

# Recycling household waste to



The traditional way: manure waiting to be carried to the fields.

*CEOSS, a Coptic NGO in Egypt, is making important steps in a process of change towards enhancing the self reliance of its target communities. In a pilot project in Sharouna and Nassareya, PTD is creating wonders in focusing LEISA synergy on the problems of garbage and reducing the high cost of chemical fertilisers. Women, in a participatory decision process, adopted innovative measures that would lead to cleaner stables and living space. By concentrating organic household waste, manure and urine in a pit in their in-house stable, they were able to produce an organic fertiliser that probably has a much higher nitrogen content than traditional manure. Further experiments may well lead to making an improved compost which will help farmers to decrease their inputs of chemical fertiliser by experimenting with different fertiliser combinations. The recycling of garbage through improved stables has resulted in time savings for women, improved health conditions as well as providing income earning opportunities. Participatory Technology Development (PTD) is a major trigger in this process.*

## **Gamal Zakaria and team members and Peter Laban**

The people of the Nile valley have sustained production on their precious valley soils since the time of the Pharaohs. These soils are very rich and, before the building of the Assouan dam, were regularly 'fertilised' by new sediments washed down the Nile as the river, swollen with the water from the summer rains in the Southern Sudan, Ethiopia and Uganda, flooded the 50 kilometre wide valley. This natural process came to an abrupt end when the dam was built in 1962.

After the dam had been constructed, farmers were able to grow two or three irrigated crops a year. Most grew wheat, maize, alfalfa, and vegetables in a two-year crop rotation. Sugar cane and cotton are also important crops. In 1953, land reform curtailed land ownership to 50 feddan (1 feddan = 1 acre) and today most farmers in the Nile Valley do not own more than 2 to 5 feddan. People live in two or three storey houses, densely packed into the narrow streets of the small towns found

throughout the valley. Cattle are kept inside the home, and there is little or no organised collection or disposal of manure, stable or household waste. Each day low quality manure is carried to the fields and household waste is dumped beside the river or along the irrigation and drainage canals.

### **A pilot project**

In 1997, the Coptic Evangelic Organisation for Social Services (CEOSS) started a pilot project in Sharouna (pop. 35,000) and Nassareya (pop. 16,000), two small towns on the eastern banks of the Nile. CEOSS is an important NGO in Egypt and has high credibility at government level because of its non-partial approach to both Islamic and Christian as well as rural and urban communities. Established in 1952, it has expanded over the past four decades from organising literacy programmes to running complementary economic, health and agricultural development programmes that follow a social-service-delivery type approach. At present it is implementing development programmes in about 75 communities.

The pilot project area is relatively inaccessible and undeveloped. The present

objective is to improve the living conditions of the population and increase the ability of farmers and women to develop solutions to the problems they face in everyday life. A second objective is to strengthen the capacity of CEOSS to implement more participatory, integrated, and ecology-oriented development programmes. The project strategy draws heavily on the Participatory Technology Development (PTD) approach and focuses on the recycling of garbage by women and the improved use of fertilisers by farmers.

### **First results**

Some 30 farmers work together in farmer-experiment groups. After only nine months they are eager to continue systematically experimenting with different crop practices and indicate that they are prepared to continue this approach with or without CEOSS support. Other farmers have expressed interest in joining these experiment groups and in starting experiments themselves. The initial results of these fertiliser experiments have been encouraging and have shown that it is possible to maintain yields and reduce cost despite decreased applications of chemical fertilisers. In the first experiments organic and/or bio-fertilisers partially replaced chemical fertilisers.



# improve soil fertility

The impact of the pilot project at the household level was more profound. After a careful and participatory process of workshops and discussions amongst six different women's groups, it was decided to see whether it was possible to collect manure, straw and urine from the stable and combine it with organic waste and kitchen ash in a pit prepared in the stable itself. This innovation proved highly successful. Not only did it produce a much richer organic fertiliser, it saved the women a great deal of time. They no longer had to bring soil in from the fields every day to dry the stable or carry household waste to the garbage dumps near the river. The stables were cleaner so animals did not have to be cleaned in the river every day. Moreover, cleaner stables and animals made it possible to collect much cleaner milk which benefits both animal and human health. Men also profited from these innovations: they no longer have to carry manure to their fields everyday and they are coming to realise that they are getting a much richer manure. In the long run garbage recycling may well reduce pollution of the canals and the other waterways. The initial six groups involving 60 women have grown to about 100 participants and 50 other women have asked to join the project.

## How did this happen?

CEOSS, wanting to incorporate a more ecological dimension into its agricultural and rural development activities, asked its funding agencies for support. Preparatory work

was carried out in two villages to prioritise problem areas and assess gender roles. Soumaya Ibrahim, a social development and gender specialist from Cairo played an important role in this process. A PRA was carried out in March 1996 amongst 75 households in the two towns and demonstrated very clearly that the disposal of household waste water and garbage were by far the most important problems facing women, while male farmers gave priority to reducing the cost of chemical fertilisers. The outcome of the PRA guided the subsequent project proposal formulated by the CEOSS team. A PTD approach was chosen in which the farmer and women groups selected would still have the freedom to select other priority problems when implementing the pilot project. This open-ended project approach was approved at the end of 1996 by NOVIB and ICCO.

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 selected farmer groups.

The CEOSS team repeated the design workshops with two farmers' groups and six women's groups from the two towns. Farmers grasped the process and decision making aspects very quickly and CEOSS's role was thus limited to advice, facilitation and making contacts with experts such as Dr. Sayed Arafat, a soil fertility expert attached to the National Research Centre (NRC) in Cairo.

## Box 1. Looking for things to try: a PTD module for designing experiments with farmers.

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

**Tools:** Resource flow diagrams; Problem tree; PRA ranking tools

### Procedures:

Community meeting for commitment and endorsement of experiments  
Drawing resource flows for farm enterprises (*Flow diagrams*)

Identifying problems and options to solve them (*Pair-wise Ranking*)

More detailed problem analysis (*Problem Tree*)

Orienting the farmer experiments (*Ranking*)  
Agreeing on the detailed design of the experiments (treatments, experiment lay-out; monitoring, etc.)

Conclusions are laid out in project idea-sheets

This module corresponds to Step 2 (partly) and Step 3 of the PTD process. Such a module should be preceded by a PRA problem identification and priority setting at the community level.

Adapted from: Diop and Labun (1997).

Farmers wanted an analysis made of the soil in the fields where they would carry out the experiments to help guide different treatments - combinations of a more balanced amount of chemical fertilisers, bio-fertilisers and/or traditional manure. Smaller groups of farmers were formed on the basis of the field conditions in which they worked and progress, difficulties and results were discussed in these groups.

## Women showed great interest

It was not surprising that setting up workshops and further discussions with women took more time. The projected changes had important cultural, social and gender implications for the age-old system of dealing with cattle, waste and manure. CEOSS staff took as much time as was necessary to make sure that the decisions made were really owned by the women's groups. Visits were organised to Minya, Cairo and Alexandria to discuss other experiences and projects. This was in itself an important event for most of the women had never left their village before and now, for the first time in their lives, were being exposed to other situations and ideas. CEOSS credited the PTD process with making this possible.

The experience and advice of Prof. Dr. Nader Ragheb Mitry of the NRC, an expert in rural waste technology, proved to be invaluable in helping the women develop the proposed innovations.

A women's group in the small town of Nassareya



## Costs involved

In May the final decision was made to experiment with solutions to the garbage/manure disposal problem. The most successful solution has already been described above. Another solution, developed for families without cattle, involved a large blue plastic container (200 litre) with holes in the bottom and a small door on the lower side for removing composted materials. The containers were second-hand and bought relatively cheaply (120 EL (3.5 EL=1 USD)). At the moment the construction cost of in-house stable pits is about 280 EL, but these costs can be reduced when people provide the necessary bricks and labour themselves. When making decisions on the solutions to be tried out it was agreed that CEOSS would pay 75 % of the expense involved. Later it became clear that this contribution needs to be drastically revised.

## 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 have contributed to the positive results achieved. However, it became very clear that it is important that researchers are committed to the PTD process to avoid their opinions becoming too dominant.

The fertiliser experiments were too complex and it will not be possible immediately to differentiate between the effects of a balanced application of chemical fertiliser and those results achieved by applying organic and bio-fertilisers. There is still the risk that researchers will be inclined to follow their own research agendas and CEOSS staff have an important role to play in this respect.

Further work is needed to ensure that farmer experiments continue to improve and that the results are shared within farmer groups and the village community. Strengthening and increasing the number of farmer experiment groups could be the next step in the PTD process. The early results of this pilot project are encouraging. They invite further action to develop on the successes of the participatory process especially as it has improved living conditions and affects the work women do in the household. Two important steps that could be taken are strengthening the way the women's development groups function,

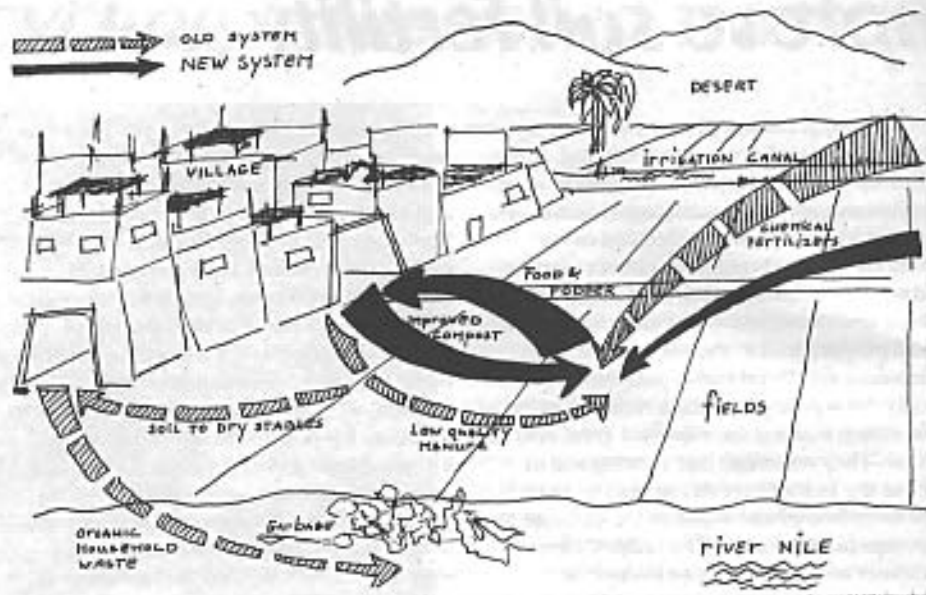


Figure 1: A nutrient flow diagram of a Nile Valley farm household system

and finding ways to market the organic fertilisers produced at home, especially by families who have no cattle and no fields.

## Challenges to CEOSS

CEOSS as a development organisation also faces a number of important questions. How can its policies be adapted to up-scale and increase the impact of the pilot project by strengthening and institutionalising the PTD approach? What will this mean for the further development of staff capacity? How should the important issue of financial contributions be dealt with, where it is clear that it cannot respond to a massive demand for improved stables? What form should new programme proposals - the follow-up to this pilot project - take? How can the contradiction between this participatory process of empowerment and more individually-focused development programmes be reconciled? And, finally, how should this information be recorded and documented so that it can be exchanged and shared with others both inside and outside CEOSS?

When this article has been translated into Arabic it may form an important part of the process of advocating more participatory-

and ecology-oriented development programmes in Egypt.

Gamal Zakaria, Medhat Ayad, Fakhouri Nader, Sameh Seif, Ashraf Naseh, Basem Saroufim, Gamal Mokhtar, Margrit Saroufim, Magda Ramzy. CEOSS, P.O. Box 50, Minya, Egypt. Fax/Minya: +20.86.326573; Fax/Cairo: +20.02.2975878; Email: g.zakaria@ceoss-  
org.eg

Peter Laban, Team Leader, ILEIA

## References

- CEOSS, 1996 A proposal for an agro-environmental pilot project in the Sharouma Nassareya area
- Laban P, 1997 Report of the first PTD training workshop for the CEOSS agro-environmental pilot project in the Sharouma-Nassareya area, Middle Egypt. ILEIA/ETC-Netherlands.
- Laban P, 1997 Report of the second PTD/LEISA training workshop for the CEOSS agro-environmental pilot project in the Sharouma-Nassareya area, Middle Egypt ILEIA/ETC-Netherlands.



An improved stable with a manure pit ready for use

## Key factors for success

- Farmers and women eager to change their situation;
- A participatory process from problem identification to an open-ended project approach;
- The PTD process: people really feeling that outsiders are listening to them and taking their concerns seriously: handing back decision making and the ownership of innovations and experiments;
- Gender sensitivity and differentiation;
- Practical procedures for farmer/women design workshops (Box 1);
- Extensive use of PRA tools including drawings of resource flows;
- Participatory development of a major innovation in the household system with multiple positive effects (cleaner houses, time savings for both women and men, improved health and fertilisers);
- The open learning attitude of CEOSS development staff;
- A process embedded in an organisation with long experience in community development that has the trust of rural communities.