

Bund Planting for Manurial Biomass

AMEF Foundation is born out of a concern for ecological agriculture. Embedded in this concern are the livelihood improvements and ecological balances. Choosing to work with resource poor families in fragile ecosystems of dry farming, AMEF seeks to enable them to generate and adopt alternative farming practices, that are acceptable and affordable.

Sustainable agriculture (SA) in dry lands requires adoption of a bunch of practices pertaining to rainwater conservation, soil fertility improvement, diversified crop production systems, along with rebuilding of environmental support.

Over the years, AMEF has found certain alternative farming practices highly accepted by farmers. Such practices are considered here as Good Agriculture Practices eligible to be widely disseminated. **This good agricultural practice pertains to soil fertility improvement through generation and utilization of manurial biomass on the farm bunds.**

AMEF firmly believes that while farmers alone are the practitioners of these options, as end users, there are several agencies working with them as enablers. This brief seeks to help the enablers to promote SA in their specific context.

Dry farming in South India, suffers due to low fertility levels and poor water holding capacity of the soil. In the post green revolution era, for a variety of reasons, the practice of using adequate quantities of organic manures has yielded place to use of some amounts of chemical fertilizers. This not only deprives the soil of its natural ability to sustain crop but also adds considerably to the cultivation cost.

Some desirable traditional practices like crop rotations, yearly application of tank silt, sheep penning, in addition to regular use of farmyard manure (FYM), have become rare operations today. The practice of collecting and manuring large quantities of leaf matter from the surrounding areas, in the summer season, has also disappeared.

Therefore, adopting suitable alternative practices of generating and using sufficient amounts of organic manures has become critically important for saving dry farming. Already farmers are growing trees like neem (*Azadirachta indica*), pongamia (*Pongamia pinnata*), matchwood tree (*Allanthus excelsa*), wild moringa (*Moringa oleifera*), on and around the farms. But, this is not adequate to meet the needs of organic manures in dry farming. More purposeful measures are necessary. In this regard, one practice that is becoming popular is bund planting with suitable plant species.

One system of building the biomass availability in dry lands is through dense plantation (normally with one metre spacing) of selected shrubs on the field bunds. Care is taken here in choosing the plant varieties for avoiding the shade effect and root competition to the main crop. Generation of green fodder for animals could also be achieved in this effort. Once a year, generally, green leaf is gathered from these plants and composted for use as manure subsequently. The field bunds also get stabilized by this measure.

Fast growing species such as glyricidia (*Glyricidia sepium*), cassia (*Cassia seamea*) and subabul (*Luceana leucocephala*) are the most common plants used by farmers for this purpose. Among these, glyricidia grows fastest, stands frequent lopping and yields succulent material that decomposes easily. It also serves many other purposes like fodder, fuel, fence and staking material.

Raising seedlings

Seedlings of these plants can be grown on raised bed nurseries. Seeds are soaked in water over night for easy germination and then dibbled on raised beds. The nursery bed consists of fine soil, free of gravel, mixed with sufficient quantity of well-decomposed FYM. The normal dimensions of a unit bed are 1 m x 1 m x 15 cm for easy management. This enables easy watering, weeding and easy removal of the seedlings. Seedlings with two-leaves are then transplanted

into the polythene bags of dimension 10 cm diameter and 15 cm height filled with a mixture of FYM, soil and sand in 1:2:1 ratio. The seedlings are ready for planting on the bunds after 2 to 3 months. Generally, it is taken up by 1 to 2 farmers for the entire group.

Using stem cuttings

In the case of glyricidia, it is also established using stem cuttings. The stems are taken from well-grown plant (1 to 2 years old), avoiding hard wood. The stem cuttings of 2.5 cm thickness and 15 to 20 cm length are planted when there is sufficient moisture in the field, preferably during rainy seasons.

Seedlings are planted in the pits dug at a distance of 1 m while cuttings are planted in the holes made on the bunds at a depth of 10 to 15 cm. The seedlings/stem cuttings are watered in case of failure of rains, till they are established on the bunds and are protected from stray cattle by spraying dung solution.

Under normal dry farming conditions, leaf material from bund plants is ready for harvest after about a year, depending upon the growth rate. This fresh material is used for composting, green manuring and as cattle fodder.

Farmers are quickly recognizing the benefits of bund planting in terms of cutting the cost on fertilizers and augmenting fodder supply. To an extent it improves the crop microclimate by impeding the wind flows and adding to the humidity levels. The practice is becoming popular in select operational areas of Andhra Pradesh, Karnataka and Tamil Nadu.

AME Foundation promotes bund planting as a strategic component of ecological agriculture, in better management of dry farming.

Limitations

Some of the plant species have limitations. Cassia is not suitable as cattle fodder. Subabul has self-seeding habit and regular harvesting of biomass is practiced avoiding flowering and pod formation.



Manurial biomass on bund

Over 2200 farmers, involved in FFS under the AMEF-FAO Partnership Project in Andhra Pradesh, Karnataka and Tamil Nadu states of Southern India, have adopted bund planting. It has been found very useful, not only as the source of biomass for soil fertility under dry land conditions, but also as fodder for live stock.