VETIVER GRASS HEDGEROWS FOR SOIL AND WATER CONSERVATION IN THE FARMLANDS IN UGANDA

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Abstract

There is severe soil erosion in Uganda, a high-rainfall country where the main crops are bananas, pineapples and vegetables. Due to the absence of vegetable protection, all soils with nitrates are increasingly washed away, causing land degradation. The introduction of vetiver grass for the protection of soil and water has become very successful with farmers. A study shows that all farmers who know how to plant and use vetiver grass succeed in protecting their soil and hence increase farm profitability. Costly mechanical measures in the hills of western Uganda where I operate are no longer accepted by farmers due to the high performance of vetiver in solving the soil erosion problem and the very low cost it involves. It is easy to apply, requires little maintenance, and apart from soil and water conservation it has other potential benefits such as fodder, mulch, animal litter and handicraft making.

Introduction

Soil erosion is a big problem in a country like Uganda, where 80 % of the population are farmers, many of whom live on slopes, practicing farming for their survival. Northwest Uganda in particular has two rainy seasons, from March to May and from September to November, when the rainfall ranges from 600 to 1200 mm. Finding cheap and sustainable methods to help decrease runoff and reduce soil loss has always been a problem for farmers.

Vetiver grass was introduced as early as the 1970s, but the farmers were not really aware of its advantages until the 1980s, when some organizations and farmers started using it for soil erosion and water conservation purposes. In the hills of Bushenyi, vetiver was introduced by farmers from the central region. There was not enough material for planting until 1994, when we started promotion and encouraged farmers to grow vetiver grass for soil and water conservation. Many farmers initially rejected growing vetiver grass because they did not understand its importance. However, once the farmers realized the effectiveness of vetiver in conserving soil and preventing runoff, they soon adopted its use on their own farms. Vetiver helped to solve the problems farmers in the area had been struggling with for many years.

It is important to note that in this area many farmers keep animals on their farms. Previously, the animals ate most of the grass that was planted. With the introduction of vetiver, the animals were unfamiliar with this new species and showed no interest in eating it.

Vetiver grass was distributed within the community by the Kawanda research station, which had reproduced plants from their own stems and from the farmers who had planted them earlier.

The grass is planted 20-25 cm apart in a single row and follows the contour and the hedge of the terraces. It grows very high during the rainy reason. Farmers have used it for thatching their houses, as mulch and as animal litter.

Due to the importance of the grass in the western part of Uganda, farmers call it a successful grass. This is due to the success they have achieved with help from vetiver in their production of vegetables, bananas and pineapples.

Vetiver has played and will continue to play a large role in environmental conservation, as it adapts well to all climatic types in the western part of Uganda.

Vetiver Grass Multiplication in the Area

The use of vetiver grass has drastically increased wherever farmers suffer from the problems of land erosion. Previously they could not plant anything on their land as most of the fertile soil was lost due to runoff and erosion. As the demand for vetiver increased dramatically, farmers and researchers tried to discover ways of propagating vetiver grass.

It is difficult to produce viable vetiver seeds that can be propagated. We had to find ways to reproduce enough stock for planting to be given to all the farmers who had applied for vetiver grass. We used various methods such as transplanting some of the original stock, stem cutting and making longitudinal slits in the stems.

However, the demand for vetiver is still high in other regions of Uganda. We plan to start a vetiver network to help establish the available sources of vetiver and help farmers to get the amount of plants they need.

Before we came in to help the farmers, they showed no interest in planting vetiver in hedgerows. The vetiver that was planted still allowed water to erode the topsoil. We found out that the grass had not been planted properly and recommended that the spacing should be of 15-20 cm, not 50-70 cm as had been done before. We encouraged the farmers to plant using compost of dried cow manure that could add nutrients to the soil. A year later the few farmers we started with realized how this planting scheme proved significantly superior to the previous methods, especially in conserving moisture during droughts.

Vetiver grass is used for soil and water catchment in banana and pineapple plantations and vegetable gardens. The experiments and the farmers' practical work conducted in Bushenyi, in using vetiver for the purpose of soil and water catchment proved very successful.

The project was started in 1994 and more efforts were put in after the 1996 international conference on vetiver that I attended. The effort to increase the vetiver supply to the community has continued due to high demand. This has been achieved with little funds from within our organization.

The successful results presented by farmers indicate a high increase in plant production and income in four years from 1996 to 1999, as shown in Table 1.

Table 1. Increase of yield in the production of bananas, pineapples and vegetables

Year	No of farmers	Location	Increase (%)
1994-1996	50	Bushenyi district	10-40
1996-1998	150	Bushenyi, Kasese, Kabarola districts	40-75
1996-1999	300	Bushenyi Kasese, Kabarola and Mbarara districts	40-95

Economics

The cost-benefit analysis that I conducted clearly shows that vetiver grass is far cheaper than the mechanical methods used for the purpose of soil catchment.

Farmers have proved that they spent less using vetiver than they do buying materials to build up walls for protection against soil erosion. Therefore vetiver grass systems are more profitable from the very first months you plant them. Farmers have increased their profits due to the use of vetiver grass.

Vetiver for Steep-slope Stabilization

By establishing vetiver on contour lines, the embankment of both cut and fill sloped soil can be effectively stabilized. The deep-root system stabilizes the slope, while the hedges reduce runoff, increase infiltration and trap sediment. This provides a very favorable environment for planting crops on the slopes.

In Bushenyi we established vetiver in rows 15-20 cm apart. In between, we planted trees. After a year good results were out in the hills, where farmers had failed to plant anything before. Therefore our experiments proved that vetiver grass could help many farmers utilize their land on steep slopes.

Promotional Methods

In order for vetiver to be adopted and accepted in most parts of Uganda, the following was done:

- ***Information***: Collection and dissemination of information were the first components of the project we had to complete. The farmers, NGOs and government departments needed to be informed about the importance of vetiver. Information was collected from Mr Richard Grimshaw, from the World Bank, and during my stay in Thailand during the First International Vetiver Conference. We used a number of resource centres in the country.
- ***Meetings***: A number of meetings were organized at local, district and national levels in the country to establish a strategy on how we could distribute vetiver grass.
- ***Demonstrations***: We made a small demonstration for the purpose of training the farmers and other groups interested in vetiver grass in the area. At the centre, video presentations took place; the videos had been collected from various sources in the country and internationally.
- ***Collaboration***: Our centre collaborates with other organizations to network in the dissemination of information and materials to interested parties in different regions of the country. More activities are planned to take place in the year 2000.

Importance of Vetiver and Why It Came to be A Successful Grass

With its wide ranging tolerance of adverse climatic conditions, vetiver offers a simple low-cost technique that can help farmers solve their biggest problem, soil erosion. Several factors influence the success of the grass.

Farmers say it is a wonder to live on the hills and enjoy the vista and life which comes from producing crops which have been helped by planting vetiver grass. “Without it we would not have lived and survived here,” they enthuse.

Conclusion

Although many grasses, trees, shrubs and mechanical techniques have been used to prevent soil erosion over the years, to date vetiver has stood the test of time. Therefore I highly recommend planting vetiver grass not only in Uganda, but also worldwide. Let us join hands to support the vetiver grass and its users.

References

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