



Production of medicinal plants in agroforestry systems

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The medicinal and aromatic plants (MAPs) are a resource highly demanded at present, since to the typical uses of the medicinal and aromatic plants (in pharmacy, herbal medicine, condiments, perfumery, alcoholic beverages) were expanded between end of 1990 and early 2000 to new ones that increasingly have a greater weight in the global estimation of the use of this type of goods. This is the case of dermocosmetics, in which plant extracts appear more frequently, or the development and commercialization of beverages and functional foods that contain bioactive compounds from medicinal plants. In addition, in recent years the demand for natural products for the care of domestic animals has been intensified. Only in the United States the market volume of this type of products was one billion dollars in 2002. The figures that are reflected in the bibliography on both the total volume of plants that move in the PAM market and the money that generates this type of products worldwide are very high. The global average of imports each year exceeds 400,000 tons of medicinal and aromatic plants. The world market is estimated at 83,000 million dollars, of which 53% would correspond to the pharmaceutical industry, 17% to dermocosmetic products, another 17% to food and the remaining 13% to dietary supplements. Annual sales of medicines based on medicinal plants are around 7.5 trillion dollars, although sales of processed medicines amount to 108 trillion dollars worldwide. Currently, 80% of the population in developing countries depends on herbal medicines to cover their health care needs. Although the percentage of

people using traditional medicines decreases in developed countries: 42% in the USA, 48% in Australia, 49% in France, 50% in Germany, the WHO estimates that in the coming decades the population data they will use Herbal medicines will be much higher in rich countries, ranging between 70-80%. The world markets for medicinal plants are mainly supplied by wild collection in natural populations. It is estimated that 70-90% of the material of medicinal plants imported into Germany is collected in the wild and only 50 to 100 species among them are currently propagated on a large scale. The cultivation of medicinal plants seems a future strategy to guarantee continuous quality supplies and to avoid the depletion of natural resources. Agroforestry systems can be a valid alternative to produce medicinal plants. In fact in some areas of the world, especially in India and China, there is a tradition of this type of integrated crop. Today they are being carried out in different areas of the world, including Europe and Spain. This type of integrated crops from several approaches: integrate shade-tolerant MAPs as species of lower strata in multi-stratified systems; cultivate short cycle MAPs as intercropping in existing stands of tree plantations and new forest plantations; cultivate medicinal trees as shade providers, limit markers and in soil conservation structures; interplant MAPs with food crops. The studies already carried out in this field indicate that they are very interesting and promising methodologies in which a short-term benefit (MAPs) and another long-term benefit (forest plant) are obtained, in addition to other environmental and social benefits.

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