

# FINAL REPORT

1. **Project Number** 500 351 01
2. **Project Title** *Application of organic farming for reduction of agricultural water pollution, village Shirin Maafi, Tehsil Depalpur District Okara*
3. **Project Executants**
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4. **Project Duration (in months)** 12 Months
  - a) Starting Date April- 2003
  - b) Ending Date March- 2004
  - c) Progress Report for the period April 2003 to March 2004
5. **Project Cost** Rs.121, 000/-
6. **Project Summery**

This project is an outcome of consistent work of GCO in the field of sustainable agriculture over the past one decade. Concept of Organic Model Farm with earthworm hatchery and compost pits is a unique idea initiated by GCO for the reduction of agriculture water pollution. WWF (P) funded Rs. 121, 000/ to GCO for the accomplishment of this project. Duration of this project was one year from April 2003 to march 2004. Installation of slurry sprinkling system; earthworm hatchery,

composting pits, publication of illustrated guidebooks, open forums, and trainings were the main components of the project. Model Farm is actually an applied research centre where farmers are also provided training in growing earthworms, compost making, Biological control of diseases and organic practices. This model farm is also equipped with audiovisual facilities and more than **400** books on sustainable agriculture. In the organic model, slurry is used after mixing it with different other organic components and it is an evidence of how bio fertilizer can produce equally effective results without much effect on the crop yield. Chemical fertilizers are poison, not only for human body and animals in the shape of contaminated water but also unfit for the plants and crops. So, it was really very necessary to practice this method and educate and convince the masses about the importance of organic farming and side effects of the pesticides.

During the project period, different activities were carried out for the betterment of the environment, conservation of nature, and local people. For instance, **four** training programs were launched for the compost technology and earthworm cultivation and **160** farmers including **47** female farmers were provided training. In spite of this, **six** open forums were organised at Sub District level during the reporting period and **60** to **70** farmers participated in each forum. Issues and problems related to poor farmers and agriculture were discussed in these forums and the farmers participated enthusiastically.

Moreover, **six visits** of the farmers were also managed for the awareness and understanding of the practical application of the biological

method and **564** farmers (**435 male and 129 female**) visited the farm during reporting period. Objectives were achieved by adopting integrated approach.

GCO carried out each and every activity according to the work plan. On one hand organic model farm was developed for demonstration and it was a good example for the local farmer to see and observe the results of organic farming. On other hand Trainings and workshops were organised for the local farmers on organic and indigenous practices. This developed great confidence in farmers and encourage them to adopt the model. Now 11 farmers of the area have adopted different components of this model. Infact, Organic Model Farm is an attempt to derive the attention of the farmers from high input, high yield, chemical oriented agriculture to low input, low cost, bio-oriented agriculture, which is cheap and environmentally friendly for soil, water and air. Continuous use of chemicals and pesticides is causing severe damage to our soil and environment. It is a matter of life for our coming generations to do the right decision at right time and for that purpose, we should do establish a close relationship with nature by doing organic practices. That's why GCO took the initiative and did this project.

## **7. Project Objectives**

- a) Reintroducing sustainable agriculture methods
- b) Present a working model of Organic Farm to small farmer
- c) Assist the small farmers in getting high-yield without the application of environmentally unfit methods.
- d) Providing on handing training on earthworm cultivation and composting.

- e) Initiating debate on non-traditional harmful methods of combating pests
- f) Introducing biological methods as an alternative to chemical and pesticide use.
- g) Bringing to light the degradation of sub-soil water quality and how it can be improved.
- h) Creating awareness in the masses about environment-friendly farming methods.
- i) Educating the farmers and especially youth and children about the importance of sustainable organic method of farming by using Illustrated guidebooks.
- j) Advocating with the farmers for overall conservation of natural resources with special reference to sub-soil water and limited or no use of harmful pesticide and chemicals.

## **6. Methodology Used**

Working with the farmers at grass root level the GCO experience has been that small farmers often undertake expensive practices following the high input- high yield formula without any consideration to harm they cause to the environment, including soil and sub soil water. The unchecked and wide use of chemicals and pesticides have over the years imparted a direct negative result on the quality of soil, water and air and sub soil water has also been contaminated. This excessive use of pesticides and chemical fertilizers also increased diseases both in animals and human beings. It was also destroying and affecting the natural bio diversity of the area. Many species were also facing extinction due to the polluted water and soil. In this backdrop GCO felt that timely revival of low cost indigenous and organic practices is a must. As GCO have an experience of

working at grass root level on sustainable agriculture, the level of public awareness has raised the level to such a state where, with a little effort, people would be willing to adopt biological technology. Integrated approach was adopted to meet the objectives and achieve the target of sustainable organic agriculture.

For the accomplishment of the project, project committee was established before the start of the project. This committee comprises of local community, a representative of NGO, councillors and representatives of different CBOs. The committee met before the start of the project and held three meetings with local farmers and people. The farmers and participants were given detailed briefing about the activities of the project. Their knowledge and experiences regarding organic farming was also shared. After these meetings, it was very clear that the farmers had become highly aware of declining quality of sub soil water and side effects of pesticides. They were also looking for and willing to try organic methods that may result in a positive impact on yield and environment.

So, the activity started with the detailed drawing and layout of the organic model and then the process of the establishment of organic model farm was started.

For that purpose, the procedure of the formation of civil works of the slurry pits was initiated. *A Slurry pit of 10\*10 feet size was constructed and it was linked with Bio Refinery Plant with the help of 6 inch RC pipe. The slurry comes directly to this pit from bio refinery. This slurry pit was divided into two parts and thick slurry was separated from the liquid one with the help of a mash between two portions. So that it would be easy to*

*sprinkle it on the plants through sprinkling system.*

Next step was the setting up of the slurry sprinkling system. A 2 HP motor pump was installed on slurry pits for lifting of the slurry from the pits and to sprinkle it on plants. Network of pipes was also laid down for taking the slurry to the different parts of the organic model. At first the sprinkler was not functioning because the slurry was thick. So, nozzles were specially designed for slurry sprinkling.

*Then three pits of 8\*6\*6 feet size were dug for composting and a shredder was installed for shredding of the soft wood and for the cutting of agriculture mass into pieces for the making of compost. Eight to ten inches layer of shredded material was being put into the pit and then slurry was sprayed on it to keep it moist. This slurry also helped in fermenting and decomposing the matter. After few layers of shredded organic material and slurry, the pit was covered with polythene sheet. However few holes were left for installing PVC pipes in pits. These pipes provide air to the OM and save the OM from rotting. After six to eight weeks (depending on the temperature) fine organic fertilizer was ready to use in fields. This fertilizer was used in the fields for observing their results and impacts on environment and crop.*

*Three pits of 3\*3\*2 feet were dug for establishing earthworm hatchery. These pits were constructed in semi shade place because Earthworms cannot survive in direct sunlight. Earthworms were taken from a retired scientist of PCSIR laboratory. Leaves of trees and plants are put into the pits and worms converted these leaves into fine organic manure. These earthworms were also propagated and were released*

*in the fields. The purpose of this activity was to promote the earthworm culture in the area and its practical application is one of the techniques in the organic model farm for the stakeholders to understand the system.*

*After completing civil work farmers were invited to organic farm to show them working and uses of these indigenous practices. There they observed the practical application of slurry sprinkle system, earthworms and positive impacts of organic farming.*

For the promotion and replication of sustainable agriculture in the area, four trainings on compost making and earthworm cultivation were also conducted and more than **200** farmers benefited from these trainings. Six visits of **564** farmers to the organic model were also managed. Besides that six open forums were also organised for the promotion of organic farming. These forums provided opportunity to the farmers to discuss the issues affecting the small farmers and their yield. These forums were found very effective and fruitful for farmers. Besides engaging the farmers in these forums and debates on existing farming techniques and their hazards, four illustrated guidebooks were also prepared. These guidebooks were distributed among the farmers and students free of cost. The topics were;

- a. Story of Earthworm.
- b. Why prefer compost on chemicals.
- c. Friendly insects
- d. What chemicals and pesticides do to soil?

Volunteers of CBOs worked to mobilize the local community to adopt the organic techniques and to brief them about the uses of biological methods at six different

villages i.e. Shirin Maafi, Hujrah, Shah Muqem, Depalpur city, Awan Klan and 23-D.

## **7. Results & there significance**

Results of this innovative project have been very encouraging. Some of the important outcomes of the first and second quarter of the project are: -

**a.** Soil was tested before the start of the project. PH of the soil was 8.9, highly alkaline and it loamy clay in structure. Cracks appeared when soil became dry. After application of organic compost and slurry the soil responded well. Organic matter was increased and soil became more porous now soil also can gat more air. Fertility of the soil increased and it resulted in increase of yield. Pest attacks were found surprisingly low. One obvious change was that, the plants look more healthy and shiny and they bear more flowers and fruit. Taste of the vegetables produced by organic techniques was also better then the ordinary vegetables.

**b.** Improved quality of sub-soil water due to the use of natural techniques.

**C.** Reduction in use of techniques affecting natural resource. Farmers are highly aware of the side effects of pesticides and chemical fertilizers. Now many farmers are using organic techniques and number of farmers using biological methods of pest control is increasing every day.

**d.** Replacement of chemical fertilizer with organic compost

**e.** Improvement of human and livestock health as a result of

uncontaminated water and this fact is very clear from the hospital record.

**f.** More aware farmers and youth about importance of environmental conservation and best practices of environment friendly farming.

**g.** Yield of many crops has increased with compare to inorganic farming. For example 600 kg onion was produced from one acre. Bitter gourd, Gourd, Ladyfinger, Long beans, Green peas, Leek, Broccoli, and garlic were also produced in more quantity then inorganic agriculture.

**9. Targets/Objective not achieved** All most all the targets have achieved.  
**and reasons thereof**

**10. Problems and steps taken to Overcome them** Following problems and constraints were faced during the project period.

**a.** In the start the farmers were hesitating from adopting organic techniques because they were used to use inorganic methods since long time. Regular meetings, workshops, trainings and visits of practical organic model convinced them regarding these sustainable organic agriculture methods.

**b.** Yield of some crops decreased i.e. Tomato, Cauliflower, and Green chilli, Bringal etc, which discourages the farmers. But they were told that it may happen in the beginning and it will be recovered in few years.

**c.** Sprinkling system for spraying slurry was not available. It was specially designed and manufactured.

**10. Conclusion & Recommendations** In a nutshell, people have become highly aware of the declining quality

of sub-soil water in the area, as the cases of water born diseases have shown a marked increase over the past few years. In the prevailing circumstances there are few suggestions;

**a.** This project has a very good impact on environment of village and up scaling of such projects will definitely bring positive change in culture of existing farming practices.

**b.** It is observed that farmers show their interest when they are facilitated. It is required to arrange more and more trainings and forums to convince them to adopt the system and take initiative by them.

**c.** It is a need of time to educate the people about the side effects of chemicals & pesticides because it is a matter of life for our coming generations.

**11. Output: Reports, media, articles Slides, photographs etc.** Photographs were made and monthly reports were prepared during the project.

**12. Equipment Status Report** following equipment was purchased for this project and all the equipment is being used carefully and all are in good running order.

**a.** One motor pump

**b.** Shredder

**c.** Sprinklers