

USDA Hurricane Georges Recovery Program Special Objective 1

“Damaged Rural Watersheds Rehabilitated through Strengthened Local Capacity.”

SECTION II: DETAILED ACTIVITIES BY COUNTRY

E. COUNTRY PROGRAM DESCRIPTION-- Dominican Republic

Program Objectives and Summary

Following the lead of USAID/Dominican Republic to implement Hurricane Georges Recovery Program (HGRP) activities through grants to NGOs, USDA concentrated almost all of its technical resources in assisting NGOs that have an established field presence and close links to communities in the targeted areas of the country. By direct funding of field activities through grant agreements and by providing specialized technical assistance and training, USDA ensured that a significant share of its Hurricane resources went to actual rehabilitation work in the field.

Results Framework

Special Objective 1 (SpO 1) was addressed through a combination of three intermediate results (IRs) in the Dominican Republic:

- Emergency watershed protection implemented for critical sites (IR1.1)
- Land and water resources rehabilitated (IR 1.2)
- Local capacity to mitigate future storm effects strengthened (IR 1.3)

Specific project targets were to rehabilitate damaged land; reduce hillside land vulnerability to future severe storms; promote specific agricultural practices that retain plant cover in the watershed; and correct specific exigencies.

Activities and NGO Partners

The Dominican Republic program activities included capacity building workshops in watershed management and soil conservation on steep slopes, and NGO demonstration/rehabilitation projects in:

- Reforestation of degraded lands
- Installation of demonstration sites showing alternatives to slash and burn agriculture
- Protection of roads from landslides through installation of gabions

- Reactivation of damaged apiculture
- Expansion of tree nursery production capacity

The removal of tree and other plant cover from hillsides has been a key factor in increasing the vulnerability of these lands to serious soil erosion under storms. The reforestation project, demonstration sites project, and nursery expansion project were all aimed at addressing this concern by facilitating and promoting the establishment and maintenance of plant cover on hillsides in the Georges-affected watersheds. Increased plant cover guards against soil erosion and excessive water runoff from these lands. The two training workshops also addressed the need to maintain plant cover, and highlighted other critical actions to be taken toward mitigating future storm effects. The installation of gabions reduced the landslide vulnerability of a key road, while the project to recover damaged apiculture helped strengthen honey producers against potential business failure.

To achieve the objectives of this program, USDA worked in partnership with the following NGOs:

- World Vision
- Dominican Nature Foundation (in Spanish, *Fundación Natura Dominicana* or “Natura”)
- Center for the Development of Agriculture, Livestock and Forestry (in Spanish, *Centro de Desarrollo Agropecuario y Forestal* or CEDAF)
- Foundation for Community Development (in Spanish, *Fundación para el Desarrollo Comunitario* or FUDECO)

USDA also provided a technical specialist, Manuel Ayala, from the Natural Resources Conservation Service (NRCS), who visited all grantees in the field and reviewed their work. Mr. Ayala gave continual technical assistance through short-term visits.

USDA also collaborated with Entrena, the Mission's contractor for handling NGO participation. Early in the program, Entrena hosted needs assessment meetings that greatly facilitated contacts between USDA and NGOs working specifically in Hurricane Georges-affected areas. As a result of these initial dialogues, USDA received and funded five NGO proposals for HGRP activities. Entrena also provided valuable assistance in organizing the two major training workshops conducted under this program.

Key Accomplishments/New Technologies

Key Accomplishments IR 1.1

Emergency Watershed Protection for critical sites

Landslide Protection, through construction of gabions and furrow drains, for main rural farm-to-market road in Panzo and Majagual watersheds.

This protection activity was completed through a grant of \$69,753 to World Vision in conjunction with field-based technical review and advice from USDA. The effort included construction of 953 cubic meters of stone-filled wire baskets, 382 square meters of concrete/stone walls, and 67 cubic meters of furrow drains, all of which contribute to increase local capacity to withstand future storm effects. Blockage and washout of roads during severe storms and hurricanes have a quick and serious impact on economic activity in affected areas. World Vision determined that in the Majagual watershed, the communities of Los Arroyitos, Rio Grande, Gran Plena, Canada de la Vaca, Batista, Mundito, and La Rosa all are benefiting from this road protection. In the Panzo watershed, Apolinar Perdomo, Los Guineos, La Petaca, El Aguacate, El Botao, El Pozo, El Copey, and Las Canas are community beneficiaries.



Figure 1. Gabions constructed under this project protect key farm-to-market road in the Dominican Republic

Key Accomplishments IR 1.2

Land and water resources rehabilitated

Reforestation of 72 land parcels in Georges-affected locations in Haina-Duey watershed.

Through a \$30,000 grant to Fundacion Natura Dominicana, sites in the municipality of Villa Altagracia, province of San Cristobal, were rehabilitated with a mixture of trees (fruit, coffee, and cacao). In total, **1,233 tareas (77.5 hectares) were planted with 86,410 seedlings**. Promoting substantial recovery and reactivation of agricultural production, the project covered 300 tareas (19 hectares) over their original target, and planted 23,000 plants over target. Since tree crops provide excellent soil cover, they are particularly advantageous for making the watershed less vulnerable to future storm effects.

Replacement/Improvement of bee hives and honey production destroyed by Hurricane Georges, in Boca del Yuma, La Altagracia,

Through a \$7,000 grant to CEDAF and technical assistance from the USDA Agricultural Research Service (ARS), bee-honey production was successfully re-started in this Georges-affected area. 50 double beehives were constructed and installed according to USDA specifications, and farmers can now produce a better quality product through the improved hive construction. ARS also provided specific technical assistance in fighting the Varroa bee mite, a parasite.



Figure 2. Bees thriving in one of the new hive boxes constructed to USDA specifications

Bee honey production is an important economic activity in the area, and one that does not have a damaging effect on the watershed. It is also one of few permissible uses of wildlife inside the Eastern National Park, where the farmers are located. Because bees

need tree pollen and plant nectar, honey producers tend to promote the *maintenance* of tree cover, instead of its removal. Honey production is also considered a desirable economic alternative to cutting trees for the production and sale of firewood and charcoal. Thus, supporting restoration of the bee honey production as an agricultural activity is consistent with promoting activities that may reduce the watershed's vulnerability to storm-effects.

Fifty-two families directly benefited from this project. The Government of the Dominican Republic considered the honey production assistance important enough to pursue an ongoing relationship with ARS. Since the end of the Hurricane Georges program, ARS has hosted two Dominican extensionists for a week of study at their Texas laboratory. ARS has also secured the services of a commercial beekeeper to provide additional training to the Dominicans.

Key Accomplishments IR 1.3

Local capacity to mitigate future storm effects strengthened

Expansion of tree nursery capacity in Matayaya, San Juan de la Maguana, to produce 950,000 plants a year for use by farmers for reforestation in Georges-devastated areas.

Through a \$40,000 grant to Fundacion para el Desarrollo Comunitario (FUDECO), technical improvements were made to expand the production capacity of an existing nursery. The expanded nursery is 1000 square meters, and is located at FUDECO's Community Center for Organic Agriculture and Appropriate Technology.

FUDECO had determined a demand of 1.5 million plants per year for their impact area, but annual production capacity at their nursery was only 120,000 plants. FUDECO now estimates that 5,000 small farmers from the Elias Pina and San Juan de la Maguana provinces will benefit from the increased capacity in tree production. Because FUDECO operates the nursery as part of their ongoing program, the increased nursery capacity should benefit farmers for years to come.

Establishment and operation of 4 sustainable agriculture demonstration sites to discourage slash and burn agriculture in the Georges-damaged Haina-Duey watershed.

With technical advice and an \$11,581 grant from USDA, Fundación Natura Dominicana (Natura) has established and incorporated these 4 farm demonstration sites into their ongoing operation. The sites use organic fertilizer produced on-site and feature both live and dead barriers along their contours to stem soil erosion and excessive water runoff. Live barriers included pineapple and black sugar cane. In addition to the grant, USDA NRCS also provided field training in the use of hand levels to establish contour lines and grade.

This type of demonstration site serves as an important storm mitigation tool by encouraging hillside farmers to adopt agricultural practices that rehabilitate their damaged watersheds. The traditional belief held by local farmers is that if they do not apply fire to the land as part of the preparation for seeding, then the land will simply not produce a harvest of commercial value. The farmers also believe that live and dead barriers will promote infestation by noxious animals, or insects. The aim of this project was to dispel myths, correct misconceptions and offer alternative practices that will not leave the hillsides bare.



Figure 3. Establishing barriers to soil erosion along contours in sustainable agriculture demonstration sites

Evidence that the project is working may be found in this statement by a local farmer who planted his beans in a non-demonstration area (i.e., using traditional burning) and later compared his crop to that of another farmer who planted in a demonstration area:

I planted my beans at the right time when they were supposed to be planted. This man planted about a month later, and his plants are doing better than mine are--they are already flowering and bearing fruit. It proves to me that conservation is important, and that you don't have to burn to raise a crop.

As these sites continue to operate long past the close down of the Hurricane Georges program, we are hopeful that many farmers will become similarly convinced to try out the demonstrated best practices.

NGOs and governmental organizations trained in “Soil Conservation on Steep Slopes” in September 2000, and in “Management of Watersheds” in November 2000.

These two workshops were part of a larger series of capacity building courses organized by Entrena with USDA and other USG agencies. The two-day Soil Conservation workshop was delivered by three NRCS specialists and focused on tillage methods, contour cropping, installation of live and dead barriers, and terracing. Thirty participants completed the course.

The watershed management workshop was a four-day course also delivered by NRCS specialists. This course addressed the use of agroforestry techniques and buffer strips to improve soil fertility and reduce soil erosion. USDA instructors conducted a comprehensive pre-workshop field assessment to prepare site-specific activities and materials for the course. Thirty-six participants representing some 17 different organizations attended the training.

Entrena provided valuable planning assistance for both of these events.

Practical Impact of USDA’s Assistance

Parts of the DR within the Hurricane George damage zone are better off after USDA assistance because:

- 72 parcels (covering 77.5 hectares) are reforested and on their way to recovery of agricultural production.
- A main farm-to-market road serving communities in the Rio Panzo and Rio Majagual watersheds has been protected from landslides.
- Farmers and NGO technicians have increased capacity in hillside soil conservation and watershed management
- The FUDECO plant nursery in San Juan de la Maguana province has 8 times its previous capacity to satisfy short- and long-term demand for planting stock for reforestation in Georges-affected areas.
- Bee honey production in the Eastern National Park area in La Altagracia province has been reactivated and improved, contributing to the economic health of the region.
- Three of the five grants funded under this program (demonstration sites, bee honey production, and plant nursery expansion) have been incorporated into the ongoing operation and sustainable development activities of the implementing NGOs. The other

two activities--reforestation, and road protection--were designed to achieve site specific goals related to watershed rehabilitation.

- All of the NGO partners have increased capacity and commitment to continue their respective reforestation and watershed protection efforts and to maintain a positive conservation presence in the target area.

Additional Measures to Protect the Investment/Recurring Costs

Other than some regular maintenance, no additional measures need to be taken to support these projects. If additional funding becomes available in the future, it would be useful to do a follow-up review on the impact of the activities.

Other Activities to Consider to Mitigate Future Disasters

On the macro level, USAID should continue addressing development in the Dominican Republic under a watershed approach, integrating agricultural, environment, and rural development concerns.

Budget for the Dominican Republic HGRP: US\$ 206,733