Sustainable and Profitable Agriculture through Irrigation - *Mugonero, Rwanda*

Chapter
University of Colorado at Boulder

Project Cost
$26,750

Funds Needed
$12,000

ENGINEERS WITHOUT BORDERS USA

Engineers Without Borders™-USA (EWB-USA) is a non-profit organization established in 2000 to partner with developing communities worldwide in order to improve their quality of life.
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Background

Rwanda is a small landlocked nation located in central Africa. This mountainous country is slightly smaller than Maryland and is the most densely populated nation on the continent. Rwanda was placed into the public eye most recently as a result of a genocidal civil war during the mid 1990s. The negative effects of this event continue to be felt throughout the country. With little international assistance, the country continues to struggle and its people remain staggeringly poor, subsisting on the little they can grow in their drought-ridden climate. While this country faces many problems, including inadequate supplies of food, mounting health problems, and educational deficiencies, the lack of a consistent source of water for irrigation can be debilitating for the millions living as subsistence farmers.

The Need

Approximately 100 kilometers west of the Rwandan capital of Kigali, on the edge of Lake Kivu, the L'esperance Children's Aid Orphanage provides food and shelter to 129 Rwandan orphans. During the dry season, which lasts nearly 5 months per year, the orphanage cannot grow crops and the children subsist on a meager diet consisting of cassava, maize, and beans. Insufficient nutrition can cause stunted mental and physical growth, putting these children at a disadvantage moving forward in their lives.

The mission of the orphanage's director is to create a self-sustaining orphanage that can function *without* outside donations. L'Esperance has identified a strong demand for fruit tree seedlings. If an improved irrigation system existed, the orphanage could grow and sell these seedlings, progressing towards their ultimate goal of economic independence.

The EWB-CU Response

In response to the insufficient irrigation at the orphanage, the EWB-CU Rwanda team and the L'Esperance community have selected a sustainable irrigation system for the orphanage.

L'Esperance requests that the irrigation system deliver water to the 0.43 hectares of vegetable fields and tree nurseries. At the top of the hill, above the orphanage, is an unused 50,000 liter tank containing water that is continuously pumped with water from a stream below. The system was installed over 5 years ago to meet the potable water needs of the children at the orphanage. However, water quality testing revealed that the stream water was not potable. Since then, the EWB-CU team has addressed the potable water issue at the orphanage by installing rainwater catchment systems. The tank has been largely unused since and can now be used to help solve the irrigation problem.

Gravity will take the water from the tank, through a piping system, and spread it to various locations around the fields. The irrigation system will allow more crops to be produced during the dry season. In turn, the children will have a much healthier diet, which is critical for their development. Additionally, the improved system will allow the tree seedlings to be grown and sold, thus contributing towards the orphanages ultimate goal of becoming economically self-sufficient and sustainable.

Moving Forward

Although L'Esperance Orphanage has the largest fruit orchard in Rwanda, including 2 hectares of pineapples, it is unable to economically capitalize on the resource. They have been in contact with a fair trade organization interested in selling dried pineapples; however, their inconsistent pineapple production during the dry season is prohibiting the opportunity. In addition to implementing the vegetable irrigation system this summer, we will assess the feasibility of a separate irrigation system for the pineapples fields that would ultimately help L'Esperance reach their economic goal.

To learn more about this project:
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