

FINAL PROJECT SUMMARY

“Treatment and Recycling of Grey Water to be Re-used in Family Vegetable Gardens”

Geographical Location

The municipality of Malinalco—with 25,610 inhabitants according to 2010 figures from the National Institute of Statistics and Geography (*Instituto Nacional de Estadística y Geografía*—Inegi)—is located in southern Mexico State. This project included the towns of San Nicolás, San Sebastián, La Huerta and Amate Amarillo.

Participating Organizations

North American Partnership for Environmental Community Action (NAPECA); *Escuela del Agua*, A.C.; the municipal delegates of the communities of San Nicolás, San Sebastián, Amate Amarillo and La Huerta; *Grupo de Promotores Comunitarios Multiplicadores del Agua y Protectores del Río*, and *Fundación Comunitaria Malinalco*, A.C.

Description of the Problem

The lack of grey water sanitation represented a public health problem in the area, as waters would puddle near wash basins until they decomposed and cause foul odors, spoiling the soil and representing a source of pollution for families. The problem worsened during the dry season, as these grey waters, stagnant in the river and puddles in the street, decomposing even faster and becoming a source of pollution and diseases such as dysentery, hepatitis, ascariasis and various gastrointestinal problems.

Project Overview

Workshops were held on the importance of treating and recycling household grey waters. Seventy-five grey water treatment filters were built, and families were trained on filter care and maintenance. A total of 42 water quality analyses were conducted, and 75 family vegetable gardens were created.

Results and Monitoring

1. Awareness and training was given to 75 families on the treatment and recycling of grey waters, as part of a healthy, sustainable culture of respect for water and ecosystems.
2. Seventy-five grey water treatment filters were built and optimal operating conditions, and families were trained to maintain the filters themselves.
3. Local bricklayers were trained to build filters to help foster the ecotechnique in other homes.
4. The water quality of 40 filters was analyzed, and all results were in acceptable ranges.
5. Seventy-five family vegetable gardens were created to improve nutrition. Families plant and harvest their own vegetables and in many cases achieve a surplus, providing additional household income.

Escuela del Agua will keep families training on seed harvesting, to make them self-sufficient and non-dependent on the organization to provide seeds.

Families were informed that *Escuela del Agua* will analyze the water quality of the filters twice per year at no cost, to ensure their optimal operation. The families will pay a fee for any additional analyses required.

A brochure was developed, explaining how to maintain grey water filters step by step. The brochure was given to each beneficiary, including project organizers' contact data for any questions or comments.

A *Manual of Best grey water Practices* was also developed, now available only in the digital version. The aim is to publish a print version and release it with the support of other organizations, institutions and educational centers.

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Summary of Results by Community

Comunidad de La Huerta

Datos estadísticos de la comunidad

- La comunidad tiene 127 habitantes.
- Viven 27 familias.
- Cada familia consume en promedio 1,000 Litros de agua al día.
- Cada familia gasta \$250 pesos a la semana en la compra de verduras.

Resultados

- El proyecto beneficio a 71 personas, lo cual equivale al 55.90% del total de la población.
- Se beneficio a 15 familias, lo cual representa el 55.5% del total de familias que habitan la comunidad.
- El agua tratada del filtro es utilizada para el riego del huerto familiar y plantas de ornato, por lo cual cada familia ahorra en promedio 700 litros al día.
- Cada familia beneficiada ahorra 150 pesos a la semana, por concepto de compra de verduras. Mensualmente ahorrarán 600 pesos.

Comunidad de Amate Amarillo

Datos estadísticos de la comunidad

- Esta comunidad cuenta con 238 habitantes.
- En donde viven 62 familias.
- Cada familias consume en promedio 1,000 Litros de agua al día.
- Cada familia gasta \$250 pesos a la semana en la compra de verduras.

Resultados

- El proyecto beneficio a 116 personas, lo cual representa el 48.73% de la población total
- Se beneficio a 30 familias, lo cual representa el 48.38%, del total de las familias
- El agua tratada del filtro es utilizada para el riego del huerto familiar y plantas de ornato, por lo cual cada familia ahorra en promedio 700 litros al día.
- Cada familia beneficiada ahorra 150 pesos a la semana, por concepto de compra de verduras. Mensualmente ahorrarán 600 pesos.

Comunidad de San Nicolás

Datos estadísticos de la comunidad

- Esta comunidad cuenta con 882 habitantes.
- En donde viven 203 familias.
- El consumo promedio de agua por familia es de 600 litros.
- Cada familia gasta \$200 pesos a la semana en la compra de verduras.

Resultados

- El proyecto beneficio a 65 personas, lo cual representa al 7.36% de la población total.
- El proyecto beneficio a 15 familias, lo cual representa el 7.38% de l total de las familias.
- El agua tratada del filtro es utilizada para el riego del huerto familiar y plantas de ornato, por lo cual cada familia ahorra en promedio 450 litros al día.
- Cada familia beneficiada ahorra \$130 pesos a la semana, por concepto de compra de verduras. Mensualmente ahorrarán 520 pesos.

Comunidad de San Sebastián

Datos estadísticos de la comunidad

- Esta comunidad cuenta con 797 habitantes.
- Donde habitan 177 familias.
- El consumo promedio de agua por familia es de 600 litros al día.
- Cada familia gasta \$300 pesos a la semana en la compra de verduras.

Resultados

- El proyecto beneficio a 68 personas, lo cual representa al 8.53% de la población total.
- El proyecto beneficio a 15 familias, lo cual representa al 8.47% del total de familias.
- El agua tratada del filtro es utilizada para el riego del huerto familiar y plantas de ornato, por lo cual cada familia ahorra en promedio 400 litros al día.
- Cada familia beneficiada ahorra \$230 pesos a la semana, por concepto de compra de verduras.

Achievements

The municipality of Malinalco has a potable water shortage due to the lack of a proper distribution network. Only the municipal capital has sewer service, which is inefficient due to high operating costs. Therefore, the grey water treatment filter for our project was widely accepted by families. The filter helps in two ways: a) the sanitation of grey waters that used to puddle, create foul odors and pose health hazards, y b) the recycling of grey waters to water the family vegetable garden. The project results have made beneficiaries very happy, as they have contributed to improving their eating habits and improving their finances thanks to additional garden yields.

Challenges

- For families to properly maintain the filter.
- For families to continue growing their vegetable gardens.
- For families not to use the fences to keep their backyard animals.

Lessons Learned

What once seemed impossible—the treatment of grey water in rural and marginalized communities in the municipality of Malinalco— is now a reality thanks to the support of the NAPECA initiative, knowledge obtained from *Escuela del Agua* and the sum of the efforts of the beneficiaries to adopt the ecotechnique.

It was very important to identify and partner with the communities' born leaders, for both the project, *Escuela del Agua* and the community itself, as it strengthened the social bond to such an extent that beneficiaries appropriated the ecotechnique.

The workshops also made possible a space for dialog and learning. In the end, the men acknowledged the women's participation in decision-making and working group activities; beyond their role as housewives, women were recognized as entrepreneurs who contribute ideas and efforts toward a common good.

What's Next?

In each community, *Escuela del Agua* will continue to conduct home visits once a month to monitor the correct use and maintenance of the filter. Two free water quality tests are performed each year. If additional analysis is required, the beneficiary must cover the costs. Families are also involved in filter care and maintenance and water recycling, not only to water the family garden but also to wash patios and water fruit trees and ornamental plants. The persons who attended received training on family gardening—mostly peasants—are extending the knowledge acquired to their avocado, guava and peach trees, sugarcane, manzano chiles and beans. In addition to reducing crop pests and disease, this also provides an economic benefit. Beneficiaries and *Escuela del Agua* have agreed to find synergies that ensure sustainable ways of life, benefiting the community and the environment.