2. Sprinkler and drip irrigation scheme (1991-92)

Background

Sprinkler and drip irrigation systems have recently been introduced with the objective of utilising economically the quantity of water available for irrigation for bringing maximum possible area under irrigation. In order to facilitate the adoption of these irrigation systems, the Government of Maharashtra has been implementing this scheme since 18th November, 1986.

Implementing Programme

Sprinkler and drip irrigation systems: In the sprinkler irrigation system, crops are watered not through field channels but by sprinkling through sprinkler. In the drip irrigation system, arrangement of tubes is made so that water trickles near the roots of plants/grafts and water is thus supplied to them in the required quantity. The sprinkler irrigation system is suitable mainly for cereals and oilseeds while drip irrigation system is suitable for fruit-crops, vegetables and other cash crops wherein the distance between the plants is more. Through the Sprinkler and Drip Irrigation Scheme, subsidy is given to farmers according to their land holding size for installing such irrigation sets. The extent of subsidy prescribed is 50 per cent for marginal and small farmers, 35 per cent for medium farmers and 30 per cent for big farmers, the maximum limits being Rs.20,000, Rs.14,000 and Rs.12,000 respectively.

By following the sprinkler and drip irrigation systems, there is saving in the quantity of water and some more benefits are also achievable e.g. increase in the production and upgradation in the quality of crop, saving in the expenditure on land-development and farm operations like weeding etc., decrease in soil erosion and avoiding water logging etc..

Objectives of evaluation study

The objectives of the evaluation study were to assess the extent to which the benefits of these irrigation systems mentioned above were actually received by the beneficiaries and to study the bottlenecks at different levels in the implementation of the scheme.

Sample Selection

Twelve of the districts in the State were selected for this study. From the selected 12 districts, 24 Block Development Officers, 30 Branch Managers of Banks, 41 distributors of sprinkler/drip irrigation sets, 175 beneficiaries of sprinkler irrigation sets and 240 beneficiaries of drip irrigation sets were selected for this survey. In addition to this, 16
non-beneficiary farmers who had applied for the benefit of sprinkler/drip irrigation sets and had not received the same were selected for the survey. The findings of the survey are summarised in the following paragraphs.

**Period of field work**

5. This evaluation study was done by the Directorate of Economics and Statistics in April-May 1991.

6. **Findings**

**Progress of the scheme**

1. Under the Sprinkler and Drip Irrigation Scheme sponsored by the State Government, Rs.14.6 crore were disbursed towards subsidy from 1986-87 upto January 1991 and area expected to be benefitted was at 13,100 hectares.

**Progress in the selected districts**

2. In the 12 districts selected for the study, subsidy for installing sprinkler sets under the scheme (State and Centrally Sponsored) was given to 5,707 beneficiaries and that for installing drip irrigation sets was given to 6,395 beneficiaries during the period 1986-87 to 1989-90. The average project cost per beneficiary of sprinkler set was Rs.14,450, out of which the share of loan, subsidy and self-raised resources of the beneficiary was 45 per cent, 32 per cent and 23 per cent respectively. The average project cost per beneficiary for drip irrigation set was comparatively more than that for sprinkler set at Rs.29,500 and the share of loan, subsidy and self-raised resources of the beneficiary was 44 per cent, 25 per cent and 31 per cent respectively.

3. The average area per beneficiary under sprinkler set was 1.50 hectare while that under drip set was 0.93 hectare.

4. In the beginning, the condition of taking loan from bank was envisaged in the scheme. This condition was relaxed from June, 1989 and subsequently 3,862 beneficiaries took benefit of the scheme by taking only subsidy and not bank loan and made the rest of the expenditure through their own resources. The proportion of such beneficiaries in 1989-90 was as high as 45 per cent.

5. Amongst the beneficiaries of the Sprinkler (State and Centrally Sponsored) and Drip Irrigation Schemes, majority of the beneficiaries (55 to 72 per cent) were marginal or small farmers and they shared 57 to 74 per cent in the total subsidy disbursed. Proportion of medium farmers was also 26 to 41 per cent and the share of subsidy disbursed to them was 24 to 41 per cent. Thus the beneficiaries of the scheme are marginal, small or medium farmers to a large extent. The proportion of beneficiaries belonging to S.C./S.T. was only one per cent. In majority of the districts, preference
was being given to S.C./S.T. farmers while sanctioning the cases, but their proportion in the applicant farmers was much less.

6. Meetings of the District Committees: The meetings of the District Committees to be held for recommending subsidy were held as per prescribed norm (i.e. one meeting in two months) in only two of the 12 districts surveyed. Though the number of meetings held was less in the remaining districts, it was reported that all the process of the scheme was completed in these meetings. The extent of the meetings to be held by Chief Executive Officer, Zilla Parishads for taking review of the scheme was much low.

7. Verification of the sets: The extent of verification of the sets of sprinkler given to the beneficiaries as verified by Agricultural Development Officer, Block Development Officer and Agricultural Officers was found to be 36 per cent, 33 per cent and 69 per cent respectively. As for the drip irrigation sets, the extent was 19 per cent, 36 per cent and 91 per cent respectively. The extent of verification by the officers at district and tehsil level seems to be appropriate. However, after the installation of the sets, the follow-up as to whether the sets are really in existence is done in only 25 per cent of the tehsils. Such follow up is necessary all over the State to avoid any irregularities in the scheme.

8. Checking quality of the sets: To have control over the quality of the drip irrigation sets, it is expected to get the sets checked from laboratories on sample basis. Such checking was not at all done in 9 of the 12 districts in the survey. This aspect is unsatisfactory and this implementation has to be done to keep control over the quality of the sets.

9. Guidance regarding use of sets: Monthly workshops are arranged by the Agricultural Department at district level and it is expected that messages giving guidance to the beneficiaries regarding the use of sets be prepared and circulated by agricultural staff through such workshops. However, it was observed that such action was taken in only 5 of the 12 districts in the survey. It is necessary that such guidance be made easily available to the beneficiaries who need it.

10. Loan by the banks for installation of the sets: In the tehsils selected for the study, the loan cases for installation of sets were handled in a large proportion (49 per cent) by co-operative banks. The share of commercial and rural banks in handling the loan cases was 40 per cent. The remaining loan cases were handled by sugar factories and other institutions. Two-third of the implementing officers of the scheme opined that the working of the banks regarding the sanction of loans was satisfactory, while one-third of the officers opined that sanctioning of the loans was delayed by the banks. Some officers informed that the banks, while sanctioning the loans, demanded for advance subsidy or margin money. Concerned officers also complained that the co-operative banks did not sanction the loans according to the quotations but sanctioned the same by
considering cropwise limits of the loan. It is necessary that the Agricultural Department discuss with the concerned bank officials and eradicate such difficulties.

11. It was observed that in 13 per cent of the bank offices surveyed, some amount was compulsorily taken from the beneficiaries as down payment before sanctioning the loans for sets. It was also observed that there was no uniformity in fixing the duration of repayment of loan amongst different banks. In this respect also, it is necessary to discuss with NABARD and the banks and decide some uniform suitable system.

12. After-sales service from distributors: It was opined by the Agricultural Officers in one-third of the 24 tehsils surveyed that the after sales service of the distributors of the sets was unsatisfactory. Also 13 per cent of the beneficiaries of sprinkler and 22 per cent of the beneficiaries of drip irrigation sets selected for survey expressed dissatisfaction over the after sales service of the distributors. It is necessary to make efforts to improve the after sales service of the distributors. Otherwise, it may not be possible for the beneficiaries to achieve maximum utilisation of the set.

13. The distributors selected for the study had on an average supplied 35 sets per year to the cultivators. The distributors informed that out of these sets, on an average one sprinkler set and two drip sets had to be repaired per year. If this information is factual, the extent of occurring defects in the sets seems to be negligible. The distributors received the amount of bank loan, in general, within one to one and a half month after installation of the sets. However, they complained that there was much delay in getting the amount of subsidy from the Government.

14. Guarantee of one to seven years of the sets distributed to the beneficiaries was given by the distributors and thus no uniformity was observed in this respect. It is necessary to make efforts for bringing uniformity in this aspect.

15. Suggestions by Agricultural Officers about the implementation of the scheme: In order to effectively implement this scheme, the Agricultural Officers have made the following suggestions:

   i) Government orders in this scheme may be issued in the beginning of the month of April itself instead of issuing them in May or June.

   ii) Subsidy may be granted for all the crops.

   iii) The limits of amount of loan sanctioned by the Branch Managers of the banks may be enhanced.

   iv) The limit of per acre expenditure of the sets is prescribed by the Government in 1986. It is necessary to enhance the limit as the actual expenditure over the sets has been about double the limit.
16. Benefits received by the cultivators through the scheme: To assess the benefits received by the cultivators through this scheme, related information was collected from 175 beneficiaries of sprinkler sets and 240 beneficiaries of drip sets and important findings therefrom are given below.

17. Benefits from sprinkler sets: The proportion of marginal and small land holders in the beneficiaries of sprinkler sets was 46 per cent and that of medium holders was 43 per cent. Thus it is observed that the benefit of sprinkler sets was received mainly by marginal, small and medium land holders.

18. Area under irrigation: In 1989-90, the average land under cultivation of the beneficiaries of sprinkler sets was 3.32 hectare, out of which 1.99 hectare (60 per cent) was under irrigation through conventional and sprinkler systems together. Prior to using the sprinkler sets, their average land under cultivation by conventional methods was 1.54 hectare (47 per cent). This shows that there is increase of 29 per cent in the land under irrigation of the beneficiaries due to sprinkler sets. Their average land under irrigation through sprinkler sets was 1.19 hectare. There was sizeable increase in the land under irrigation of the marginal and small holders after getting the benefit of the scheme and 87 per cent of their land under cultivation was under irrigation. It was observed that 44 per cent of the beneficiaries of sprinkler sets were practising sprinkler set in the whole of their area under irrigation and 19 per cent from the remaining beneficiaries were not able to do so due to financial difficulties.

19. Saving in water due to sprinkler sets: As mentioned earlier, there was increase in the area under irrigation by 29 per cent due to saving in water as the effect of using sprinkler sets. The beneficiaries in whose irrigated area there was no increase informed that due to saving in water they could supply the available water in uniform quantity throughout the year and thus there was increase in crop production.

20. Change in cropping pattern due to sprinkler sets: It was observed that there was remarkable change in the cropping pattern of the beneficiaries due to adoption of sprinkler sets and the area under cash crops was doubled after the installation of sprinkler sets.

21. Increase in the agricultural production: It was observed that per hectare production from irrigated land of the beneficiaries had increased by 20 per cent after adoption of sprinkler sets. Considering together the 29 per cent increase in the area under irrigation due to sprinkler sets and the 20 per cent increase in the production from irrigated area, it is felt that the beneficiaries are certainly benefited due to adoption of sprinkler sets.

22. Other benefits due to sprinkler sets: In addition to the above mentioned benefits viz. increase in the area under irrigation and that in the production from irrigated area,
the beneficiaries also mentioned the following benefits having received due to sprinkler sets: improvement in the quality of crops (54 per cent beneficiaries), saving in the expenditure on land development and field operations like weeding etc. (26 to 29 per cent), decrease in the soil erosion (76 per cent) etc..

23. Average expenditure on sprinkler sets: The average expenditure on installation of sprinkler sets, as reported by the beneficiaries, was Rs.13,500 per beneficiary and Rs.11,300 per hectare. Fifty per cent of the beneficiaries selected for study had installed sprinkler sets by taking only subsidy and not bank loan. These beneficiaries had borne the expenditure towards the difference in the total project cost and subsidy. As for the beneficiaries who had taken loan for installation of sets, the share of loan in the total project cost was 56 per cent, that of subsidy was 37 per cent and the rest 7 per cent of the expenditure was made by the beneficiaries through their own resources. Five per cent of the beneficiaries of sprinkler sets were asked to pay down payment by the banks before sanctioning loans. It is necessary to take proper care to avoid such compulsion from the banks.

24. Majority of the beneficiaries of sprinkler selected for study informed that verification of their sets was done by the concerned Agricultural Officers.

**Beneficiaries of drip irrigation sets:**

25. Proportion of small holders: The proportion of marginal and small land holders in the beneficiaries of drip irrigation sets was 64 per cent and that of medium holders was 29 per cent. Thus most of the beneficiaries of drip (93 per cent) belonged to this group.

26. Area under irrigation: It was observed that there was 18 per cent increase in the area under irrigation of the beneficiaries selected for the study after installation of drip irrigation sets. The beneficiaries of drip had installed the drip irrigation sets on an average in 1.06 hectare. 55 per cent of the area out of the total irrigated area of the beneficiaries was under drip irrigation. After getting the benefit of drip sets, the proportion of irrigated area out of the total area under cultivation of the marginal and small holders increased to as high as 96 per cent. It was observed that more than half of the beneficiaries (53 per cent) of drip had adopted the drip in whole of their irrigated area and 15 per cent from the remaining beneficiaries could not do so due to financial difficulties.

27. Saving in water due to drip sets: It is already mentioned above that there was 18 per cent increase in the area under irrigation due to saving of water by adoption of drip. The beneficiaries in whose irrigated area there was no increase informed that the saving in water due to drip enabled the supply of water all throughout year, which resulted in increase in crop production.
28. Change in cropping pattern: It was observed that after adoption of drip sets, there was 25 per cent increase in the area under cash crops like sugarcane, fruit crops, oilseeds etc..

29. Increase in agricultural production: Some of the beneficiaries had planted fruit crops while adopting drip. However, as it takes considerable period of time for getting production from the fruit crops, the production in the beginning is negligible. It was observed that excluding the fruit crops, there was 49 per cent increase in the per hectare gross income from irrigation and 38 per cent increase in the net income from irrigation to the beneficiaries after adopting drip. As most of the beneficiaries selected for the study had installed the sets just one year prior to the survey i.e. in 1988-89, it can be said that the effect of increase in the prices of agricultural produce is small in the above increase in income. Considering together the 18 per cent increase in the irrigated area due to installation of drip sets and the 38 per cent increase in the net per hectare income from irrigated area, it is felt that beneficiaries of drip sets are certainly benefited through the scheme.

30. Other benefits due to drip sets: In addition to the increase in the area under irrigation and that in the net income from irrigation, the beneficiaries mentioned the following benefits which they received due to the scheme: decrease in soil-erosion (81 per cent beneficiaries), decrease in spread of pests and insects on crop (56 per cent), improvement in quality of crops (57 per cent) and saving in expenditure on land development and field operations like weeding etc. (38 per cent).

31. The beneficiaries mentioned that the process of sanction of their applications from the Government, sanction of loans from the banks and actual disbursement of loans was completed satisfactorily within a short period. However, they expressed their dissatisfaction over the delay in disbursement of the amount of subsidy.

32. Average expenditure on drip sets: The average expenditure for installation of drip sets, as reported by the beneficiaries, was Rs.28,700 per beneficiary and Rs.27,075 per hectare. In the total project cost, the shares of bank loan and subsidy were 59 per cent and 34 per cent respectively and the rest 7 per cent of the expenditure was made by the beneficiaries from their own resources.

33. Most of the beneficiaries in the survey reported that verification of their sets was made by Agricultural Officers.

34. Non-beneficiaries having not received the benefit of the scheme: The cultivators who had applied for getting benefit of set through the scheme but the set was not sanctioned to them due to some reasons, were termed as non-beneficiaries and information regarding such reasons with some additional information was collected from them. It was revealed that there were no such non-beneficiary cultivators in 80 per
cent of the 24 tehsils selected for the survey. This means that in these tehsils, all of the applications received from the cultivators for getting benefit through the scheme were sanctioned. In the remaining 20 per cent of the tehsils also, the extent of such non-beneficiaries was low. The main reasons for not sanctioning the applications of the non-beneficiaries were no fulfillment of documents, non-availability of grants and being defaulters of the applicants etc.. It is felt that more number of cultivators will be able to get the benefit of this scheme if these lacunas are eradicated.

35. Information was collected from some farmers who had not at all applied for getting the benefit of set through this scheme regarding the reason why they had not applied. It was observed that 17 per cent of such cultivators didn't have even information about the scheme. The main reasons reported by the rest of the cultivators for not applying for the benefit were as follows: financial difficulties (31 per cent), cultivator being defaulter of bank (12 per cent), no necessity of installation of set as supply of water from well is sufficient (9 per cent) etc.. The last of these reasons does not seem to be proper because there is scope for increasing the area under irrigation of the cultivator and the nearby cultivators due to the saving in quantity of water by adoption of sets. In addition to this, better growth of crops is observed due to adoption of sprinkler and drip irrigation sets. It is felt that it is necessary to remove ignorance of the cultivators in this regard through media.
Recommendations

7. Considering the above conclusions drawn from the evaluation study, it was observed that due to adoption of sprinkler and drip irrigation systems there was saving in the available quantity of water and the cultivators got increased production. However, in view of more effective implementation of the scheme, the following recommendations are made.

i) For avoiding the delay in disbursement of subsidy, the disbursement of loan and subsidy may be made simultaneously as is made in the implementation of Integrated Rural Development Programme.

ii) The limits fixed for per acre expenditure for sanctioning subsidy may be reviewed after a fixed time interval and subsequently be revised.

iii) Though the extent of verification by the officers of the sets installed under this scheme is in general satisfactory at the State level, it is not satisfactory in the districts where the response to this scheme is on a large scale (e.g. Nasik). It is necessary to make efforts for meticulous obeyance of the norms prescribed for such verification in all the districts.

iv) It was observed in most of the tehsils that after primary verification of the installation of the set, there was no re-verification after certain time interval. It is necessary to make efforts for such re-verification after a fixed time interval in view of solving the difficulties faced by the beneficiaries while using the set.

v) In order to maintain the quality of various sets supplied by the distributors, the checking of the sets on sample basis should be meticulously done in all the districts.

vi) Proper guidance as to the use of sets may regularly be given to the beneficiary cultivators through the monthly workshops arranged at district level by the agricultural staff.

vii) Efforts may be made to consult with NABARD and the bank officials regarding the compulsion made by the banks for down payment, margin money, deposits etc. while sanctioning loans, period of repayment of loan, the limit on the amount of loan to be sanctioned by branch managers etc. and to adopt uniform suitable procedure.

viii) There are some complaints about the after sales service rendered by the distributors. Efforts may be made to discuss the same with the distributors for taking action about the same. Suitable powers may be delegated to the
Agricultural Development Officers for taking timely action about such complaints.

ix) Necessary care may be taken to ensure that the agricultural staff get the instructions about this scheme in the beginning of the month of April itself every year.

x) It was observed that the response to this scheme was low in some districts (e.g. Wardha, Bhandara) out of the 12 districts selected for the study. It is necessary to make special efforts to make the cultivators realise the benefits of the scheme through various media of propaganda.

***********