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Rescuing Eroded Lands in Kenya

by Peter Newton

Western Kenya's Lake Baringo District used to be well covered with grasses and trees, a home to pastoral, semi-nomadic peoples. Today, expanding human and livestock populations, insecure land tenure and more roads and settlements are reducing dramatically the amount of vegetation in the region and the carrying capacity of the land.

Soil erosion is among the most pressing problems afflicting this semi-arid and arid region. It accounts for substantial loss of crop and pastoral lands as well as reduced fishing productivity in Lake Baringo. The Baringo District exhibits some of the most severely eroded areas in the country. Long, deep gullies scar the fields.

But a collaborative project between Kenyan and Canadian researchers is trying to create an indigenous group of highly trained specialists in the problems of soil erosion in semi-arid regions. The collaborative project, funded by IDRC, is administered by Dr Wilson Kipkore of Moi University and Dr R. B. Bryan of the University of Toronto. The main goal is to allow some of the best graduate students to take advantage of teaching resources at the University of Toronto.

"We have a number of students who do their course work at Toronto and their fieldwork in Kenya," says Dr Bryan. "It gives them practical experience in the latest technologies and the realities of conducting research and problem solving in developing countries."

"We have foresters working with soil conservationists and soil conservationists working with water management people," says Dr Bryan. This informal network serves as an information source for the young specialists. "I think this is perhaps the most successful feature of the project."

The project site in Baringo contains striking examples of the major soil erosion problems and related social conditions found in African semi-arid regions, all within just a 30 km radius of the lake. The valley floor receives 650 mm of rain a year while 1200 mm fall on the surrounding mountains. "You go from dry land problems to steep wet mountain slopes in a fairly short distance," says Dr Bryan.

Dr Bryan says the district's relatively numerous trees distract attention from the lack of ground vegetation, essential in preventing soil erosion. It has been depleted mainly from overgrazing by the livestock of the growing human population. After some 70 years of degradation, extensive areas are now devoid of vegetation or are covered with unpalatable or toxic plants. Grasses have been virtually eliminated and seed sources are extremely restricted.

"Over the area most of the soils are bare of vegetation for much of the year, particularly at the critical period of the year which is the end of the dry season and beginning of the wet season in April. When the wet season comes the heaviest rains hit the exposed soil, resulting in serious soil erosion," says Dr Bryan.

The research team has identified a number of techniques for re-establishing grasses, increasing infiltration, and harvesting runoff water. The most efficient methods include surface mulching with stones and organic matter, which reduce evaporation. The researchers have also planted indigenous trees and shrubs to stabilize the soil. Acacia tortilis, a nitrogen-fixing tree, is proving to be highly successful.

The knowledge gained from this project has immediate implications for other semi-arid regions that suffer from high rates of soil erosion. In addition, the creation of an indigenous core of specialists and a network to share information demonstrates the potential for capacity building.

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