TEA RESEARCH INSTITUTE OF SRI LANKA

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GUIDELINES FOR ESTABLISHMENT OF TEA TO FACILITATE MECHANIZATION OF FIELD OPERATIONS

Introduction

Tea is a labour-intensive plantation crop; hence, the labour requirement and cost are heavy. It has become necessary to introduce mechanization to tea plantations since the tea sector is presently facing acute worker shortage.

Mechanization in agriculture is the use of machine to accomplish a task or operation involved in agricultural production. Key objectives of mechanization are to increase worker productivity, reduce cost of production, improve product quality, ease manual operations, complete tasks timely and change worker attitudes.

Tea planting system facilitating mechanization of field operations

Mechanization of field operations requires adequate space for worker and machine mobility, dense canopy architecture and absence of obstacles such as shade trees in the path of machine operation.

The conventional system of single-row planting at a spacing of 0.6 m x 1.2 m (2 feet X 4 feet) limits the use and efficiency of machines.

The double hedge-row planting system commonly practiced in some other tea growing countries such as Japan and China paves the way for mechanizing most of the labour-intensive field operations such as harvesting successfully. Therefore, hedge-row planting system having a spacing of 0.6 m x 0.6 m x 1.5 m (2 feet X 2 feet X 5 feet: Figure 1) is considered amenable to facilitate mechanization of post-planting tea field operations in Sri Lanka.

However, the other special considerations that require greater attention are as follows;

- As considerable space of land between two hedge-rows is exposed to rain thus soil erosion, this planting system is more suitable for flat and undulating lands. Moreover, particular attention should be paid to cover such areas by mulching and planting of cover crops during early stages of establishment to minimize soil losses and weed growth.

- Due to high planting density (theoretical density is 15,370 plants per hectare which is about 14% more than the theoretical plant density of conventional system: 13,450 plants per hectare), competition for moisture during dry weather may lead to poor plant growth and drought casualties. Therefore, unfertile lands,

soils with poor moisture retention capacity and drought prone areas are best avoided in hedge-row planting unless they are provided with irrigation facilities. Furthermore, use of hardy tea cultivars with an erect-growth habit recommended for the agro-climatic regions will minimize such disadvantages.

- Rate of fertilizer application needs to be increased in par with number of plants per ha (high plant density).

- Training of the hedge-row to form a slightly curved plucking surface with the use of appropriate pruning machines will facilitate use of pruning/harvesting machines with dome-shaped blades.

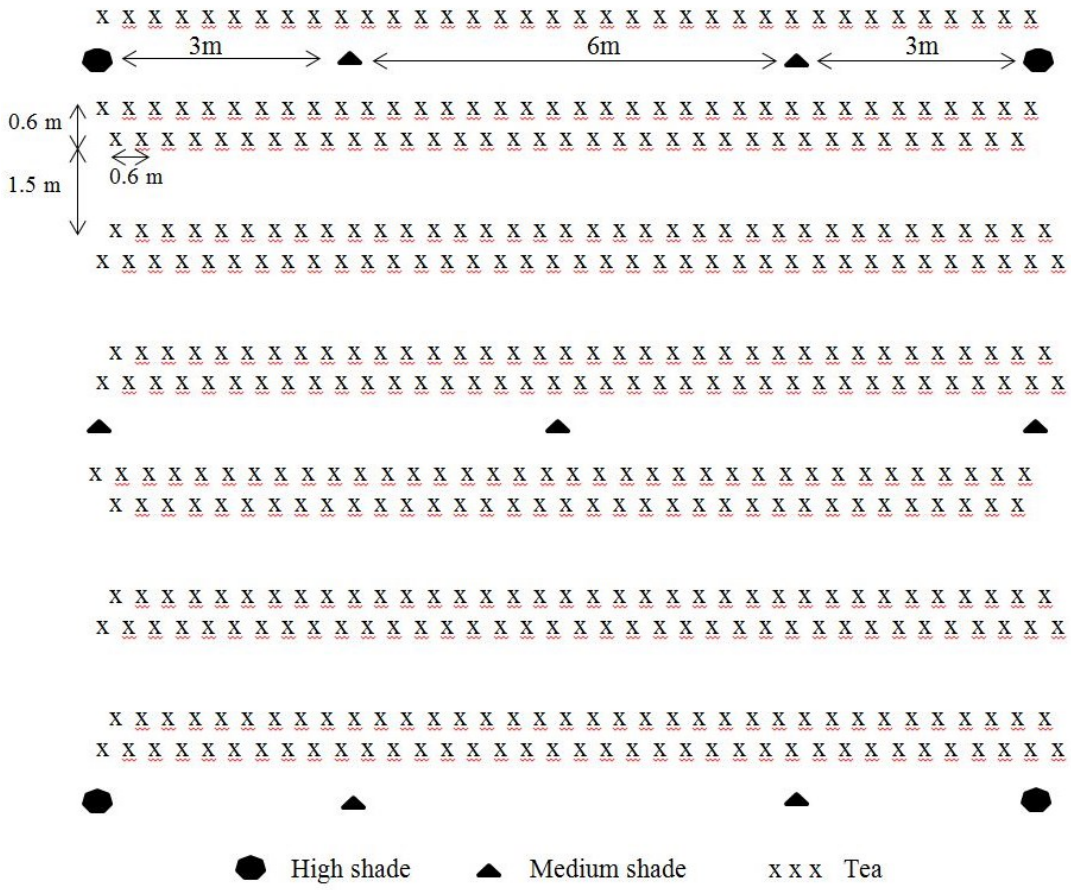

Figure 1. A schematic diagram of double hedge-row planting arrangement in the field (0.6m x 0.6m x 1.5m)

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