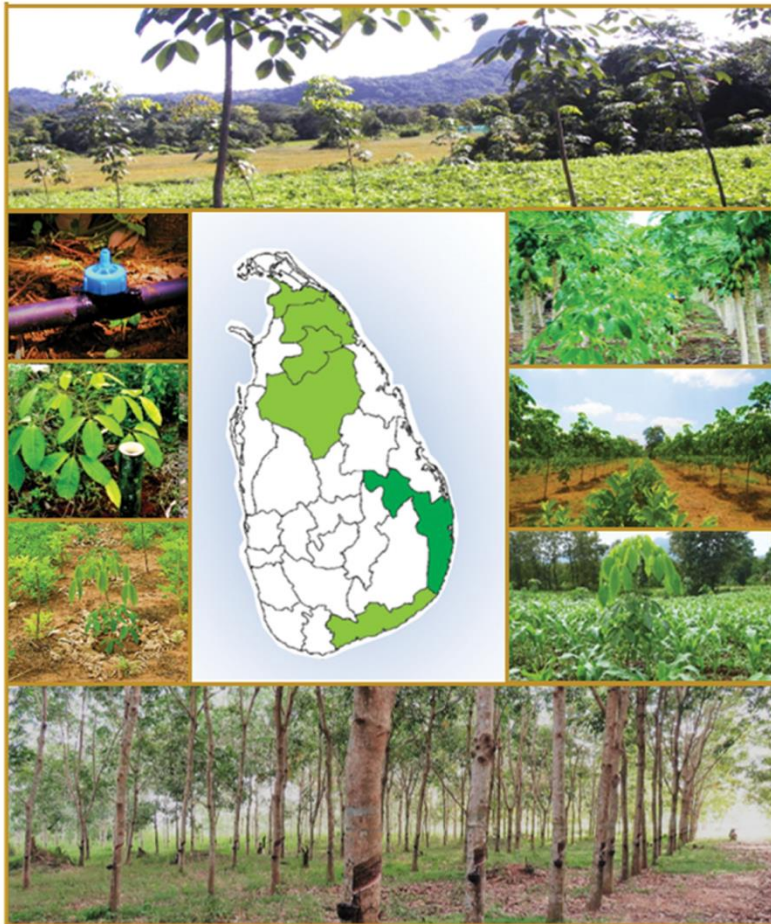


Advisory Circular No. 2021/01

# Establishment of Rubber in Dry Climates



**Rubber Research Institute  
of Sri Lanka**

## **ESTABLISHMENT OF RUBBER IN DRY CLIMATES OF SRI LANKA**

### **Identification of suitable areas**

Both Intermediate and Dry Agroclimatic Zones are generally considered as dry areas in Sri Lanka. Amongst the sixteen districts that representing drier climates, rubber cultivation has been well established in Moneragala and Badulla districts for a longer period. In the recent past, rubber cultivation has popularized over Ampara district where the majority of the area lies in the Dry Zone. At present, farmer participatory trials have been established in Vavuniya, Anuradhapura, Kilinochchi and Mullaithivu districts to assess the adaptability.

### **Identification of suitable lands**

Lands having clay loamy soils in the great soil groups of Reddish Brown Earth (RBE) and Red-Yellow Latasol (RYL) are suitable for rubber cultivation. Soils should be deep (over 1.5 m) and enriched with groundwater. Areas subjected to water-logging are not suitable. Also, soils with high quartz levels are not advisable to consider for rubber planting.

### **Identification of suitable farmers**

In selecting farmers for initial cultivation of rubber, attention should be given to those who;

- Have long-term experience in farming,
- Have innovative and risk tolerance capabilities,
- Could engage in on-time farming activities,
- Could afford long income lag immature period of rubber,
- Tend to practice intercropping with rubber.

### **Preparation of the land**

In order to facilitate intercropping, avenue planting system (2.5 m x 7.75 m) is recommended accommodating 516 trees per hectare. It is suitable to change the size of the planting hole from 0.6 m x 0.6 m x 0.75 m (what is practiced at present) to 1 m x 1 m x 1 m to facilitate the root penetration in the early establishment. The addition of organic manure to the planting hole such as dry cow dung, compost and decayed crop trash (*ca.* 5 kg) is recommended depending on the availability.

It is important to provide a proper drainage system during the rainy season and allow more water to percolate down the soil.

### **Planting materials to be used**

Since no special clones have been recommended for the drier areas, all five clones used in the smallholder sector, *i.e.* RRIC 100, RRIC 102, RRIC 121, RRISL 203 and RRISL 2001 are recommended for planting. It is necessary to use healthy polybagged plants having leaves in two whorls. As recommended, selection of only the top whorl hardened plants and tailing off the taproot 7-10 days before transporting from the nursery are mandatory.

### Crop calendar

With little rainfall received during the Yala season (South-West monsoon), planting is to be arranged in accordance with the rainfall pattern of the Maha season (North-East monsoon). However, land clearing could be started during the dry condition prevailed in March-April or in August. Lining and pegging to mark planting holes could also be done during either April-May or September. Holing needs slightly moist soil hence either June or September is suitable for this operation. Planting rubber should be undertaken with the onset of North-East monsoon during end September-mid November. Planting of intercrops/shade plants are preferred prior to the establishment of rubber.

Considering the rainfall distribution, fertilizer application in the early stages of growth has to be confined to three occasions instead of four in the traditional Wet Zone. The annual fertilizer dose is to be split into three and applied at the beginning of September/October, at the end of December and in April (Fig. 1). Due to relatively high soil pH and high temperature, urea-based fertilizer is not suitable for these areas. Instead, Sulphate of Ammonia could be used with other ingredients at the ratio of 7:9:9:3 (N:P:K:Mg).

	January	February	March	April	May	June	July	August	September	October	November	December
Land selection	■	■										
Land clearing			■	■				■				
Lining & pegging				■	■				■			
Holing						■			■			
Planting rubber									■	■	■	
Planting intercrops								■	■	■	■	■
Fertilizer application				■					■			■

**Fig. 1.** Activity chart for rubber cultivation in drier climates

Planting rubber with the polybag intact (only the bottom of the bag removed) as recommended for the Wet Zone of the country, was found to be unsuitable for these areas due to the high level of swelling and shrinkage of the soil in wet and dry periods, respectively resulting in weak contact of the roots with the adjoining soil in the ground. Therefore, total removal of the polybag at planting is recommended (Fig.2).



**Fig. 2.** Complete removal of polybag before planting

During the initial establishment period, extreme care should be taken to conserve moisture in the soil and minimize evapotranspirative losses. Rubber plants are to be provided with temporary shades at their early stage of growth either by dead plant material and/or shade plants. *Gliricidia* could be used as a good shade plant for immature rubber by planting four sticks (*ca.* 1.5 m tall) as a square, keeping a gap of *ca.* 1 m to the rubber plant (Fig. 3), in absence of an intercrop which provides partial shading (*eg.* banana, sugarcane).



**Fig. 3.** Planting *Gliricidia* to provide shade for rubber plant

Intercropping becomes a must during the immature period of rubber as it ameliorates the crop microclimate (particularly taller crops provide partial shading at early stages of rubber plants) and provides involuntary care to rubber plants with the activities of other crops (intercultivation). Intercropping is to be encouraged in view of securing the financial status of farmers during income lag immature period of rubber. Being cost-effective, growing crops like banana and maize as an intercrop with rubber would be the best option (Fig. 4).



**Fig. 4.** Intercropping during immature period

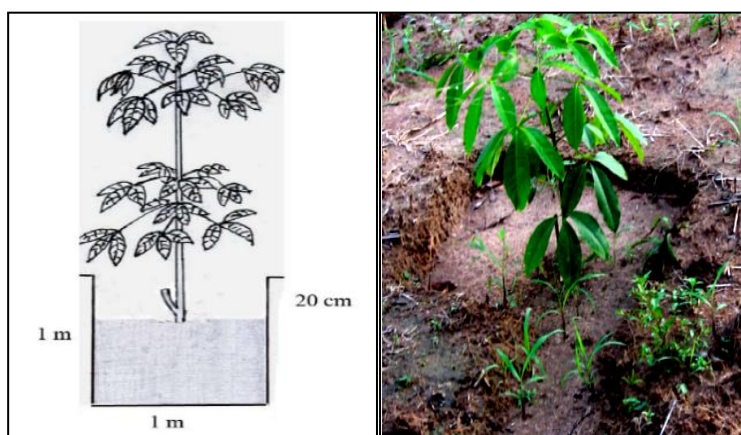
Thick mulch is to be provided around the plant base using weeded or any dead plant material obtained from intercrops. Further, the use of artificial mulches such as Power Mat developed by RRISL could also be an option. However, it is necessary to avoid any direct contact of the mulching material with the greenery stem of the plant and so, mulching is to be placed ca. 10 cm away from the plants (The heat build-up in the mulch makes heat injuries on the stem). Application of lime on the brownish area of the stem in immature rubber trees during the dry spells is also a good practice to reflect solar radiation and thereby reducing the desiccation. Mulching around the rubber plants is to be continued even during the mature phase (Fig. 5).



**Fig. 5.** Placing mulch around rubber plants

Irrigation during the dry spells of the first 3-4 years is required for proper establishment. This should be designed based on the evopotranspirative demand, water holding capacity of the soils and root penetration. In order to facilitate irrigation, a basin could be formed keeping the plant base ca. 20 cm below the usual

ground surface (Fig. 6). However, it is required to let water drain off from the basin during the rainy period.



**Fig. 6.** Forming a basin (with a drain) around the plant base

With micro/pitcher irrigation systems, the amount of water to be applied could be reduced (Fig. 7). Socker tube developed by RRISL or any other suitable irrigation technique would also be an option. Care must be taken in drip irrigation as drippers tend to be blocked frequently with calcium deposition.



**Fig. 7.** Indigenous irrigation techniques during dry spells

**Adaptive Research Unit  
Rubber Research Institute of Sri Lanka  
Dartonfield  
Agalawatta**

**September 2021**