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TEA RESEARCH INSTITUTE OF SRI LANKA

GUIDELINES FOR TEA AND COCONUT INTERCROPPING

Intercropping of tea and coconut is considered feasible in the mid and low country, in the agro-ecological regions, WM1, WM2, WM3, WL1 and WL2, where conditions are conducive for the cultivation of both these crops. The main objective is to enhance productivity of land.

1. INTERCROPPING PROCEDURE

Coconut should be planted in an avenue system. The spacing between avenues can vary from 9.75 - 12.0 m (32 - 40 ft). However, the spacing within the avenue should not be less than 6.0 m (20 ft). According to this system of planting density of coconut varies from 135 to 170 palms per ha (54 - 68 palms per acre). The tea should be intercropped in the avenues of coconut leaving at least 2.4 m (8 ft) for the manure circle of coconut. The spacing of tea can vary from 1.0 m x 0.6 m (3.5 m x 2.0 ft) to 1.2 m x 0.6 m (4.0 ft x 2.0 ft) depending on the growth habits of tea clones. The details of number of coconut palms and tea plants under different spatial arrangements are given in Table.1. In order to avoid excessive shade on tea, it is suggested that wherever possible coconut be planted in the East-West direction.

Table 1 – Density of tea and coconut per ha under different spacing arrangements

Module	Coconut		Tea		
	Spacing (m)	Palms/ha	Spacing (m)	No. of tea Rows within a coconut avenue	Plants per ha
1	9.75x 6.0 (32 x 20 ft)	170 (68 per acre)	1.0 X 0.6 (3.5 x 2.0 ft)	6	10000 (4000 per ac)
2	9.75 x 6.0 (32 x 20 ft)	170 (68 per acre)	1.2 x 0.6 (4.0 x 2.0 ft)	5	8500 (3400 per ac)
3	11.0 x 6.0 (36 x 20 ft)	150 (60 per acre)	1.0 x 0.6 (3.5 x 2.0 ft)	7	10500 (4200 per ac)
4	11.0 x 6.0 (36 x 20 ft)	150 (60 per acre)	1.2 x 0.6 (4.0 x 2.0 ft)	6	9000 (3600 per ac)
5	12.0 x 6.0 (40 x 20 ft)	135 (54 per acre)	1.0 x 0.6 (3.5 x 2.0 ft)	8	10800 (4320 per ac)
6	12.0 x 6.0 (40 x 20 ft)	135 (54 per acre)	1.2 x 0.6 (4.0 x 2.0 ft)	7	9450 (3780per ac)

Fig.1 illustrates the spatial arrangement of the Module 6 of Table.1

2.2 Spacing:

9.75 m to 12.0 m (32 ft – 40 ft) between rows in avenue system
6.0 m (20 ft) within the row (Fig. 1)

2.3 Soil conservation and land preparation:

As per recommended practices (CRI Circular Nos. A 8 to A 11)

2.4 Planting holes:

(a) For loamy/clay loam soil

0.9 m x 0.9 m x 0.9 m (3 ft x 3 ft x 3 ft) (CRI Circular No. A 3)

(b) For shallow & gravelly soil

1.2 m x 1.2 m x 1.2 m (4 ft x 4 ft x 4 ft)

2.5 Cover crops:

Establish *Calapagonium mucunoides* (Calapagonium) or *Arachis pintoii* along the coconut avenues. Ensure that the cover crops are maintained within the coconut area (Circular No. A 10)

2.6 Fertilizer application:

As per CRI recommendation, it is necessary to use an extra dose of dolomite or kieserite at the rate of 1 kg per palm (Circular No. A 5).

2.7 After-care:

As per CRI recommendations in Circular No. A 4.

3. PLANTING OF TEA

3.1 Soil conservation and land preparation:

As per recommended practices (TRI Advisory Circular No. S 4)

3.2 Soil rehabilitation:

If the soil conditions are marginal (less than 90 cm soil depth, more than 20% gravel content and less than 2% soil organic carbon content) or if the soil is infested with nematodes, soil rehabilitation with mana grass for a period of 18-24 months is recommended. When coconut and mana grass are planted at the same time, it is recommended to cut a 1 ft x 1 ft (0.6 m x 0.6 m) trench 6 ft (3.6 m) away from the coconut tree and plant mana grass in between two trenches as shown in Fig. 2.

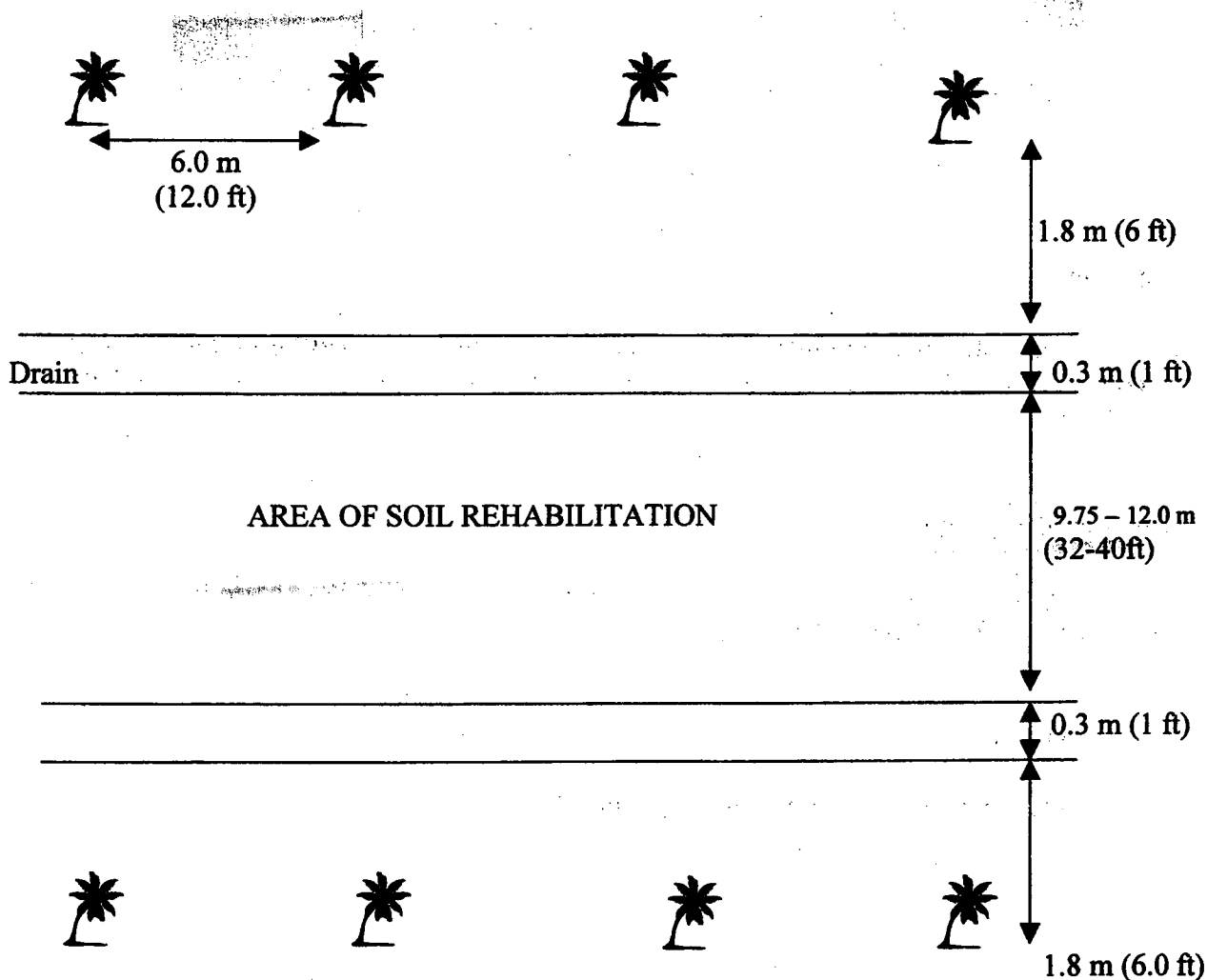


Fig. 2 – Area demarcated for soil rehabilitation in Coconut Avenue

3.3 Establishment of shade:

Gliricidia as a medium shade should be established at the spacing of 6.0 m x 3.6 m (20 ft x 12 ft). The shade trees may be thinned out or completely removed when coconut begins to provide shade for tea.

3.4 Clones:

TRI 2025, TRI 2026, TRI 2027
TRI 3014, TRI 3019, TRI 3025
TRI 4006, TRI 4048, TRI 4088
S 106, DG 7, DG 39

3.5 Spacing:

1.0 m x 0.6 m (3.5 ft x 2.0 ft) – For clones with erect growth habit eg. S 106, DG 7 and DG 39

1.2 m x 0.6 m (4.0 ft x 2.0 ft) – For clones with spreading growth habits TRI 2000, 3000 & 4000 series clones

3.6 Planting holes/trenches:

Holes: 45 cm (18 inches) deep with a top diameter of 30 cm (12 inches) and a bottom diameter of 12.5 cm (9 inches)

Trenches: 45 cm (18 inches) deep and 45 cm (18 inches) wide

3.7 Time of planting:

Planting of tea should be done with the onset of SouthWest monsoon rains (May/June). For Nematode prone areas, a suitable nematicide may be applied as per the Advisory Circular No. N 2. For White Grub prone areas, planting hole could be prepared as per recommendations in the TRI Advisory Circular I 9.

3.8 After-care

3.8.1 Thatching:

Thatching should be done soon after completion of planting tea and repeated before the tail end of the monsoon (Advisory Circular No. S 4). Care should be taken to keep thatch material (mana, gautemala, grass) 15 cm (6 inches) away from the collar of the tea plant.

3.8.2 Weed management:

Manual weeding is preferred

3.8.3 Fertilizer application:

Fertilizer and dolomite applications should be done according to TRI recommendations (TRI Advisory Circular Nos. F 9, F 10, F 12, F 13 and F 14).

3.8.4 Bringing into bearing:

As per recommended practices (TRI Advisory Circular No. V 1)

4. INTERCROPPING TEA IN EXISTING COCONUT LANDS

Lands presently under coconut may be inter-cropped with tea, provided that the soil and weather conditions are conducive for tea. The coconut palms should be over 35 years to allow sufficient sunlight falling on tea. Soil rehabilitation is essential for compacted lands with marginal soil. Further, planting tea in trenches of 45 cm (1.5 ft) wide and 45 cm (1.5 ft) deep is preferable. A shallow trench of 30 cm depth (1.0 ft), 2.0 m (approx. 6 ft) away on either side of coconut rows should be advocated to minimize any adverse effect of mana grass on the productivity of coconut.

4.1 Planting arrangement

To avoid competition, tea should be planted at least 2.4 m (8.0 ft) away from the coconut palm. Two systems of planting can be adopted for planting tea in existing coconut lands.

(a) Planting tea only in the avenues of coconut

In this system, tea is established only in the inter-rows of coconut. The spacing can vary from 1.0 – 1.2 m (3.5 – 4.0 ft) between rows and 0.6 m (2.0 ft) within the row (Table 2) depending on growth habits

(b) Planting tea in the entire space between coconut palms.

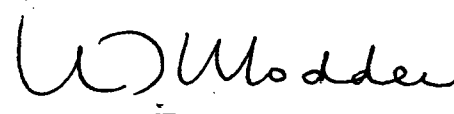
In this system, tea should be planted at a spacing of 1.0 m x 0.6 (3.5 ft x 2.0 ft) or 1.2 m x 0.6 m (4.0 ft x 2.0 ft.) to cover the entire space in the coconut square leaving a radius of 2.4 m (8.0 ft) from the coconut palm (Table 2).

Table 2 -Planting arrangement and density of tea in existing adult coconut plantations

Planting system	Tea at 1.0x0.6 m (3.5 x 2.0 ft)	Tea at 1.2x0.6 m (4.0 x 2 ft)
	No of plants/ha	No of plants/ha
Tea in coconut avenue	10,000 (4000 plant/ac)	8,100 (3240 plants/ac)
Tea in entire coconut square	11,500 (4600 plants/ac)	9,700 (3880 plants/ac)

4.2 Other considerations:

- (a) In order to allow movement of carts and tractors, it is advisable to leave one coconut avenue for every 5 to 6 avenues without planting tea.
- (b) In coconut plantations with irregular spacing (where coconut is planted in the contour), it may not be possible to plant tea in a systematic manner. In such lands, tea should be planted in the space available after leaving 2.4 m (8.0 ft) from the coconut palm.
- (c) All cultivation practices and aftercare for both tea and coconut should be carried out according to TRI and CRI recommendations. It is advisable to consult relevant Advisory and Extension Officers for necessary assistance.



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Director

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Jointly issued by the TRI and CRI