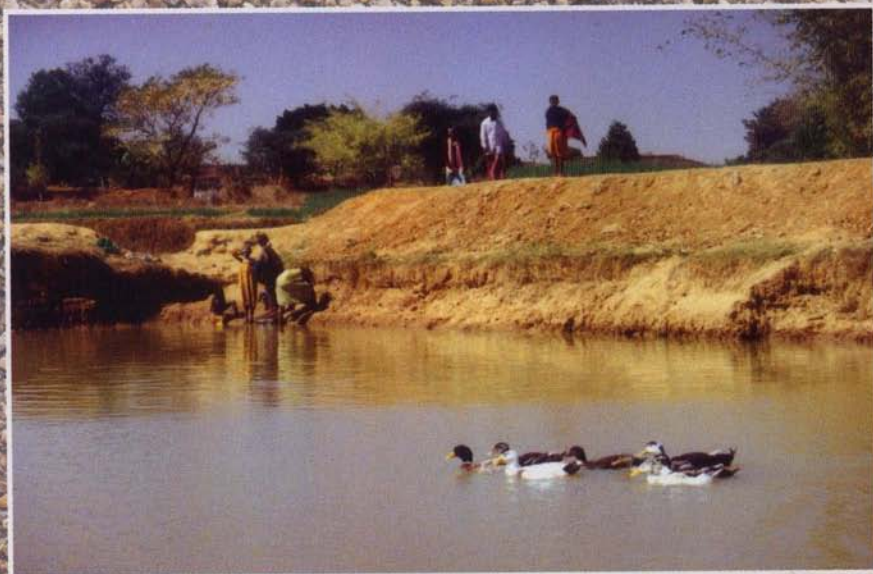


Water for a better life

People's movement for regeneration

**A case study of accomplishments under the
Environment Education and Action Program**



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Cover picture: Ducks in the Shyamlapur pond made under EEAP

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Acronyms and Glossary

CCA	-	Canadian Cooperative Association
<i>Chullah</i>	-	Stove
<i>Didi</i>	-	Elder Sister
EEAP	-	Environment Education and Action Program
EEP	-	Environment Education Program
ERT	-	Environment Resource Team
<i>Ghuttia</i>	-	Cow dung cakes used as fuel
<i>Hariyali Samities</i>	-	Green groups
IFCOD	-	India Forum for Cooperative Development
<i>Jadavs and Pathkas</i>	-	Certain castes in India
<i>Kharif crop</i>	-	Monsoon crop
<i>Krishak Bandhu Pump Set</i>	-	Low-cost pedal-operated pump set
<i>Krishi Mela</i>	-	Farmers' fair
<i>Lattha, Duni</i>	-	Devises used for irrigation purposes
<i>Manav Kalyan Samiti</i>	-	Human Welfare Society
NGO	-	Non-Governmental Organization
NFE	-	Non-Formal Education
O.B.C.	-	Other Backward Classes
<i>Panchayat</i>	-	Development unit within a block, comprising several villages
PIDT	-	People's Institute for Development and Training
PVO	-	Participating Voluntary Organization
<i>Rabi</i>	-	Winter crop
RAP	-	Rural Action Project
RRA	-	Rapid Rural Appraisal
<i>Siksha Avm Vikas Samiti</i>	-	Education and Development Committee
<i>Shramdaan</i>	-	Donation of labor
S.T.	-	Scheduled Tribe
<i>Tolas</i>	-	Village is revenue department's concept, tola is the people's grouping based on their religion, language, ethnicity and other factors that make homogeneous people a community
<i>Beej Bhandar</i>	-	Seed Store
WHS	-	Water Harvesting Structure

1. INTRODUCTION

A case study of Shyamlapur village

“Didi

I have begun to dream that my grandchildren may yet see the beautiful homeland that I remember as a child, forested hills, mountain springs, bird calls and may be even the tiger!”



Excavation of the WHS at Shyamlapur has just started. Will Rupu Tudu's dream come true?

said, old **Rupu Tudu** (picture on page 26), laughing. His mono-toothed mouth was wide open. Wrinkles on his face showed the dark wizened man that reflected his wisdom. He was sitting on a stone on the parched land on which stood his home and his village. The excavation had just begun for Water Harvesting Structure (WHS). Rupu Tudu had donated the land to the community for building the WHS.

This is about action for regeneration of the communities tucked away in a corner away from the bustle of self-aggrandizing cities and their privileges. There the cock crows on the morning and the life is as it always was. The tools for conviviality used were the environment and generation of cooperation between peoples living in the area. Villages that took the revolutionary step of self-renewal through the regeneration of the environment based on self-reliance and cooperation, rather than living on promises from the government which never came to be fulfilled.

It was the month of January 1999, when we first stepped into the village Shyاملapur, after crossing the river 'Jayanti'. We could see only the barren land with red soil and no plants or trees around. As we went on crossing the river on foot as there were no bridges we could see glaring signs of soil erosion. The desolate picture of the countryside hit us hard. Few date palm trees that grew produced no dates of any consequence, but served the purpose of supplying leaves for making mats and brooms. These plants grew naturally and perhaps as a nature's response to human terror unleashed on land. These plants reduced land erosion and seemed as if the nature was trying to protect herself.

We noticed that village Shyاملapur is 15 km away from the railway station of Jagdishpur. It is mainly a tribal village. There are three tolas (small clusters) in it namely Maridih, Naiyadih and 'Shyاملapur Khash'. It has a geographical area of 216.29 hectares (ha) of which forest area is only 0.5 ha compared to the applicable norm for this area of about 72 hectares. In Shyاملapur village, there is no pond nor any proper source of drinking water. There are only two tube wells and two wells.

The village Kushmaha is located in Dhamni Panchayat, 20 km. away from PIDT Lokshala at Jagdishpur, which is also the nearest railway station. The total geographical area of the village is 184.6 ha., of which 40.53 ha. are under forest, 85.67 ha. are under agriculture and 24.8 ha. under wasteland. The total population of the village is 414 in 60 households with an average literacy percentage of 10.15%.

The village has three hamlets or 'tolas'. One of the hamlets is inhabited by the 'Kol' (S.T.) the other by the Santhal (S.T.) and the third by the Yadavs and Pathaks (O.B.C.) Their average land holding is 5.5 acre (more than two hactare) of land. The land belongs to three types a) cultivable land, b) barren land c) homestead land. In spite of good land holding size most of the male members have to migrate for work for at least nine months in the year since the land is barren without any irrigation facility.



Road to Kushmah and Shyamlapur. The barren landscape hits you hard. This land could yield much to ease the poverty in the villages.

These were but two typical villages of the area. These two villages were that of Santhal tribes. There were many other villages, almost one hundred, in which PIDT work was spread. These villages are those about which we write our story of cooperation and self-reliance.

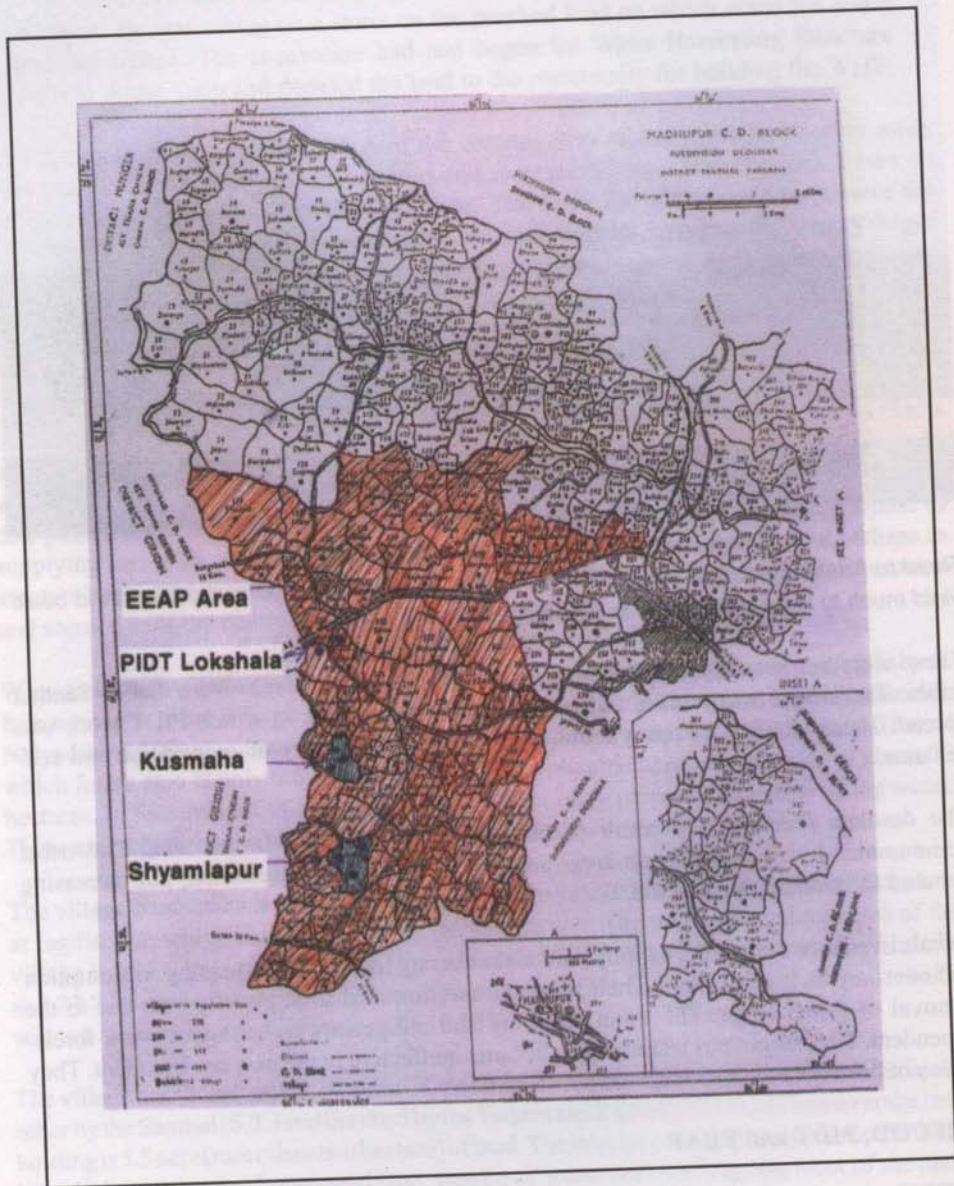
The desolate scenario is a result of large-scale deforestation in the area. The tribal communities living in the forest areas are not the cause of deforestation, but increasing demand for wood in the cities is.

Tribals lived their simple life happily without hankering for an ever-increasing consumption and ever-improving products. Their present condition of dismal poverty was due to the removal of forest cover. The tribal economy and indigenous technologies were forest-dependent. The indigenous technologies became ineffective in the new environment. They have not been able to cope with the new situation.

2. IFCOD, PIDT and EEAP

IFCOD is a national network of voluntary organizations committed to cooperative values, principles and practices. It promotes cooperative action for development and strives

Madhupur Block and the Project Area



for equitable sharing and management of natural resources, gender equity and youth participation in people's development. IFCOD was started as an informal network of the program partners of the Canadian Cooperative Association (CCA) in 1993 and was registered as a society in 1995 under the Societies Registration Act. It presently has a membership of 20 voluntary organizations from 12 States of India.

IFCOD envisions the creation of a just and self-reliant society. It hopes to realize this vision by promoting, strengthening and collaborating with people-centered development institutions and processes, based on cooperative values and principles at the local, regional, national and international levels. IFCOD subscribes to the international cooperative principles and upholds the values of volunteerism, individual and collective responsibility, democracy and self-help through mutual help, self-reliance, accountability and transparency.

PIDT, as its acronym implies ('peedith' in Hindi means 'oppressed'), works with economically poor and oppressed scheduled tribes and castes and other backward groups. It grew out of the Rural Action Project (RAP) of the National Institute of Bank Management (NIBM), when some 40 social activists, researchers and professors involved in field study and grassroots action in North India set about questioning local power structures and searching for alternate development strategies. Founded in 1980, PIDT has its registered office in New Delhi and operates in the States of U.P., Jharkhand, Chhattisgarh and West Bengal. It presently has 450 social activists working in these States. Its major activities are in the areas of :

- Awareness education and training for transformation,
- Sustainable ecology through environment regeneration,
- Protection of cultural skills and knowledge systems,
- Self-reliant livelihood enhancement,
- Collective marketing for 52 organizations and
- Research and advocacy for peace, femininity and sustainability.

In the past 15 years, PIDT conducted many environmental awareness trainings for villagers, promoted soil and water conservation, composting, and vermiculture and watershed programs.

EEAP : In keeping with its declared mission and priorities and deeply concerned with the environmental degradation taking place in India, IFCOD had planned to launch a program involving all its partners. But it did not succeed in its efforts to secure the necessary financial support. In July 1998, Canadian Cooperative Association (CCA) came to the aid of IFCOD to help in the launching of a program called Environment Education and Action Program (EEAP), involving seven of IFCOD's partner organizations, in the States of Assam, Bihar (presently Jharkhand), Gujarat, Karnataka, Kerala, Maharashtra and Uttar Pradesh. The goal and objective of EEAP are respectively:

“To initiate a process of sustainable community development through cooperative action,”

&

“To increase the capacity of people’s organizations, such as cooperatives, self-help groups and similar associations, to effectively manage land, water and energy resources.”

- Awareness Generation (Environment Education Program – EEP):

Continuous education of the communities in the areas selected by each partner about the importance of environmental concerns, to motivate them to build up their capacities for the proper management of the natural resources and to take collective action towards this end. Each partner was expected to conduct a minimum of 15 EEPs for an average duration of 3 days each, and impart environmental education to a minimum of 750 persons.

- Formation of Environment Resource Team (ERT):

Each partner was expected to identify a minimum of 10 potential leaders and resource persons in the program areas and get them trained to conduct environment education programs and guide in addressing environmental issues of the area. These resource persons are referred to as ERTs — Environmental Resource Teams. The ERTs in turn would help the communities in each area to identify and address specific environmental problems.

- Action Intervention:

Implementation of community-based action programs with the participation of the people affected, which were to be of direct, local benefit through the application of diverse and innovative approaches to the supply, conservation and use of land, water and energy resources.

- Establishment of Cooperatives/Cooperative-type organizations:

Each partner is expected to train and organize the people benefited by the action interventions into cooperatives or cooperative type of organizations for sustaining the social and economic gains of the program.

The two-and-a-half year program involved only a budget of Rs 8.78 lakhs at the level of each partner, out of which Rs 6.86 lakhs were provided by IFCOD/CCA and the rest was contributed by the partner organization and the people. IFCOD organized and met the cost of common capacity building programs like pre-program consultations, program orientation workshop, training of environment resource teams, cooperative training programs, monitoring and evaluation. IFCOD thus played the role of a facilitator, trainer

and program administrator.

EEAP is a unique program, in which several committed non-governmental organizations from different parts of India have 'cooperated' to address one of the priority issues of environmental degradation in the country. The comprehensive, but flexible program design has helped in starting a people's movement for sustainable development in the areas selected. What is described in the following pages is the outcome of the people's movement for better environment in one of the areas.

3. OUR STORY

Who are WE? We are three distinct players bent on playing a win, win game. There were not to be any losers in the game. Even though the three players had distinct personalities, they shared the same vision and had the same mission to fulfil which was their common dream. It was a glorious vision, but a difficult mission to fulfil.

It was difficult because the dream was contrary to the dream of contemporary society. The dream was neither a dream of yesteryears nor of the present, but of a future. We were dreaming of future — a future devoid of miseries, discords, degradations, with ways of sustaining the society built within our dreams. Creating harmony within ourselves — with our nature and the nature.

The Three Players

THE PEOPLE

The people were that of 65 villages of Madhupur Block. They were poor and considered resourceless and static till they started playing the game. Economically they were poor indeed. They were well below the poverty line, but they brought out their potential to grow and assimilate and generate ideas and transform the ideas into action.

PIDT

PIDT played the role of a catalyst, a friend, a philosopher and a guide as ever. They also were the source of technical help, inspirer and conduit for capital investment. Spirit of participation that was the most crucial to the process and the product of the game was their contribution.

IFCOD

IFCOD was the strength behind the game that was being played. They acted as a host, sponsor and initiators of the whole project and were the link with the CCA.

The Vision / Dream

The Vision was actualizing a dream of creating a harmonious cooperative, egalitarian society. The society was to be sustainable and non-exploitative of nature and people.

The Mission

Was to recreate natural and social environment for sustenance and growth. Continuity of action and change proneness was the core of the Mission.

The Harmony

The rural societies reflect a tradition of less atomization of communities and are products of exploitative processes. This obstacle was also present in the area that had to be removed to initiate the process of action and restore harmony in social life. In the process of building for harmony we discovered two distinct enemies who had to be overcome the enemy within.

The primary enemy is fear and diffidence and second includes a mass and individual psychological barriers. The fear permeated amongst each other creating distress.

The Enemy Outside

Revolutionaries believe in the enemy outside. True, there are enemies outside. Yet these enemies can not be challenged unless inner barriers are removed. The revolutionaries do that themselves. They remove their inner barriers and then only they can go ahead. This process was initiated through numerous trainings, workshops and personal interactions.

Resources available with the PIDT

Profusion of organizations is a reflection of the present times as they originate not in rural societies, but in metropolitan culture. The rural organizations in the notions of most of these organizational worldviews are conceived to conform to the government or other development institution's structures and not to the societies' own norms or communication pattern.

This follows the line of convenience of fund providers and development agents, but not of the people. The people do not lead their lives by departments, but in their completeness. Within the continuous process there are moments punctuated by sorrows, failures, successes and ecstasies. There are also festivals, dances, pujas and hunting festivals, marriages and birth of babies, which lighten the lives of the people and make their

otherwise drab and busy hard life liveable.

To the myopic observation of development scientists these are of no consequence, but a hindrance to the fulfillment of targets, results and reports. However, these are the reasons for development and are intrinsic part of life and living.

PIDT looks at these moments as most positive moments when cooperation does not need help from cooperative department. Taking this view, a joint strategy was evolved with the people to transform the organization that had been developed by integrating new goals and actions. The strategy and action plans were also developed through continuous dialogue with the people and based on ground realities. Thus the natural grouping of Tolas was respected as distinct from village the new activities are planned according to Tolas.

Developing a strategy for EEAP

Development of strategy was based on the deliberation with the people and using 'Rapid Rural Appraisal' techniques. During the consultations with the people, special care ensured involvement of the women in good measure.

Resource listing and analysis was made during the 'RRA' meets. It was found that the Samities and PIDT together had much non-cash resources that could be invested. Converted into money these resources will amount to enormous figure.



Dr Aparna Dasgupta, Director, PIDT in a meeting with the village leaders of Shyamlapur

Many discussions lead us to two main pragmatic programs that became the core programs. These were plantation of trees to increase water holding capacity of the soil and construction of water harvesting structures with the aim of improving sub soil water level. Both the ideas that emerged related to water. The thirsty soil had to be tended with care. Emergence of related ideas showed the people's inherent awareness of the core problem area.

There were other associated more technology-based programs such as introduction of blue flame smokeless stove and foot pedal pump.

Environmental condition of the area

Village Shyamlapur epitomizes the entire region in environmental status. The total geographical area of the village is 216.29 hectares of which forest area is only 0.42 ha. Where existence of the forest is nil at present, total agricultural land is 117.49 ha. Only 5.3% land is irrigated and rest of the land is rainfed. The source of irrigation is river and well. Irrigation is given using indigenous devises such as Lattha. Duni etc. Like many other regions, this region is also mono-cropped as the source of the water in rabi and summer season is very poor as well as grazing is another problem.

The area is undulated with laterite soil on granite base. Water holding capacity of the soil is very low. Removal of forest cover from the land has resulted in severe problem of erosion.

A septuagenarian from Karmatar told us :

“When I was young, I did not see so much problem of soil erosion and water scarcity as much as it is now. There was not irregular onset of monsoon. Due to existence of forest, we got many essential commodities like fruits, fodder, fuel, vegetables, medicines etc. Now for buying these we have to pay a lot. We used to hunt animals when there was forest.”

Another woman of the same age from Kushmaha said:

“We used to get sufficient crop yield with the use of compost only or farmyard manure, but now seeds are brought from the market, or we receive then as free sample “mini kits” from the block office, which need

more chemical fertilizers each year.....but the productivity is not increasing in the same proportion... we do not know what to do!"

Implementation of EEAP program for the village was therefore, developed on this basis. More discussions lead to two more points, both of which were interrelated and germane to progress and achieving equality of sexes and sustainability. These were of inclusion of women at all stages of planning and development and substantial reliance at early implementation and self-reliance afterwards.

Planning for the project

The project after preparation through close consultation with the people was developed into presentable form to the IFCOD. Thus the project had ensured high success probability.

The planning was followed by the implementation. There were two aspects of implementation. The environment education of the members of the Samities and inclusion of agenda required for transformation of Samities into cooperative. At the time the EEAP project was taken on hand, PIDT had 100 'Siksha avm Vikas Samities'. (Education and Development Committees). The hundred Samities operated in 63 villages. Generally the parents of our numerous Non-Formal Education (NFE) centers were the members of the Samities.

Integration of action to social goals

Human resources :

Human resources required for the program were massive. Very little time was available for implementation of the project. Time has a special meaning and dimension in rural areas. The time available for new activities is restricted by the "idle time" available with the people. The "idle time" from the people's perspective was very minimal. Many activities that are performed in the villages are in the nature of assertion of their communal, religious or ethnic identity. This is an important part of the life. Much of that time can be termed as 'useful unemployment' and not counted in "idle time". They perform a function which communities in metropolitan areas do not need and hence do not understand the obligation of the community to what appear to them as inconsequential events.

To cover 63 villages with training and action programs time available was only those days that were not "idle". Agriculture season was not long, yet pre and post-harvest work took up a lot of time, as all activities are performed manually. Thus, between the agricultural work, renewal of mud houses and festivities left very few months when EEAP could be undertaken. Therefore, a lot of manpower became necessary to implement the program.

Volunteer contribution to the project:

Money required for hiring new manpower was not available and also considering the low effectiveness of hired manpower, task was taken up by 100 NFE teachers and supervisors. They did enormous work effectively and totally voluntarily not only in their own villages but in other villages as well. They have spent the last two years in implementing the project. However, they have become such an integral part of the project that they will have to spend time with the cooperatives when they become registered societies as well. Simple costing of the teacher and supervisors time so far can be valued at 3.6 million rupees.

The volunteers were residents of the villages where the program was implemented. They also being teachers commanded respect of the villagers. Thus, their voluntary involvement was sought for the implementation of the EEAP. Being spirited young men and women they were the best resources that we could have to put forward new ideas to people to organize them for action.

We also had contacts with 2,500 of our students and their parents who were almost 5,000 in numbers. To us the program of environmental education and plantation took the form of a movement with mass participation. The result derived out of the participation was also excellent. The people bought plants from Lokshala and planted them in their backyard with very high survival rate. Lokshala sold over 22,000 saplings. Considering the population in these villages over 2.2 plants per capita were planted in the first year through their own contribution.

4. THE TRAINING PROGRAM

In consultation with the villagers and volunteers we first developed a training module and a schedule. The strategy was that the teacher volunteers and supervisors were to be trained first, who were deemed to be the agents of change.

We chalked out the training program plan and conducted a few programs in the early period of the EEAP for **100 'Siksha avm Vikas Samiti'** members. We had thus approach to 100 instructors and 8 supervisors who were spirited young men and women in the NFE program.

We also had contact with 2,500 students and their parents who together were about 7,500 in numbers. We planned and organized a training schedule along with these beneficiaries who lived in a compact area. This approach ensured participation in program and subsequent action. It also ensured us that in future we would be able to keep track of the environment action even after the project was over.

The inclusion of children was very deserving, as they are the people who will carry the torch in future.



Explaining issues with the help of a map of the area-an EEP in progress at Javaguri Village. A total of 1,668 villagers were trained through 27 training programs in 61 villages creating many environment enthusiasts

The training program was developed bearing in mind two factors that touched people and the process of solving their problems. The program was not a one way traffic between the trainer and trainee, but a social event in which the trainer and the whole village participated. The event became celebration of a new step that they were going to take. Thus, the training programs became social events and even the children participated in them with gusto. This was not fun, though there was a lot of fun and frolic. The result was a new awareness and which was activated to lead on to become consciousness. The result of the program shows that environment awareness generation flowered into planting of trees, which has already started greening the area.

Children and environment

To enthuse the children to protect plants and even to plant them, a special program for them was undertaken known as "Maina Parijat" in selected villages. They took up small programs of their own. The Maina Parijat used dance and music, to create an environment of learning and change. The importance of the Maina Parijat has been now well recognized as a successful experiment and as a mode of generating awareness and transferring it to the next generation.

Thus, the training program was humanized into a total life-centric education in which many issues of importance such as gender issues to schooling of children, of issues of health formed a natural part of the people's desire to change and programing. It was

observed that during discussions on gender issues in the training programs, the women participated eagerly and fully, as they were themselves the victims, and the issues related to them directly.

Components of environment training

Some major problems on environment discussed during the training were:

- **Scarcity of water**

There is little irrigation facility and drinking water facility. Thus, the area has extreme scarcity of water during long months of winter and summer. Since the people suffer, the cattle and other livestock suffer much more. The children get dysentery and dehydration. Cattle, on the other hand, are lean and can not satisfy their thirst. In April, May and June this problem is most severe.

- **Soil erosion**

Deforestation has taken toll of top soil. The soil is basically sandy and lateritic. It is easily eroded. For over a hundred years or more, the soil is eroding away during the monsoon which is often torrential.

- **Scarcity of food and fodder**

With soil eroded and low water retention capacity of the soil, only one crop is produced. The one crop economies coupled with overall deforestation does not leave enough farm waste for cattle feed. Thus, both food and fodder is a problem that people have to reckon with.

- **Crisis of soil**

The erosion has reached such high proportion that it is alarming and calls for urgent action. The area is ripe for desertification.

While designing the syllabus of Environment Training, we gave importance to these issues. We thus, designed our action plan based on our observation.

These hundred young men and women who were



Women bringing water from a distance of 2 kms

educated from middle level (VIII grade) to graduation participated in our three-day training program. They decided that Shyamlapur and Kushmaha villages have more barren land and scarcity of water is much more in these villages than other villages in the region.

Several training programs were selected where 4/5 representatives of "Shiksha avm Vikas Samities" were invited so that these people can become motivated and influence villagers about environmental issues for their villages.

The instructors became the linking agents in their respective villages. In one training program, 3-4 of them helped us to select the members of their Hariyali Samities for training. Those interested on Environmental issues became members. Thus, with the leadership of 100 linking agents who became our ERT members 100 Hariyali Samities were formed.

5. IMPLEMENTATION OF THE PROGRAM

Implementation of the program became an interesting activity both for the people and for PIDT. Both gained from the experience which will be an asset for future programs as well.

The program had three components:

- A. Training
- B. Plantation
- C. Construction of Water Harvesting Structures

The Water Harvesting Structures (WHS) were created only in two villages – Shyamlapur and Kushmaha. At Shyamlapur we constructed 3 WHS, 1 in each hamlet and also an artisan well in another hamlet. In Kushmaha 2 WHS were built 1 in each hamlet. The other activities were well spread into 76 villages the effect of which was seen through widespread plantation of trees in the area.

With the excess rainwater collected in a kund, the villagers could use that water for various purposes like irrigation, drinking water for cattle, clothes washing, other daily needs etc. In Shyamlapur, the well constructed was made of concrete. This well supplied enough drinking water to the entire village.

The rate of migration has lowered in the area. Generally after the harvesting of Kharif crop, young batch of villagers migrates to other parts of the country, as they have no other alternative of income generation. But, this year, as we did the excavation work for construction of WHS, the villagers remained in the village for a long period and earned



The artisan well at Shyاملapur nearing completion

money over here itself. We are also expecting that with the increase of prospect of agriculture in this area, migration would gradually become less. As a result of the training programs, the people developed a habit to sit together to discuss common economic issues. Women came out of their houses, sat with the male folk and also for the first time voiced disagreement or modified an idea in public. Thus, there was empowerment of women achieved tangentially. There was formation of Samities too, depicting a sense of getting together for action beyond their socio-cultural bonding.

Smokeless Chullah — a change in women's lives

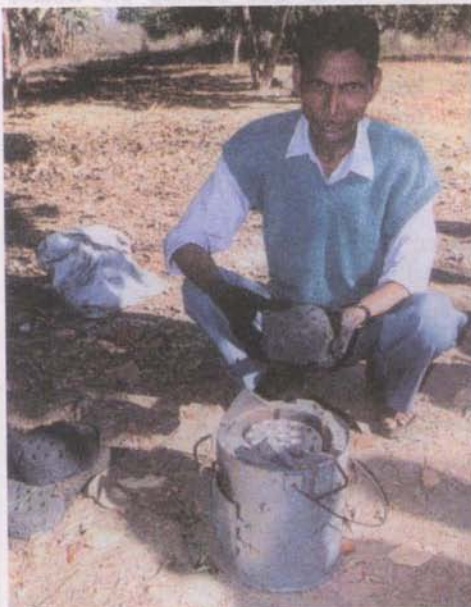
PIDT has been much concerned over improving the lives of women in its field areas of EEAP. Most women die at a very young age or suffer from chronic ailments like asthma. Most of these problems arise because the village homes in India do not have chimneys. Women have to spend quite sometime indoors for cooking and few other household responsibilities. Cooking poses a problem due to the use of fuels such as Coal, Wood, Farm Waste etc. These fuels generate a lot of smoke. These fuels produce large amount of smoke even when fully lit. Since the cooking is done mostly inside the house which do not have windows, the smoke lingers on for very long time. The women have to suffer the smoke daily and for the whole length of their lives.

The village homes also do not have many windows since windows are expensive and people spend very little time indoors. The life in villages is mostly outdoors. Due to the warm climate in Santhal Parganas, where the IFCOD-PIDT projects are located, most of the day and considerable period of time people spend outdoors. Indoor spaces are used mainly for storage and cooking. Villagers sleep indoors only during rains and severe winter months.

The girl child has to learn cooking when very small after which she becomes the beast of this burden. Consequently, their health is affected. Cooking every evening and morning means inhaling this thick smoke continuously for at least 4-5 hours every day. Lighting of the fuel produces much smoke and due to inefficient nature of the fuel, smoke remains throughout the cooking operation.

Different stakeholders like the Feminists, the NGOs and the government have been much concerned with the problem. Consequently, the scientists of appropriate technology have from time to time come up with various solutions of making a smokeless Chullah (stove). However, none became acceptable to village women adequately.

PIDT has also examined many different smokeless cooking devices from solar cookers, fuel-efficient, low-cost, portable or stationary stoves to bio gas plants etc.



Mr. Niramal Das, about to put the briquette into the Blue Flame Stove. 50 households in the Madhupur area are using this stove

Ram Pyari says "To see the food I am cooking, without tears running down and constant coughing, is an entirely new experience."

Sonia says "The black rounds can be made out of almost any material, so we need not go too far in search of wood or twigs, moreover every community can use the same kind of fuel for burning."

Bhimlal remarks, "Like ghuttia (cow dung cakes) we can make the black rounds during our idle times and store them for future use. They occupy less place and do not make the room black."

Yusuf says "It is so easy to make that I am thinking of investing in it, so that I can sell these in Madhupur and Girdih."

The Blue Flame Chullah – an appropriate technological innovation

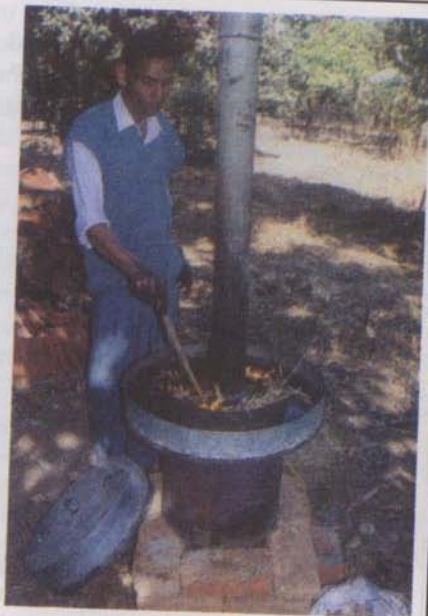
After a careful study of the problem of the area, PIDT is promoting introduction of an innovation called the Blue Flame Chullah in the area. The steady growth of interest and enterprise in this Chullah through word of mouth, is a measure of its success. It has many advantages over the other ones tried so far by different agencies in different parts of the country. The fuel is a form of briquette made from dry grasses, farm wastes even like rice husk! Making of briquettes does not require wood or other material which is environmentally untenable. The process of briquette-making is an involved process, but briquettes have potential for developing a market.

The principle of making these briquettes, which the people call black rounds, is rather simple. Any basic biomass collected is made into activated carbon and shaped in a special form to be burnt in a kiln variously made from tin or burnt clay.

The demonstration and training has been given to one person from all 100 Hariyali Samities (green groups) that have been formed pre-cooperatives. Some of the pre-cooperatives have decided to produce the briquettes and sell them at a small profit to members and non-members in the village itself. One pre-cooperative has also collected money from the members and has requested for supply of the equipment.

The members of the Environment Resource Team from different PVOs working with IFCOD also received exposure to the process of making briquettes and their uses. All of them were much enthused with it and wanted to implement the Chullah in their own regions. The briquette is not only good for cooking, but is also a wonderful low cost and energy efficient way of room heating in winter.

Though not visible at once, the introduction of this Chullah over the region is expected to bring a significant change in the longevity and health of women and the girl child.



Mr. Nirmal Das burning the wastes for making the briquettes for the Blue Flame Stove. PIDT trained about 60 persons in the preparation of these briquettes

6. THE BUNDS

These villagers insisted on constructing some structures so that rain water can be stored. The demand for such structures has become very high. There are many natural flowing waters, which spoil the field as in other seasons than Kharif they don't want lands to be overflowed with water. Rupu Tudu of Shyamapur donating land said, "my land can be converted to a pond by using the flowing spring water so that we can store water here for the dry season."

We tried to take all the records of natural resources so that in future we can construct as much as is possible with limited resources. Tapping natural resources of water also ensures the high success rate of initiatives.

Both the male and female folks of the villages participated sometimes together and sometimes separately. They finished their daily work and attended the training program till 4 O' clock in the evening. The duration of training program was 3 days. The participants enjoyed our training method, as it was based on dialogue process i.e. participatory method. One point which came up repeatedly at these training programs was that the people found the cost of cultivation increasing day-by-day. Therefore, it was decided that in the action plan we would take two villages i.e. Kushmaha and Shyamapur and try to address prime environmental problems, i.e.

- Construction of rain water harvesting structures for solving water scarcity,
- Tree plantation to prevent soil erosion and conserve moisture content in the soil,



WHS at Kushmaha Village

- Use of organic manure instead of chemical fertilizers,
- Storage of indigenous seeds which need less inorganic fertilizer,
- Use of smokeless chullahs, like the new Blue Flame Stove to minimize the fuel problem,
- Cultivation of fodder crops and
- Use of Pedal pumps instead of the usual pumps, which are more expensive.

People of both the villages sat together 3-4 times in meetings to decide the place of construction for WHS. It was decided to construct such structures in 3 tolas of each village. One WHS would be constructed at each tola, so that no rivalry develops between tolas. The people of village Kushmaha could not decide about the site and they quarreled among themselves. They did not favor to have any WHS so we did not make any WHS for them, but they planted plants in their backyard.

Instead in Maridih Tola, the renovation of an Artisan well was taken up. One football tournament was conducted by them. Thus, they saved some more money in their fund. From 'shramdan' (voluntary donation of labor) they also collected money.



Ram Swarup of Delipathar village trying to pedal the Krishak Bandhu Pedal Pump. Nearly 500 households in the area have started using this pump

Foot Pedal Pumps

A successful, replicable, viable technology intervention

The region where People's Institute for Development and Training is implementing the EEAP along with IFCOD is very dry primarily because of lack of irrigation. People own large tracts of land, but are unable to irrigate them since the rivers have cut gullies into the deforested land. The people in the region are too poor to be able to use pumps with generators since there is no electricity. Careful introduction of an appropriate technology by PIDT has created a mini revolution in the region. The foot pedal pumps are very easy to use, move and store. Women can also use them easily. This is a boon in disguise because the men often migrate as laborers. The foot pedal pump is also called the 'Krishak Bandhu Pump' or 'Farmer's Friend'.

What is a foot pedal pump?

Pedal pump was invented for poor farmers. The pump operates on pedal power. The pump can lift water up to a level of thirty feet. The pump is simple to operate and pedal power required is also not much. Even children started operating it easily. Its other virtues are:

- it is portable
- cheap to buy
- easy to repair
- low priced
- most irrigation jobs in small areas can be done with the pump.

The main advantages of this pump are that it is economical, eco-friendly, manually-operated, easy to maintain and it requires no fuel. This technology has only been demonstrated to the villagers, who have immediately realized it's enormous significance. In about 6 months after introduction we have sold 60 pumps. Rekha says succinctly :

"The Krishak Bandhu pump is my true friend and I need not depend on anyone else. It is allowing me to dream of a better future for my family."

This technology has the power to transform the environmental condition of the area through the individual effort of the area. The technology is also non-obtrusive and as Rooplal says:

"When I heard that my neighbor Ghanshyam was going to install a pump, I went out agitated thinking he was going to draw out the entire reserves from the pond which feeds our land. However, on seeing the pump, I see that I too must get one and it can only be useful since it will not draw large quantities of water in a short time."

This pump is the best form of appropriate technology, which fits very well into the existing socio-cultural ethos of the region. The only unhappy persons it creates are the local moneylenders, because the farmers can now cultivate more than a single crop and thus have less debt.

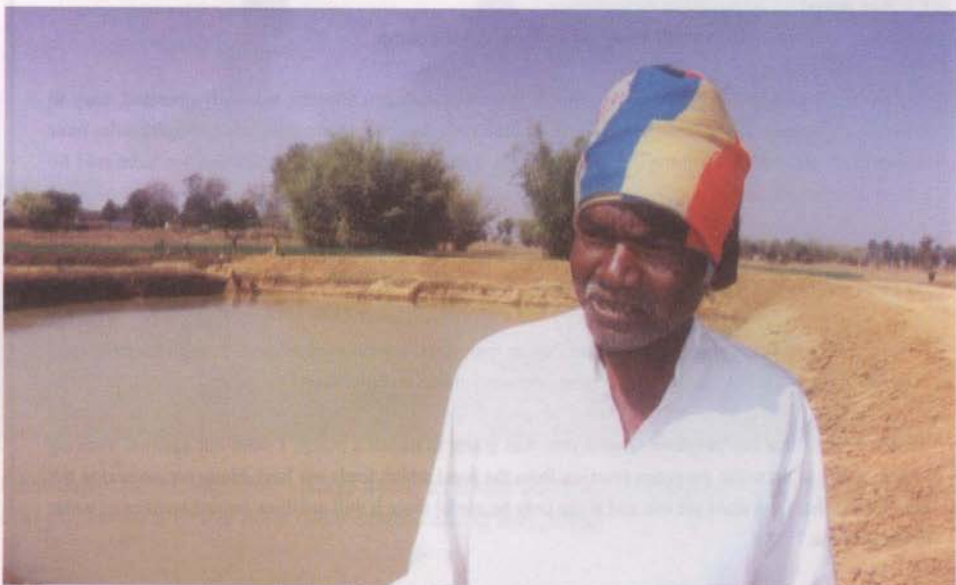
7. THE OUTCOME

Social fallouts from the activities

Four Samities have been formed around these WHS in Shyamapur. Three Samities have been formed in Shyamapur in 3 different Tolas. A Samiti of young persons has been formed taking members from each tola. They named the Samiti as the "Manav Kalyan Samiti". They have opened a bank account. They organized a football tournament and Krishi Mela (farmer's fair) where villagers from around Shyamapur participated. They are all saving money. Each week, when they will accumulate Rs. 20,000 or so the adhyakshya (chairman) says, "we will release mortgaged land of our villagers from moneylenders".

They have formed some disciplines of work amongst themselves, such as if the owner of the land does not want to cultivate the land for six years, the Samiti will cultivate crops, sell them and keep the money. If the owner wants the share of the income then he has to give $\frac{1}{2}$ of the crop cultivated to Samiti and $\frac{1}{2}$ he will keep himself. They also decided to start 'Beej Bhanders also, i.e. 'seed store' for self-reliance.

Out of three tolas of Kushmaha, beneficiaries of two tolas have come together and they have started their Samiti, which has opened an account in ' Grameen (Rural) Bank'.



Mr. Rupu Tudu, who donated the land for the Shyamapur WHS, now believes that his dream can become a reality

People from both the villages planted saplings of different tree species on the Bund. They also used the sides of Bunds for vegetable cultivation, especially creepers like pumpkin, gourds etc. The water collected in the tank is not only used for irrigation purposes, but also acts as a source of drinking and bathing for cattle. Villagers, especially women, derive much benefit from the Bund. They use the water for washing, bathing and many other sundry purposes.

A plethora of activities was thus generated through creation of a conducive, motivating and generative environment of the IFCOD-PIDT-EEAP. The above-mentioned report only gives a glimpse into the processes that went into the creation of this environment and indicative of the actions that are taking place.

Major Achievements — at a glance

- 100 Hariyali Samities formed and are developing as pre-cooperatives within two years.
- Direct contact and training was given to 1,668 villagers across 7 Panchayats.
- Over 50 acres of land was made arable through 5 water harvesting structures and 1 artisan well.
- The extremely low cost of water @ 0.47 \$ per litre in the first year and no cost in subsequent years was achieved.
- Awareness generation of sustainable agriculture lead to usage of bio-fertilizers, leading to experimentation by people on their fields and buying biofertilizers.
- Most significant was that in an environment where the people are used to receiving development inputs cost free, they paid for and bought 22,686 saplings from PIDT at their own cost and planted them. On an average five plants per family have been planted and saved.
- Introduction of the blue flame stove and people are willing to adopt the technology at the first instance.
- People have become prone to change and accept innovations. Rapid sale of foot pedal pump is an example of this.
- The water harvesting structures not only provide water to the agricultural farmland but also reduce women's household drudgery. They support a number of other activities – some of which are, pisci-culture, duckery, rope-making etc, thus improving the economy of the region.

8. APPENDIX

Table I

List of existing Water Harvesting Structures (WHS) and Lift Irrigation Units (LIU) and other activities implemented by PIDT Lokshala, Jagdishpur under water management programme

S. No.	Unit	Village	Cost of Construction (in Rs.)	Irrigated area (in acres)	Ben-efited families	Present status
1.	Earthen bund	Chiknia	47,335	12	20	Producing double crops and fishes
2.	Earthen bund	Delipathar Majhitolda	35,911	11	18	Producing double crops
3.	Earthen bund	Delipathar Mandaltola	49,315	13	30	Producing double crops and fishes
4.	Earthen bund	dhamni Santhaltola	45,882	12	17	Producing double crops and fishes
5.	Earthen bund with contour bunding	Darbey	83,300	15	30	a) Producing double crops and fishes b) Checked soil erosion c) 10 acre paddy land saved from soil and mud
6.	Earthen pond (reclamation of natural sources of water)	Delipathar Mandaltola	19,255	10	12	Producing double crops, fishes and ducks
7.	Lift irrigation (river)	Darbey Tribaltola	209,733	21	21	Producing triple crops (paddy, wheat, vegetables)
8.	Lift irrigation (river)	Raghunathpur	292,133	22	25	Producing triple crops (paddy, wheat, vegetables)
9.	Lift irrigation (river)	Kalajore	300,833	24	29	Producing triple crops (paddy, wheat, vegetables)
10.	Lift irrigation (river)	Madnisarai	243,333	21	20	Producing triple crops (paddy, wheat, vegetables)

continued on next page

S. No.	Unit	Village	Cost of Construction (in Rs.)	Irrigated area (in acres)	Benefited families	Present status
11.	Earthen bund	Chenchali Dhawatoli	55,420	15	19	a) Producing double crops b) Soil erosion checked c) 8 acre paddy land saved from soil and mud
12.	Earthen bund	Chenchali Dhawatoli	59,667	18	19	Producing triple crops (paddy, wheat vegetables)
13.	Earthen bund	Durgapur Narayanpur	42,800	20	32	Producing double crops
14.	Earthen bund	Durgapur Narayanpur	42,300	15	20	Producing double crops
15.	Earthen bund	Kushmaha	42,200	13	15	Producing paddy, vegetables, fishes
16.	Earthen bund	Samlapur Nayadih	43,200	12	12	Producing paddy, wheat and fishes
17.	Earthen bund	Samlapur Pradhantola	35,350	11	10	Producing paddy, wheat and fishes
18.	Earthen bund	Samlapur Maridih	38,450	12	12	Producing paddy, wheat and fishes
19.	Check dam (1)	Jhilua	67,530	40	40	Producing paddy, wheat and fishes
20.	Check dam (2)	Jhilua	57,407	20	22	Producing paddy, wheat and fishes and 20 acre paddy land saved from soil and mud
21.	Earthen bund	Darbey	52,593	16	17	Producing paddy, wheat fishes and taking up brickmaking
22.	Artisan well	Darbey	20,000	8	8	Producing paddy
23.	Earthen bund	Kumargarhia	50,000	10	15	Producing paddy, lemon grass and fishes
24.	Earthen bund	Kumargarhia	66,500	15	22	Producing paddy, wheat and fishes
25.	Earthen bund	Kano	58,500	16	16	Producing paddy, wheat fishes and ducks

continued on next page

S. No.	Unit	Village	Cost of Construction (in Rs.)	Irrigated area (in acres)	Benefited families	Present status
26.	Earthen bund	Pathlatand	72,668	11	18	
27.	Irrigation well (dugwell)	Kanaidih	60,000	15	25	Producing paddy, wheat and fishes
28.	Earthen bund	Chiknia	64,000	20	35	Producing wheat, vegetables and pulses
29.	Earthen bund	Pratappur	78,000	25	30	Producing paddy, wheat and fishes
30.	Earthen bund	Pipratole	81,530	10	25	Producing paddy, wheat and fishes
		Total	2,415,145	483	634	

Remarks: (i) Average cost per acre irrigated area (in Rs.) = 5,000/30

(ii) Average cost per family (in Rs.) = 3,809/38

Explanation: Construction of Water Harvesting Structures and implementation of Lift Irrigation Units is a low cost solution to perennial problem of providing irrigation facilities to this predominantly dryland area of Jharkhand.

From Table I it is clear that the average cost per acre irrigated area came to approximately Rs. 5000, while the average cost per family only Rs. 3,809 which could be recovered within a year as the single-cropped area was turned into double or triple-cropped area with a vegetable cash crop thrown into the cropping sequence.

Table II
Afforestation, Medicinal and Aromatic Plantation and Floriculture Undertaken by PIDT Lokshala, Jagdishpur

S. No.	Unit	Village	Cost of undertaking (in Rs.)	Area covered (in acres)	Ben-efited families	Present Status	Remarks Cost per acre/per family
1.	Afforestation	Darbey, Jhilua, Kumargarhia, Pipratole, Patlatand	240,000	100	300	Shisham, Sagaun, Gambhar, Neem, Jetropha, Arjun, Semul, Lebu, Sharifa etc. grown	(i) Average cost per acre (in Rs.) = 2,400 (ii) Average cost per benefited family (in Rs.) = 800
2.	Medicinal and aromatic plantation	Darbey, Jhilua, Kumargarhia, Pipratole, Patlatand	484,000	24	24	Ashwagandha lemon grass Neem, Arjun, Kalmegh Grown	(i) Average cost per acre (in Rs.) = 20,166/67 (ii) Average cost per benefited family (in Rs.) = 20,166/67
3.	Floriculture	Darbey, Jhilua, Kumargarhia, Pipratole, Patlatand	290,000	15	25	Marigold Grown	(i) Average cost per acre (in Rs.) = 19,333/33 (ii) Average cost per benefited family (in Rs.) = 11,600
	Total		1,014,000	139	349		

Explanation: From Table II it is clear that in afforestation, the cost of development is the lowest and the benefits manifold. It costed only Rs. 2,400 per acre to grow trees for fruits, fodder, fuel and timber. The cost per benefited family was also lower at Rs. 800 only. However, in afforestation, the gestation period is long, as one has to wait for 5-10 years to reap its benefits.

Growing medicinal and aromatic plants is the most costly affair, as can be seen from Table II. The cost per acre as well as per benefited family was approximately Rs. 20,167. These plants provide raw material for preparing ayurvedic medicines and home remedies for people in a remote area of Jharkhand where healthcare facilities are scarce.

As far as floriculture is concerned, from Table II it is clear that it is somewhat less costly than growing medicinal and aromatic plants, but nevertheless costly. Average cost per acre was approximately Rs. 19,333 and average cost per family came to Rs. 11,600. In order to boost the income of farm families, Jharkhand Government is promoting floriculture in the state.

Sr.	Crop	Particulars	Area (ha)	Yield (kg/ha)	Price (Rs/kg)	Production (Rs/ha)	Cost (Rs/ha)	Net Profit (Rs/ha)	Remarks
29	Family tree	Planting	20	20	1000	20000	10000	10000	Family tree (20 plants)
30	Herb	Planting	20	20	1000	20000	10000	10000	Herb (20 plants)
		Total	40	40	1000	40000	20000	20000	
		Average cost per acre					19333		
		Average cost per family					11600		
31	Flower	Planting	20	20	1000	20000	10000	10000	Flower (20 plants)
32	Herb	Planting	20	20	1000	20000	10000	10000	Herb (20 plants)
		Total	40	40	1000	40000	20000	20000	
		Average cost per acre					19333		
		Average cost per family					11600		

People's Institute for Development and Training (PIDT- as its acronym which implies in Hindi, "oppressed"), works with economically poor and oppressed scheduled tribes and castes and other backward groups. It grew out of the Rural Action Project (RAP) of the National Institute of Bank Management (NIBM), when some 40 social activists, researchers and professors involved in field study and grassroots action in North India, set about questioning local power structures and searching for alternative development strategies. Founded in 1980, PIDT has its registered office in New Delhi and operates in the States of Uttar Pradesh, Jharkhand, Chhattisgarh and West Bengal. It presently has 450 social activists working in these States. Its major activities are in the areas of :

- Awareness, education and training for transformation,
- Sustainable ecology through environment regeneration,
- Protection of cultural skills and knowledge systems,
- Self-reliant livelihood enhancement
- Collective marketing for 52 organizations and
- Research and advocacy for peace, femininity and sustainability.

In the past 15 years, PIDT has conducted many environmental awareness trainings for villagers, promoted soil and water conservation, composting, vermiculture and watershed programs.

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