CHAPTER 12

MEDICINAL PLANTS IN TROPICAL HOMEGARDENS

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Abstract. Nearly 80% of the people living in developing countries depend on medicinal plants (MPs) for primary healthcare, and homegardens are an important source of production of these plants. Homegardens can fulfill the dual role of production and in situ conservation of MPs to overcome their dwindling supplies and threat of extinction from natural sources. MPs in homegardens are either deliberately cultivated or they come up spontaneously. They are an important constituent of homegardens, next only to food crops and fruit trees; yet their economic value is not fully recognized, let alone exploited. Homegardens offer an economically and socially viable option for large-scale production of phytochemicals from important MPs under organic cultivation. Promoting organic production of selected commercially valuable species of MPs through homegardening can, thus, augment the farmers’ income, enhance rural employment opportunities, and help reduce migration of rural youth to urban centers in search of jobs. Research is needed to improve the existing germplasm, introduce suitable commercial MPs in different agroecosystems, and develop cultivation and processing techniques to increase yield and improve product quality, and exploit indigenous knowledge and market opportunities.

1. INTRODUCTION

Humans depended on certain plants for healthcare since time immemorial. Centuries of experimentation on the use of plants or products derived from them has led to the development of indigenous systems of medicine that are still respected and used in many societies. Plants have been a source of medicines for humans and livestock and pesticides to protect crops from certain pests and diseases. In India, over 200 types of vegetable drugs were in use during the Vedic period (3700 – 2000 BC). Charak Samhita (600 BC) mentioned 1270 medicinal plants (MPs), while Sushruta

Samhita (450 BC) and Vagbhatta’s Astangahridaya (342 BC) mention about 1100 and 1150 MPs, respectively (Chadha and Gupta, 1995). America, Arabia, China, Egypt, Greece, Mexico, and many other countries in Europe and Asia too recorded the use of MPs (Principe, 1991). Furthermore, about 1800 species of MPs are reported to be used in the traditional Indian medical system of Ayurveda, 750 species in Unani or Tib, 500 species in Siddha, 400 species in the Tibetan medicine and 5000 species in the Chinese medicine. Traditional medical systems in Japan, Korea (Kampo system), Indonesia (Jamu system), South Africa (Julu system), Bhutan (Gso-ba-rig-po), Sri Lanka (Deshiya Chikitsa), and Malaysia (Malay herbal medicine) also recorded a number of MPs and their uses (Principe, 1991).

An estimated 14 to 28% of the 422 000 plants occurring on earth had been used by human cultures for medicinal purposes at one time or another (Farnsworth and Soejarto, 1991). Approximately 80% of the people in developing countries rely even today mainly on traditional medicines for humans (FAO, 1996) as well as domestic animals, a major portion of which are extracts of medicinal plants or their active principles. More than 6500 species of such medicinal plants have been identified in Asia, 1900 species in tropical America and 1300 species in north-west Amazon (Farnsworth and Soejarto, 1991). Global trade in plant-based drugs was estimated at US$ 100 billion, of which traditional medicines using medicinal plants accounted for 60 billion (WHO, 2004). In addition, trade in herbal teas, drug adjuncts, dietary foods etc. (sold over the counter) was estimated at US$ 5 billion in 1997. India has approximately 150 000 practitioners of traditional systems of medicine, 10 000 licensed pharmacies manufacturing plant-based drugs. The trade in medicinal herbs in India was estimated at US$ 1 billion (EXIM Bank, 2003) and the country exports medicinal herbs worth US$ 287 million annually.

Most of the medicinal plants (70 to 90%) have traditionally been collected from forests and natural habitats. Indiscriminate extraction over years not only reduced their supplies but also endangered some of these valuable species. The growing demand for plant-derived drugs both in modern and traditional systems of medicine further exacerbated the problem in many natural habitats. This has led to the extinction of about 75 species between 1600 and 1900 and a similar number in a short span between 1900 and 1970 (Principe, 1991; Rao, 1999). It is feared that if this trend continues, about 60 000 species will become extinct in the next century (Principe, 1991). Considering the economic importance of medicinal plants, there is an urgent need to systematically cultivate them to exploit their full potential and to save them from extinction. MPs can be cultivated like any other crop(s) in different systems including agroforestry – in forest plantations, homegardens, as intercrops between trees, and as components of multistrata systems (Rao et al., 2004). This chapter reviews the status of medicinal plants in tropical homegardens and examines the scope for improving their relative contribution to the economy of rural families.

2. MEDICINAL PLANTS IN HOMEgardENS

Homegardens being one of the earliest forms of agroforestry practiced in the tropics (Kumar and Nair, 2004), it is only logical to be expected that MPs have been an essential component of these production systems (Tables 1 and 2). Indeed, the