



GRASS BARRIERS

Climate Smart Agriculture (CSA) Brief No. 2 for Agricultural Field Officers



Ocean's Edge Farm in Crochu, St Andrew

Did you know?

The use of vegetative barriers or grass hedges is an effective soil conservation practice against erosion. They diffuse and spread the water runoff so that it slowly flows through them without erosion.

Challenges

The topography of the land in the tri- Island state of Grenada, Carriacou and Petite Martinique is generally mountainous. Farming is done on the sloping surfaces because many farmers do not have alternative sites. As such soil erosion and land slippage occurs. However, the negative impacts of climate change have led to changes in rainfall patterns. These changes include an increase in heavy rainfall events, higher temperatures and rates of evapotranspiration. They also lead to longer and more severe dry spells and concerns for water availability for agricultural purpose. This coupled with **farming on slopping lands leaves the soil much more vulnerable to erosion and land slippage. It can also result in increased runoff after a heavy rain event.**

There are two main forms of erosions:

- **Gully erosion:** the form of erosion that cuts through the soil profile;
- **Sheet erosion:** this form is the most dangerous. Raindrops pound the ground dislodging soil particles which are carried away by the surface runoff. Sheet erosion is a slow but steady form of erosion that covers vast amounts of land/soil. It is difficult to see since it takes small amounts of soil over a longer period of time.

The practice of establishing grass barriers will protect the soil from both forms of erosion.

What is a grass barrier?

A grass barrier or hedge is an effective soil conservation practice against erosion. For best results, grass barriers are planted along the contours and is jointly implemented with planting on contour (see brief Number 1 on contour farming).

Grass barriers inhibit the flow of water because of their dense concentration of thick stems, thus slowing and ponding water and causing sediment to deposit at the back of them. Over time these deposits can develop into benched terraces. **These barriers function to diffuse and spread the water runoff so that it slowly flows through them without erosion.** Grass barriers are resilient because water passes over a broad area secured with perennial root reinforcement.

Vegetation that can be used as grass barriers:

- ✓ Vetiver (sweet root) grass
- ✓ Angelica fence
- ✓ Lemongrass



Vetiver Crop at Ocean's Edge Farm, Crochu, St Andrew



Benefits of grass barriers

- ✓ Retard and reduce surface runoff by promoting detention and infiltration.
- ✓ Disperse concentrated flow and prevent ephemeral gully development.
- ✓ The secondary benefits that sometimes can be realised are:
 - Entrap sediment-borne and soluble contaminants and facilitate their transformations.
 - Reduce soil loss by causing deposition of eroded sediment on hill slopes.
 - Facilitate benching of sloping topography.
 - Provide valuable wildlife habitat.
 - Provides economic benefits i.e. herbal teas and animal feed
 - Can also reduce wind force/speed through the farm eg. angelica fence on a cocoa farm

Implementation

Vegetative barriers can be applied to eroding sites on areas where vegetables are produced within gullies, ditches, on the edge of drains and roads and on bench terraces. This practice should be used in conjunction with other practices within a conservation management system e.g. crop rotation.

Vegetative barriers may also be used as field borders at the bottom of fields and/or at the ends of furrows whether the furrows are aligned up and down the slope, across the slope, or on the contour.

They are narrow strips (1-3 feet wide) of stiff, erect densely growing plants, usually grasses, e.g. vetiver, planted across the slope which is perpendicular to the dominant slope.



A freshly planted grass barrier at The Tower Estate, St Paul's, St George

How to construct vegetative barriers?

- ✓ Choose the type or variety of grass you would use as your barrier e.g. vetiver, angelica fence (used mostly in tree crops), lemon grass etc.
- ✓ With the use of the "A-Frame"* , mark out the contour lines across the slopes.
- ✓ Prick fork the soil along the contour line to a depth of about ten inches (10").
- ✓ Plant your preferred grass approximately six inches (6") apart along the row, you can plant a second row about six inches (6") away. If the barrier is to form beds then measure four to four and a half (4 - 4.5) feet away from the second row you have established and repeat the process. If it is at the edge of a drain, then move to the next drain. Remember grass barriers are planted at the top side of the drain to prevent soil or silt from entering the drain.
- ✓ In ditches and gullies, the barriers are planted across the slope and serves as a collection point for soil or silt. This pattern is repeated every eight to ten (8 - 10) feet along the ditch or gully.

*See "How to build an A-Frame" practice sheet (Brief #7)

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