

**Effectiveness of Irrigation Technology Transfer Training Programmes
under North-East Minor Irrigation Project of the Ministry of Agriculture**
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b) Objective

The main objective of the study was to assess the performance of different water distribution systems from technical and socio-economic perspectives.

c) Introduction

This study was undertaken by the Academy in order to assess the effectiveness of training courses which were attended by the various groups of farmers from the NEMIP areas. The study mainly depends on the data collected through field survey conducted in 12 sample schemes of the project areas. The main respondents were the participants of the three core-courses; Pump Operators' Course, Mechanics' Course and On-farm Water Management Course. However, some other informants like general farmers were also interviewed to cross-check the data. In some cases, observation method was also applied for the purpose. Data on the performances of three core courses were collected by covering several areas ; agronomical aspect;

institutional aspect; repairing and maintenance of irrigation equipments; level of knowledge and skills and their application by the recipients of the three core courses; changes in command area of the irrigation equipments, production, operation cost of equipments, social conflicts, income and creation of self-employment; changes in the management of irrigation schemes; and nature and causes of constraints on the application of the participants' knowledge and skills in their respective fields.

d) Executive summary

The NEMIP comprises four districts of greater Sylhet; Sylhet, Moulavi Bazar, Hobigonj, Sunamgonj and two adjacent districts of greater Mymensingh; Netrokona and Kishoregonj. Despite of having abundant ground and surface water resources, the project area is relatively poor in respect of minor irrigation. It is rather dominated by the rain fed agriculture and the cropping patterns and options are at present largely influenced by the flood regimes. Against this background, NEMIP was undertaken to achieve increased production of food grains and other crops. The ultimate objective of the project is to increase the agricultural production by introducing specific changes in agricultural practices through; (i) demonstrating diversified and intensive cropping patterns in combination with minor irrigation; (ii) demonstrating STW technology suitable for the area; (iii) developing an information base through ground water exploration programme and trade fairs (NEMIP, 1997:1). The successful achievement of all these stated objectives underlines, *inter alia*, the need for training of a large number of farmers in different areas that can streamline the process of technology transfer. As the ITRTT has chosen training as a strategy for effective transfer of irrigation technology intends to ensure efficient utilization and management of irrigation equipments and expansion of command area under irrigation equipments, it has arranged training in different fields for the beneficiaries of the NEMIP areas. The present study was carried out to assess the effectiveness of the training in the process of technology transfer. As the study discussed the situation by covering the data for a period of three years, it may be difficult to generalize the picture in many respects. In spite of this limitation, some observations can be made in the light of the findings. The study indicates that there was a positive change in respect of technology transfer with a concomitant chance in production in the NEMIP area and this has been due to the combined effect of two activities; (i) training provided by the Academy; and (ii) extension work of the NEMIP officials by field visits, trade fair, demonstration, supervision and field days.

Firstly, as stated earlier, proper operation of the irrigation equipments is heavily contingent upon the due discharge of the duties of the pump operator. The study shows that the pump operators are dutiful in the maintenance and operation of the equipments of their respective schemes. They have some knowledge about the functions of the various parts and had preliminary knowledge about detecting the faults. In doing their job, they maintain regular linkages with the scheme managers and other relevant persons. There exists proper cooperation among the related persons. Besides, the pump operators generally get some financial remuneration for their job and this inspires them to work with due sincerity. In addition, there was a positive change in maintenance of log book and equipments.

Secondly, all the mechanics are reportedly successful in all of their respective repairing works and there is no report of failure in this regard. Besides, they had done their jobs without any assistance from outside mechanics. Their service is available at the time of need and the quality of mechanics' service in terms of repairing works is at a satisfactory level.

Thirdly, a year-wise picture shows a gradual rise in the income from the repairing work. Though the scope to employment is confined to irrigation season, it has created an avenue for employment of the rural youth.

Fourthly, there was a positive change in respect of crop production, command area of the irrigation equipments, sources of seed collection and management of soil. Regarding production, a year-wise picture of three years beginning from 1994-95 to 1996-97 shows a slightly higher trend except for some cases. Sources of seeds as crop wise suggest that a large majority of the farmers use seeds from their own sources. Moreover, the farmers generally apply three types of organic manures for improvement of soil fertility and these are compost, cow-dung and oil-cake.

Fifthly, year-wise average picture for a period of three years from 1994-95 to 1996-97 shows a slight decrease of Boro and increase in the CDP crops respectively in the command area of the irrigation equipments. Likewise, there was a gradual rise in production of crop. More specifically, a tremendous change has been observed in respect of cropping patterns and the land use. In the past, the most of the lands of farmers remained fallow and their crops were absolutely dependent upon rain water and they used to grow one crop only. By contrast, now a large number of farmers grow more than one crop. This change has been possible due to the extension work of NEMIP and the application of the knowledge and skills acquired by the farmers during training at the Academy.

Sixthly, despite the presence of private ownership over the irrigation equipments, all the pumps had some sort of informal groups of the users of water from the particular pumps and they maintain provision of discussion on decision making process based on common interests. Data of the sample schemes demonstrate that all the pump groups perform their job in compliance with all the desired principles of management.

finally, as regards the outside supervision and monitoring, the concerned officials of the NEMIP maintain proper linkages with schemes areas and they extend the necessary supports and services in various ways; field visits, group discussions, trainings and field days. The areas of advices provided by them are; application of proper doses of fertilizers and insecticides; modern methods of cultivation; expansion of crop diversification programme; increasing the use of organic manure; seed production, processing and preservation techniques.

Effectiveness of training depends on the favorable existence of several conditions: (i) proper learning at the time of training and again, this depends upon many inter related factors such as the relevancy of the course contents, selection of suitable participants, efficient management of the course and efficiency of the trainers in communicating the ideas; (ii) favorable environment in the working place for the application of knowledge and skills acquired through training; (iii) commitment of the participants. If the effectiveness of the training courses in technology transfer is evaluated against all these criteria, one can conclude that the training has achieved a considerable degree of success in this regard. This success has been spurred by the simultaneous confluence of the extension work of the NEMIP. However, there is no room for complacency for the success. Rather there are many things lie ahead for further improvement of the training as well as the extension work of the NEMIP.

At first, there is a sticky problem that relates to the application of chemical fertilizers. It is seen that neither the general farmers nor the recipients of on-farm water management training are interested in the proper method of applying fertilizers. As a matter of fact, there is a serious anomaly with respect to the application of fertilizers. In most of the cases there is a clear trend of over-doses and in some cases a trend of under-doses is dominant. In many cases there was a big gap between the recommended dose and the actual one. This anomaly is ascribed to three main reasons: (a) ignorance about the proper dose of different fertilizers; (b) callousness of the farmers, and (c) financial insolvency of the farmers. The last one relates to the case of under-doses only. This anomaly with regard to the application of fertilizers underscores the need for special drive on the part of the NEMIP to

communicate farmers about the proper dose of fertilizers for different crops. This can be disseminated through field days, field visits and group discussions as presently done by the NEMIP officials.

Another problem is that the farmers are more dependent upon the chemical methods with respect to the management of pest. They are not inclined to follow the principles of IPM which is good for the crop production and at the same time less harmful for the overall environment. As regards the excessive dependence upon the chemical method, the respondents argue that it is less expensive and highly reliable in terms of effectiveness whereas the mechanical method is relatively laborious and time consuming. Beside from this, farmers find it is inconvenient to move frequently from one place to another since the plots of an individual farmer are scattered over so many places. Therefore, many farmers like the chemical application in preference to other methods of controlling insects. In order to motivate the farmers for using IPM methods for controlling of pests, a well-knitted intensive training programme is necessary. Such training programme should be arranged by NEMIP in collaboration with DAE.

Finally, the study shows that the training programmes for all the courses ; pump operators, mechanics and on-farm water management were adequate enough to acquire the necessary knowledge and skills related to the proper working in their respective fields. But nevertheless, some of the participants pointed out the need for inclusion of several new areas in the future courses including the extension of the duration. In view of this fact, all the core courses can be recast in the light of the suggestions given by the concerned participants; On top of that, refresher training for all the participants of the three core courses can be arranged in their respective fields intending to sharpen their knowledge and skills.

