

Practical experiences in implementing ecological sanitation during extreme dry regimes: some menu of local technologies, financing mechanisms and emerging opportunities

Water, Agroforestry, Nutrition and Development Foundation (WAND)

website: www.wandphils.org

Libertad, Misamis Oriental, Philippines

Elmer V. Sayre, Ph.D., In-house Adviser

Profile of the WAND Foundation

- Organized in 2003 with the goal of empowering the rural poor by conducting research and development activities in the arena of sustainable agriculture, ecological sanitation and promoting rural livelihoods.
- Based in Libertad, Misamis Oriental where we maintain a training center and a 6-hectare demonstration cum training farm showcasing aspects in ecological sanitation and integrated small farm development.

Profile, continued..

- Winner of the 2004 Panibagong Paraan, finalist of the 2005 Development Marketplace and 2006 winner of an international competition held in Israel.
- Coverage is 3 provinces in Mindanao, with main office in Libertad, Misamis Oriental and a sub-office in Dipolog City.



Background of our Ecosan Initiative

- Hinges on improving the lives of resource-poor farmers eking an existence in water-deficient areas.
- The traditional 'flush' toilet cannot be used anymore with frequent long dry spell.



Progress to date

- In 2007, we started constructing 3 double-vault ecosan toilets in our main office in Libertad municipality in order to familiarize ourselves of the system and so that it will become a pilot for our local clients comprising mostly of farmers and their families.
- When we observed that social and cultural acceptance is high, we constructed 12 more units and located mostly in schools in 3 municipalities in 2008.
- We were able to present our case study in eco-sanitation in an international forum in Malaysia (WEPA). Our Executive Director, Cora Sayre was able to attend also a 6-month training on ecological sanitation in Sweden and India sponsored by the SIDA.

Progress to date.. continued

- So far we have established 41 double-vault ecosan toilets and 39 arborloo toilets (Misamis Oriental = 18; Zambo Norte = 17; Lanao del Norte = 6).



Results (as of December 2008)

- Less pollution of groundwater and waterways as a result of no longer flushing human excreta. The savings in water is computed at average 2 liters per flush x 937 users x 365 days a year, assuming 1 toilet visit per person per day = 684,010 liters.
- Production of organic matter estimated at average of 35 kilograms per ecosan user per year x 937 users = 32,795 kilograms. Increase the plants tolerance to water stress and is essential for nutrient utilization.
- Less spread of diseases as a result of open defecation.

Double-vault ecosan

- **Materials:**

Coco lumber, nipa, bamboo, bowl, container, wood, pipe, tiles, drum..

Cost:

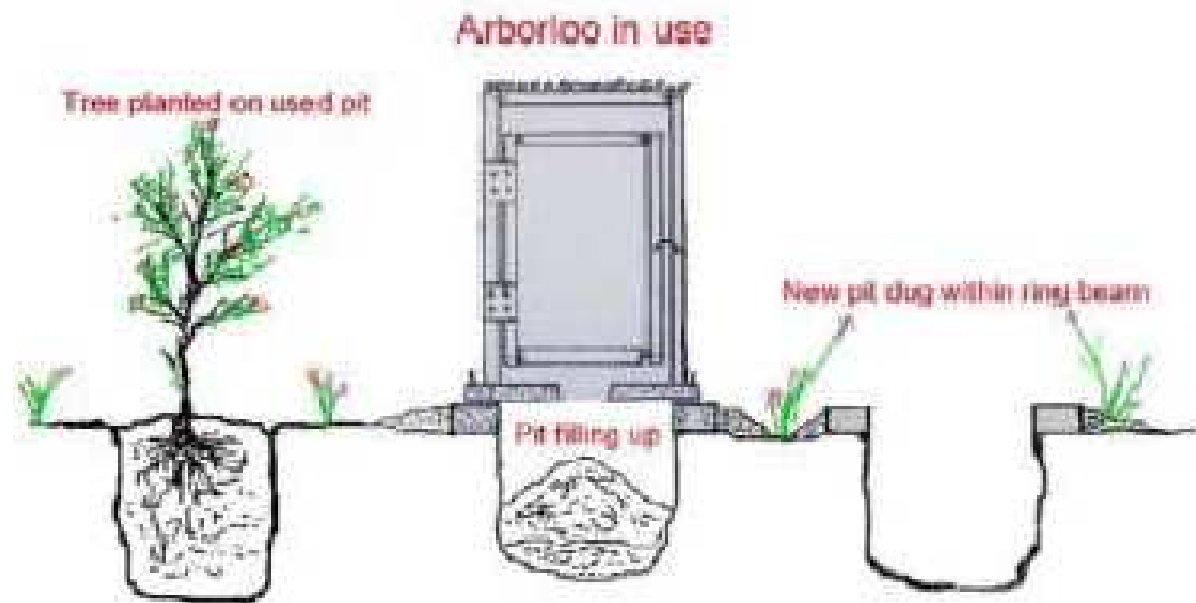
P 20,000 – 30,000



Arborloo

- Movable concrete slab and toilet bowl to be placed directly in an open pit.
- Ash or soil is placed in the arborloo after defecation to hasten the dehydration process and when it is full, the cover slab, the specialized toilet bowl and the housing is moved to another area and the filled-up hole planted to trees.
- The arborloo is ideal in marginal hilly areas where water table is very low therefore seepage do not reach and contaminate the water source. It is also ideal for single or several families eking an existence in the mountainside who have no access to sanitary toilet facilities.

Arborloo illustration



Arborloo cover-slab fabrication



Installing arborloo

- Pre-fabricated arborloo installed in a mountain barrio in Manticao municipality

Installation time:
1.5 days



Arborloo pre-fabrication

- Materials =
gmelina, coco lumber,
nails, nipa, bowl,
ecoPee

Cost: Range of
P 1,500 to P 3,000



Eco-Pee and rainwater collection

- Collection of urine and using it as fertilizer, promoting vegetable gardening and rain and grey water conservation with water to be used in the vegetable gardens.
- The project gets its cue from cases around the world on the usefulness of urine as fertilizer and the fact that commercial fertilizer nowadays is very expensive with urea (45-0-0) at more than 2,000 pesos per sack.
- With the assistance of the Association of Locally-Empowered Youth in Northern Mindanao (ALEY-NM), we have distributed 120 Eco-Pees' to 3 elementary schools and local farmers and 75 rainwater collectors.

Ecopee

- Ecopee container

Materials:
used containers,
glue, tube..

Cost: P 65



Ecopee

- EcoPee distribution in schools;
50:50 sharing in urine collection

Use:

Primarily for our seedling nursery and demo farms



Rainwater and urine collectors

- Materials:
used 200-liter drums,
plastic bottle, tube..

Cost: P 700



Rainwater and urine collectors

- Single drum urine and rainwater collector

Cost: P 350



Operating a Financing Mechanism for Ecosan

- Starting a micro-finance mechanism for small farmers and entrepreneurs as a way to tie-up financing and livelihood support for the bottom poor.
- Opportunity window to integrate micro-financing to our health and sanitation activities, thus, a beneficiary can take a loan of any of his choice – complete toilet (arborloo or ordinary flush) , toilet bowls, wood, bamboo, roofing, rain water collector, etc.
- The payment is center-based and weekly. Our repayment rate is 98%.

Ecosan micro-finance package

Loan Package/Cost:	Amount
--------------------	--------

- Gmelina wood for walling
- Coco lumber for frame
- Nipa for roofing
- Nails
- Cement
- Deformed bars
- Toilet bowl
- Hinges

Total: range of P1,500 to P 3,000

Optional Items: 200-liter drum, 18-liter container, vegetable seeds

Condition: Payable in 2 years, 1% interest rate per month

Ecosan-based village enterprise

- Making toilet bowls

Materials:

cement, mix sand,
form, wire..

- Cost:

Ecosan= 175

Arborloo= 160

Ordinary bowl = 75



Ecosan-based village enterprise

- Producing our own wood products coming from trees planted by our farmers

No. of workers: 12,
irregular



Allied Agricultural Production Activities

- Redeeming mortgaged land and returning it to the original landowner on a co-management scheme.



Allied Agricultural Production Activities

- Raising vegetables, tree planting and soil conservation practices.



Allied Agricultural Production Activities

- Promoting ecosan products as fertilizer (vermi-compost secondary treatment in Dipolog City)



Seedling nursery and tree planting

- Seedling nursery in Libertad municipality

Tree planting condition:

10:1; timber tree repayment



Three Challenges

- Improving the double-vault ecosan or piloting other design alternatives so that it will be more affordable, lightweight and mobile (user-friendliness). (c/o iBoP Asia Grant).
- Exploring further how arborloo ecosan can be improved (versatility) and useful both in upland and in water-logged areas. (c/o iBoP Asia Grant).
- Studying the response of crops (trees, vegetables, coconuts) to ecosan product (urine and feces) treatments and publishing the study/ies. (c/o Science for Humanity).

Emerging opportunities

- How to convince local government units, donors and other stakeholders to fund, lead and implement ecosan.
- Our plan is to establish an 'ecosan village' where different ecosan menu of options will be demonstrated and make this as a training facility for hard and soft ecosan technologies.

Ecosan Village

Components:

- Ecosan/arborloo
- Rainwater/grey-water conservation
- Eco-park
- Vege-garden
- Ecosan-based livelihoods
- Clean technology
- “Barefoot” ecosan experts



Example of ecosan-based livelihood – Jed's Kofi

- Jed's Kofi = 4-in-1 (corn, coffee, malunggay and lemongrass)

Price per pack:
1 Peso (1 serving)



Example of ecosan-based livelihood – Jed's Kofi

- Air-drying lemongrass; corn-coffee ingredient



Example of ecosan-based livelihood – Jed's Kofi

- Jed's Kofi packaging

Projected

ROI: 220%

Number employed:
9, mostly women



Re-use example..

- Home-gardening (utilizing all possible available spaces)



Re-use example

- Using urine and rainwater..



Re-use example

- Food always in the home (FAITH)

Est. annual savings =
P18,000
(P 49/day)

Plus, plus..





The end...



Daghang Salamat!