



Participatory Technology Development Working Paper 1

**EXPERIENCES WITH FARMER EXPERIMENTAL DESIGN
WORKSHOPS IN EGYPT**

**by Jean Marie Diop and Peter Laban
ETC ECOCULTURE
Netherlands**

Year 2000

At an internal workshop of ETC Ecoculture, some consultants in training and coaching Participatory Technology Development (PTD) exchanged their methods and experiences made with workshops to initiate a process of designing farmers' experiments. These workshops involved farmers interested in experimentation and PTD facilitators interested in supporting the farmers' experimentation.

The experiences presented in this paper are based on workshop guidelines that were elaborated by Jean Marie Diop and Peter Laban and applied in Egypt in the Novib-supported Agro-Environmental Pilot Project implemented by the Coptic nongovernmental organisation CEOSS (Coptic Evangelic Organization for Social Services) and in the DGIS-supported Fayoum Horticultural Development Project implemented by Euroconsult.

TABLE OF CONTENTS**PAGE**

1. THE CEOS EXPERIENCE	4
1.1 Background	4
1.2 Methodology used	4
1.3 Impact and Results	7
1.4 Challenges ahead to increase impact	8
2. FAYOUM HORTICULTURAL DEVELOPMENT PROJECT	9
2.1 Background	9
2.2 Methodology used	9
2.4 Bottlenecks and how to manage those problems	14
3. REFERENCES.....	16

1. THE CEOSS EXPERIENCE

1.1 Background

CEOSS, a Coptic NGO in Egypt, is progressing quickly in an important change process towards enhancing the self-reliance of its target communities. In a pilot project in Sharoonaa and Nassareya in Middle Egypt near Minya, the Participatory Technology Development (PTD) approach is being successfully applied in a synergy between solving garbage problems in the home and finding ways to replace chemical fertilisers in the farm. A participatory process that involved women in analysing their current problems and in seeking solutions led to the testing of an innovation to achieve greater cleanliness and hygiene in the livestock stables and the family living areas. By concentrating organic household waste, manure and urine in a pit in the in-house stable, an organic fertiliser is being produced that probably has a much higher nitrogen content than the traditional manure. Further experiments may well lead to further improvements in the compost, which is needed in agricultural fields where farmers are trying to decrease their chemical fertiliser inputs by experimenting with different combinations of fertilisers. At the same time, the garbage recycling through improved stables is resulting in considerable time savings for the women, improved health conditions for the families and income-earning opportunities for the women. The project strategy builds heavily on a gender-sensitive PTD approach, focused on garbage recycling by the women and improved use of fertilisers by the men.

1.2 Methodology used

a) PRAs and project planning

A project preparation process started in March 1996 with PRA exercises in the two rural towns selected by CEOSS as being fairly well representative of general agricultural and environmental problems in the Nile Valley. The PRAs served to prioritise problem areas and assess gender roles. The PRAs among the total of 75 households in the two towns, implemented by CEOSS staff¹, demonstrated very clearly that disposal of household waste water and garbage was by far the most important problem for the women, while male farmers gave high importance to reducing the cost of chemical fertilisers. The outcome of the PRAs was further discussed with the communities and their leaders, resulting in consensus at the community level to orient the pilot project on these issues. These decisions guided the project proposal made during a workshop in May 1996 by a CEOSS team in Minya, pulling together staff of both the Local Development Sector and the Special Services for Agriculture and Environment. The proposal was for a PTD approach, in which farmer and women groups (still to be selected) had the freedom to choose other priority problems to be tackled during the actual implementation of the pilot project.

¹ The PRA was guided by a team from Cairo, and Peter

b) Initiating the PTD process

Implementation started in January 1997 with a PTD Training Workshop for CEOSS staff, which included a PTD design workshop (see Box 1) with one of the three farmer groups selected and appointed by the communities involved.

In almost all rural towns in Egypt, cattle are kept overnight in a room/stable inside the house. Houses are situated in densely-build small towns of 10,000 to 30,000 people. These congested towns suffer from hygienic problems, because garbage and manure are left in the houses and streets. According to the initial PRAs, creating cleaner and healthier conditions in and around their homes was a top priority for the women. After a careful and participatory process in a series of workshops, discussions and visits to other places with six groups of women, they all decided to try out an innovation, which consisted of making a pit in the in-house stable. Manure, straw and urine from the stable and other organic waste and kitchen ash from the house are collected in this pit over a period of 2-3 days. The improved manure is then dug out and transported to the field as organic fertiliser, sometimes after a composting process.

The farming system involves a rotation of two, often three, crops a year in the same plot, wheat, alfalfa and maize being the main crops, with vegetables (cucumbers) grown in between. The male farmers were especially interested in reducing the cost of chemical fertilisers. They decided to start small experiments in subgroups of about four persons who had fields with similar soil conditions. They wanted to compare yield, plant development and effects on soils of three different treatments: reduced quantities of chemical fertiliser, use of bio-fertiliser, and use of cow manure.

BOX 1: LOOKING FOR THINGS TO TRY OUT: A PTD MODULE FOR DESIGNING EXPERIMENTS WITH FARMERS

Objective: Agreements on what to find out and what to try out

Tools: Resource Flow Diagrams/Maps; Problem Tree; PRA Ranking Tools

Procedures:

1. Community meeting for commitment and endorsement of experiments
2. Drawing resource flows for farm enterprises (*Flow diagrams*)
3. Identifying problems and options to solve them (*Pair-wise ranking*)
4. More detailed problem analysis (*Problem tree*)
5. Orienting the farmer experiments (*Ranking*)
6. Agreeing on the detailed design of the experiments (treatments, experimental layout, monitoring, etc.)
7. Conclusion: project idea sheets

NOTES:

- a) This module corresponds to the third cluster of activities in the PTD process ("Looking for things to try"); it also covers part of the second cluster ("Analysing the situation: understanding problems and opportunities")
- b) Such a module *should* be preceded by a PRA problem identification and priority setting at the community level.
- c) Details of the procedures are available and can be given on request (see also the *PTD Circular* of September 1998).

1.3 Impact and Results

After only nine months, about 30 farmers working together in farmer experimenting groups acquired a taste for more systematic experimentation with different crop practices and claimed that they would continue this with or without support from CEOSS. Other farmers showed their interest to join the experimenting groups or started experiments on their own. The initial results of the fertiliser experiments have been encouraging, as they indicate that it would be possible to maintain yields of wheat and other crops and to reduce costs because of decreased application of chemical fertilisers. In the first experiments, chemicals were partly replaced by organic and/or bio-fertilisers.

The innovation of the compost pit in the stable inside the house proved to be highly successful. It considerably reduced the time women spend each day bringing soil from the fields to dry the stable and carrying household waste to the garbage dumps near the riverside. At the same time, it became easier to clean the stables, and made it unnecessary to clean the animals every day at the river or the irrigation canals. Moreover, the cleaner stables and animals made it possible to obtain much cleaner milk and to improve the health conditions of both animals and humans. Also the men benefit from this innovation, as they do not have to carry manure every day to their fields while (although this still has to be proved) they feel that they obtain a much richer manure than before. Initially, 60 women were participating in six groups. This number has rapidly increased to about 100 women in the second year, while more than 50 additional women have asked if they can also try out this innovation.

Inputs needed to make an improved stable are basically labour and cement. In the case of the first stables built, labour was provided by people experienced in masonry work. Now most work is done by the family itself. The initial financial subsidy to buy cement and other small materials was 75% of the total cost. Now, after two years, this has been reduced to 25%. All other costs and labour are provided by the families concerned.

BOX 2: KEY FACTORS FOR SUCCESS

- A participatory process from problem identification to an open-ended project approach;
- Farmers and women eager to change their situation;
- Fender sensitivity and differentiation;
- The PTD process: people really feeling that outsiders are listening to them and taking their concerns seriously, leaving the decisions and ownership of innovations and experiments to them;
- Practical procedures for experimental design workshops with women and men farmers;
- Extensive use of PRA tools; e.g. drawing resource flows
- Participatory development of a major innovation in the household system;
- An innovation with multiple positive effects (cleaner houses, time savings for both w
- Women and men, improved health, improved fertilisers);
- The open learning attitude of CEOSS development staff;
- A process embedded in an organisation with long experience in community development and high trust from rural communities (despite a potentially tense social/religious context).

1.4 Challenges ahead to increase impact

Although this pilot project has made a promising start, important issues need further attention. The advice of scientists from NRC has certainly contributed to the positive results. However, it became very clear how important it is that these researchers are really committed to the PTD process, in order to avoid that their opinions become too dominant. There is a risk that researchers follow too much their own research agendas. CEOSS has an important role to play in ensuring that the women's and farmers' agendas are given priority.

The design of the fertiliser experiments was too complex. At the end of the first year (1997), it was difficult to differentiate between the effects of a more balanced application of chemical fertilisers and those of organic and bio-fertilisers, as these different treatments were not done separately in different fields. In the following years, the farmers repeated the same experiments, but with a one-factor/one-field design. Also composted manure was added as a new treatment.

Efforts still need to be stepped up to improve farmers' experiments by simplifying them (one factor comparisons) and by increasing the number of replications to obtain results that can be more easily recognised by fellow farmers and accepted by formal researchers. At the same time, the sharing of results within the farmer experimenting groups and in the village community at large needs to be expanded.

Also strengthening and multiplying farmer experimenting groups should be a next step in the PTD process. The first encouraging achievements of this pilot project invite action to capitalise on this participatory process, especially with women, in order to improve their household living conditions. Two important steps that could be taken are strengthening of functional women development groups by building on the enthusiasm and dynamics created in the groups of women involved in the stable innovations and finding ways to market the organic fertilisers produced at home, especially in the case of those families which have no cattle to produce manure and no fields to use these fertilisers.

CEOSS, as a development organisation, is also faced with a number of important questions. How can CEOSS adapt its policies to widen and increase the impact of the pilot project by strengthening and institutionalising the PTD approach? What will this mean for further development of staff capacity? How to deal with the important issue of financial contributions, where it is clear that CEOSS cannot respond to a massive demand for improved stables with the current high contribution from CEOSS? How will CEOSS give follow-up to this pilot project in the form of new programme proposals? How is CEOSS going to conciliate contradictions between this participatory process of empowerment and the current development programmes, which are more, focused on individuals? Finally, how is CEOSS going to record, document, exchange and share information with others inside and outside CEOSS, and how may this contribute to further advocacy for more participatory and ecologically-oriented development programmes, at least in Egypt?

2. FAYOUM HORTICULTURAL DEVELOPMENT PROJECT

2.1 Background

The Fayoum Horticultural Development Project (FaHDP) is located in the Nile Valley to the South-West of Cairo. A number of missions to the project during its Third Phase, e.g. the Mid-Term Review Mission of September 1995 and a Review Mission of January 1997, stressed that project activities should be implemented in line with a PTD approach. Various activities were already being implemented along these lines, e.g. the pilot on-farm trial programme, but the Project Management wanted to stress more specific PTD activities during the last, Fourth Phase of the project. In December 1997, a mission took place to analyse the project's current activities related to PTD, to examine the research methods of regional and national research institutes, to introduce and formulate a process for further developing PTD, and to plan activities to be implemented with junior research staff and their supervisors of institutes and universities (PTD Mission Report, December 1997).

The PTD mission recommended a PTD training programme involving agricultural and horticultural research and extension staff. In the case of researchers, it was decided to concentrate on postgraduate (MSc) students who could implement a PTD approach in their thesis research. The training and supervised implementation of PTD research (on-farm trials jointly with farmers and based on problem identification with farmers) was meant to prepare these young researchers to implement PTD also in their future research activities. Since PTD research should be executed together with extension agents, male and female extension staff of the Fayoum Agricultural Department (FAD) was a second target group for the PTD training.

A series of training workshops was foreseen. The first one was to create awareness and commitment among potential actors involved in the horticultural knowledge system in the Fayoum project (farmers, researchers, university staff and students, FAD extension staff, FaHDP staff) and, in particular, the directors and supervisors. A training-of-trainers workshop was proposed to build the capacity of a limited number of people to become trainers/facilitators of PTD.

The postgraduate students and extension staff attended a PTD and Farmer Experimental Design Workshop to prepare them for implementing their PTD research with farmers. Farmer Experimental Design Workshops were conducted in three villages in the Fayoum region, to wit, Desia (cucumber-growing area), Zawia (tomato-growing area) and Feddmine (mango tree area).

2.2 Methodology used

One lesson learnt from the CEOSS experience with the farmer experimental design workshops was that the procedure of drawing resource flows for farm enterprises (see Box 1) is relevant but not sufficient. This procedure needs to be extended through a planning map (mapping the experiments to highlight the "inputs" and "outputs").

After the possible solutions have been identified, the field team facilitates group discussions to probe the choices made by the farmers. This opens their eyes about their choices and makes them aware of not only the technical but also the socio-economic aspects of the technologies they are interested in trying out. In general, farmers do not immediately recognise all the socio-economic features and requirements of technologies new to them. This can explain why some experimenting farmers drop out during

implementation of the trials, as was experienced in earlier PTD activities in Kenya (Diop *et al.* 1998).

The Farmer Experimental Design Workshop used in FaHDP started with refreshing the participants' memories about PTD and PRA, and acquainting them with the diagnostic tools used during situation analysis. The main objectives of this phase are to identify farmers' priority problems and to gain a deep understanding of the technical and socio-economic aspects of these problems.

The Farmer Experimental Design Workshop can be considered as a "planning phase" starting after the farmers' priority problems have been clearly identified and analysed. This "planning phase" was split into three steps: Farmer Workshop, Planning Map, and Planning of Experiments. Procedures for these three steps are outlined in Boxes 3, 4 and 5 (adapted from Defoer, T. *et al.* 1998 and Diop, J.-M. & Onduru, D. 1999)

BOX 3: PROCEDURE OF CONDUCTING THE FARMER WORKSHOP

SPECIFIC OBJECTIVES:

1. To inform all villages about the objectives of the planning phase.
2. To review and feed back findings from the situation analysis in the field.
3. To combine farmers' and outsiders' viewpoints to solve the priority constraint(s) identified:
 - to appraise farmers' initiatives (informal experiments) and assess their views on ways to deal with the problems and constraints identified;
 - to provide farmers with relevant alternatives
4. To assist farmers in setting priorities and in making a preliminary choice about possible solutions.
5. To agree on the agenda for continuing the planning phase.

PROCEDURE:

1. Choose and prepare a suitable place for meeting.
2. Introduce the field team.
3. Explain the objectives of the planning phase and the specific objectives and expected outputs and methodology of the farmer workshop.
4. Present the list of major constraints identified in the diagnosis phase (those prevalent for all farmers and those which are specific).
5. Identify farmers' views on recent (negative) changes to their farming practices and their ways of testing possible solutions:
 - major changes (what, why, how did you develop your own idea for
6. testing, etc.);
 - inventory of farmers' past/recent experiments related to those constraints (probe into the characteristics of their experiments);
 - farmers' idea(s) for solutions to the constraints identified, the relevance of the idea(s), what are the conditions to be met for success and who will be interested in trying out the idea(s).
7. Present alternatives solutions identified by the field team for testing by farmers; detailing objectives, hypothesis, procedures and conditions for successful implementation and (tentative) results expected.
8. Present and discuss the field team's matrix of possible solutions according to a range of criteria.
9. Investigate farmers' preference: using, for instance, the preference-ranking technique, let farmers rank their solutions together with the outsiders' solutions. This will highlight their list of preference criteria, which can be ranked further by using a matrix-ranking technique.
10. Compare farmers' and the field team's criteria: discuss differences and similarities between farmers' and the field team's solutions and criteria.
11. Make a provisional list of all possible solutions in relation to constraints (and typology of farmers).

BOX 4: PROCEDURE OF MAKING THE PLANNING MAP

OBJECTIVES:

1. To visualise the farmers' plan after completion of the farmer workshop.
2. To analyse the changes compared to the previous period.
3. To stimulate the farmers to experiment with new ways to tackle their priority problems.
4. To open farmers' eyes about the requirements needed for successful implementation and subsequent consequences of inputs and outputs.

PROCEDURE:

1. Meet farmers at a suitable place and present the field team.
2. Explain the objectives, expected outcomes and procedure of the meeting.
3. Discuss the changes in socio-economic characteristics of the farming system (if the planning map is done individually, start by making a tour of the farm).
4. Choose a suitable place for making the map.
5. Explain the principles and techniques of making the Resource Flow Map (RFM) and give some examples. Present the material that can be used: paper, coloured pens, charcoal, etc. and agree on symbols to be used. Ask the farmer(s) to map the current resource flows on their fields (the farmer should hold the stick). Discuss and analyse the results.
6. Ask the farmer(s) to re-draw the RFM and illustrate the desired management of the farm (fields and crops). New elements the farmer plans to set up (compost pit, manure/waste heaps, etc.) should be drawn into this map.
7. Illustrate the possible recycling system.
8. Facilitate discussion among the farmers in order to identify, quantify and illustrate the inputs and to specify their nature. Do the same for outputs.
9. Analyse with the farmer(s) the improvements planned compared to the previous management illustrated in the initial RFM.
10. Analyse the requirements/consequences of the farmer's plan (ideally one plan for each farmer). This could be: labour demand, required equipment (donkey, cart, plough, seeder, weeder, etc), other inputs.

BOX 5: PROCEDURE OF PLANNING THE EXPERIMENTS

OBJECTIVES:

1. To decide on the type of experiment to be implemented by the experimenting farmers.
2. To combine views from farmers and the outsiders on experimentation:
 - to discuss the farmers' views on objectives, hypothesis, experimental design,
 - monitoring and evaluation of the experiments the farmers intend to implement;
 - to help farmers in improving the design and monitoring of experiments.
3. To agree on procedures for designing and monitoring the experiments, including the role of outsiders
4. To agree on the monitoring and evaluation criteria and indicators.
5. To agree on the topic of the required training (if needed) prior to implementation.
6. To jointly decide on time and venue for joint laying out (if needed) of the experiments.

PROCEDURE:

1. Choose and prepare a suitable place for the meeting.
1. Present the field team.
2. Explain the objectives of the planning, expected outputs and methodology adopted so far and the following methodology.
3. Facilitate discussion among farmers to come to an agreement on the possible solutions they would like to try out first. Ask for volunteers or experimenting farmers proposed by their group.
4. Discuss the cropping calendar and layout of possible experiments, and come to a decision with farmer experimenters on experiments to be laid out immediately.
5. Identify farmers' views on objectives and design of the experiments and discuss issues to strengthen the experimental design.
6. Identify farmers' views on monitoring and evaluation of the experiments and discuss issues to improve monitoring and evaluation.
7. Discuss procedures for the laying out, monitoring and evaluation of the experiments, including: roles and responsibilities of the field team and farmers, schedule of field visits and meetings.
8. Draw up a report on the agreements.

Note: Forms had been designed for Steps 6, 7 and 9 (Diop 1999_a)

2.3 Impact and results

Three PTD research proposals were jointly initiated with farmers in the field and finalised later on by the PTD training participants in classroom:

- In the situation analysis in Desia village, the farmer gave the highest priority to cucumber varieties and diseases. Agreement was reached with farmers to carry out **two experiments**: one with the factor "variety" (3 treatments per farmer experimenter) and one with the factor "pesticides" (2 treatments per farmer experimenter). Another solution agreed upon to reduce disease attacks was to grow cucumber outside the normal period used by farmers.
- In the situation analysis in Zawia village, the farmers gave the highest priority to tomato seed varieties and diseases. Agreement was reached with farmers to carry out **two experiments**: one with the factor "seed variety" (2 treatments per farmer experimenter) and one with the factor "pesticides" (2 treatments per farmer experimenter).
- In the situation analysis in Feddmine village, the farmers gave the highest priority to mango diseases. Agreement was reached with farmers to carry out **one experiment** with the factor "diseases" (4 treatments per farmer experimenter).

In general, the methodology used was positively judged by the actors, who emphasised the following:

- Trials have strengthened the communication between farmers and field agents and amongst farmers themselves.
- There was integration of each other's ideas and combination of both farmers' and outsiders' knowledge.
- The PTD process has launched regular (once a week) meetings among farmers; these meetings are organised and facilitated by the extensionists.
- Exchange visits have promoted exchange of experiences between farmers.
- A few farmers not officially involved in the experimentation picked up the new ideas.
- The PTD process created exchange of experiences between farmers, group decision-making and working with a group focus.
- The PTD approach created better social relationship between farmers and between farmers and extension agents.

The end-of-season evaluations with farmers enabled the field team to define the areas in which farmers have learnt:

- Before the trials, pesticides were not used efficiently, but now farmers are more aware about the way they should use them and about the necessity not to focus on only one pesticide because resistance of pests to pesticides could develop.
- The PTD experiments gave farmers the opportunity to share ideas and experiences between themselves and with outsiders.
- There was an increase of trust toward field agents and therefore better collaboration between farmers and extension staff.
- To conduct the experiments, a certain number of rules and defined tasks have been agreed upon between farmers and outsiders. This allowed each partner to follow-up on the tasks conducted by the other partner. This was so successful that farmers decided to maintain the rules and tasks from now on.
- Use of elements (for instance, micro-elements for mango pests) the farmers had not used before.
- Increased communication among farmers and farmer-to-farmer exchange of experiences to solve problems.
- Efficient use of pesticides.
- Many technical methods for farmers' own experiments.
- Farmers learnt to cultivate new varieties of cucumber and tomato.
- In Desia village, growing cucumbers outside of the normal period had many advantages: healthier plants, less attacks by pests, better production when market prices are more favourable. Many farmers were sceptical in the beginning about the change in the planting date; now the PTD experiments are considered as "windows" for other non-participating farmers to see.
- The PTD experiments encouraged farmers to repeat the experiments, even with other crops.

These different impacts can be located in three fields:

- The tangible “products” obtained so far, i.e. the improved technologies.
- The development process: Initially farmers used to be involved in actions planned and directed by the project team. Through the PTD process, the team has facilitated the actions jointly chosen with farmers and has monitored them by taking into account farmers’ criteria and indicators. The team recognised that solutions can be proposed by the farmers and learned to adapt their scientific designs to farmers’ realities and evaluation criteria. The PTD process has also facilitated a shift in how field agents/outside approach farmers’ priorities. Instead of focusing from the outset on their own knowledge/competence and interests, they saw how PTD workshops with farmers to design experiments brought farmers’ priorities to light that had not been identified before by their programmes.
- The positive reaction of the field team (who were previously more familiar with the conventional top-down approach to development) towards the participatory principles advocated through the PTD approach.

2.4 Bottlenecks and how to manage those problems

Because of the top-down approach with which many participants are very familiar, difficulties arose in the field in putting the participants on the track of the PTD approach. The consequence of the conventional top-down approach was also felt on the farmers’ side, because some farmers were waiting for suggestions from the outsiders when the phase of looking for things to try out started. With both the PTD training participants and farmers, the “donor syndrome” (high expectation of funds from the donor/project) also arose when looking for things to try out.

The project opted to concentrate the PTD training on postgraduate students who could implement the PTD approach also in their future research activities. This did not prove to be possible for all of them, because of lack of support from their own institutions. There is then a risk that the skills and competence gained through the PTD training will be diluted or lost.

In the future, the idea of focusing the PTD training on individuals should be revised. It would be better to focus on some organisations that are open-minded to PTD and to do the PTD training “on the job” with their staff. This would then lead to scaling up of the approach. In this way, the issue of funds needed for PTD can be solved because an organisation interested in taking a PTD approach will be prepared to make room in its budget for inserting the approach. For the staff of such organisations, training and coaching of PTD could be combined.

Obstacles were foreseen by many workshop participants with regard to the application of PTD or the funds needed for it. PTD research is not expensive; it is simple and farmer-oriented, with limited inputs and straightforward techniques. The PTD approach is not “something new” that will displace another approach applied by an organisation. A general impression of mine in the initial training workshop was that some participants feared that the PTD approach could threaten their own interests. PTD should be understood as a complement to strengthen an existing approach and should be inserted (by applying its concepts and principles) into the organisation’s programme without major additional costs.

Through the PTD process with farmers, interesting quantitative results have been obtained but the validation of these results (through continued experimentation and increasing the number of farmer experimenters) should be pursued, because the PTD trials were mainly training-oriented and not oriented to obtaining statistically valid data, also of use to the farmers. In the other hand, the qualitative (social) results obtained demonstrate the relevance of the PTD approach in terms of building up confidence, mutual trust and complementarity between farmers and outsiders (extensionists, researchers, etc.).

The PTD approach in Egypt still needs to be demystified through additional PTD awareness-raising workshops, mainly for researchers. The involvement of researchers in the PTD process should be sought. These researchers will be expected to feed the process with new ideas and new options to try out, to probe in order to make clear to farmers what their options could lead to, to support farmers in their experimentation, and to help them understand the results.

3. REFERENCES

Defoer, T. et al. (1998): *Soil fertility management in Africa. Resource guide for Participatory Learning Action. Part 3: Tool for the field.* Draft cards 6, 7 and 8. Amsterdam: KIT publication.

Diop, J.-M. & Onduru, D. (1999): *Farmer Experimental Design workshop for LEINUTS project in Kenya: a low potential area case.* ETC-Netherlands, Leusden. 11 pp.

Diop, J.-M. & Werf, E. van der et al. (1998): *On-farm agro-economic comparison of organic and conventional techniques in High and Medium Potential Areas of Kenya.* Final Research Report of the KIOF/ETC-Netherlands Project. Leusden: ETC-Netherlands, Leusden. 131 pp.

Diop, J.-M. (1999_a): *Participatory technology development and farmer experimental design workshop for Fayoum Horticultural Development Project.* Mission report (January-February 1999), Fayoum, Egypt. Leusden: ETC-Netherlands, Leusden. 16 pp.

Diop, J.-M. (1999_b): *Participatory technology development: experiences in Fayoum. Fayoum Horticultural Development Project-IV.* Mission report (June 1999), Fayoum, Egypt. ETC-Netherlands, Leusden. 20 pp.

Laban, P. & Diop, J.-M. (1998): *PTD training module: designing experiments with farmers.* PTD Circular 9: 3-4 (ETC-Netherlands, Leusden).

This is the list of all working papers published by ETC Ecoculture.
If you would like to receive one of these papers, please write to the address below.

- PTD Working Paper 1: Experiences with Farmer Experimental Design Workshop in Egypt.
- PTD Working Paper 2: Farmer Experimental Design Workshop for the LEINUTS project in Kenya: a low-potential area case.
- PTD Working Paper 3: Trying out PTD with NGOs in Peru and Bolivia.
- PTD Working Paper 4: Building capacity in participatory approaches.
- PTD Working Paper 5: Participatory Technology Development in Cameroon: the route and milestones in the process of its institutionalisation.
- PTD Working Paper 6: Towards sustainable development in Mahaweli settlements through farmer participation
- PTD Working Paper 7: PTD for Sustainable Dryland Agriculture in South India: Balancing our way to Scale

ETC Ecoculture

- Established** ETC Ecoculture has been active worldwide since 1980; the European focus dates from 1995
- Expertise** Consultancy, training, project implementation, studies, information and documentation
- Specialisation** Natural resources management, sustainable agriculture and forestry, culture and nature
- Clients** International agencies, co-financing institutions, government and non-governmental organisations
- Funding** Bi-lateral donors (e.g. the Netherlands, Sweden), national and international NGOs, Dutch national and provincial ministries

For more information:

ETC Ecoculture Tel: 00 31 (0) 33 432 6000
Kastanjelaan 5 Fax: 00 31 (0) 33 494 07 91
P.O. Box 64 E-mail: ecoculture@etcnl.nl
3830 AB Leusden
The Netherlands