CHAPTER 2

Systems of cultivation and management

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2.1 INTRODUCTION

There are many different broad systems of banana cultivation and management and these depend on whether the production area is tropical or subtropical; whether the production is for export, local market or for subsistence; and whether the crop is dessert bananas or plantains (Purse-glove, 1972; Samson, 1980; Jaramillo, 1987; Stover and Simmonds, 1987; Wilson, 1987).

Tropical banana areas which produce dessert fruit for export are mainly in Central and South America, the Caribbean, West Africa and the Philippines. Most export cultivars are of the Cavendish sub-group (Musa AAA) and form the basis of world trade in bananas. However, this amounts to only about 12% of all Musa production worldwide (Stover and Simmonds, 1987). Management is often controlled by multinational companies, and the cultivation system is orientated towards very large plantations, flat topography, long plantation life, extensive technical infrastructure and high quality fruit. The main importers of this fresh fruit are the US, the European Economic Community and Japan.

In the Caribbean (Windward Islands, Jamaica, Martinique, Guadeloupe) and West Africa (Ivory Coast, Cameroon) cultivation systems are orientated towards handling smaller farms, regular replanting, topographical variations and less permanent infrastructures, but still emphasizing fruit quality for export. In the Windward Islands, banana exports represent 60% of total exports, compared with 28% in Costa Rica or Honduras (Jaramillo, 1987).

Musa (AAA) dessert bananas are also produced commercially in subtropical and Mediterranean climates, away from their centre of origin. These areas include New South Wales, Western Australia, South Queensland, South Africa, Israel, Taiwan, the Canary Islands, Egypt and...
parts of Brazil. Such localities are situated at latitudes above 20° North and South, and are characterized by wide seasonal variations in rainfall and temperature. The industries are small, being limited by the size of the local markets. Export is usually not possible due to either quality, economic or logistical reasons. However, some short-distance export does take place (e.g. Taiwan to Japan; Canary Islands to Spain). Cultivation systems are orientated towards coping with extremes of heat or cold, competitive influences on the plant and efficient supplementary irrigation. Consequently, a large proportion of the international research into *Musa* (AAA; Cavendish sub-group) production now originates from these Mediterranean and subtropical areas, and results have demonstrated a high yield potential over a very wide range of climates.

In the humid tropics, a wide variety of bananas and plantains are grown for cash cropping and for subsistence. Cultivars grown are mostly triploids and hybrids of *Musa acuminata* and *M. balbisiana*, such as AAB dessert bananas, AAB plantains, and ABB and AAA cooking bananas. In 1979, about one-third of all these types produced were the Horn-type (AAB) plantains (Stover and Simmonds, 1987). Countries growing these types as cash crops and staple foods are, among others, Nigeria, Cameroon, Ivory Coast, Brazil, Colombia, Venezuela, India, Indonesia and the Philippines. AAA cooking bananas are grown principally in the East African countries, Uganda, Rwanda, Burundi and Tanzania (Chapter 17). Cultivation systems are based on organic fertilization, replanting and rotation cropping, weed control, and intercropping combinations to increase cash flow. There is a general absence of chemical farming, or other inputs of capital and technology (Ddungu, 1987; Jaramillo, 1987; Wilson, 1987).

2.2 THE PLANTATION SITE

2.2.1 Site selection

Tropics

In the humid tropics with flat topography and uniform warm climate, site selection is mainly based on soil classification and drainage (Stover and Simmonds, 1987). The best banana soils are deep, well-drained loams with high water holding capacity, high fertility and organic matter content, and an absence of acidity or salinity (Purseglove, 1972). It is thus soil type and not climate which limits site selection in a country like Costa Rica, and new sites have to conform to certain minimum physical and chemical requirements in the soil. In Costa Rican plantations, 67% of the variance in gross production could be attributed to soil type (Veldkamp *et al.*, 1990).