

## A NOTE ON SOIL EROSION AND USEFUL SOIL BINDERS IN THE WEST COAST

By

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The ravages effected by soil erosion are well-known and people are becoming alive to the dangers caused by it to land and to agriculture. The problem is serious in the west-coast where the land and cultivated fields are full of ups and downs and where the rainfall is about 150 inches in a year of which about 100 inches of rain are received in as many days from June to September every year. Further the soils are mostly light and sandy. During the monsoon it is a common sight to find a small rut or a foot-path

### Soil erosion a serious problem in the west-coast.

developing into a deep gully overnight; field bunds, embankments of channels, river sides, road sides and even railway embankments are often washed off causing serious damage. In cultivated fields, levelling and bunding are certainly important operations for guarding against surface wash; but an unprotected bund is no proper safeguard at all, and in the light or loamy soils a rat hole or a crab-hole can lead to the washing away of a good bund in a short while. So the problem resolves itself to soil binders. By these are meant plants or other materials which help to bind or keep together soil particles and resist their being washed off by rain or flowing water or blown off by strong winds. For nature's scourge there must be nature's remedies and man's search for a solution lies in observing what nature does to combat the evil. Most of the innumerable hills and highlands of the West coast look barren without any high-growing vegetation, still the soil there, is mostly intact in spite of heavy rains. This is due to the fact that there is thick growth of wild grass growing naturally and the matted roots act as soil binders. The trouble starts when man interferes with nature indiscriminately and destroys natural vegetation. Also it is a matter of common observation that along the banks of the many rivers in the West coast, the trouble is least where there are trees particularly the coconut. This is due to the effect of their roots. In loose or sandy soils, the coconut, in particular, has the good habit of forming an impregnable mass of roots which can withstand any amount of erosion by water.

Thus in nature, we have grasses and trees including shrubs which act as effective soil binders. But there are grasses and trees of various sorts, and all are not equally good and cannot be. Therefore, the question often asked is "what is the best soil binder for this or that locality". Various plants have been suggested by botanists and agriculturists from time to time. Even *Spinifex squarrosus*, a spiny grass growing on the beach, and *Ipomaea pes-caprae* a creeper, have been

recommended for certain localities along with a host of others like *Pandanus* and the Palmyrah. In fact any plant that has a good and matted root system will serve the purpose, provided it is a hardy perennial. But wild plants cannot always suit man's purposes and the species chosen should serve not only as good soil binders but should also be useful otherwise. So our search for suitable material should be made among our cultivated plants also.

At the Coconut Research Station in South Kanara (west coast), various plants have been under observation in this connexion of soil preservation for some years. The most useful of these are mentioned hereunder.

The Thin or Dry Napier Grass — (*Pennisetum Sp.*) This was introduced at the Coconut Station in 1941 as a fodder grass and has become quite a success in the soils here, growing profusely to a height of 4—5 feet during the south-west monsoon and yielding even 10,000 lb. of green stuff per acre in a season, under favourable conditions. Though the leaf is rather coarse; it is excellent for making silage. The fodder problem is acute in the west-coast during the summer months. The use of this plant for fodder is perhaps too well-known to need further emphasis here. In the laterite soils of the Pilicode station it has almost become a weed, though there is no fear of its turning out to be a pernicious one. It's rapid multiplication is due to the ease with which it propagates itself by seed and by slips. Being a prolific seeder, large quantities of the fuzzy seeds produced in the summer months are blown off by wind, and they sprout with the rains in all sorts of places wherever they happen to get lodged. Slips, however are much better for controlled multiplication; if these are planted with the monsoon rains in June or August, they establish themselves quicker and give cuttings sooner.

**Dry Napier Grass.** However the most important consideration about the plant here is the root system, which consists of a thick mat of roots about the surface of the soil. The grass is a perennial and though it dries off during the later summer months the underground rootstocks manage to live through the summer and sprout with the first rains. Close-planted at about six inches apart on any bund or a slope or boundary mud walls it acts as an effective binder and protects the soil. It is, therefore, worth while planting this grass in all suitable places both for protecting the soil and for fodder. Hundreds of pounds of the seed have been distributed during the last few years even in the districts outside the west-coast and still there is demand for the seed and slips for planting.

2. The spear grass — (*Heteropogon contortus*) — This is another perennial fodder grass found wild in most districts of the Province. Growing from seed or slips it easily establishes itself when planted during

the rains. It is quite a good soil binder, and has been found to be an excellent protection for bunds and edges of foot-paths and slopes of terraces at the Coconut station and elsewhere.

3. The Coconut palm — (*Cocos nucifera*) — This is too well-known to need any special introduction. The different parts of the palm, alive or dead are put to a variety of uses. But curiously enough, few people seem to realise how effective and useful its root system is in preventing the erosion of the soil. A few seedlings planted at the surface of the soil at a distance of 3 to 6 feet along a channel or a river bund which

**The palm that  
protects bunds.**

is subject to periodical breaches effectively check the damage, as the plants grow up and spread their roots. In grown up trees thus planted, the root system will be found to be as effective as a concrete embankment. At the same time the trees may be made to yield well by thinning off the weaker ones, by leaving one every ten feet or so. As the primary object of the planting is for protecting the soil, thinning the trees may be done only when the palms are about seven or eight years old, by which time the root system is thickly spread and well established and the trees begin to yield nuts. Further the husk of the coconut is also a useful material in controlling surface wash which is sometimes inevitable through water vents. If such places are partially blocked by a few layers of coconut husk, the soil that is being washed off is caught up in the fibres of the husk and water alone is allowed to escape slowly.

It is, therefore, highly desirable that we make use of the common plants described above and protect the 'good earth' from erosion and its consequent evils.

## Hybridisation in Sweet Potatoes

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**The Crop:** The sweet potato (*Ipomea batatas*, Lam) is a quick growing high yielding crop grown in a small scale throughout the Presidency. Though not an important cash crop, as a combined vegetable and food crop, it is an important supplement to the food supply of the Province. Because of its merits it is grown in all the tropical and extra-tropical regions of the world. The cultivation and technology of the crop are very advanced in other countries e. g. Java, Philippines, Southern United States and West Indies. It has not been intensively studied and its cultivation developed in India, probably due to its low economic status, but is now attracting considerable attention owing to the present food crisis.