

POSSIBLE ROLES OF THE EXTENSION GROUP OF THE TECHNOLOGY  
EVALUATION AND TRANSFER DIVISION AT CSSRI.

A DISCUSSION PAPER FOR THE INDO-DUTCH SOIL SALINITY  
AND RECLAMATION PROJECT

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The Extension Group of the Technology Evaluation and Transfer Division can make important contributions to the task of CSSRI by performing different roles. Clear decisions should be taken which roles this division should perform, because at present different people have different expectations regarding these roles. Several of them are unhappy because their expectations are not realised, but it is not possible to realise all expectations at the same time with the manpower and resources available. At the same time it is hard to deny that communication between agricultural researchers and farmers is at present a more crucial problem for the agricultural development of India than lack of research findings. CSSRI is no exception in this regard.

Major possible roles for the Extension Group are:

1. Organising the communication between CSSRI researchers and the (potential) users of research findings. The major user groups are researchers at State Agricultural Universities, policy makers on agricultural development and farmers. It is possible to decide that the Extension Group should not organise the communication with all of these groups, but e.g. only with the farmers,
2. Research to develop extension strategies which are suitable for solving problems regarding salination and sub-surface drainage.

In discussing these roles I will focuss on the waterlogging and soil salinity research programme, which is supported by the Indo-Dutch Project. Many points may also be relevant for other research programmes at CSSRI, except the Data Base.

The ICAR Review Committee (1988) specified the objectives of the first line extension system of ICAR as follows:

1. To promptly demonstrate the latest agricultural technologies to the farmers as well the extension workers of the State Departments of Agriculture and Non-Governmental Organizations with a view of reducing the time-lag between technology generation and its adoption;
2. To test and verify the technologies in the socio-economic conditions of the farmers and identify the constraints;
3. To get a first-hand feedback of farming problems so that scientists can reorient their research, education and training programmes;
4. To provide training and communication support to the State Departments of Agriculture and Non-Governmental Organizations; and
5. To promote extension research and studies, including

comparative studies of extension systems in different parts of the world.

In addition the Committee recognises the importance of a strong linkage between the research and development systems.

One should wonder how these objectives can best be realised in the case of CSSRI and to what extent they should be modified after five years. It seems likely that at this moment the Committee would have preferred to mention objective 1 only after objective 3, because it is now widely recognised that the objectives 2 and 3 indicate important causes of the time-lag mentioned in objective 1. Without such a change in order research may be done which contributes little to solving many problems of farmers, especially of resource poor farmers.

One might also attach more importance at present to learning from the indigenous knowledge of the farmers and the insights they have gained from their experience and experiments and the modifications they have made in recommended technologies.

## 1. Organising communication.

### 1.1 Agricultural Knowledge and Information System

Sometimes the Extension Group is asked only to help to organise the communication with users groups after difficulties have arisen. e.g. because users are not using the technologies as the researchers who developed them. think they should be used. This will not work well. The Extension Group can only play a useful role. if they have been involved in organising this communication from the very beginning.

Organising the communication between CSSRI researchers and the different users of our research findings requires careful planning of these communication processes. A first step is to analyse of the Knowledge and Information System regarding salination and drainage.

Knowledge relevant for solving salination and drainage problems is not only developed at CSSRI, but fortunately also by:

- several departments of State Agricultural Universities.
- WALMIs,
- research institutes and universities on engeneering.
- agricultural development organizations working in saline areas.
- irrigation and drainage departments and other organizations,
- government policy makers,
- NABARD officers,
- farmers.
- researchers and other actors outside India.

The kind of knowledge each group can contribute to this system can be quite different. Some have knowledge from research, others from farmer's experience and others on government policies or on the rules and regulation of different agencies, which influence drainage and irrigation.

Users or potential users of CSSRI research can be found among all the groups just mentioned. It is important to realise that CSSRI can only communicate with several target groups through intermediaries and that these users should not only be informed about research findings developed at CSSRI, but also about knowledge developed by other Actors in the AKIS. This makes it important to analyse who develops which kind of knowledge, how the communication flows between these different actors in the Knowledge and Information System regarding salination and drainage and what are bottlenecks preventing an effective flow of information.

The Extension Group could make this analysis and use it to plan what CSSRI can do to overcome these bottlenecks. There can be important differences between States in this Knowledge and Information System.

The official way through which information should flow from CSSRI researchers to farmers and from farmers to these researchers is through:

1. SAU researchers
2. SAU Subject Matter Specialists (SMSs)
3. Agricultural Department SMSs
4. Village Extension Workers
5. Contact farmers.
6. Other farmers.

Suppose that at each of these steps 20% of the information is lost. What would be a rather low loss, than in total 74% would be lost. If 50% is lost in each step than at the end 98.5% is lost. One can think of several possibilities CSSRI can use to reduce these losses:

- training CSSRI researchers in communication with users of their research findings. This requires capable trainers.
- preparing publications and audio-visual aids at CSSRI or in cooperation with the State Agricultural Universities or the Agricultural Departments which can be used to improve the communication in some or all of these steps.
- cutting out some of these steps, e.g. CSSRI researchers could participate as trainers in the bi-annual workshop the SAU organises with the Department of Agricultural SMSs and the Sub-divisional Agricultural Officers. CSSRI already gives a one month course for SMSs in Agronomy from the Departments of Agriculture in many States.

The Extension Group could play a role in each of these steps. Clearly not all CSSRI research findings should reach farmers. Rather often these findings should first be modified by SAU researchers and others to make them more location specific.

## 1.2. Publications

An important way to disseminate research findings are publications, but we have to take into account that different target groups have different information needs. Researchers working on similar problems as the author have quite different needs from Village Extension Officers in villages with serious

salination problems. Therefore different publications have to be written for different target groups, often using a different language as well. It is likely that some of these publications can better be written by others than CSSRI staff, e.g. good extension officers know the information needs and the language of their farmers better than we know them. The task of CSSRI staff regarding publications for farmers could be to assist extension officers in writing these publications by helping them to decide what is the most important information for these farmers and assuring that the information they present is correct.

The Extension Group could help to plan and organise this publication process. Publications are not useful, unless they reach the target group. Therefore the Extension Group could also help to plan and organise a good distribution system for CSSRI publications. The publications printed at ILRI for the Indo-Dutch Project have been received at CSSRI, but they have not yet been distributed in a systematic way. Several of the Extension Subject Matter Specialists and Soil Conservation Officers we visited, had not received other CSSRI publications, which would have been helpful for their work. The costs of printing and distributing some more copies of these publications is low compared to the costs of the research project. If potential users of CSSRI research findings know about these findings, one can not be sure that they will use them. However, as long as they do not know these findings, one can be sure that they will not be used.

At present CSSRI researchers publish mainly for other researchers contrary to their colleagues at many other agricultural research institutes in the world, who publish also for their various user groups.

Audiovisual aids, such as films and slide shows can play an important role in extension programmes. Not all organizations, who act as an intermediary between CSSRI and the farmers will be able to produce these AV aids. If the problem is not very situation specific, it can be cheaper if CSSRI produces them for use by different organizations. This could be another task of the Extension Group.

### 1.3 Training

Another important way to communicate research findings is training. Part of this training is organised by the Extension Group of CSSRI. Other parts are organised by State Agricultural Universities, KVKs and TTCs, Agricultural Departments, Irrigation Departments, the Irrigation Management Research and Training Institute etc. It could be useful if the Extension Group analyses whether this whole training system provides at this moment the training all potential users of CSSRI research findings need. I got e.g. the impression that salination problems are of crucial importance for the future of agriculture in Haryana, but the ADOs receive very little training on this subject, because the T and V system focusses training on the immediate problems of the farmers and not yet on long range problems like salination. In addition the Agricultural Department has no SMSs in irrigation and

drainage and each District Training Centre of the Haryana Agricultural University only one, who is also responsible for farm machinery. If salination is a problem of increasing importance for Haryana, CSSRI could and in my opinion should, point out to the relevant authorities that this communication gap exists.

It would also be useful to come to a mutual agreement which training can best be provided by CSSRI and which by other organizations and which role CSSRI should play in training organised by other organizations.

Training is more effective when it starts with the problems the trainees consider important than when it starts with the problems the trainers consider important. However, all over the world researchers are inclined to start with the problems on which they have done research. The Extension Group could help researchers to become more effective trainers. After all they have been trained to be good researchers and usually not to be good trainers. This Group can also play an important role in choosing the best combination of different training methodologies. It will only be possible to realise the goals of many courses, if lectures are combined with individual and group exercises in which the trainees learn to apply their new knowledge for solving practical problems, which they face in their work. This training and advice by the Extension Group should be coordinated with similar training NAARM gives to a limited number of scientists.

It seems that at this moment several trainees at CSSRI courses make limited use of the knowledge they gained, because it is not the priority of their organization to work on the problems discussed in these courses. It is very difficult to train trainees effectively, who are not motivated to learn. It might have been better to communicate first with those officers, who make decisions regarding these priorities. After the priorities have been changed, the people who have to implement them, could be trained. Also in training the target groups have to be selected carefully and the content should be different for different target groups. The Extension Group could analyse which sequence of steps has to be taken by different organizations, in the process of utilization of CSSRI research findings. This makes it possible to decide who should be invited for training at each stage of this process or with whom we should communicate in an other way.

Sometimes it may be useful to bring participants from different States together in one course, because they can learn a lot from each other. For other topics this is not wise, because the problems are quite different from State to State.

CSSRI realises that Human Resource Development is crucial for successful development. Therefore it has already trained SMSs Agronomy and Soil Conservation Officers from the State Departments of Agriculture, staff members of Land Reclamation and Development Corporations, the Forestry Department in Haryana and

Soil and Water Testing Laboratories and researchers from State Agricultural Universities on short courses.

#### 1.4 Formulating extension recommendations.

In India it is often expected that researchers from State Agricultural Universities and ICAR Institutes play jointly a major role in developing extension recommendations. In many other countries this is mainly the task of the extension Subject Matter Specialists, who gather information from farmers and Village Extension Workers on farmers problems and from all relevant sources, including researchers, on possible solutions for these problems. The Extension Group could assist researchers in playing their proper role in developing extension recommendations.

In several situations there is not so much a need for recommendations, but more for providing farmers and policy makers the information they need to make their own decisions. If they are well informed, they are better able to make good decisions themselves than extension agents and researchers can make for them. One reason is that these decision often require an integration of knowledge from different sources, including the decision maker himself.

On-farm trials (pilot projects) play an important role in developing extension recommendations. Often these trials are conducted by the Farming Systems Research Division of the research institute in cooperation with the extension subject matter specialists. As CSSRI does not (yet?) have a Farming Systems Research Division one can wonder which role the Extension Group should play in this process.

Often different recommendations have to be formulated for different target groups. For farmers as a target group these recommendations could depend on:

- their agro-ecological situation, e.g. the salinity of the ground water,
- the infrastructure, e.g. the availability of irrigation water,
- the access to markets; if this makes it possible to grow high value crops, much more can be invested than when cereals are the main crop,
- the managerial capabilities of the farmers, which influence e.g. their yield level and cropping pattern,
- the resource level of the farmers. Many research institutes formulate recommendations on basis of the assumption that all farmers are resource rich farmers, but this assumption is not correct in India.
- the subsidises available for drainage or land reclamation.

Also the situation of the individual farmer should influence which recommendation is given because of differences in:

- availability capital, labour and other resources,
- other possibilities to invest these resources, e.g. good quality of land outside the drainage project,
- non-farm sources of income and ability to bear risk,
- goals of the farmers.

The Extension Group could take the lead in formulating these recommendations in consultation with researchers in different disciplines and extension Subject Matter Specialists. This would support the trend towards more participatory approaches in agricultural development in Indian Departments of Agriculture, which is already stimulated by the training given in Farmers Situation Based Extension programmes based on Participatory Rural Appraisal techniques at MANAGE and NAARM.

#### 1.5. Demonstrations and field days

It is not likely that our recommendations will be widely accepted unless we can demonstrate that they help decision makers to achieve their goals. e.g. help farmers to increase their income. CSSRI has done this successfully with the reclamation of alkaline soils, but not yet with subsurface drainage. On this technology a few field days have been organised at the Sampla experimental farm for farmers and extension agents. More could be organised in the future there as well as in other drainage projects. One is planned for February 9, 1993. It could be the task of the Extension Group to organise these demonstrations and field days. It is more likely that other agencies are willing to use the results of these demonstrations, when they have been involved in them themselves than when they only visit these demonstrations once and a while and read reports about them. Cooperation with other agencies can make it more difficult to organise these demonstrations, but often the extra time and effort invested will give a good rate of return.

Farmers are often more effective communicators of the success of these demonstrations than government officers are on condition that they are well informed on the relevant research findings regarding drainage and salination. In Sampla I got the impression that they might communicate some ideas which are not in agreement with the ideas and information researchers give these farmers. This may create some confusion among visiting farmers.

#### 1.6. Feedback

It is quite important for successful research to receive information from farmers and other potential users of research. For planning a research programme it is necessary to know what problems farmers and other potential users of research findings feel they have. It is rather easy to find solutions for problems of farmers, who have a lot of capital, water and other resources, but many Indian farmers are not in this category. We have to know the resource level of farmers to be able to develop innovations which are suitable for them.

Not all farmers adopt research recommendations. We should know why they do not adopt certain recommendations. They may have quite good reasons for it. If farmers adopt an innovation, they often modify it at the same time. For researchers it is quite important to know which modifications they make, why they make them and what are the results of these modifications. It may be valuable improvements which make the innovations more acceptable for the situation in which the farmers live, but it may also

indicate that there has been some miscommunication.

Internationally there is now a lot of interest in using the indigenous knowledge of the farmers. Also with regard to salinity farmers have learned from experience and their own experiments what can be done about this problem. Researchers usually look at a problem from the point of view of their discipline, whereas farmers try to integrate knowledge from different disciplines in the real situation of their farm. Researchers should know about this farmers' knowledge to be able to test whether it is valid and to integrate this knowledge in extension recommendations.

#### 1.7 Monitoring the impact of recommendations given in the past.

As a result of CSSRI recommendations many farmers have reclaimed their alkaline soils. It was expected that this would solve their problems with these soils forever, but on a number of farms problems return. This is at least partly because farmers have modified CSSRI recommendations. It could be useful to know to what extent this is happening in order to decide whether CSSRI research and extension should again give attention to this problem.

#### 1.8 Organising communication or communication?

The Extension Group can organise the communication with different user groups or they can communicate the research findings themselves. They can e.g. organise a training course in which various researchers act as trainers or they can give the training for certain groups themselves. If we choose the first approach, the staff of the extension group needs a basic understanding of the major research findings of CSSRI. For the second approach they should have a sound knowledge of these research findings.

### 3. Extension research.

For quite some time one has thought about irrigation as an engineering problem. Later one realised that irrigation is used to grow crops. Therefore to work effectively on improving irrigation engineers and agronomists should cooperate closely. Recently in analysing the reasons for the limited success of many irrigation projects one became convinced that the human factor can not be neglected, because people run irrigation organizations and farmers irrigate their fields and influence the distribution of water. This change in approach towards irrigation is also important for CSSRI. We visited one large drainage project with which many farmers were dissatisfied. This was clearly much more a problem of human relations than of technology. Research by social scientists could therefore be important to make the research at CSSRI more relevant for solving salination problems on condition that these social scientists cooperate closely with scientists in other disciplines. At present these social scientists are in the Extension Group and to some extent the Economics Group.

Research by the Extension Group could try to develop extension strategies which are needed for extension programmes regarding salination and drainage. For some of the problems on which CSSRI researchers are working fairly good extension strategies have been developed elsewhere. For the salt resistant varieties e.g. the same strategies can be used, which have been used successfully to introduce other new varieties.

Specific extension problems in the field in which CSSRI is working are, if I see it correctly:

- drainage projects require collective decisions, which in the Indian legal framework should be accepted by nearly all farmers.
- water users associations can play a useful role in the design, operation and maintenance of a drainage project and in collecting the money needed to finance (part of) this project.
- making farmers in certain areas aware that they will face serious problems in the future, because of the rising table of saline groundwater, unless corrective measures are taken soon.
- communication with policy makers: this seems to be more important with regard to salination and drainage than with regard to many other agricultural problems.
- farmers expect that the government will subsidise drainage projects to a larger extent than the government says it is willing to do. They also expect subsidised inputs to be used in these projects. These expectations are partly based on subsidies given in the past, but government policies have changed. If these expectations are not realised it is difficult to gain the confidence of the farmers, which is necessary to make the project a success. Therefore a task for extension can be to help farmers to develop realistic expectations regarding government subsidies. This will not be easy.

Policy makers get more and more interested in establishing some kind of water users associations. An important reason is that the Treasury is not willing to finance all the drainage works which should be established in the country in the next decades. It is unlikely that farmers can be motivated to establish associations in order to collect money for the Treasury. It may be possible to motivate them if through these associations they can influence the design of drainage works and help to develop a system for their operation and maintenance. Farmers may e.g. be highly interested in the location of the open drains needed to discharge the drainage water. I got the impression that several civil servants believe that they can make these decisions better for the farmers than farmers can make them themselves. They may not realise that in this way they kill the motivation of the farmers to make their water users association a success or that it is not possible to develop a successful association without using the local knowledge of the farmers, e.g. regarding the social structure of their village. This implies that such a study would have to focus on the interaction between the civil servants and various groups of farmers and not only on the attitudes of the farmers.

Increasingly problems of Indian farmers can not be solved through individual decision making, but they require also collective decisions. There is very little research in India on how one can help farmers groups to make these collective decisions. Research done elsewhere, e.g. on irrigation organizations in the Philippines, may have limited applicability in the Indian culture. Therefore research in this area is not only important for drainage projects, but also for other aspects of agricultural development. Also NGOs in India have valuable experience in supporting collective decision making, e.g. in watershed development projects.

Questions which should be asked to choose worthwhile a research project include:

- What information do we need to plan an effective extension programme?
- To what extent is this information already available or can be obtained without doing research?
- Can this information be obtained through research?
- Is it likely that the improvement we can make in our extension programme through this research rather than basing our decisions on hunches, make this research cost effective?

Usually a major objective of this research should be to understand the way of thinking of various sections of our target group. Therefore careful listening by the researcher himself to farmers or other target groups using anthropological research methods often gives more valuable results than elaborate statistical analysis.

A valuable way can be to test an extension strategy in a pilot project and to observe carefully what the reactions are and learn from this experience. This can be action oriented research, where we do not wait until the pilot project is finished and all data are analysed to predict what we can do better next time, but where we adjust our actions to our observations.

A problem can be, however, that the situation in a small pilot project is quite different from it can be in a large scale project. E.g. in a pilot project CSSRI researchers can be a major source of information for the farmers, but in a large project intermediaries between researchers and farmers have to be used. Therefore such a pilot project should be based on a sound knowledge of modern theories on extension, communication and change in human behaviour. If these theories are confirmed in a pilot project, it is much more likely that the extension strategies will also work elsewhere than when they are based only on the ideas of the researcher. The researchers should try seriously to keep up to keep up to date with these theories.

Extension researchers have a higher level of responsibility that they do their research in such a way that it is likely that their research findings are utilised than other researchers. Often involving the potential users in the research is an effective strategy (See Section 1.5).

### 3. Concluding remarks.

Several of the roles mentioned above are at present already performed by the Extension Group, some a more systematic way than others. It is not possible to perform all the roles mentioned in this discussion paper well with the staff available in the Group. Choices have to be made. The major criterium for this choice should be in my opinion: through performing which roles will the Extension Group contribute most to the realisation of the tasks of CSSRI. Another criterium could be: which roles is the present staff motivated and capable to perform well.

There are two reasons why this paper does not say which choices should be made:

- CSSRI staff does have a lot capabilities and information to make these choices, which I do not have.
- if the people concerned are involved in the decision which roles they should perform, it is more likely that they are motivated to perform them well than when this decision is made on the basis of the suggestions of an outside consultant.

However, I am convinced that it is important that these choices are made soon and communicated clearly to all scientists at CSSRI.

There can be two different kinds of considerations in making choices regarding the roles of the Extension Group:

1. Which roles are most important for CSSRI?
2. Which roles are in the interest of the staff members of the Division, e.g. because they give them more opportunities to get a promotion or to do pleasant work?

It is a management task to let these considerations coincide as much as possible. If one would decide e.g. that it is in the interest of CSSRI that the Extension Group concentrates mainly on organising the communication with the users of its research staff members: who perform this task well should have as much possibilities for promotion to higher ranks than staff members who do good research. The ICAR Review Committee (1988: 120) that a major consideration for the promotion of extension scientist should be the quality of their extension work: published papers may not be the main criterium.

#### ACRONYMS

ADO	Agricultural Development Officer (village extension worker in Haryana)
AKIS	Agricultural Knowledge and Information System
AV	audio visual
CSSRI	Central Soil Salinity Research Institute
HLRDC	Haryana Land Development Corporation
HSMITC	Haryana Small Scale Irrigation and Tubewell Corporation
ICAR	Indian Council of Agricultural Research

ILRI	International Institute for Land Reclamation and Improvement
KVK	Krishi Vigyan Kendra
MANAGE	National Centre for the Management of Agricultural Extension
NAARM	National Academy for Agricultural Research Management
NABARD	National Bank for Agricultural and Rural Development
SAU	State Agricultural University
SMS	Subject Matter Specialist (in the extension system)
TTC	Trainers' Training Centre
WALMI	Water and Land Management Institute