30 lakh farmers have been brought under Drip system of Irrigation. An amount of 450 crores has been spent for providing subsidy.

Centrally Sponsored Scheme for Micro-irrigation:

The scheme was sanctioned during the fag end of the year 2005-06. Therefore, actual implementation of the scheme was started in the year 2006-07

The State Government has constituted State and Districts level Monitoring committee.

Suitable guidelines on 36 important points have been issued to all the implementing officers. The Micro irrigation scheme is being implemented since 2006-07.

As a policy matter, it has been made mandatory to subject all Centrally Sponsored Schemes for third party evaluation to assess its social and economical impact on the targeted group in particular and the society at large. Accordingly, the Micro Irrigation Scheme which has completed first four years of its implementation since 2006-07, is now subjected to third party Evaluation.

The state Department of Horticulture, has entrusted the task of evaluation of the scheme, to the IN-RIMT, Bangalore

OBJECTIVES, TERMS OF REFERENCE AND METHODOLOGY

Objectives:

The State Department of Horticulture through comprehensive evaluation desires to know the level of awareness about Micro irrigation Scheme among the farmers.

Whether the assistance extended by the Government is being put to proper use.

Suggest Policy changes that need to be adopted to make the scheme successful. .

Terms of Reference:

The State Department of Horticulture has set the Terms of Reference

- Economic analysis of MIS with annual, perennial crops
- Evaluation of water use efficiency with Horticulture crops.
- Farmers' response in the adoption of the scheme.
- Involvement of DMIC and drip / sprinkler companies in planning, implementation, monitoring and reporting.
- Impact of technological supports towards productivity enhancement.
- Assessing the nature of inter-relationship and co-ordination between departmental personnel, implementing companies and farmers.
- Nature and efficiency of processing claims and disbursement of subsidy assessment. Whether subsidy has reached the eligible farmer?.
- Study the opportunities & limitations in the implementation of MIS scheme with the farming system.
- Whether subsidy covers all categories of farmers.
- Problems in identifying the farmer beneficiaries.
- Whether there is any change in cropping pattern.:

The Department of Horticulture has suggested the methodology for evaluation.

1. Field based survey to assess the impact of various scheme components.
2. Farmer beneficiary survey and farmer's group survey to assess the process and impact of scheme implementation.

3. Data collection from different project stake holders, Govt. Departmental staff and farmer beneficiaries.
4. Analysis of the available data and reports.

Expectations of evaluation:

It is expected to analyze the impact of the Micro Irrigation Scheme towards increasing productivity by bringing in more area under drip irrigation.

APPROACH:

Immediate action was initiated to gather all primary and secondary information from Directorate of Horticulture.

Field schedules were prepared based on the terms of reference for collecting information from various stake holders in the scheme.

Five Evaluation teams were formed to take up field visits / verification/ interactions with concerned stake holders in the randomly selected 20 districts of the State.

METHODOLOGY.

1. In order to get required data format was designed and sent to concerned DDH (ZP) of 20 districts along with dates of visits to districts and field visits by the evaluators in the specified taluks vide our letter dated 09/02/2011
2. The evaluation teams visited the districts on scheduled dates. They had interaction with DDH, SADH /ADH & MIS dealers. The team elicited required information as per schedules from them.
3. Later, the teams visited randomly selected beneficiary fields located in villages of selected taluks in each of 20 districts. The visit to beneficiary field was followed by interaction with the concerned beneficiary and other farmers in the neighbourhood.
4. The core group review discussions were held regularly to monitor the progress of evaluation.
5. The evaluation teams gathered all required information from the concerned stake holders.

6. The information so gathered was subjected to analysis.

Evaluation:

The financial achievement during the period subjected for evaluation is in the range of,

Sl.No.	Financial Year	% Achievement
1.	2007-08	74.02
2.	2008-09	78.73
3.	2009-10	99.99

The financial achievement has been steady and reached its peak of 100% in the third year itself. The performances in the first two years under review are also very good indicating the zeal of the implementing agencies and eagerness of farmers for adopting the Micro irrigation System.

Economic analysis of MIS with annual, perennial crops:

All the officers working in 20 selected districts have expressed in unison that, adoption of Micro irrigation system has ushered in an economic change in the beneficiary families. They have stated that the change is for the good:

The evaluation teams during the course of their visit to 413 villages have met a total of 1618 beneficiaries falling under various categories and had interaction to ascertain from them on the benefits of MIS.

Irrespective of the category, all the beneficiaries have expressed that, the higher income generation after installation of micro irrigation is attributed to its positive influence on various factors such as growth plants/ bearing/ yield / quality of produce/ and expenditure on weeding & irrigation.

The responses of sample beneficiaries indicate that the water usage in horticulture crops after adopting micro irrigation has helped them increasing period of irrigation, spread of intervals.

All the 1618 beneficiaries have expressed that MIS serves the purpose.

98.57% beneficiary farmers have said that they received subsidy.

67.40% beneficiaries have changed the cropping pattern.

Virtually the DMIC has been a non starter in all the districts.

The IAs have trained all of them on management of system, like cleaning filters, using control valves, fertigation unit and the care to be taken..

Further 75% of the beneficiaries have stated that they have attended training on plant protection, plant nutrition, post harvest management and also water management.

All 44 departmental officials have expressed that the IAs and farmers have extended full co-operation during the course of implementation.

The 1618 sample Farmers who were interviewed by the evaluators had no reservations in expressing their satisfaction about the coordination between them, the IAs and departmental staff.

Performance of Micro irrigation system suppliers:

The State Department of Horticulture has approved 36 companies for supply of Micro irrigation systems in the State. All the 36 approved companies are active in their respective allotted districts. These companies have put in their efforts to achieve the target in spite of financial constraints and the risks involved. As a result of efforts of these companies /dealers the department could achieve 100% expenditure during the year 2009-10.

Opportunities:

Some beneficiaries felt that there is ample opportunity for water management and soil moisture regime while majority of beneficiaries have said that there is scope for fertigation.

Limitations:

Some beneficiaries stated that rat damage is a major concern and few more beneficiaries say that clogging of filter & tubes requiring acid frequent treatment are also a major limitation in MIS.

The response of beneficiaries amply proves that while there are some manageable limitations, opportunities for MIS are umpteen.

Subsidy coverage:

Sufficient care has been taken to cover all the categories of farmers under MIS. Of the 1617 sampled beneficiary farmers, majority of them have either entirely changed the cropping pattern or added new crop/crops with the existing ones. According to their responses to the questionnaire, 1090 (67.40%) beneficiaries have changed the cropping pattern and the rest have perennial crops and hence not changed.

CONCLUSION:

All the objectives enunciated in the scheme have been achieved in general with minimum deviations of the guidelines. However, some of the gaps such as functioning of DMICs in some districts, delay in processing and release of subsidies are noticed, lesser utilisation of funds for SC/ST categories due to their poor economic status, probability of misuse of subsidy provided by the misrepresentation of the area of utility in subsequent claim by the farmers / companies are noticed.

EVALUATION OF CENTRALLY SPONSERED SCHEME FOR MICROIRRIGATION IMPLEMENTED DURING THE YEARS 2007-08 TO 2009-10

CHAPTER I

1. GENERAL

1.1 Introduction:

Water is a renewable resource. However, due to over exploitation by various human activities in the name of development and destruction of natural water bodies which were once a perennial source of water both for drinking and irrigation, has resulted in depletion of ground water table. The ever increasing demand for water from various sectors has rendered water a scarce commodity. Availability of water in appropriate quantity for both industrial and irrigation purposes is under severe stress.

Agriculture is an inevitable activity for survival of human race. Agriculture sector consumes 80% of the country's exploitable water resources. The overall development of the agriculture sector is largely dependent on judicious use of the available water resources.

Even though, the major and medium irrigation projects have contributed to the development of water resources, the inefficient conventional methods of conveyance water adopted in irrigation has led not only in wastage of water but also to several ecological problems like water logging, salinization and soil degradation rendering agriculture lands unproductive. This has been the cause of concern globally in general and India in particular.

Efforts were on in various countries to find suitable solution to minimize wastage of water in irrigation. The fruits of the efforts are modern day irrigation methods like drip and sprinkler irrigation. It has been recognised that use of modern irrigation methods are the only alternative for efficient use of surface as well as ground water resources. Therefore, Micro irrigation has been prioritized as the singular factor contributing to the overall development of agriculture sector.

1.2 Government of India Initiative:

Government of India is aware of the fact that in spite of having the largest irrigated area in the world, the coverage of irrigation is only 40 percent of the gross cropped area. The main reason for such a low coverage is attributed to the use of the inefficient conventional method of irrigation (flood irrigation).

Considering the water availability for future use and the increasing demand from various sectors, Government of India has introduced a number of demand management strategies and programmes to increase water use efficiency, especially in the use of surface irrigation water. Although, many of these strategies are in practice since late seventies, the net impact of these strategies in increasing the water use efficiency is not very impressive till date.

One of the demand management strategies introduced relatively recently to control water consumption in Indian agriculture is “**Micro-irrigation**” (MI) which includes mainly drip and sprinkler irrigation method.

1.3 Concept of Micro-irrigation:

Micro-irrigation refers to low-pressure irrigation systems that spray, mist, sprinkle or drip. The water discharge patterns differ because emission devices are designed for specific applications due to agronomic or horticultural requirements.

The term “Micro-irrigation” describes a family of irrigation systems that apply water through small devices. These devices deliver water onto the soil surface very near to the plant or below the soil surface directly into the plant root zone.

Convenience of conveying water in an efficient manner has influenced growers, producers and landscapers to adapt micro irrigation systems to suit their needs for precision water application.

Micro-irrigation in Agriculture is used extensively for row crops, mulched crops, orchards, gardens, greenhouses and nurseries. In urban landscapes, micro irrigation is widely used with ornamental plantings.

Micro irrigation systems are immensely popular not only in arid regions and urban settings but also in sub humid and humid zones where water supplies are limited or water is expensive.

1.4 Advantages of Micro-irrigation:

- **Water savings:** Conveyance loss is minimal. Evaporation, runoff and deep percolation are reduced as compared to other traditional irrigation systems. A water supply source with limited flow rates such as small water wells or city/ rural water can be used.
- **Energy savings:** A smaller power unit is required compared to sprinkler irrigation systems.
- **Weed and disease reduction:** Because of limited wetted area from non spray type of micro irrigation, weed growth is inhibited and disease incidences reduced.
- **Automation:** Fertilizers and chemicals can be applied with water through the irrigation system. Micro-irrigation systems can be automated which reduces labour requirements.
- **Improved production on marginal land:** On hilly terrain, micro-irrigation systems can operate with no run off and without interference from wind. The fields need not be levelled.

1.5 Potential problems:

- **Management:** Micro-irrigation systems normally have greater maintenance requirements. Soil particles, algae or precipitates can clog the emission devices.
- **Potential for damage:** Animals, rodents and insects may cause damage to some components. The drip and bubbler irrigation systems need additional equipment for frost protection.
- **High initial cost:** Micro-irrigation systems are ideal for high value installations such as orchards, vineyards, greenhouses and nurseries where traditional irrigation methods may not be practical. However the investment cost can be high.

1.6 Trends and Achievements so far:

Micro irrigation is introduced primarily to save water and increase the water use efficiency in agriculture. However, it delivers many other economic and social benefits to the society. While reduction in water consumption due to adaption of drip system of irrigation ranges from 30 to 70 percent for different crops, the productivity gain is estimated to be in the range of 20 to 90 percent for different crops. In spite of having many economic and other advantages over the method of flood irrigation, the coverage of area under micro-irrigation is not appreciable in India except for few states viz. Maharashtra, Karnataka, Andhra Pradesh, Tamil Nadu, Orissa and Madhya Pradesh. Even though the Drip irrigation method has been in practice since early seventies, an appreciable improvement in its adoption has taken place only from the eighties, mainly because of various promotional programmes introduced by the Central and State governments.

Since Drip irrigation is a new technology and capital-intensive venture, both Central and State government operates schemes with subsidy for promoting drip method of irrigation.

Central scheme was started during 1982-83 (during the Sixth plan). Through this scheme Government of India provided a subsidy of 50 percent to the farmers with matching contribution from the State governments for installation of micro-irrigation devices. Of the total amount of subsidy, 75 percent was allocated for small and marginal farmers and the balance 25 percent for other group of farmers.

During the seventh plan the subsidy was limited to only small and marginal farmers. However, due to capital paucity, this group could not afford the drip systems even at the subsidised rate and hence the progress during seventh plan was very negligible.

The area under Drip method of irrigation has increased from mere 1500 ha in 1985 to 70,859 ha in 1991-92 and further to 5,00,000 ha as of March 2003 (GOI 2004). All though remarkable growth has been achieved over the last two decades in adopting micro irrigation, its share to the gross irrigated area of the country is only negligible percent as of today.

Among the various reasons for the slow progress of adoption of this new technology, its capital-intensive nature seems to be one of the main deterrent factors. Further,

there were many restrictions such as the limits in area that a beneficiary could cover under the scheme, cost structure etc that acted as deterrents for wider coverage.

However the Micro-Irrigation Scheme has undergone lot of changes over the years. This is visible in the policy initiative taken by Government of India on Micro-irrigation scheme for the 10th five year plan.

1.7 Policy Initiative:

- To bring more area under irrigation, it has become necessary to introduce new irrigation techniques viz. Micro and Sprinkler Irrigation for economizing the use of water and increase productivity per unit of water. This technology also arrests water logging and secondary salinization problems of the canal command areas and check the receding water table and deteriorating water quality in the well command areas. The estimated potential of Micro / Sprinkler Irrigation Technology in the country is 27 & 42.5 Million hectares respectively. It is proposed to implement a Centrally Sponsored Scheme, on Micro Irrigation during the Tenth Five Year Plan covering an area of 1.5 million hectares under drip irrigation and 0.5 million hectares under sprinkler irrigation.
- The objective of the scheme is to increase the coverage of area under micro irrigation in the country for improving crop productivity with efficient use of water resources. Micro irrigation is to be viewed as a total plant support system starting with planting material to post harvest management and marketing. Therefore, micro irrigation need be promoted in a holistic manner involving appropriate cultivars, good agronomic practices, post harvest handling, processing and marketing leading to an end-to-end approach. Water source development and recharge of wells through Watershed Management would also form a part of the package.
- The scheme will be available to all the farming community in the country and the focus will be for the efficient utilization of various inputs as water, fertilizer etc. & increase in productivity & quality of produce.
- Keeping in view the available potential and urgent need to promote efficient use of water resources, it is proposed to cover 2 million hectare under micro/sprinkler irrigation during Tenth Plan(1.5 million hectare under drip irrigation and 0.5 million

hectare area under sprinkler irrigation). Initially, the focus will be on horticultural crops; with emphasis on potential belts/regions in the States suiting to agro-climatic conditions. Various extension activities viz. Training and awareness programmes for state officials, farmers, NGOs, entrepreneurs, scientists, service providers; direct mail campaigns, trouble shooting for operational problems in various agro-climatic zones would be carried out in all states/ UTs through the National Committee on Plasticulture Applications in Horticulture(NCPAH).

- It is proposed to provide financial assistance @50% of the unit cost for various spaced crops. The financial assistance of 50% would be jointly shared by the centre and state governments in the ratio of 80:20. In other words, 80% share (40% of unit cost) will be met by the centre, and the balance 20% (10% of unit cost) will be met by the respective states. The beneficiaries may contribute the balance of 50% of the unit cost, either through his / her own resources or through soft loan(s) from any financial institutions.
- The outlay proposed for covering 2 Million hectares under micro/sprinkler irrigation during the Tenth Plan Period will be Rs.7600 Crores (which includes 50% farmer's contribution and Rs. 100 Crore for HRD, promotion and other administrative costs) The central and state government's contribution of the total outlay would be Rs.310 and 750 Crores respectively.

Central government sanctioned the Central Sector Scheme for Micro irrigation during the fag end of financial year 2006-07 and therefore actual implementation of scheme has started from the financial year 2007-08.

CHAPTER II

2. AN OVER VIEW OF THE C. S. SCHEME FOR MICRO-IRRIGATION

2.1 Key features of the Micro irrigation (MI) Scheme:

- It will be a Centrally Sponsored Scheme under which out of the total cost of MI System, 40% will be borne by the Central Government, 10% by the State Government and the remaining 50% will be borne by the beneficiary either through his/her own resources or soft loan from financial institutions.
- Assistance to farmers will be for covering a maximum area of five ha per beneficiary family.
- Assistance for **drip and sprinkler demonstration** will be 75% for the cost for a maximum area of 0.5ha per beneficiary which will be met entirely by the Central Government.
- The Panchayati Raj Institutions (PRIs) will be involved in selecting the beneficiaries.
- All categories of farmers are covered under the Scheme. However, it needs to be ensured that at least 25% of the beneficiaries are small & Marginal farmers.
- The focus will be on horticultural crops being covered under National Horticulture Mission. A cluster approach will be adopted.
- The Scheme includes both drip and sprinkler irrigation. However, sprinkler irrigation will be applicable only for those crops where drip irrigation is uneconomical.
- There will be a strong HRD input for the farmers, field functionaries and other stake holder at different levels. Besides there will be publicity campaigns, seminars/workshops at extensive locations to develop skills and improve awareness among farmers about importance of water conservation and management.

- The Precision Farming Development Centres (PFDCs) will provide research and technical support for implementing the scheme.
- At the National level, National committee on Plasticulture Applications in Horticulture (NACPH) will be responsible for coordinating the Scheme, while the Executive Committee on Micro Irrigation (ECMI) will approve the Action Plans. At the State level the State Micro Irrigation Committee will coordinate the programme, while at the District level the District Micro Irrigation Committee will oversee the programme.
- The Scheme will be implemented by an Implementing Agency (IA) appointed by the State Government, which will be the District Rural Development Agencies (DRDA) or any identified Agency, to whom funds will be released directly on the basis of approved district plans for each year.
- The IA shall prepare Annual Action Plan for the District; get it forwarded by the DMIC & SMIC for approval by the Executive Committee (EC) of NCPAH.
- Payment will be made through crossed cheque. If the cheque is in the name of the system supplier, the same will be delivered through the farmer/beneficiary.
- Registration of System Manufacturers will be done by the SMIC for use of the Districts.
- Supply of good quality system both for drip and sprinkler irrigation having BIS marking, proper after sales services to the satisfaction of the farmer is paramount.

2.2 Objectives of Micro-irrigation Scheme:

6. To increase the area under irrigation.
7. To increase the coverage of area under micro irrigation.
8. To promote efficient use of water resources.
9. To increase the yield/productivity of the crop.
10. To improve the economic status of farmers in the region.

2.3 Stake holders of the Scheme:

1. Farmers.
2. Drip/Sprinkler companies approved by concerned SMIC.
3. State Department of Horticulture/Agriculture.

Initially, the focus will be on horticulture crops; with emphasis on potential belts/regions in the States suiting to the agro-climatic conditions.

2.4 MICRO IRRIGATION SCHEME- KARNATAKA SCENARIO:

2.4.1 Background:

Karnataka State Department of Horticulture has been promoting Drip system of irrigation among the farmers of the State from the year 1991-92. Since the inception of the scheme to the end of the year 2004-05, an area of 2.27 lakh hectares belonging to 1.30 lakh farmers have been brought under Drip system of Irrigation. An amount of Rs. 450 Crores have been spent for providing subsidy.

2.4.2 Centrally Sponsored Scheme for Micro-irrigation:

The scheme was sanctioned during the fag end of the year 2005-06. Therefore, actual implementation of the scheme was started in the year 2006-07

The State Government has constituted State and Districts level Monitoring committee to oversee the successful implementation of the Micro irrigation scheme in the State.

The State Department of Horticulture has issued suitable guidelines from time to time in order to facilitate hassle free implementation at taluk and District level.

2.4.3 Salient features of the guidelines:

1. Subsidy for installation of Micro irrigation system covers all Horticulture crops except Coffee, Tea, Rubber and Oil palm.
2. Assistance is extended for maximum of 5 ha per beneficiary family.
3. Pattern of Subsidy:
 - a. The financial subsidy in the Districts of Bijapur, Kolar & Chickaballapur would be 100% for first 2 ha. and 50% for the remaining 3 ha.
 - b. In the remaining Districts of the State, subsidy would 75% for first 2 ha and 50% for remaining 3 ha.

-
- c. For sprinklers, the subsidy will be 50% with maximum limit of Rs.7500/ha.
 4. Area limitation for each beneficiary:
 - a. Maximum of 5 ha for Plantation and Fruit crops.
 - b. Maximum of 2 ha for Vegetables+ flowers.
 5. Beneficiary selection would be made by the Panchayat Raj institutions.
 6. Beneficiary reservation- SC-18%, ST-8%, Women-30%
 7. The farmer intending to install drip system should have assured water resources and power supply. This should reflect in the application seeking subsidy.
 8. The farmers desirous of installing drip system should get their name registered in the taluk AHO office. The same need to be entered in the seniority list
 9. Prescribed application form should be obtained through the company/dealers and submitted along with necessary documents.
 10. After satisfactory installation, the dealer/company shall submit the application for claiming subsidy.
 11. On receipt of application, the concerned taluk officer, shall enter the application number in the concerned Register and issue acknowledgement to the applicants.
 12. The approved companies should report to District Horticulture Officer and Director of Horticulture, Bangalore, the details of beneficiaries by e-mail. These details are also to be forwarded to the taluk level Officers, who will take up plot verification on seniority.
 13. The application for claiming subsidy should contain the details such as Survey No. Of the land, crop, extent, source of irrigation. These details should tally with pahani furnished with the application.

14. In case, crops installed with Micro irrigation is not mentioned in the pahani - a separate certificate by the village accountant and countersigned/ confirmed by the higher authorities of Revenue department to that effect should be obtained. The same has to be approved/certified by ADH/SADH to be eligible for subsidy.

15. If the water from a single well is shared between one or more beneficiaries, a no objection certificate from all sharers to be obtained and furnished along with application and same has to be confirmed /ensured.

16. A certificate from the beneficiary to the effect that the Micro irrigation system will be maintained and utilized for a minimum of 3 years should be enclosed.

17. The dealers on their part design the layout of drip system separately for each beneficiary and prepare a map indicating all necessary technical details such as 'N' direction, boundary, neighbouring Sy.Nos., the location of Filter, ventury, By pass Assembly, Fertigation tank, Main/ lateral pipes and their measurements, crop spacing etc. The map should possess the signature of the beneficiary and the company.

18. While laying the system it should be ensured that water distribution is uniform in the entire plot.(10% variation admissible)

19. The need based equipments such as Ventury; By pass Assembly/ Fertigation Tank must be installed and shown in the bill.

20. Installation of Filter equipment is compulsory. Failure to install filter results in rejection of application for subsidy and concerned company will be held responsible.

21. Optional items such as Sand filter and Cyclone filter are not considered for subsidy. The intending farmers can install them at their cost.

22. The items such as online / inline drip system, micro jet, micro inkjet and foggers may be used based on the crop requirement. However, only the cost of drippers is to be taken for calculation of subsidy.

-
23. In hilly region, HDPE pipes of 4 Kg or 6 Kg pressure could be used subject to the maximum ceiling limit of admissible subsidy.
24. PVC pipes, Laterals, Filter, Dripper and inline Dripper should invariably bear the ISI markings. Only PVC control valve to be used. No GI pipe permitted.
25. The signatures of dealer /company, VAT number, Sales Tax are to be indicated in the applications submitted by the beneficiary farmers for claiming subsidy.
26. Company /dealers should furnish a certificate confirming 3 year guarantee for effective working of the system and replacement of defective parts, maintenance and repairs free of cost during the guarantee period.
27. Dealers /companies need to report satisfactory functioning of the MI system installed by them to the respective taluk level officers every quarter.
28. The implementing officers would carry out periodical physical verification of MI system installed plots to ensure satisfactory functioning of the system.
29. List of Documents to be enclosed with application seeking subsidy.
- a. Beneficiary photo-certified.
 - b. Delivery chalan of company should have signature of beneficiary.
 - c. Invoice, Tax invoice, Credit bill, Cash bill should possess counter signature of company- the approved price list & Rate list of DOH should tally each other.
 - d. Acknowledgement for receipt of payment from the farmer.
 - e. Work completion report- certified by the Company and Beneficiary.
 - f. Technical hand book and a report on Training imparted by the company regarding maintenance aspect of MI system.
30. Subsidy to be allowed based on the data in the prescribed table. If it exceeds, the farmers shall bear the extra cost.

31. The following points are to be considered while calculating subsidy:

1. The rates quoted in the company bill and the rates communicated by the DOH should tally.
2. If there are intercrops, the crops with minimum spacing could be considered for subsidy.
3. VAT amount should be shown separately in the bill and VAT number should be indicated on the bill.
4. Subsidy should be paid considering the ready recknor /table.

32. While calculating subsidy, if there are crops having spacing not covered in the table /ready recknor, such case may be considered based on the density of plant population, nearest spacing cases on an average.

33. The taluk level officers after completing all formalities shall submit the application with eligible subsidy details to the DDH immediately.

34. The concerned DDH (ZP) shall exercise his powers of 10% of plot verification and thoroughly examine the application submitted by the taluk level officer and there after sanction the subsidy.

35. The payment of subsidy amount should be sent through Account Payee crossed cheque to the beneficiary after duly following all procedures.

36. The details of applications received, application cleared till previous month, subsidy paid etc should be displayed on the office notice board.

Apart from the general guidelines, circular instructions have also been issued to clarify any ambiguity in understanding the guidelines by the subordinate offices. This has resulted in satisfactory and successful implementation of scheme.

2.5 PROCESS OF IMPLEMENTATION OF MICRO IRRIGATION SCHEME:

Share of Government of India	Share of Government of Karnataka
40%	35%

MICRO IRRIGATION SCHEME

DEPARTMENT OF HORTICULTURE

GOVERNMENT<#### PUBLIC PRIVATE PARTICIPATION ####>PRIVATE

DOH	<ol style="list-style-type: none"> 1. Timely decision and action. 2. Constant monitoring of the project activities. 3. Effective implementation. 4. Transparency in financial management. 5. Quality Output. 	<p>Approved Drip/Sprinkler Companies.</p>
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ROLE OF DOH.

1. Facilitator and Monitoring
2. Extension of Technical Know-how.
3. Extension of other assistances.
4. Financial management.
5. Approving price list.
6. Evaluation.

ROLE OF COMPANIES.

1. Receipt of MIS application Online/manually, documentation And verification.
2. Field visits & training farmers.
3. Area expansion.

TARGETS FOR ACHIEVEMENTS

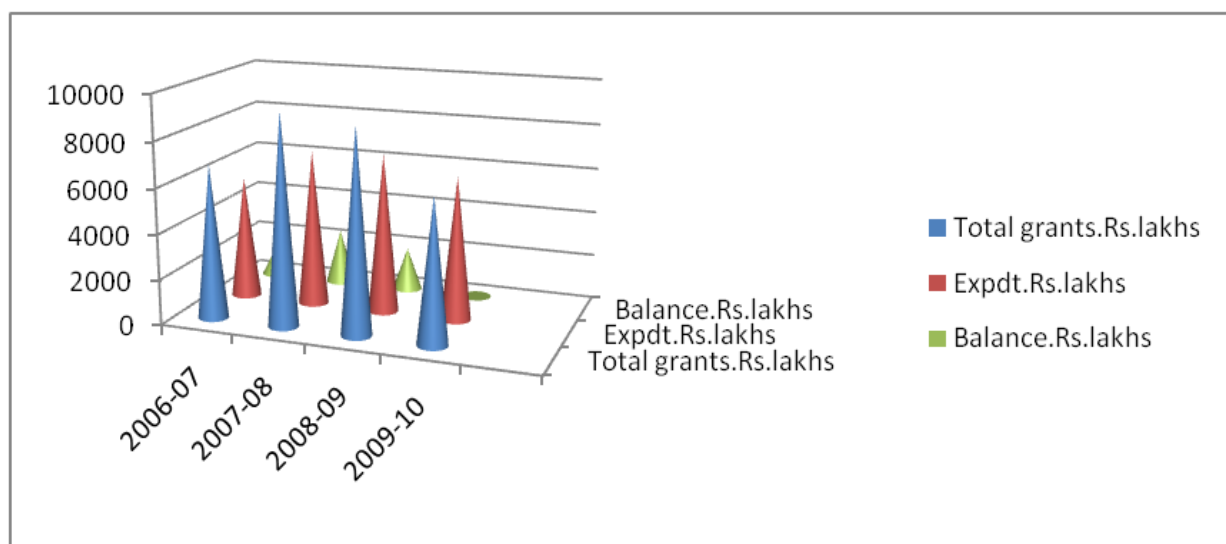
- AREA EXPANSION.
- EXTENSION OF DEVELOPMENT RELATED FACILITIES.
- EXTENSION AND PUBLICITY.

The Micro irrigation scheme is being implemented since 2006-07 as per the guidelines & the implementation pattern as enunciated above.

The financial statement furnished by the State Department of Horticulture for the period 2006-06 to 2009-10 gives an indication of progress made during each year.

Financial statement under Centrally Sponsored Scheme for Micro irrigation from 2006-7 to 2009-10 including State share (Rs.in lakhs)

Sl. No	Year	Opening balance	Budget released During the financial year	Total	Expenditure During the financial year	Balance At the end of financial year.
1	2006-07	-	6778.57	6778.57	5453.42	1325.14
2	2007-08	1325.14	8024.16	9349.30	5595.88 + 1325.14	2428.25
3	2008-09	2428.25	6554.36	8982.61	7072.50	1910.11
4	2009-10 Upto end of March 2010	1910.11	4430.99	6341.10	6340.55	0.55



As a policy matter, it has been made mandatory to subject all Centrally Sponsored Schemes for third party evaluation to assess its social and economical impact on the targeted group in particular and the society at large. Accordingly, the Micro Irrigation Scheme which has completed first four years of its implementation since 2006-07, is now subjected to third party evaluation.

CHAPTER III**3. STRATEGIES FOR EVALUATION****3.1 OBJECTIVES, TERMS OF REFERENCE AND METHODOLOGY****3.1.1 Objectives:**

The state Department of Horticulture after scrutinizing the techno-commercial proposal and following bid tender process, has entrusted the task of evaluation of the scheme, to the IN-RIMT, Bangalore.

The State Department of Horticulture through comprehensive evaluation of Micro irrigation Scheme desires to gain insight into,

1. The level of awareness about Micro irrigation Scheme among the farming community.
2. Whether the assistance extended by the Government is being put proper use
3. Policy changes that needs to be adopted by the Government in order to make the scheme successful.

3.2 Terms of Reference:

The State Department of Horticulture has set the Terms of Reference for conducting evaluation studies which would enable to analyze the impact of the MIS Scheme towards water use efficiency & enhancing productivity in horticulture crops by bringing more area under drip irrigation. The following are the broad expectations of the proposed evaluation.

1. Economic analysis of MIS with annual, perennial crops.
2. Evaluation of water use efficiency with Horticulture crops.
3. Farmers' response in the adoption of the scheme.
4. Involvement of DMIC and drip / sprinkler companies in planning implementation, monitoring and reporting.
5. Impact of technological supports towards productivity enhancement.

6. Assessing the nature of inter-relationship and co-ordination between departmental personnel, implementing companies and farmers.
7. Nature and efficiency of processing claims and disbursement of subsidy assessment. Whether subsidy has reached the eligible farmer.
8. Study the opportunities & limitations in the implementation of MIS scheme with the farming system.
9. Whether subsidy covers all categories of farmers.
10. Problems in identifying the farmer beneficiaries.
11. Whether there is any change in cropping pattern.

3.3 Proposed Methodology:

The State Department of Horticulture has suggested the following methodology for evaluation.

5. Field based survey to assess the impact of various scheme components.
6. Farmer beneficiary survey and farmer's group survey to assess the process and impact of scheme implementation.
7. Data collection from different project stake holders, Govt. Departmental staff and farmer beneficiaries.
8. Analysis of the available data and reports.

Suitable sample size has to be worked out for each category of data collection and analysis and to decide the appropriate unit of analysis.

Evaluation will be done in all the 29 districts. Within the district 2-3 taluks where every category of farmer is located to be chosen for collection of data from 100 stratified random farmer samples from each taluk.

3.4 Expectations of evaluation:

It is expected to analyze the impact of the Micro Irrigation Scheme towards increasing productivity by bringing in more area under drip irrigation.

CHAPTER IV

4 PROCESS OF EVALUATION - APPROACH & METHODOLOGY

The State Department of Horticulture has entrusted the task of evaluation of Micro irrigation Scheme to INRIMT on 03.01.2011. The organization initiated process of evaluation on priority. The approach and methodology adopted in evaluation are highlighted herein.

4.1 APPROACH:

1. Immediate action was initiated to gather all primary and secondary information from Directorate of Horticulture.
 - a. Year wise Government orders sanctioning the Micro Irrigation Scheme.
 - b. Guidelines issued to District and Taluk level Officers.
 - c. List of approved MI system suppliers /dealers.
 - d. Year wise, District wise Physical and Financial targets.
 - e. Recommended subsidy levels for different crop spacing.
 - f. Other specific instructions issued from time to time.
 - g. List of districts and taluks to be subjected for evaluation.

2. Field schedules were prepared based on the terms of reference for collecting information from various stake holders in the scheme. (Schedules I to III)
 - a. Schedule I- Beneficiary farmers
 - b. Schedule II- DOH, District level/Taluk level officers
 - c. Schedule III- Approved Micro irrigation system dealers.

3. Five Evaluation teams were formed to take up field visits / verification/ interactions with concerned stake holders in the randomly selected 20 districts of the State.

4. An orientation programme was arranged on 15/02/2011 to evaluation teams on collection of data, filling of schedules, and interaction with stake holders, and observations to be made in the field, compilation of data.

4.2 METHODOLOGY

6. A pilot study was arranged on 15/2/011 to the core group and field evaluators by visiting DDH office, Chickaballapur for interaction with DDH, Taluk SADH/ADH and input dealers followed with field visits. The team members had a long spell of interaction with the DDH, Taluk SADH/ADH and MIS dealers. The points of discussions were based on the questioner/ schedules prepared exclusively for officers and dealers. During the field visit, each member of the team had interaction with the beneficiary as well the group of farmers and gathered information on various points covered in the respective schedule.

7. In order to get required data format was designed and sent to concerned DDH (ZP) of 20 districts along with dates of visits to districts and field visits by the evaluators in the specified taluks vide our letter dated 09/02/2011

8. The evaluation teams visited the districts on scheduled dates. They had interaction with DDH, SADH /ADH & MIS dealers. The team elicited required information as per schedules from them.

9. Later, the teams visited randomly selected beneficiary fields located in villages of selected taluks in each of 20 districts. The visit to beneficiary field was followed by interaction with the concerned beneficiary and other farmers in the neighbourhood. Apart from gathering information as per the prepared schedules, the teams also have elicited information on influence of MIS on cropping system, economy and input availability, trainings etc.

10. The core group review discussions were held regularly to monitor the progress of evaluation.

11. The evaluation teams gathered all required information from the concerned stake holders.

12. The information so gathered was subjected to analysis and the findings are presented in the foregoing paras.

CHAPTER V**5 EVALUATION:****5.1 Financial and Physical targets:**

The year wise financial and physical targets to each of the districts were circulated in the beginning of the financial year. The Year wise annual financial and physical targets for the entire state as furnished by the Directorate of Horticulture is enlisted herein,

Sl.No;	Year.	Financial target (Rs. In Lakhs)	Physical target (ha)
1.	2007-08	Rs. 7725.09	29810.30
2.	2008-09	Rs. 8287.18	28020.00
3.	2009-10	Rs.10813.35	35517.00

The Directorate has also furnished the annual financial achievement. The same is highlighted here,

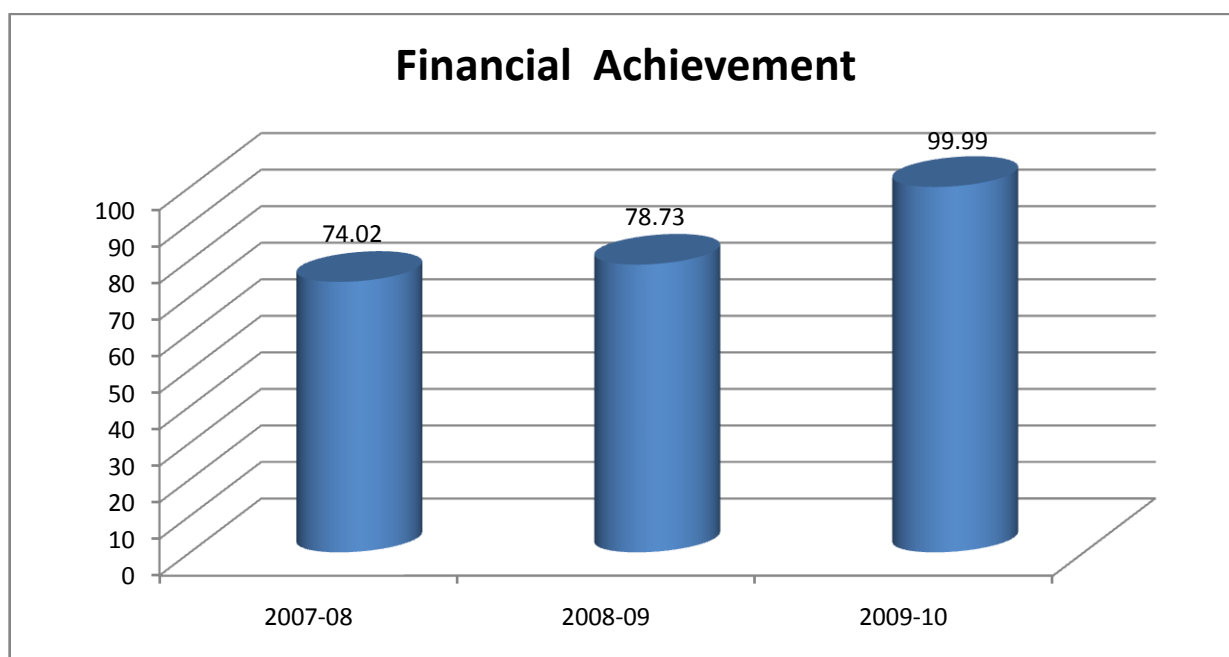
5.2 Overall Financial Achievements:

The details of overall year wise performance during the years 2007-08 to 2009-10 as furnished by the Directorate of Horticulture is as follows,

Sl. No.	Year	Opening balance	Budget released during the financial year	Total	Expenditure During the financial year	Balance At the end of financial year.
1	2006-07	-	6778.57	6778.57	5453.42	1325.14
2	2007-08	1325.14	8024.16	9349.30	5595.88+ 1325.14	2428.25
3	2008-09	2428.25	6554.36	8982.61	7072.50	1910.11
4	2009-10 Upto end of March 2010	1910.11	4430.99	6341.10	6340.55	0.55

The financial achievement during the period subjected for evaluation is in the range of,

Sl.No.	Financial Year	% Achievement
4.	2007-08	74.02
5.	2008-09	78.73
6.	2009-10	99.99



The financial achievement has been steady and reached its peak of 100% in the third year itself. The performances in the first two years under review are also very good indicating the zeal of the implementing agencies and eagerness of farmers for adopting the Micro irrigation System. The tempo should be maintained in the remaining plan period to pass on the benefits to farmers thereby achieving the set goal of bringing in more areas under irrigation, to increase productivity of horticulture crops and usher in economic development in rural areas.

The implementation of Micro Irrigation Scheme involves three important processes such as, identification of farmers and installation, payment and sanction of subsidy. Each of the processes have distinct procedures and are enunciated herein,

5.3 Process of MIS installation, sanction of subsidy and Payment:

5.3.1 Installation:

The farmers desirous of installing MIS are required to approach the Taluk Horticulture office and seek details of subsidy, essential equipments to be installed and list of approved MIS suppliers. Later, they can meet any one of the approved firms to obtain details of cost of MIS and on satisfaction, proceed further to get the actual survey of land, plan and estimate of cost for MIS installation. The representative of the MIS Company will visit the site to inspect the situation of the land, prepare a sketch of the land with all land marks around to enable easy identification. After examining the crop, source of water, topography of land, prepares a Plan pertaining to installation requirements such as location of filter, direction of main lines and lateral lines, and their required measurements, number of control valves required, position to fix ventury, bypass assembly and fertigation unit etc. later, based on the requirement the MIS supplier will prepare and give the estimate of cost with terms and condition to the farmer. He will also explain the amount of subsidy that he could get from the Government. The farmers can negotiate with the supplier about the cost, & terms and conditions and arrive at an agreement. Upon completion of agreement between them, the MIS supplier would install the MIS and collect the payment from the farmer.

In the meantime, the MIS supplier will provide the application for claiming subsidy and also assist him in documentation process. Later the MIS supplier will submit the application to department on behalf of the farmer and send details of application by e-mail to Deputy Director and Director of Horticulture.

5.3.2 Sanction of Subsidy:

The taluk level Horticulture Officer, on receipt of application, register the same and maintain seniority of applications. He will take up field inspection according to the seniority and satisfy himself about MIS installation and other particulars provided in the application. Later subsidy claims are prepared as per the guidelines and the ready recknor provided to them by the Directorate along with the guideline. It will further be forwarded to the Deputy Director of Horticulture concerned.

The Deputy Director of Horticulture will scrutinise the application and the recommendations of taluk officers and sanction the subsidy as per the norms laid down in the guidelines.

5.3.3 Payment of subsidy amount:

The department is not responsible for the payment of total cost of MIS installed in the farmers' field. It is between the farmer and the supplier. The role of department comes into picture only if the farmer submits an application seeking subsidy under MIS scheme. If everything is in order as per the terms and conditions laid out in the scheme guidelines, the process of sanction subsidy will take place as explained above. Once the subsidy is sanctioned the Deputy Director of Horticulture will raise a crossed Account payee cheque in the name of the beneficiary farmer and despatch it to the concerned by registered post/ or make payment to the bank if the farmer has taken a loan for the purpose depending on the nature of claims. At no time the subsidy amount will be paid to the supplier.

5.4 EVALUATION AS PER TERMS OF REFERENCE

5.4.1 Economic analysis of MIS with annual, perennial crops:

5.4.1.1 Opinion of various cadre officials of the Department:

The team of evaluators during their visits to District and Taluks have met 44 officers of the State Department of Horticulture. The cadre wise officers who were involved in interaction during field visits are,

1. Deputy Director of Horticulture	20 Nos
2. Senior Asst. Directors of Horticulture.	16 Nos.
3. Assistant Directors of Horticulture.	08 Nos.

All these officers have expressed in unison that, adoption of Micro irrigation system has ushered in an economic change in the beneficiary families. They have stated that the change is for the good. As per their opinion,

- i. The Micro irrigation system has helped the farming sector.
- ii. There is noticeable change in beneficiary families.
- iii. On an average 40-50% increase in their farm income from annual / seasonal crops brought under MIS
- iv. The increase in income from perennial crops ranged from 15-20%

5.4.1.2. Opinion of Beneficiary farmers:

The evaluation teams during the course of their visit to 413 villages have met a total of 1617 beneficiaries falling under various categories and had interaction to ascertain from them on the benefits of MIS (Table 1). Their social and economic back ground, the situation in their land reflects on their opinion. Therefore the general status of sampled beneficiaries have been factored based on community, land holding educational qualification and water availability.

Category wise sampled beneficiaries are as follows,

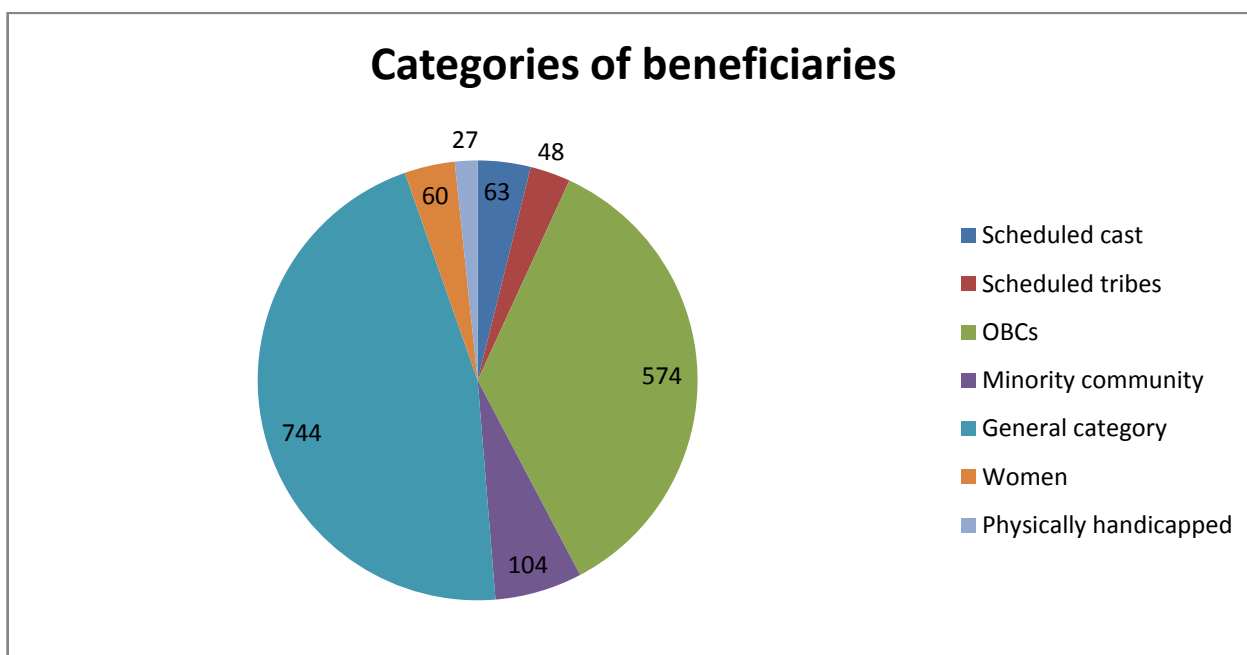
- i. SC beneficiaries. 63 (03.89%)
- ii. ST beneficiaries 48 (02.96%)
- iii. Other Backward communities. 574 (35.47%)
- iv. Minority community beneficiaries. 104 (06.42%)
- v. General category 742 (46.85%)

Other categories:

- i. Women 60 (3.70%)
- ii. Physically handicapped 27 (1.66%)

TOTAL 1618

It may be noted that 54 percent of the sampled beneficiaries are from weaker section of the society and the remaining 46 percent are from general category. Amongst them 6.85% of the beneficiaries belong to SC/ST communities.



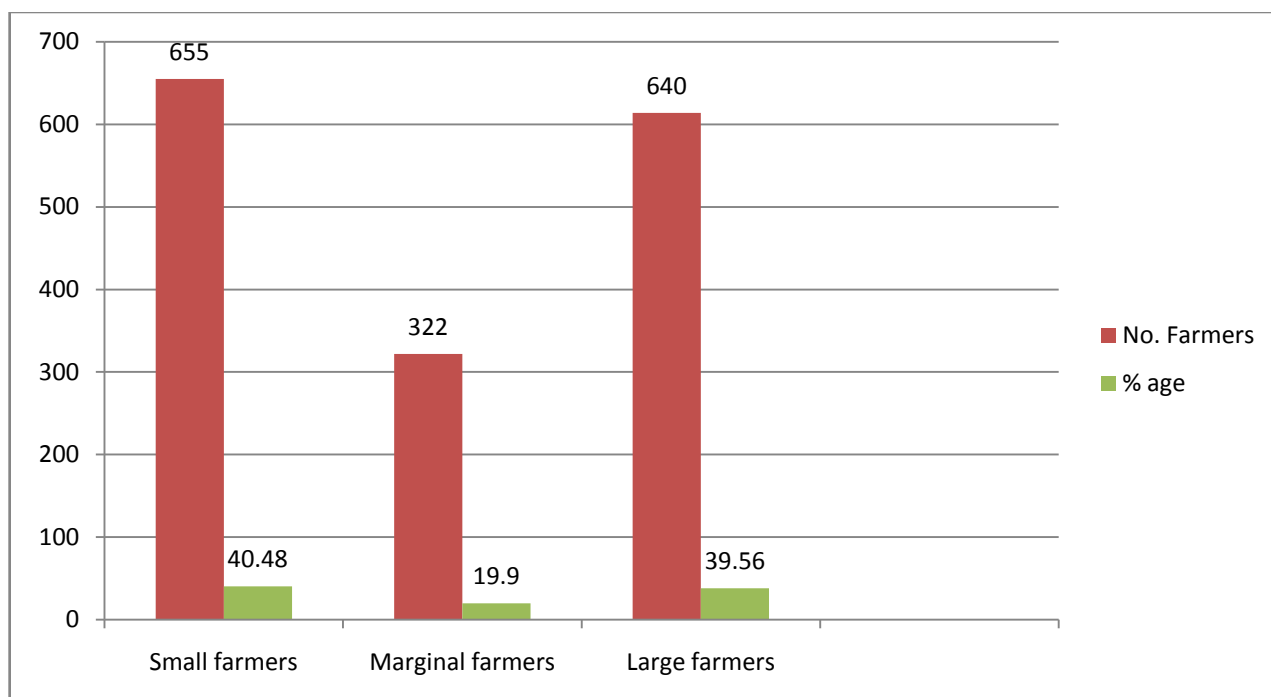
5.4.1.3 Social status of beneficiaries:

The evaluators have interacted with most important stake holder of MI scheme i.e. farmers during their visit to fields where Micro irrigation systems have been installed. The social status of the beneficiaries are furnished herein,

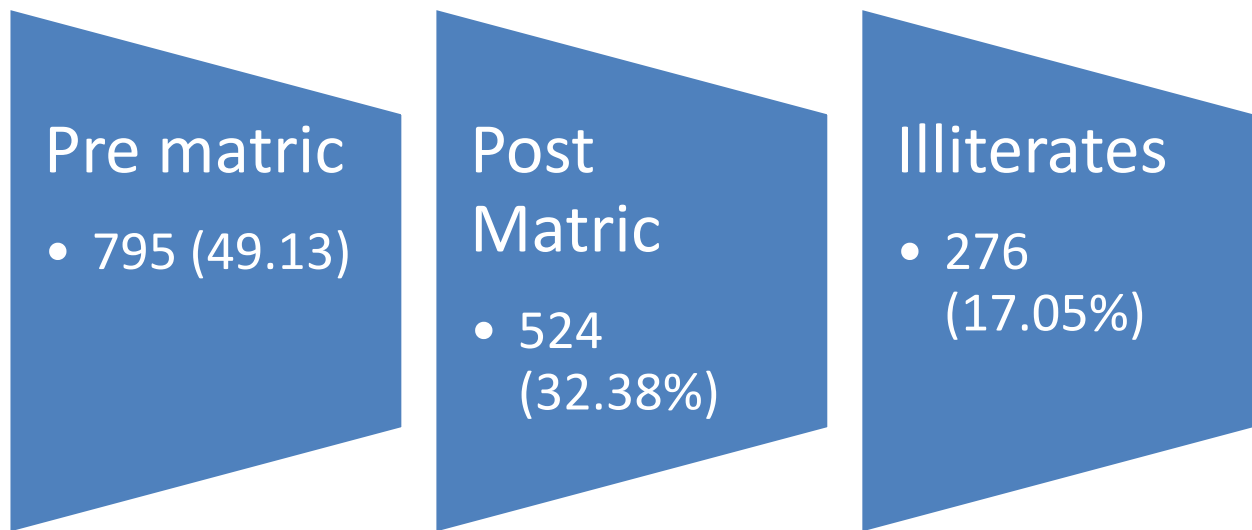
A. Land holding Status:

- i. No. of Small farmers. 656 (40.54%)
- ii. No. of Marginal farmers. 322 (19.90%)
- iii. No. of Big farmers. 640 (39.56%)

60 percent of the beneficiaries evaluated belong to the group of small and marginal farmers. Their opinion on various aspects reflects the impact of MIS on the majority of farmers.



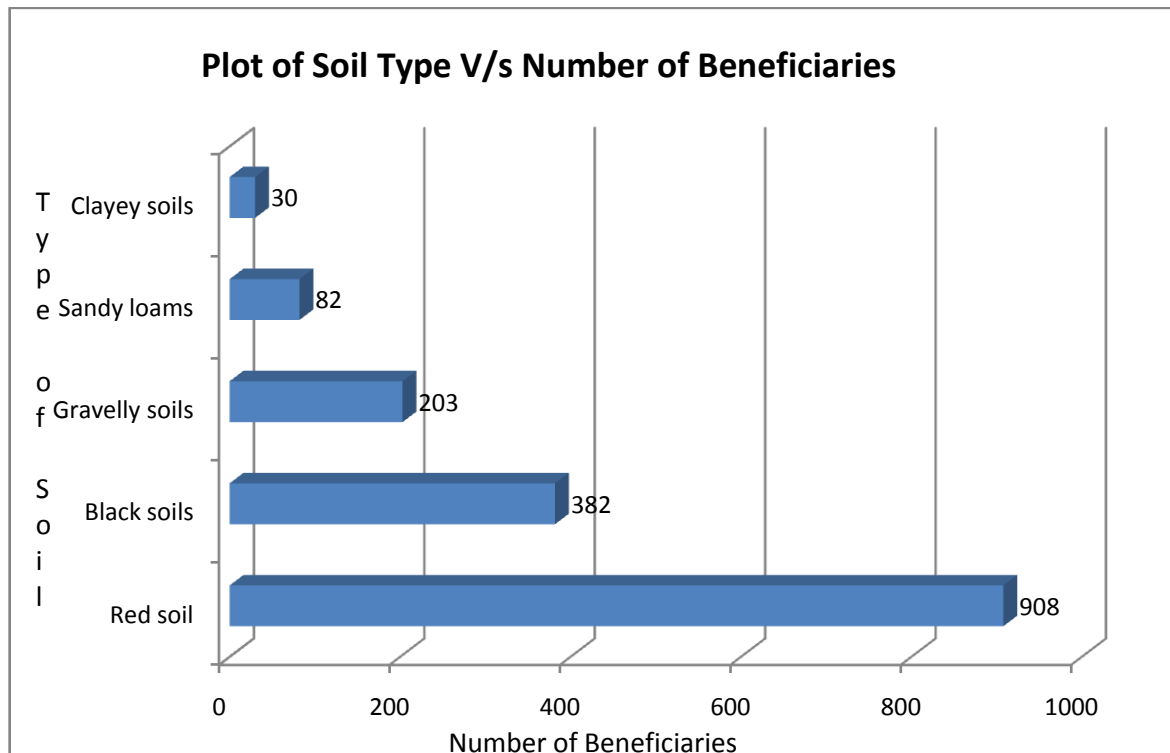
Education is important to understand the concepts. Literacy rate among the sampled beneficiaries 81.51% of the sampled beneficiaries were literates with 49.13 % having pre metric 32.38% having post metric qualification. Only 17.05% were illiterates. Their educational status helped them to understand the concepts of MIS better and hence was able to respond to our queries and convey their opinion effectively.

B. Educational Status:**5.4.1.4 General information about selected beneficiaries:**

In the 20 districts selected for evaluation, a total number of 1618 numbers of beneficiaries of MIS pertaining to the period 2007-08 to 2009-10 have interacted with the evaluators. The information on status of their land and water gathered during the interaction is furnished herein (Table 3),

i. Soil type: (1617 beneficiaries)

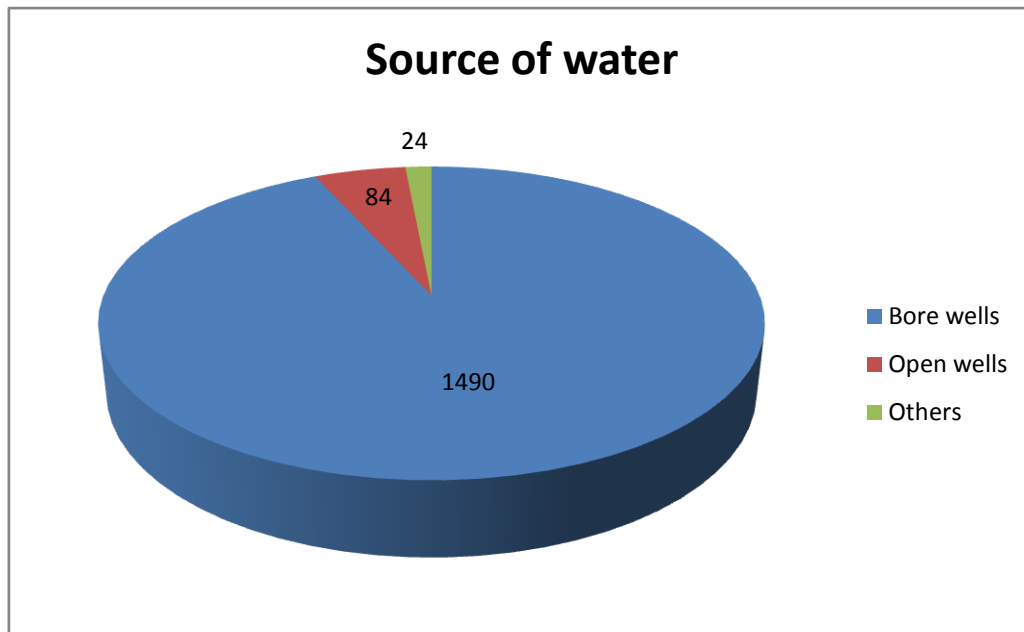
- 908 (56.11%) farmers have Red soils.
- 203 (12.54%) farmers have gravelly soil.
- 82 (5.06%) farmers have sandy loam soils.
- 382 (23.61%) farmers have black soils.
- 30 (1.85%) farmers have clayey type of soils.



The type of soils has influence on the quantity of water required per irrigation/frequency of irrigation and period of irrigation. The gravelly type and sandy loam soils, because of their nature of poor water holding/retention capacity, may require frequent irrigation and higher quantum of water to meet the requirements of the plants. Whereas, the red loams and black soils have better water retention/holding capacity providing scope for larger interval between two irrigations and optimum quantity of water per irrigation. However, the clayey soils have the capacity to hold water for longer period, the interval between two irrigations may have to be adjusted depending on the local climatic conditions. About 12% soils need tank silt application and 2% soils need good drainage system.

ii. Source of water: (1618 beneficiaries)

- 1490 (92.08%) farmers have Bore wells.
- 84 (5.19%) farmers have open wells.
- 24 (1.48%) farmers have other types.

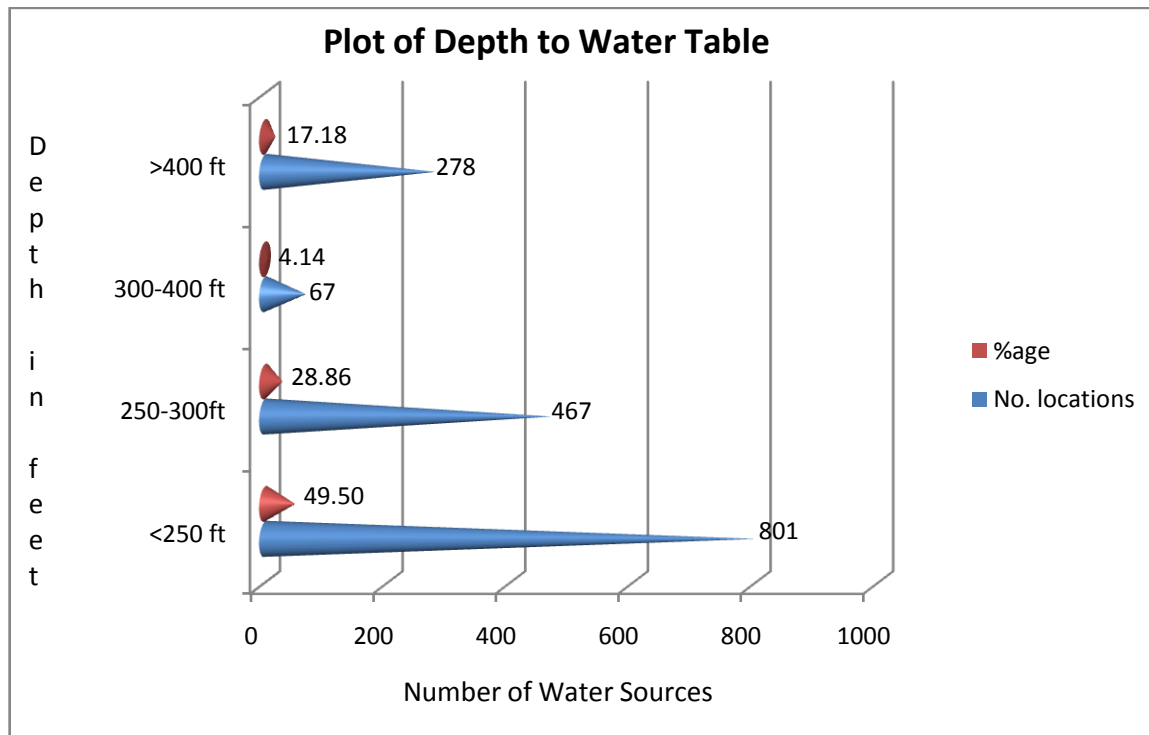


Bore wells constitutes the major source of water for 92.08% of the sampled beneficiaries, whereas open wells are the source for 5.19 % of the beneficiaries and a miniscule of 1.48% beneficiaries have other types such as ravines and rivulets, tanks etc. Recharge pits may be suggested to increase groundwater replenishment or recharge.

iii. Depth (water table) in ft.(1618 beneficiaries/locations)

- At 801 (49.50%) locations it is <250 ft.
- At 467 (28.86%) locations it is between 250-300 ft.
- At 67 (4.14%) locations it is between 300-400 ft.
- At 278 (17.18%) locations it is >400 ft.

The ground water table varies depending on the location and topography of the farm. Among 1618 number of beneficiaries, almost half of them (49.50%) are lucky to have got water at the depth of less than 250 ft. 33% of the farmers have to go deeper beyond 250ft and up to 400 ft to get sufficient water for irrigation. While a few i.e. 17.18% of the beneficiaries have got the water beyond 400 ft depth to get enough water for their crops.



iv. Quality of water:

- At 1487 (91.90%) locations it is soft water.
- At 108 (6.67%) locations it is hard water.
- At 4 (0.24%) locations details not furnished.

Quality of water affects the efficiency of MIS. Hard water clogs the laterals and micro tubes and prevents smooth flow of water. The system would require frequent cleansing and sometimes replacements. Majority of the sampled beneficiaries (91.90%) have soft water and only 6.67% of beneficiaries have unfortunately hard water and have been advised to take timely servicing of the system to make function effectively for a longer period.

v. Water lifting equipment

- 650 (40.17%) farmers are using <5 HP motor.
- 406 (25.09%) farmers are using 5 to 7.5 HP motor
- 453 (27.99%) farmers are using > 7.5 HP motor.

The capacity of the water lifting equipment is dependent on the extent of the farm, location of the farm, dept of the water source, and the distance between the source and the point of irrigation. Among the sampled beneficiaries, 40.17% are using lower capacity (<5 HP) lifting units. While 25.09% of the beneficiaries are using medium range (5-7.5 HP) motor,

27.99% of the beneficiaries are using higher capacity (>7.5HP) motors to lift and pump water.

Irrespective of the category, social status and educational back ground, ground situations such as water availability, type of soil, and all the beneficiaries have expressed that, even though they find it difficult to invest money in advance, they are benefited in various ways by installing MIS to their crop. On the economic benefits, these beneficiaries have stated that -

The higher income generation after installation of micro irrigation is attributed to its positive influence on various factors such as growth plants/ bearing/ yield / quality of produce/ and expenditure on weeding & irrigation.

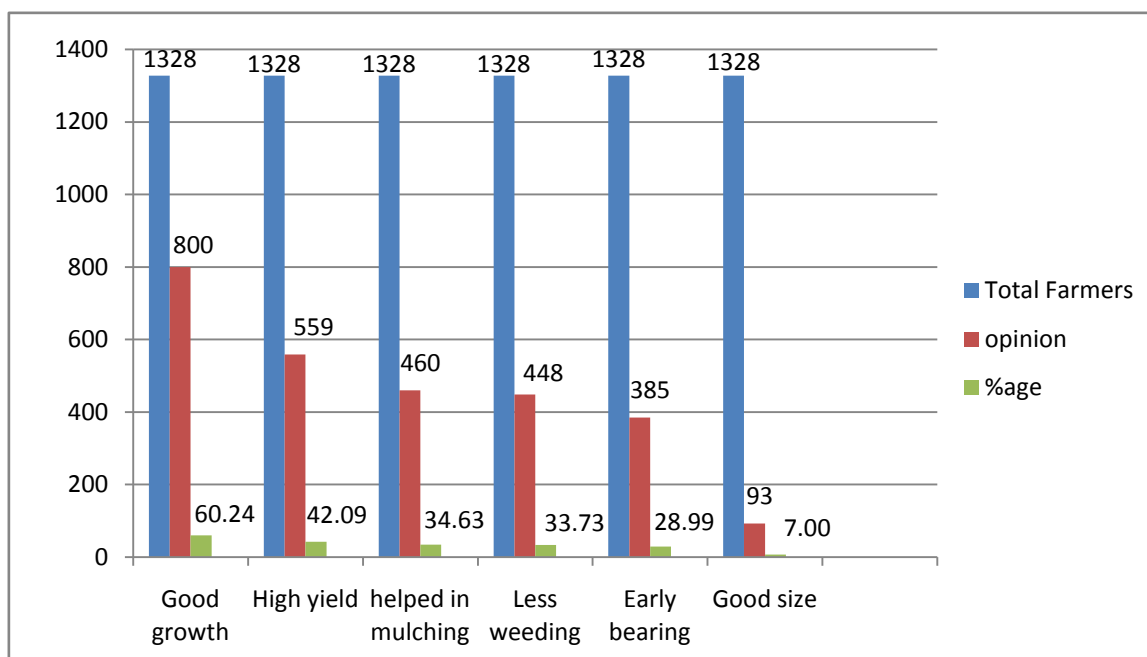
The opinion of farmers on growth and returns is as follows

→ **Changes in health / Growth of the crop:**

- 1328 (82%) beneficiary farmers have said -YES
- 116 (7.17%) beneficiary farmers have said – NO

Among 1328 farmers who have stated that there are changes in Health / growth of the crop,

- 800 (60.24%) have said they have observed good uniform growth.
- 559 (42.09%) have said they got higher yield.
- 93 (07.00%) have said they got healthy good sized nuts.
- 385 (28.99%) have observed early bearing with better quality fruits.
- 448 (33.73%) have said less weeds minimizing labour cost.
- 460 (34.63%) have said MIS has helped in mulching, growing green manure crop and such other factors



➔ **Increased income from the land:**

- 1112 (83.73%) beneficiaries have stated -YES
- 136 (10.24%) beneficiaries have stated- NO.

➔ **As per the information furnished by the sample beneficiaries,**

i. The income from annual / season crops such as vegetables and flowers has increased by 40-50%.

ii. The income from perennial crops, although it is too early to assess the range, in the first year of installation, in later years the productivity of the plants have improved by 15-20% and consequently there is increase in their farm income by 15 to 20% from perennial crops as well.

iii. The impact of MIS against flooding method has also been assessed through control plot survey taken up in Kolar and Tumkur districts in 22 beneficiary plots. The income of crops through flood irrigation is found to be Rs. 0.98 lakhs / beneficiary (on an average Rs. 0.76 lakhs/ha).

- ❖ **The income before MIS was - Rs. 862.80 lakhs (Rs.0.776 lakhs/beneficiary).**
- ❖ **The income after MIS is - Rs.3367.66 lakhs (Rs. 3.028 lakhs/beneficiary).**
- ❖ **The income of irrigated crops through flood irrigation – Rs.0.98lakhs/ beneficiary.**

(Details are indicated in the respective Table)

5.4.2. Evaluation of water use efficiency with Horticulture crops:

The 1618 sampled beneficiary farmers have expressed their opinion on three important factors influencing water use efficiency. They are, (Table 6)

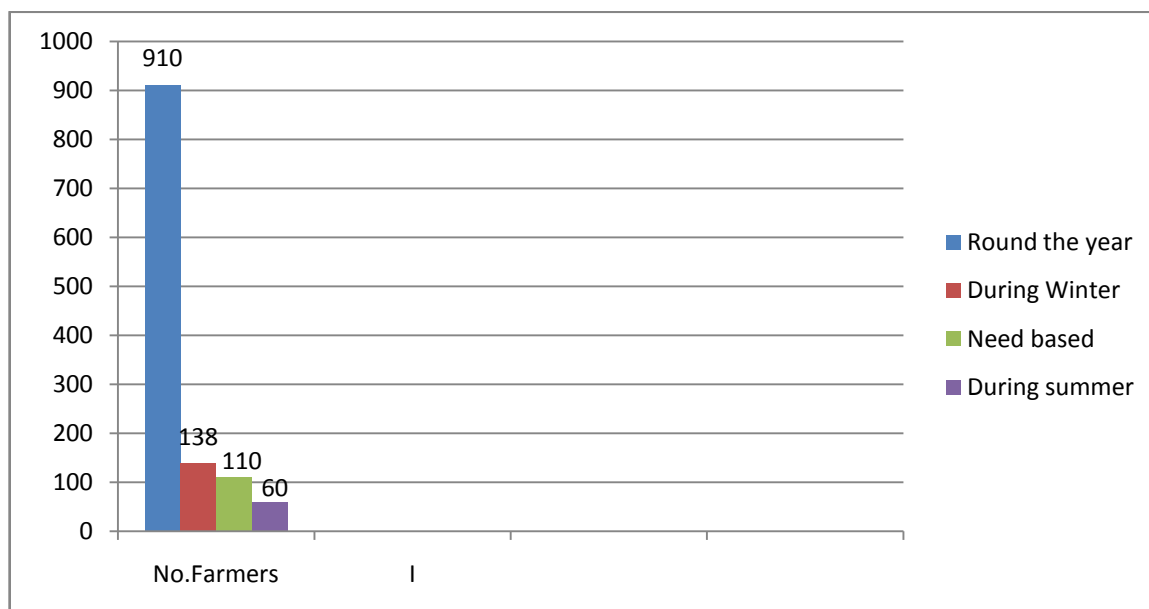
i. Period of using Micro irrigation:

910 (56.52%) farmers have said that they use micro irrigation round the year.

138 (8.5%) farmers have stated that they use micro irrigation during winter.

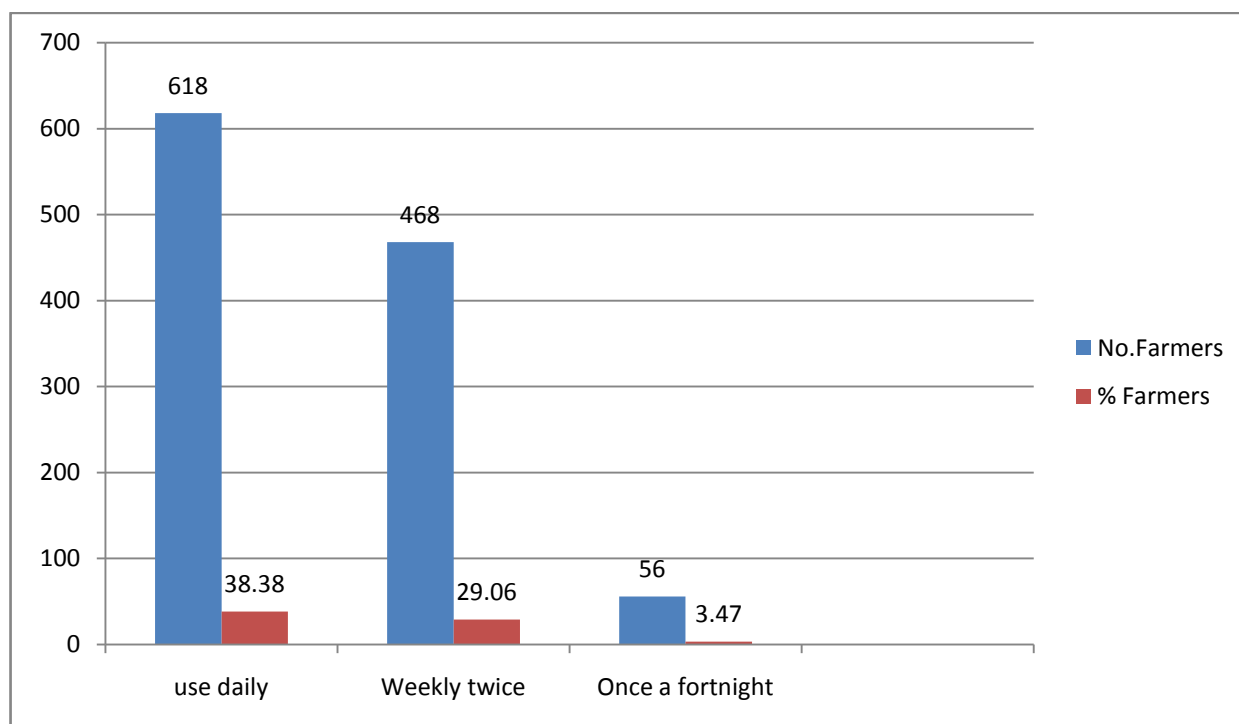
60 (3.72%) farmers have stated that they use Micro irrigation during summer.

110 (6.83%) farmers have stated that they adopt need based Micro irrigation.



ii. Interval between two irrigations:

618 (38.38%) farmers have said that they use MI daily. 468 (29.06%) farmers have said that they use MI weekly twice. 56 (3.47%) farmers have said that they use once a fortnight.



The responses of sample beneficiaries indicate that the water usage in horticulture crops after adopting micro irrigation has helped them increasing period of irrigation, spread of intervals. The impact of MIS on crop is excellent to good. This is the result of efficient use of water due to installation of MIS.

5.4.3. Farmers’ response in the adoption of the scheme:

i. Purposefulness on installation of MIS:

All the 1617 beneficiaries have expressed that MIS serves the purpose.

ii. Farmers response on getting Subsidy:

1594(98.57%) beneficiary farmers have said that they received subsidy.

20 (1.23%) beneficiary farmers said that they did not receive subsidy.

(The range of subsidy varies from 50%, 75% & to 100%)

iii. Impact of MIS on water conservation:

As per study, it has been observed that impact of MIS is quite satisfactory (97.46%) and the rest as average.

334 (20.65%) farmers have stated that the impact is **Excellent**.

835 (51.63%) Farmers have stated that the impact is **Good**.

6 (0.37%) farmers have stated that the impact is **Average**.

The impact of Micro irrigation on water conservation appears immense as 51.63 % farmers interviewed have expressed it as good while 20.65% have said that it is excellent (Table 6).

iv. Performance of the MIS System:

The performance of the system is rated as good/excellent as expressed by (97.34%).

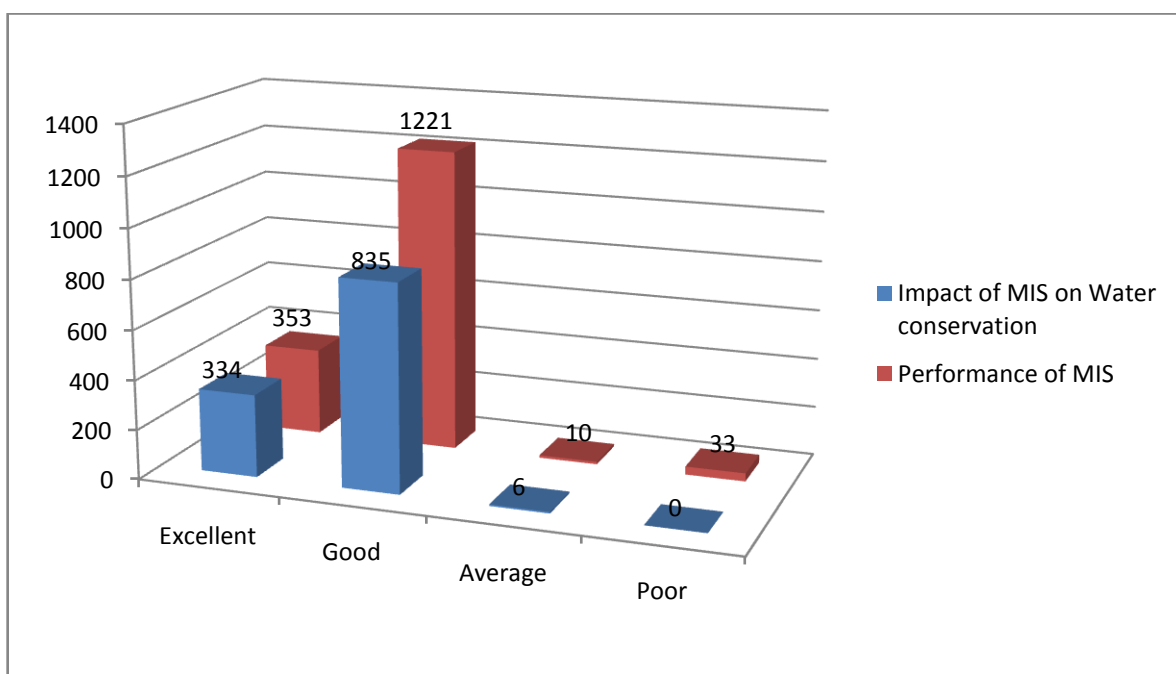
353 (21.83%) beneficiaries have graded it as **Excellent**.

1221(75.51%) beneficiaries have graded it as **Good**.

10 (0.61%) beneficiaries have graded it as **Average**.

33 (2.04%) beneficiaries have graded it as **below Average**.*

*(Hassan-3, Dharwar-3, Davangere-22, Bagalkot-3 & Koppal-2)



97% of the sampled beneficiaries have stated that the performance of the MIS has been good to excellent whereas the rest expressed that the performance has been

average to below average. The reason for this negative feeling is learnt to be because of improper maintenance.

v. On services rendered by Horticulture Department.

385 (23.80%) beneficiaries have stated that the services are **Excellent**.

1205 (74.52%) beneficiaries have stated that the services are **Good**.

2 (0.12%) beneficiaries have stated that the services are **Average**.

16(0.37%) beneficiaries stated that the services are **below Average**.*

*(Hassan-2, Dharwar-3, Raichur-1, Davangere-5, Bagalkot-3 & Koppal-2)



Services rendered by other two stake holders to the farming community would either encourage or discourage them from approaching for any future guidance. On services rendered by the department officials, 98% of the sampled beneficiaries have expressed their satisfaction level from good to excellent. The district wise details are presented in Table 14.

vi. Services rendered by the MIS Suppliers

a). On system installation & maintenance services:

203 (12.55%) beneficiary farmers have graded it as **Excellent**.

1343 (83.05%) beneficiary farmers have graded it as **Good**.

3 (0.18%) beneficiary farmers have graded it as **Average**.

11 (0.68%) beneficiary farmers have graded it as **below Average**.*

*(Dharwar-1, Gulbarga-1, Davangere-4, Bagalkot-3 &Koppal-2, Table 15)

b). In getting subsidy:

189 (11.68%) beneficiaries have graded it as **Excellent**.

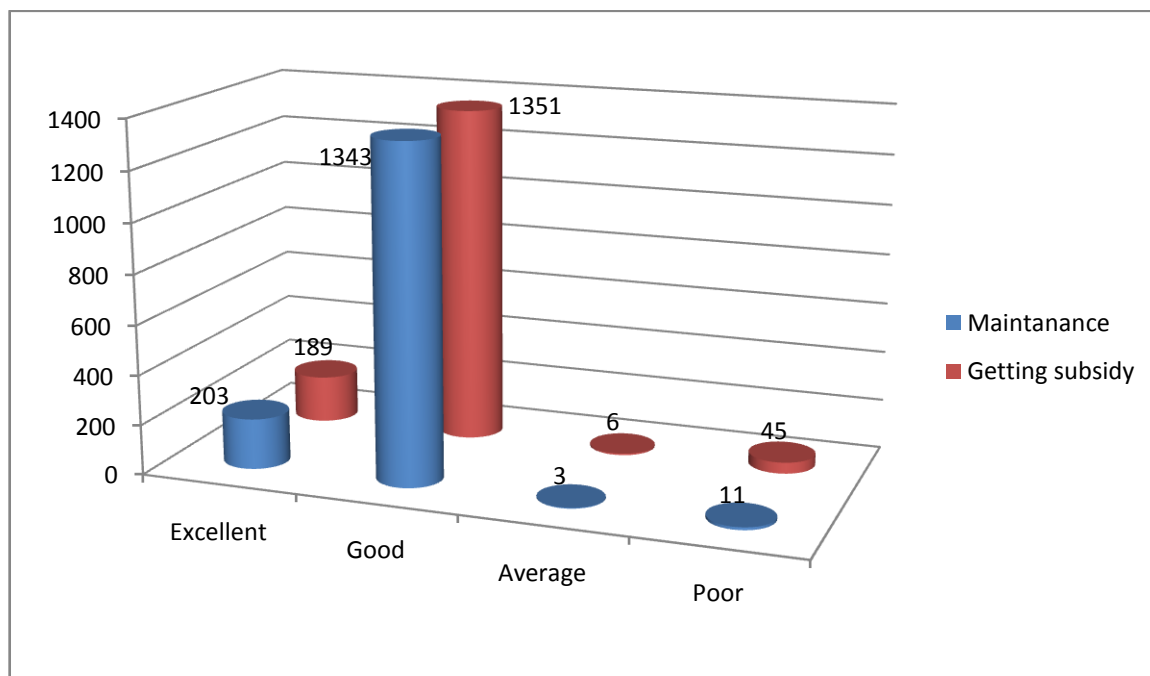
1351 (83.54%) beneficiaries have graded it as **Good**.

6 (0.37%) beneficiaries have graded it as **Average**.

45 (2.78%) beneficiaries have graded it as **below Average**.*

*(Hassan-31, Dharwar-1, Gulbarga-4, Davangere-4, Bagalkot-3 & Koppal-2)

The services of the MIS suppliers are very important. It significantly enhances the popularity of MIS and encourages more number of farmers to adapt the MIS in their farms as well. The services hitherto rendered by them has been appreciated by almost 97% of the beneficiaries to be good to excellent while only 3% have felt it to be average to below average for various extraneous reasons.



vii. On management of irrigation systematically:

1468 (90.78%) beneficiary farmers have said **-Yes**

20 (1.23%) beneficiary farmers have said **-No**.*

*(B'lore (R)-3, Hassan-2, Dharwar-1, Gulbarga-4, Davanagere-4, Bagalkot-3, Koppal-2)

Among the beneficiaries 91% have expressed that MIS has helped them in systematic management of irrigation while the rest needs further training in management.

viii. On Change of cropping pattern:

1090 (67.40%) beneficiaries have changed the cropping pattern.

103 (6.36%) beneficiaries have not changed the cropping pattern.

MIS has brought in a sea change in cropping pattern. 67% of the sampled beneficiaries have changed the crops from seasonal crops to perennial crops increasing income potential from their land.

5.4.4 Involvement of DMIC and drip / sprinkler companies in planning, monitoring and reporting:

The District Micro irrigation committee appears to be nonexistent in 17 districts and active only in 3 districts viz. Bellary, Haveri and Chamarajanagar, that too only in the year 2007-08 and later have ceased to be functional in these three districts also. Even in these three districts the committee members have met only once. Therefore, it can be stated that virtually the DMIC has been a non starter in all the districts.

5.4.5. Impact of technological supports towards productivity enhancement

The interaction with 1617 beneficiary farmers on various aspects of Micro irrigation also delved on the subject of technological support given to them in management of MIS and crop management. As per their statements,

- IAs have trained all of them on management of system, like cleaning filters, using control valves, fertigation unit and the care to be taken not to damage the lateral pipes while ploughing, harrowing and operations in the field.
- Further 75% of the beneficiaries have stated that they have attended training on plant protection, plant nutrition, post harvest management and also water management.
- The beneficiaries have stated that training on plant protection has helped them in pest and disease management. This in turn has helped them in getting higher yield of good

quality produce which fetched them higher returns. Beneficiaries are of the view that minimising pest damage has alone contributed to 10-15% higher returns.

- The training on water management gave them the essential knowledge on
 - a. Water requirement of different crops.
 - b. Crucial stages of crops requiring irrigation.
 - c. Intervals between two irrigations based on the season/crop stage.
 - d. Water conservation by regulating usage and minimising wastage.
 - e. Optimization of water use efficiency for economic benefit.

Majority of the beneficiaries are of the view that through this learning, they are able to maximize output from an unit area by way of regulating water usage, stretching the irrigation period enabling growing of short term crops in the extended period and/or by area expansion. These activities have helped them in earning | 15-20% additional income.

5.4.6. Assessing the nature of inter-relationship and co-ordination between departmental personnel, implementing companies and farmers:

The officials of the State Department of Horticulture, MIS suppliers and Farmers are the stake holders in the Micro irrigation Scheme. It is important and as well essential for all the three to co-ordinate with each other for the successful implementation of the scheme. Keeping this in view, the evaluators sought the opinion of all the three stake holders. The response was overwhelmingly positive and none have expressed any reservations about the co-ordination between them. The highlights of the opinion gathered are furnished herein

All 44 departmental officials, with whom the evaluators had interaction, have expressed that the IAs and farmers have extended full co-operation during the course of implementation of the scheme.

- a. Among 108 dealers representing various approved MI suppliers,
 - 20 have said the coordination between them is excellent.
 - 65 have said the coordination between them is good.
 - 20 have said the coordination between them is satisfactory, And
 - 1 has said the coordination between them has been average.

b. The 1617 sample Farmers who were interviewed by the evaluators had no reservations in expressing their satisfaction about the coordination between them, the IAs and departmental staff. They had no grouse what so ever against any of the remaining two stake holders.

It indicates, that there was extremely good coordination between the three stake holders which has resulted in achieving the set targets.

5.4.7. Nature and efficiency of processing of claims and disbursement of subsidy assessed. Whether subsidy has reached the eligible farmer?

The nature and efficiency of processing of claims is inter dependent on the performance of two important stake holders of the scheme i.e. IAs and officials of the department of horticulture. Their performance in hastening the following processes would influence the efficiency of implementation of MIS scheme.

- i Selection of beneficiaries through panchatiraj institutions.
- ii. Collection of authenticated documents from beneficiaries.
- iii. Inspection & Survey of land & other procedures for installation of MIS.
- iv. Submission of application with necessary documents by IA.
- v. Inspection and processing applications by the Department.

The time taken to process application for subsidy at different levels reflects on the final achievement of the target. 27 out of 44 officers who interacted with the evaluators have replied to our queries. The responses are as follows,

❖ Processing of applications at taluk level:

a. Selection of beneficiaries by Panchayati raj Institutions:

The process of selection of beneficiaries in all the 20 districts subjected for evaluation has been done by the panchayati raj institutions without any exceptions. The process of selection of beneficiaries has taken one to three months depending upon the numbers to selected giving priority to SC (18%), ST (8%), and Women (30%) beneficiaries.

Collection of authenticated documents like land records:

Pahani /Record of rights, water availability certificate, Power supply documents are all important to facilitate sanction of subsidy. In several cases, where crops grown on a particular land has not been mentioned in pahani, the IA has had to run around to get the certificate from the village accountant and further certified by the higher revenue authorities. In such cases, the delay caused in submission of application to sanctioning authority, rendered the beneficiary losing the seniority or losing the opportunity of getting subsidy, the same year.

b. Inspection, Survey of land & other procedures for installation of MIS:

The IAs or their authorised dealers have surveyed the land of each beneficiary for preparing the estimate of requirements such as the length of main line to be drawn, total length of laterals and micro tubes required. Based on their survey, the IAs has submitted the map of the land indicating the location of particular Sy.No. of the village, boundary of the land, Sy.Nos. of lands in the neighbourhood, N/S direction location of irrigation sources. The map also contains the MIS diagram showing the direction and length of main line, laterals, location of filters and other accessories. However, in almost all places, a katcha line drawing instead of well designed map was found with records. This indicates the dealers have not given importance to a very essential document.

c. Submission of application with necessary documents by IA:

Implementing authority through their representatives located at district/ taluks, have collected as required, all relevant documents from the beneficiaries and after completion of the MIS installation works, have submitted them along with prescribed application form duly authenticated by the beneficiaries. However, in majority of the districts, the applications are understood to have been submitted during the last three months of the financial year.

Performance of Micro irrigation system suppliers:

The State Department of Horticulture has approved 36 companies for supply of Micro irrigation systems in the State (list enclosed). These 36 companies/ suppliers have 1060 dealers located in various districts /taluks. The evaluators visited 26 taluks in 20 randomly selected districts and gathered information on their performance during the three year period. The gist of information is furnished herein (Table 2)

Table 2

I.	Area covered	1845.06 ha
II.	No. of drip units installed	1585
III.	Year wise installation.	
	2007-08	431 (27.19%)
	2008-09	602 (37.98%)
	2009-10	524 (33.05%)
	Year NF	28 (01.76%)

The major operators are.

Name of the supplier	No. of units installed.	% share
a. M/s. Jain Irrigations	341	22.48
b. M/s. Megha Agrotech	208	13.71
c. M/s Agroplast	145	9.55
d. M/s. Kothari	76	5.00
e. M/s. Netfim	59	3.89
f. M/s. Sujay	53	3.49
g. M/s. Premier irrigations	49	3.23
h. M/s. Kissan irrigations	38	2.50
i. M/s. Nagarjuna F &C	36	2.37
j. M/s. Supreme drips	27	1.78
k. M/s. Kaveri pipes	20	1.32
l. Others	465	30.65

All the 36 approved companies are active in their respective allotted districts. These companies have put in their efforts to achieve the target in spite of financial constraints and the risks involved. As a result of efforts of these companies/dealers the department could achieve 100% expenditure during the year 2009-10.

d. Receipt of applications and registration in taluk Horticulture office:

All the officers have stated that it is being done on a regular basis.

e. Time take for scrutiny of applications:

25 officials out of 27 who have answered our questionnaire have stated that scrutiny of applications would require one month in general.

f. Time taken for Field Inspection and processing applications by the Department:

The taluk level officers or horticulture officers attached to KVKs are required to inspect 100% of the fields in their jurisdiction as per the seniority of the applications registered in their respective offices. The applications seeking subsidy are submitted by the IAs at the fag end of financial year rendering field inspection a difficult task for the departmental officers. However, the taluk level officers are carrying out this task with utmost urgency to beat the time limit and are able to comply with the stipulations.

23 officers have stated that minimum one month was required for field verification while 2 officers have stated 2 months and one officer has stated 3 months.

g. Time taken for preparation of subsidy claims and onward submission:

Of the 27 officers who responded, 7 have said one month, 6 have said 2 months while one required 3 to 5 months another has stated 6 to 12 months. 8 officers have not mentioned the time or period.

❖ Processing of claims at District level:**a. Time taken for scrutiny of applications:**

The 20 Deputy Directors of Horticulture working in the 20 districts subjected for evaluation have stated during interaction, that one month would be required for processing applications received from different taluks.

b. Time required for sanction of subsidy claims:

Of the 20 officers only 9 have responded. They have stated that the time for sanction of subsidy may vary from one week to 6 months depending on the availability of funds.

The above responses from officers clearly indicate that there is no undue delay at any level. The efficiency in processing claims is very high, but with regard to sanction and

disbursement of claims, the efficiency is high when funds are available and in the absence of funds efficiency takes the back seat.

Negative aspects of Efficiency in Processing of claims and disbursement of subsidy: Processing of claims seeking subsidy begins at taluk level through submission of applications. As per the guidelines, it is the responsibility of the MIS suppliers to guide and assist the farmers who are desirous of installing MIS, in collection of documents, filling of applications and submit the same with all the mandatory documents. The process of submission of applications should take place as soon as the installation is complete. This would provide the Departmental staff sufficient time to inspect the plots, have dialogue with the beneficiary to ascertain the quality and efficiency of the system before processing the application for calculation of subsidy and on ward submission.

However, the evaluators have learnt through discussions with all the three stake holders, that applications seeking subsidy are normally submitted during last two-three months of the financial year leaving no scope for detailed inspection and scrutiny of documents. In such situations it will be very difficult not only to taluk level officers but also to the Deputy Director of Horticulture who is expected to inspect 10% of the plots before sanction of the subsidy.

It is learnt that, on certain occasions, the departmental officers take the risk of processing the application pending field inspection due to paucity of time and complete the formality of inspection before issuing the subsidy cheques. Although it appears unavoidable, laxity on the part of MIS suppliers will go unnoticed at the risk of officials. Therefore, it is advisable to fix a time frame to the MIS suppliers to submit the applications and beyond which no application would be entertained.

The delay caused at the taluk level increases work load at district office during the last one month of the financial year. The excessive work load and pressure to clear as many applications as possible may lead to irregularities and financial improprieties which cannot be retracted later. The fear psychosis of omission and commission reflects on the efficiency.

Secondly, there appears to be inordinate delay in release of grants from the directorate. Such delays compels the district level officers to keep the applications pending for a long period of time while the farmers who have invested money for installation of the system gets restless over the delay in sanctioning and release of the subsidy.

Although e-governance has been introduced to bring in transparency and to enhance efficiency, it is found wanting in achieving the desired results due to delay in release of grants on the one hand and belated filing of beneficiary details affecting the process of sanction and release of subsidy.

Disbursement of subsidy - Whether the subsidy has reached the eligible farmers?

All the above discussed activities are all the means towards this end i.e. for getting financial subsidy. This is an important task set out for the departmental officers. As already stated, it has been the normal practice of IAs in almost all the places to rush through the applications during last three months of the financial year. It is observed that the taluk level officers have painstakingly carried out field inspections and submitted the processed applications along with their inspection report and subsidy that could be granted based on the departmental parameters.

The Deputy Directors of Horticulture, on their part, have scrutinised the application, documents and the recommended subsidy before finally sanctioning the subsidy. The subsidy so sanctioned has been paid to the beneficiaries in the form of cheques as prescribed in the guidelines.

The evaluators have ascertained from the 1617 beneficiaries about receipt of subsidy and all have confirmed that they have indeed received the subsidy. This confirms that the subsidy has reached eligible farmers. Further none of the sample beneficiaries expressed about non receipt of payment or undue delay.

1594 (98.57%) beneficiary farmers have said they received subsidy.

20(1.23%) beneficiary farmers said they did not receive subsidy.

5.4.8. Study of opportunities & limitations in the implementation of MIS scheme with farming system:

The sampled beneficiaries of 15 districts numbering 1091 have responded to our queries on possible opportunities for MIS in different farming systems. These 15 districts are spread over in different climatic zones with different cropping pattern. The opinion of farmers is as under (Table 4)

Opportunities:

- 323 (29.60%) beneficiaries felt that there is ample opportunity for water management and soil moisture regime.
- 541(49.58%) beneficiaries have said that there is scope for fertigation.
- 347 (31.80%) have said, weed growth is controlled; labour problem minimised and can overcome power problems.
- 5 (0.46%) have stated that nutrient loss is minimised.

All the beneficiaries have expressed that MIS has opened many avenues for improvement in crop management and yield potential.

Limitations:

- 126 (11.55%) beneficiaries stated that rat damage is a major concern.
- 46 (4.21%) beneficiaries have felt that mixed cropping is not possible.
- 435 (39.87%) beneficiaries say that clogging of filter & tubes requiring acid frequent treatment are also a major limitation in MIS.

The response of beneficiaries amply proves that while there are some manageable limitations, opportunities for MIS are umpteen (Table 7).

Any system installed in the open field would be exposed to various problems.

And MIS is no exception. However, all the problems expressed by the farmers are manageable and have easy and cost effective remedies.

5.4.9. Whether subsidy covers all categories of farmers?

1. Selection of beneficiaries by the taluk level panchayati raj institutions is done as per the guidelines issued by the State Department of Horticulture. The guidelines stipulates the, Beneficiary reservation as-

- a. Scheduled Cast - 18%,
- b. Scheduled Tribe - 08%,
- c. Women - 30%.

Accordingly, the selection process has taken place. A total number of 1617 beneficiaries falling under various categories have interacted in the selected 20 districts.

The following Category of farmers in the sample have got the subsidy

SC beneficiaries.	63 (03.89%)
ST beneficiaries	48 (02.96%)
Other Backward communities.	574 (35.47%)
Minority community beneficiaries.	104 (06.42%)
General category	742 (46.05%)

Other categories:

Women	60 (3.70%)
Physically handicapped	27 (1.66%)

TOTAL 1618

It may be noted that 54 percent of the sampled beneficiaries are from weaker section of the society and the remaining 46 percent are from general category.

The social status of the beneficiaries among the samples are furnished herein,

No. of Small farmers.	655 (40.48%)
No. of Marginal farmers.	322 (19.90%)
No. of Big farmers.	614 (37.95%)

Among these, 32.38 percent are having post metric qualification, while 49.13 percent of the beneficiaries are pre metric and 17.05 percent are illiterates.

It is clear from the above information that care has been taken to cover all the categories of farmers under MIS scheme.

5.4.10. Problems in identifying farmer beneficiaries:

The implementing agencies have expressed that, although there is no difficulty in identifying the beneficiaries, they are facing difficulty in getting number of beneficiaries in the reserved category to comply with the guidelines. Secondly, the small & marginal farmers and farmers falling under reserve category are hard pressed for funds and find it difficult to advance money for installation of MIS.

5.4.11. Whether there is any change in cropping pattern?:

The sample beneficiaries who have been following dry land cropping pattern like growing ragi, jowar, cotton, maize chillies etc. under rainfed conditions are now able to grow horticulture crops such as mango, sapota, Banana, coconut, Grapes, Areca, vegetables and flowers due to installation of MIS in their fields.

The evaluators have ascertained from the beneficiaries about the status of irrigation facility in their land and mode of irrigation adopted by them.

The status of land before installation of MIS in their lands is furnished herein,

Status of land holdings with sampled 1618 beneficiaries:

a. Rainfed	519.13 ha
b. Irrigated.	1793.73 ha
TOTAL	2312.86 ha

Irrigation status of lands owned by sampled beneficiaries before MIS:

Area covered by Basin/ flood/ Furrow method 1955.38 ha.

Area covered by drip installed earlier to MIS 195.31 ha.

Of the 1617 sampled beneficiary farmers Majority of them have either entirely changed the cropping pattern or added new crop/crops with the existing ones. According to their responses to the questionnaire, 1090 (67.40%) beneficiaries have changed the cropping pattern and the rest have perennial crops and hence not changed.

Compliance with the guidelines:

Directorate of Horticulture has issued elaborate guidelines on the procedures to be followed at various stages of implementation of the scheme. The said guidelines consist of 46 points of which 43 pertains to district and taluk level scheme implementing officers.

The evaluation teams have kept these guidelines for reference while assessing the performance efficiency of the staff in sanctioning the subsidy.

The evaluation teams have not found any divergence from the guidelines in any of the 20 districts subjected for evaluation.

The evaluation teams have not come across any instance of overlooking any particular guideline either at taluk or at district level. The officers have been able to implement the scheme successfully without much difficulty. It has been ascertained during the detailed discussions with the taluk level officers that,

- a. A registry is maintained to register the names of farmers desirous of installing MIS
- b. An application registry is maintained to make entries of the receipt of applications
- c. All applications have been scrutinized to confirm that the entries are correct and essential documents are attached. Documents have been verified to ascertain,
 - i. The details of S. No.& extent of land, crop, wells etc. in the pahani & application,
 - ii. Claims about equipments like, ventury, Bypass Assembly, fertigation tank,
 - iii. Signature of the dealer/company, Vat No., Sales Tax No. are mentioned in the application
 - iv. Map containing technical details,
 - v. Certificate for satisfactory functioning of MIS,
 - vi. Three year Guarantee certificate,
 - vii. Certificate from beneficiary for using the system for minimum of three years.
 - viii. Beneficiary photo,
 - ix. Delivery challan, Technical handout,
 - x. Work completion report and acknowledgement for receipt of payment-by the farmer
- d. Field inspection is taken based on seniority has been taken up for verification of,
 - i. Whether the beneficiary has his own water resources,

- ii. Whether the system has been installed as per the design,
 - iii. Whether all the items mentioned in the bill are installed,
 - iv. To confirm ISI specification,
 - v. To check uniform distribution of water to all parts of the garden.
 - vi. To cross check the details such as boundary markings, location of filter, and measurements of installed pipes.
- e. On completion of inspection that subsidy claims are prepared as per the ready recknor provided to them and forwarded to Deputy Director of Horticulture for sanction of subsidy,
- f. On receipt of files, the Deputy Director has inspected 10% of the plots and there-after sanctioned the subsidy,
- g. Subsidy amount paid through A/c payee crossed cheque to the beneficiary.

All the procedures have been followed scrupulously in compliance to the guidelines.

The procedures set forth in the guidelines have helped the officers in implementing the scheme successfully and efficiently thereby achieving the set goal.

CHAPTER VI

6.1 CONCLUSION:

Government of India sanctioned the Micro irrigation Scheme at the fag end of financial year 2005-06 and therefore, no cognisable activity could take place in that year. Ear 'nest efforts appears to have been made by the Departmental staff and MIS suppliers from the financial year 2006-07 for successful implement the Micro irrigation Scheme in all the 29 districts of the State. Notionally by the end of March 2010, Micro Irrigation Scheme has completed five years of implementation. Hence, the State Department of Horticulture desired to evaluate the impact of the scheme and to assess its success in fulfilling the objectives viz;

Objectives of Micro-irrigation Scheme:

To increase the area under irrigation.

To increase the coverage of area under micro irrigation.

To promote efficient use of water resources.

To increase the yield/productivity of the crop.

To improve the economic status of farmers in the region.

The State Department of Horticulture entrusted the task of evaluation to IN-RIMT, Bangalore. M/s IN-RIMT on their part has diligently carried out the evaluation as envisaged in the terms of reference.

The task of evaluation was taken up in right earnest by obtaining information such as guidelines, States financial achievement, subsidy pattern and list of approved MIS suppliers and their dealers in districts / taluks etc. from the Directorate. Three different questionnaires for collecting information from each of the three stake holders of the scheme were prepared. The evaluators were appraised and practically trained on the approach to be adopted in collecting information from different stake holders. Later on follow up visits to district and taluk Horticulture offices and further to the farmers' fields were taken up.

In the meanwhile the information obtained from the Directorate was also subjected to analysis to know status of overall performance at the State level.

The financial figures furnished by the Directorate of Horticulture clearly indicate that the performance at district level has been exemplary leading to maximization of physical achievement. The gist of financial achievement for the three years subjected for evaluation is in the range of,

Sl.No.	Financial Year	% Achievement
1.	2007-08	74.02
2.	2008-09	78.73
3.	2009-10	99.99

The financial achievement has been steady and reached its peak of 100% in the third year itself. The performances in the first two years under review are also very good indicating the zeal of the implementing agencies and eagerness of farmers for adopting the Micro irrigation System. The tempo should be maintained in the remaining plan period to pass on the benefits to farmers thereby achieving the set goal of bringing in more areas under irrigation, to increase productivity of horticulture crops and usher in economic development in rural areas.

Evaluation work was carried out in randomly selected 24 taluks of 20 districts. During the course of evaluation, evaluators have met all the three important stakeholders in the scheme viz,

a. Departmental Officers-i. Deputy Director of Horticulture -	20
ii. Sr. Asst. Director of Horticulture -	24
iii. Assistant Director of Horticulture -	08
b. MIS suppliers/ Dealers	108
c. Sampled Beneficiary farmers.	1617

The process of selection of beneficiaries in all the 20 districts subjected for evaluation has been done by the panchayati raj institutions without any exceptions. The process of selection of beneficiaries has taken one to three months depending upon the numbers to selected giving priority to SC (18%), ST (8%), and Women (30%) beneficiaries. In all,

1617 beneficiary farmers were sampled for field visit and to seek their responses about various aspects of MIS, such as benefits of MIS, getting subsidy, training, cropping pattern etc.

The interaction with the above listed stake holders has given very concrete evidence of successful implementation of MIS during the period subjected for evaluation. The salient features of evaluation are furnished herein;

All the officers have expressed in unison that, adoption of Micro irrigation system has ushered in an economic change in the beneficiary families. They have stated that the change is for the good. As per their opinion,

- i. The Micro irrigation system has helped the farming sector.
- ii. There is noticeable change in beneficiary families.
- iii. On an average 40-50% increase in their farm income from annual / seasonal crops brought under MIS
- iv. The increase in income from perennial crops ranged from 15-20%

The beneficiary farmers have expressed that -

The higher income generation after installation of micro irrigation is attributed to its positive influence on various factors such as growth plants/ bearing/ yield / quality of produce/ and expenditure on weeding & irrigation.

83.73% beneficiaries have said there was increase in income. The income status before and after installation of MIS as reported by them,

- ❖ **The income before MIS was - Rs. 862.80 lakhs (Rs.0.776 lakhs/beneficiary).**
- ❖ **The income after MIS is - Rs.3367.66 lakhs (Rs. 3.028 lakhs/beneficiary).**
- ❖ **The income of irrigated crops through flood irrigation – Rs.0.98lakhs / beneficiary.**

Among the 1617 sampled beneficiary farmers,

56.52 percent farmers have stated that they use micro irrigation round the year, while only 38.38% percent farmers have said that they use MI daily. The rest use the system based on the requirement.

The responses of sample beneficiaries indicate that the water usage in horticulture crops after adopting micro irrigation has helped them increasing period of irrigation & spread of intervals.

90 percent of the beneficiaries have said that they are able to manage the available water systematically increasing the water use efficiency.

The impact of MI on crop health and productivity is stated to be excellent to good.. 67 percent of the farmers have changed the cropping pattern owing to installation of MIS.

Similarly, 75 percent farmers are happy with performance of the system and about the services rendered by the Departmental officers and MIS suppliers.

Among the sampled beneficiaries 98 percent have received the subsidy within 6 months.

An overwhelming percentage (90%) of beneficiaries has appreciated the coordination between all the three stake holders.

The MIS suppliers have a major role in educating farmers about benefits MIS and convincing them to adopt the MI in their land to systematically use the available water. They have been successful in convincing farmers living in their allotted district / taluk. The performance speaks about the efficient role played by them.

I. Area covered	1845.06 ha
II. No. Of drip units installed	1585
III. Year wise installation.	
2007-08	431
2008-09	602
2009-10	524
Year NF	28

The companies have trained all the beneficiaries on periodic maintenance of MIS, distribution of water, time schedule and use of liquid fertilizers. Majority of the

beneficiaries interacted with the evaluators stated that they were ably assisted by the company people in documentation, servicing power to the system, in getting subsidy.

Beneficiary farmers have also appreciated the efforts of the departmental staff in the process of screening subsidy applications, timely field visits, early scrutiny of applications and sanctioning subsidy. 98 percent of the sampled beneficiaries have got their subsidy within a period of 4-6 months.

50 percent of the sampled beneficiary farmers have said that MIS has opened opportunity for fertigation, minimizing labour and scope for intercropping while 39 percent have said clogging of micro tube is the major limitation in MI system.

67 percent sampled beneficiaries have changes in the cropping pattern after installation of MIS.

Thus, all the objectives enunciated in the scheme have been achieved with minimum or almost none aberrations of the guidelines.

The performance of Officers and Officials of the State Department of Horticulture working at various levels and places has been exemplary.

Similarly the efforts of MIS suppliers and/or their dealers in scouting for suitable and eligible beneficiaries, timely installation and submission of application seeking subsidy with all the necessary documents is praiseworthy. It is well accepted by the departmental staff that but for their efforts achievement of 99.99 percent target in the year 2009-10 would not have possible.

Farmers on their part have well accepted the new system of irrigation for bettering their economic status.

All these factors have contributed towards achieving the set goals.

6.2 SUGGESTIONS:

1. Strengthening of District Micro Irrigation Committee (DMIC) and creation of Taluk MICs:

Water is the basic need of agriculture. Government of India has initiated various measures to cover more area under various types of irrigation facilities. Micro Irrigation has proved to be one of the most effective measures to provide irrigation to larger tract of land at micro level. Augmenting irrigation to enhance production is a national priority. The responsibility of both elected representatives and the officials in implementation of MIS is immense. Therefore, State Level and District Level Micro Irrigation Committee were formed to facilitate effective implementation. The role of DMIC in implementation of the scheme is more of a facilitator than a controlling authority at District level.

As per the guidelines, the DMIC is required to meet regularly once a quarter to assess the status of implementation and guide the implementing officers and the Agency. The Departmental officers and the MIS suppliers on their part shall brief the DMIC on the category wise number of beneficiaries identified; number of MIS installed/being installed, financial implications, subsidy sanctioned/disbursed, availability of grants etc. and field problems if any requiring DMIC intervention. Based on the information furnished the DMIC shall respond suitably and ensure co ordination between the stake holders.

However, the evaluation teams have found that the DMICs are not active in most of the districts. The committee has neither met regularly nor shown any interest to ascertain the status of the scheme. This attitude of the DMIC may be due to absence of any authority over the finances and /or formulation of scheme, selection of beneficiaries etc.

It is essential that the members of the DMIC are sensitized about their role and obligations to the society at large and ensure their active participation. The following suggested measures may bring in life to the inactive DMICs.

Secretary to Government, Horticulture Department ought to evince interest in activating the DMIC.

Frequent correspondence from Secretary level to Chief Executive Officers, Zilla Panchayat may change their posture about DMIC.

The Chief Executive Officer, Zilla Panchayat should be made responsible for conducting the DMIC as specified in the guidelines.

Additional Director/Joint Director of Horticulture (MIS) may well have to meet the ZP CEOs during their visits and discuss the importance of DMIC and appraise them on the difficulties faced by the District and Taluk level officers while implementing the scheme.

The Deputy Director of Horticulture, being the secretary of the DIMC should report to the Directorate of Horticulture about the difficulty in arranging/conducting the DMIC meeting.

Similarly, a monitoring committee at taluk level may be constituted with Taluk Panchayat Executive Officer as the chairman, to facilitate effective implementation of the scheme. The taluk level committee would assist the implementing agency (the MIS suppliers) in hastening the process of selection of beneficiaries, obtaining revenue documents, installation of system, arranging training programme, obtaining grants and such other related activities.

2. Negative aspects of Efficiency in Processing of claims and disbursement of subsidy and e-governance:

Processing of claims seeking subsidy begins at taluk level through submission of applications. As per the guidelines, it is the responsibility of the MIS suppliers to guide and assist the farmers who are desirous of installing MIS, in collection of documents, filling of applications and submit the same with all the mandatory documents. The process of submission of applications should take place as soon as the installation is complete. This would provide the Departmental staff sufficient time to inspect the plots, have dialogue with the beneficiary to ascertain the quality and efficiency of the system before processing the application for calculation of subsidy and on ward submission.

However, the evaluators have learnt through discussions with all the three stake holders, that applications seeking subsidy are normally submitted during last two-three months of the financial year leaving no scope for detailed inspection and scrutiny of documents. In such situations, it will be very difficult not only to taluk level officers but also to the Deputy Director of Horticulture who is expected to inspect 10% of the plots before sanction of the subsidy.

It is learnt that, on certain occasions, the departmental officers take the risk of processing the application pending field inspection due to paucity of time and complete

the formality of inspection before issuing the subsidy cheques. Although it appears unavoidable, laxity on the part of MIS suppliers will go unnoticed at the risk of officials. Therefore, it is advisable to fix a time frame to the MIS suppliers to submit the applications and beyond which no application would be entertained.

The delay caused at the taluk level increases work load at district office during the last one month of the financial year. The excessive work load and pressure to clear as many applications as possible may lead to irregularities and financial improprieties which cannot be retracted later. The fear psychosis of omission and commission reflects on the efficiency.

Secondly, there appears to be inordinate delay in release of grants from the Directorate. Such delays compels the district level officers to keep the applications pending for a long period of time while the farmers who have invested money for installation of the system gets restless over the delay in sanctioning and release of the subsidy.

Although e-governance has been introduced to bring in transparency and to enhance efficiency, it is found wanting in achieving the desired results due to delay in release of grants on one hand and belated filing of beneficiary details on the other affecting the process of sanction and release of subsidy. The majority of the Officers interacted with have expressed their satisfaction about the online payment system being followed and have appreciated the initiative.

3. Lacunae in scheme guidelines and field implementation:

a. Role of Panchayati Raj Institutions in selecting beneficiaries:

Micro irrigation scheme is implemented at farm land level. As per the guidelines, panchayati raj institutions are to be involved in selection of beneficiaries. However, there is no clarity on the role of panchayati raj institutions.

It needs to be clarified how the panchayati raj institutions at village level and taluk level have to assist in selection of beneficiaries without duplication and repetition of the process.

b. Inclusion of seasonal crops such as vegetables and flowers for grant of subsidy under MIS is a welcome change. Many farmers have availed the benefits. On closer scrutiny of the subsidy facility, unsavoury facts come to light. Unlike in perennial crops, there is vast

scope for misuse of the facility in seasonal / annual crops. To drive home the point an example is given here under.

Farmer A has 3 acres of land in Survey No.'X'. Mr. A grows a seasonal crop (vegetable / flower) in an acre land, installs MIS and avail subsidy as per norms. Next season or an year after, Mr. 'A' applies for MIS subsidy for one more acre out of remaining two acres of land as per record. As per guidelines he is eligible to avail the benefit. The scope for misuse creeps in at this juncture.

In the first instance, the MIS supplier who is also the agency to identify, motivate the beneficiary, submits application with a sketch of Survey No. 'X' land and indicate crop at a particular location. Next season when applied for the additional area, the location of the on the sketch is shifted to suit the requirement. However, on the field, neither there will be actual shift nor the extension of the system.

In the second instance, where again subsidy is sought for an acre of crop, one can find in actual a shift of the location of crop on the same survey number, but along with old MIS system. That is to say, Mr. A will not purchase any additional material and instead use the same material installed during the previous year by simply shifting with just addition of few meters of main line. This he does in connivance of the local dealer. Thereby Farmer 'A' gets additional subsidy without investment.

The scope for such and other innovative ways of hoodwinking is possible in seasonal crops and suitable effective measures to check misuse of funds appears essential.

Extending subsidy to farmers not having irrigation resources:

Many small and marginal farmers may find it difficult to invest on bore wells/open wells on their own, but are interested in adopting modern horticulture to boost up their income. There is scope and opportunity for such farmers to install MIS and avail subsidy if their neighbours having bore well / open well and are willing to share. In such cases farmers have to obtain consent letter / no objection certificate from the neighbour to the effect that he would provide water for irrigation at least for a minimum period of five years. Based on such documents, subsidy may have to be sanctioned to encourage small and marginal farmers to improve their economic status.