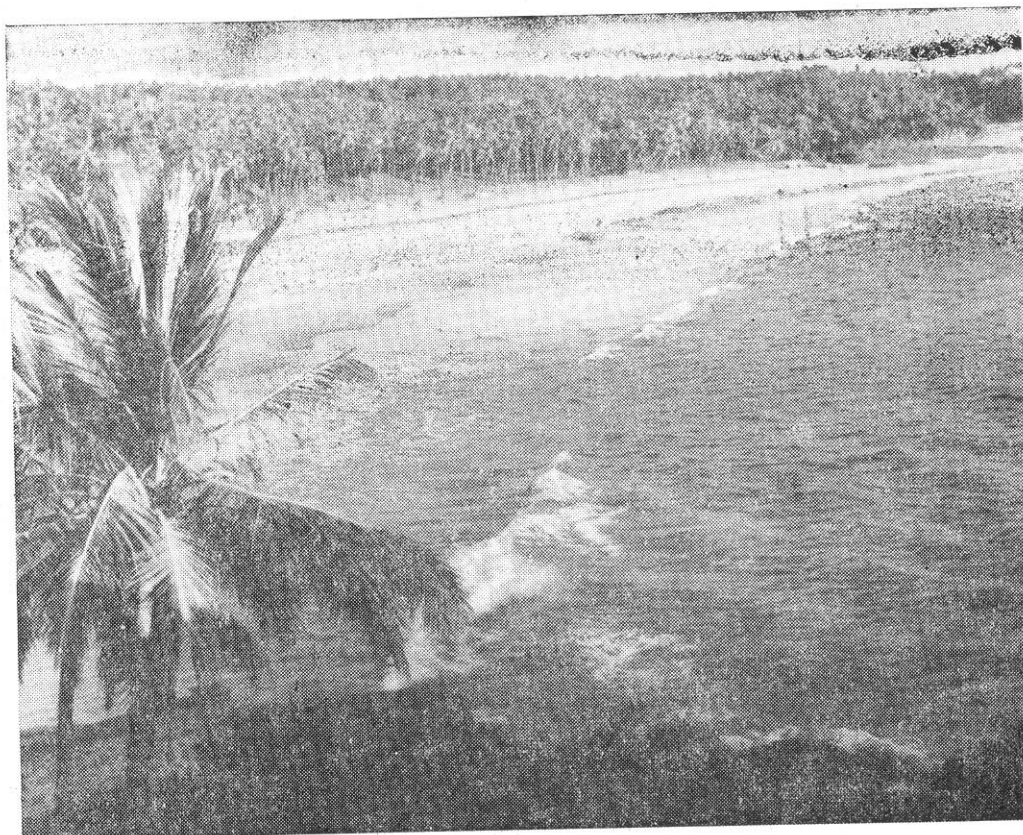


COCONUT palm is known for its adaptability to a wide range of soils and varying soil environment. It is said to grow well on sandy soils, especially littoral type, provided there is an assured supply of underground water within easy reach of roots and palms are adequately and properly manured. Available literature also reveals that the establishment of coconut on littoral sand is a difficult task even with irrigation facility. Experience has shown high mortality of transplanted seedlings on such soil, particularly when the proper management is lacking. Hence, a long-term experiment was undertaken to work out an exact technology for establishing coconut plantation with a reasonable success on coastal sand at the Central Plantation Crops Research Institute, Kasaragod.

A field experiment was started in 1971 to assess the role of different organic sources along with normal NPK application in the establishment of coconut on littoral sand. The physico-chemical characters of the surface soil are depicted in Table 1. The prevailing mean annual rainfall in the area is 3,500 mm with major precipitation between June and September. The water table is met within 3 to 8 m from ground surface.

One-year old West Coast Tall seedlings were planted in June, 1971 in one cubic metre pits with a palm to palm spacing of 8 x 7.5m. The total nutrients applied to each palm from third year onwards were 0.5 kg N, 0.32 and 1.2 kg K<sub>2</sub>O per palm per year, the adult palm dose recommended by the Central Plantation Crops Research Institute. During the first and second year, one-third and two-thirds of the above doses respectively, were applied. The five treatments included NPK application alone and NPK supplemented with coir dust, coconut sheddings, forest leaves and cattle manure which in turn were replicated five times. The mode of



The coastal zone has considerable potential for expanding the area under coconut

## APPLY ORGANIC MANURE TO REDUCE COCONUT MORTALITY ON COASTAL SANDS

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fertilizer application during the first three years in two equal splits in May/June and August/September; whereas in the subsequent years, one-third dose was applied in May/June and two-thirds in August/September. Ten kg of different organic sources, on an oven dry basis, were applied to seedlings during the first three years and, thereafter, the quantity was doubled. The treated palm received weekly irrigation from December to May.

The mortality observed in different treatments revealed that the

NPK application alone resulted in 50 per cent death of seedlings. The application of cattle manure and coconut sheddings individually along with NPK resulted in a remarkable reduction in mortality (7 per cent), whereas the application of forest leaves and coir dust along with NPK proved to be the next best effective in cutting down the mortality (15 per cent).

The growth characters like palm height and number of leaves also showed superiority of coupling NPK application with organic sources

over NPK alone. The continuous addition of organic sources with NPK had a definite additive effect on growth parameters over NPK application. The cumulative effect and the end of ten years on plant height in increasing order was NPK (599 cm), NPK plus coconut sheddings (668 cm), NPK plus coir dust (674 cm), NPK plus cattle manure (693 cm) and NPK plus forest leaves (710 cm). A similar trend was also noticed with respect to cumulative production of leaves. The trend in increasing order was NPK alone (56), NPK plus coir dust (65), NPK plus coconut sheddings (66), NPK plus cattle manure (70) and NPK plus forest leaves (72).

The flowering in different treatments also recorded a similar trend. The palms treated with organic sources started flowering since 1977 whereas the NPK alone treated palms recorded it only in 1980. The advancement of flowering with

time has been presented in Table 2.

The general vigour of four-year-old experimental palms under different treatments can distinctly be categorised into three groups showing (a) best vigour and growth in treatments where NPK was supplemented by forest leaves and cattle manure; (b) moderate vigour and growth where NPK was supplemented with coir dust and coconut sheddings; and (c) poor growth where NPK alone was used.

TABLE 1. PHYSICO-CHEMICAL CHARACTERS OF LITTORAL SAND

Characters	
pH (in 1:2 soil water suspension)	6.6
Sp. conductance (mmhos/cm)	0.1
Organic carbon (%)	0.08
Available nitrogen (kg N/ha)	92.0
Available phosphorus (kg P <sub>2</sub> O <sub>5</sub> /ha)	99.0
Available potassium (kg K <sub>2</sub> O/ha)	22.0
Texture	Sand
Sand (%)	98.2
Silt (%)	0.2
Clay (%)	0.7

The better vigour and growth of palms in the treatments which include organic sources may be possibly on account of the changed behaviour of soils in respect to moisture retention. Normally, the addition of organic matter to soils is supposed to improve the moisture availability, duration of moisture retention and physical condition; thereby exerting beneficial effects on existing crops. The differential growth responses and reduction of mortality during the experimentation

TABLE 2. FLOWERING BEHAVIOUR UNDER DIFFERENT TREATMENTS

Year	NPK alone	Coirdust +NPK	Coconut sheddings +NPK	Forest leaves +NPK	cattle manure +NPK
1977	NF	F	F	F	F
1978	NF	F	F	F	F
1979	NF	F	F	F	F
1980	F	F	F	F	F
Flowering percentage as on 1980	16.7	53.0	40.0	75.9	70.0

NF—Not flowered F—Flowered

**DUSTING POWDERS**

**PARATOX 2%**  
(Methyl Parathion)

**QUINATOX 1.5%**  
(Quinalphos)

**DIGMAR 5%, 10%**  
(DDT)

**SUBMAR 5%, 10%**  
(BHC)

**MALTOX 5%**  
(Malathion)

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**AIMSAN 50%**  
(Phenthoete)

**DIGMAR 25%**  
(DDT)

**MALTOX 50%**  
(Malathion)

**WETTABLE POWDERS**

**DISCON-Z 75%**  
(Zinc)

**SULPHO-TOX 70%**  
(Sulphur)

**COP-TOX 80%**  
(COC)

**DIGMAR 80%**  
(DDT)

**SUBMAR 80%**  
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