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A Case Study

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Intervention of forestry and horticulture in watershed management under different climatic conditions

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Abstract : The humps, slopes and gully bottom planting of *Acacia nilotica* and *Dendrocalamus strictus* intercepted rain water, reduced the impact of falling rain drops and alimented the ground water table. Similarly, planting of *Citrus* spp. and *Zizyphus mauritiana* and *Psidium guajava* in ravinous area protected the degraded land of watershed and provided fuel from the annual pruning. The plantation of *Acacia niotica* and *Dendrocalamus strictus* under farm forestry provided the wood for domestic purpose. The pods of *Acacia nilotica* are being used as nutritive feed to the browses. Pearl millet in association of clusterbeans and cowpea planted in the interspaces of *Mangifera indica* gave 3000 kg/ha mango fruits and 360-370 q/ha green fodder. The grasses grown between the rows of *Mangifera indica* and *Madhuca latifolia* harvested by 175 - 225 q/ha at green stage. The fruits yield by 3000 kg/ha and 3500 kg/ha were also reaped from *Madhuca latifolia* and *Mangifera indica*, respectively. *Zizyphus mauritiana, Acacia nilotica, Prosopis juliflora, Ficus bengalenasis, Ficus glomerata* and *Ficus lacor* planted on banks of gullies for their establishment. These plantations established the gullies and green leaves and fruits of these trees are also being used as green fodder during summer season or drought period. *Acacia nilotica* planted in conjunction with grasses for rearing of domesticated farm animals under silvi-pastoral system paid good dividends to the farm families of watershed.

Key words : Humps, Gully bottom, Intercepted, Rain drops, Pruning, Browse

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Forestry and horticulture are closely linked for watershed management along with environmental amelioration and socio-economic upliftment, the later resulting in considerable improvement of the quality of life in villages. The forestry and horticultural systems generate several positive environmental impacts in watershed areas like improvement in hydrological balance and production of water from rain water harvesting, improvement in physical properties of degraded soils, alimentation of ground water, reduction of surface runoff water and sedimentation of reservoirs, recycling of carbon, creation of favourable micro-climatic condition conducive to higher food production, increase rainfall through transpiration and maintaining balance in oxygen, carbon dioxide, atmospheric temperature and relative humidity. The grain crops like cereals, pulses and oilseeds grown by farmers under fragile condition are just enough to meet their family requirements but the products of fruit trees give cash to them. Some fruit leaves e.g. *Ber* contain good percentage of crude protein, which proves beneficial for the browses. Apart from leaves the fruit trees also yield wood from the annual pruning, which can be sued as fuel wood. Fruit trees provide employment to the farmers and their family members during off season also. Likewise, the forest trees maximized the per unit production of fodder, fuel, wood and other forest products. In addition to this, the forest trees also optimize the productivity of biological and physical resources *viz.*, land, labour, live stock, soil moisture, solar radiation and the like. The forest trees also preclude the soil erosion, conserve the soil moisture, increase the soil fertility, help in eco- friendly farming and maintain the ecological balance.

It has been estimated that the forest bushes /shrubs and small horticultural trees take CO_2 @ 3 M.T./ha from the environment and release O_2 @ 1 M.T./ha. Similarly, standing trees catch to dust @ 70 M.T./ha on their foliage and clean the environment, reduce the temperature and