Is Shade Necessary in the Cocoa Field?

A seventy per cent (70%) shade is absolutely necessary for newly established young cocoa plants. This should be gradually reduced to twenty five per cent (25%) shade for cocoa trees over five to seven years. Shade is needed to reduce water loss in the dry season.

In the case of fields in active production, no shade is needed if the cocoa trees are getting sufficient nutrients and water throughout the year. However, since cocoa fields are not normally irrigated in the dry season some permanent shade; approximately twenty five per cent (25%) is needed for bearing cocoa trees.

Two types of shade trees may be used in cocoa production:

1. Temporary shade
2. Permanent shade

Temporary Shade

Temporary shade trees provide shade for young cocoa plants until such time that the permanent shade trees are established (figure 1).

Temporary shade is usually provided by food crops which give the farmer an income until the cocoa trees mature and start production.

Plant temporary shade trees at least four to six months before the young cocoa trees are planted. These will provide shade for young cocoa plants. Maintain for a period of about one to five years.

Some Plants that can be used for Temporary Shading are:

Bananas, pigeon peas, papaya, cassava and plantains.

Permanent Shade

Establish permanent shade trees to form a canopy over the more mature cocoa plants. Plant these at least one year before the young cocoa trees are planted (figure 2).

Trees that are recommended for permanent shade are:

- Immortelle
- Cedar and other timber trees
- Fruit trees such as breadfruit and avocado

NOTE: Temporary shade should only be used for newly established, young cocoa plants.
Avoid use of permanent shade trees which shed their leaves in the dry season. Fallen leaves pose a fire hazard.

It is recommended that permanent shade be planted 18.3 m x 18.3 m (60 ft x 60 ft) apart.

iii. Finally line up field by placing pickets for cocoa at the selected spacing. Cocoa can be planted at 1.8 m x 1.8 m (6 ft x 6 ft) or 2.5 m x 2.5 m (8 ft x 8 ft) or 3.5 m x 3.5 m (10 ft x 10 ft). The example below shows a field lined up for cocoa at a spacing of approximately 1.8 m x 1.8 m (6 ft x 6 ft) (figure 4).

How Is Shade Established?

The method of establishing shade depends on whether the area is to be:

a) clear-felled, or
b) underplanted.

Establishment of Shade in Clear Felled Area (for total replanting)

After clearing the existing vegetation, establish new cocoa field under newly established temporary and permanent shade crops. This is a costly process.

i. Lay out beds approximately 7.5 m (24 ft) wide. Make drains between the beds.

ii. Place pickets for permanent shade in the centre of the beds 18.3 m (60 ft) apart (figure 3).
Rows should be in an East – West orientation to improve air flow

Each 7.5 m (24 ft.) bed could hold
- four (4) rows of cocoa plants at approximately 1.8 m x 1.8 m (6 ft. x 6 ft.), or
- three (3) rows of cocoa plants at 2.5 m x 2.5 m (8 ft. x 8 ft.), or
- three (3) rows of cocoa plants at 3.5 m x 3.5 m (10 ft. x 10 ft.)

iv. Temporary shade should be planted between every other row of cocoa pickets (figure 5).

Establishment of Shade for Underplanting

Underplanting involves planting of new cocoa plants under old existing cocoa trees. Plant recommended Trinidad Selected Hybrids (TSH) plants between old trees at desired spacing.

In the underplanting system, temporary shade plants may also be used to provide shade in open spaces arising from the death of permanent shade trees and old cocoa plants (figure 8).

In the underplanting system, old cocoa trees are used as temporary shade.

In areas to be underplanted some permanent shade must be removed.

Select permanent shade trees to be removed so as to leave shade at approximately 18.3 m x 18.3 m (60 ft. x 60 ft.) apart (figure 6).

Line up the field for planting of cocoa within existing 3.7 m x 3.7 m (12 ft. x 12 ft.) spaced cocoa, such that young cocoa would be planted at 0.9 m (3 ft.) on either side of old cocoa tree (figure 7).
Management of Shade

Temporary Shade

Adjust shade as cocoa trees mature. During the first year remove temporary shade to allow 50% of the total light to pass through. Progressively remove the temporary shade to allow up to about 25% shade as the cocoa trees develop and their branches overlap to form an unbroken canopy. Remove all temporary shade by the fifth year.

Permanent Shade

Some permanent shade (25%) is generally needed for bearing cocoa trees. Reduce shade in mature fields depending on the availability of water.

List of Cocoa Factsheets in this Series:

1. Production of Cocoa - Coc/TT: Ag Ext 13: 01
2. Pruning of Cocoa
3. Shade Management in Cocoa Production - Coc/TT: Ag Ext 13: 03
5. Black Pod Disease of Cocoa - Coc/TT: Ag Ext : 13 :05
6. Witches’ Broom Disease of Cocoa - Coc/TT: Ag Ext 97: 06
8. Cocoa Seedling Production - Coc/TT: Ag Ext 98: 08

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