Vetiver Grass Technology

Vetiver grass is easy to propagate and establish as hedgerow. It is adopted to a wide range of soil and climatic condition. When planted correctly, vetiver grass will form a dense permanent hedge in one year. It has a strong root system that penetrates and binds the soil. Vetiver grass is perennial and requires minimal maintenance. It will not spread to the alleys since it does not multiply by rhizomes nor from seeds. Compare with other grass, it does not compete much with the crops it is protecting. Vetiver crown is below the ground surface which helps protect the plant against fire and overgrazing. Its leaves and roots are resistant to insects and diseases. Vetiver can withstand, drought, flood and long period of water logging.

Hedgerow of full grown vetiver grass (Photo: LSU/WOCAT)

Small Farm Reservoir (SFR)

The small farm reservoir (SFR) is a small water impounding earth dam structure to collect rainfall and runoff, designed for use in a single farm, and typically has an area of about 300-2,000 square meters. The embankment height above ground level is less than 4 meters. It can be easily constructed with a bulldozer or manual labor. Irrigation is done with PVC siphon pipes or pumps. SFR is used in rainfed-growing areas to provide supplemental irrigation to a wet and dry season crops. Aside from irrigation and aquaculture, water in the reservoir could also be used for small scale livestock watering, wallowing areas for animals, e.g. ducks.

The Small Farm Reservoir (SFR) is an earth dam structure use to trap and store rainfall and runoff
(Photo: BSWM)

For more information about soil conservation technologies and approaches and the preparation of conservation farm plans, please contact:

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Pagyamanin: Lupa at Tubig
Laban sa Kahirapan

Practical and Low-Cost Soil and Water Conservation Technologies for Upland Farmers

Department of Agriculture
Bureau of Soils and Water Management
Bureau of Agricultural Research
Elliptical Road, Diliman,
Quezon City

Natural Vegetative Strips (NVS)

Natural Vegetative Strips (NVS) are narrow live barriers vegetated with naturally occurring grasses and herbs. Farmers like the technique because it requires only minimal labor for establishment and maintenance while effectively controlling soil erosion and conserving nutrients applied to the crop through fertilizers. After laying out the contour lines with the use of A-Frame and marking them with stakes, a 50-cm strip along the contour is left unplowed. The stakes serve as guide in plowing. Plowing along the contour helps to further reduce soil erosion, because the flow of water is broken and more water infiltrates into the soil. The unplowed strips will be vegetated with natural grasses and herbs. Water running down the slope during heavy rains will infiltrate into the soil when it reaches the vegetative strips. Eroded soils will collect behind the strips and natural terraces will form over time. This way, soil and applied fertilizer will be conserved. Land preparation and crop management will also become easier.

NVS is a low-cost technique because no planting material is required and only minimal labor is necessary for establishment and maintenance. To maintain, the established NVS will need to be cut to about 5-10 cm above the ground: once before planting a crop and 1-2 times during the cropping period. The cuttings can be incorporated during land preparation or applied to the cropping area as mulch. The distance between strips will depend on the slope. For a slope of 18-30%, a 3-5 meter distance is ideal.

Natural vegetative strips (NVS) is an example of a cheap SWC technology that is acceptable to small farmers (Photo: ICRAF/WOCAT)

Residue Incorporation

Many farmers still consider their crop residue as nuisance which interferes with their farming operation. Apart fromdepriving them the opportunity to recycle nutrients which could decrease fertilizer inputs, crop residue burning emits carbon dioxide (CO_2) which contributes to global warming.

Residue incorporation can considerably increase the organic matter content of the soil and thus lessen the need for commercial fertilizer. This can be done by cutting and then spreading the crop residues evenly in the farm. This will also provide surface protection to the soil during the turn-around period when erosive rainfall events could occur. Burning crop residue is the same as burning fertilizer.

During land preparation for the succeeding crop, the residue is incorporated into the soil. This will increase the supply of nutrients, improve soil structure, porosity and water holding capacity.

Residue incorporation is a simple technology that can convince farmers to practice more complex technologies (Photo: WOCAT)

Trashlines

In steep sloping lands where soil erosion is a problem, crop residue (e.g. corn stalks) can be used as trashlines laid along the contour. This will enhances water infiltration, slows down runoff and minimizes soil loss. When decayed, the residue will provide nutrients, lessening the need for fertilizer.

Trashline is a cheap and effective means of minimizing soil loss (Photo: WOCAT)

Conservation Tillage

The maintenance of permanent soil cover of living or dead plant material is the heart of conservation tillage. Instead of the usual plowing and harrowing before planting, the crop seeds are drilled directly into the soil through the layer of crop residues.

Conservation tillage results in a much shorter turn-around period between two croppings. This is very crucial in areas where rainfall duration is short as it takes advantage of the residual soil moisture at the end of the rainy season.

The crop residue cover reduces evaporation, prevents the growth of weeds, increases soil organic matter content, stimulates soil life (flora and fauna) and sequesters carbon.

Young corn plants emerging from the residue of the previous crop (Photo: UPLB/WOCAT)