

AN OVERVIEW OF SOME IMPORTANT ESSENTIAL OILS AND OTHER NATURALS

EUCALYPTUS CITRIODORA

(*Eucalyptus citriodora*)

This report on eucalyptus citriodora oil is the ninth in a series of reports being produced by the IFEAT Socio-Economic Sub-Committee on the importance of specific naturals to the livelihoods of those involved in their production. This report, along with all the previous socio-economic reports, can be found on the IFEAT website, under the tab "Publications".

INTRODUCTION

Eucalyptus citriodora is one of the top twenty essential oils by volume with total consumption of 1 000 tonnes per year. Its main application is in fragrances, especially for household products. It has a very important role in modern fragrances for its fresh citrus-floral-aldehydic note. It is also very popular in cosmetics, toiletries (bath products) and household applications (eg dishwashing products). It has strong antimicrobial properties and is used in pharmaceuticals and aromatherapy. It is very efficient for treatment of skin infections, mycosis and acne. It is also used in insect repellent formulations.

The two main producing countries of E. citriodora are Brazil and China.

E. citriodora is originally from Australia and has adapted very well in Brazil. Its main constituent is citronellal, widely used in perfume and household cleaning products.

In Brazil, *E. citriodora* oil production originated in the state of Sao Paulo. This state was the most important area for essential oil production and in the 1970s Brazil became the principal producer of *E. citriodora* oil in the world. Over the years and along with the gradual increase of production, the industries spread northwards to the states of Minas Gerais, Goias and Bahia and westwards to the state of Mato Grosso do Sul (Cury, 2001). The production volume of *E. citriodora* oil in Brazil is estimated at 580 tonnes per year from the states of São Paulo (35%), Minas Gerais (45%), Mato Grosso (15%) and Bahia (5%). This production is supported by 11,600 ha of *E. citriodora* plantations, distributed as above.

In 2015, Brazil exported about 330 tonnes of *E. citriodora* oil. Europe had the largest share (65%), followed by the USA (25%), Asia (5%) and Latin America (5%). The domestic market accounted for the

remaining oil, used mainly for manufacturing household cleaning products.

In China the main production areas are Guangxi (80%), Guangdong (15%) and Fujian (5%) (Yeung, 2005). The annual production of *E. citriodora* oil is about 200 to 300 tonnes, of which 50% is exported and 50% is used within China (Lawrence, 2009; Yeung, 2005). The growing consumption by the aroma chemicals industry in China has reduced the volume of oil available for export. This has stimulated Brazil to increase its production of *E. citriodora* oil. Moreover, the Brazilian prices are cheaper than the Chinese prices on the international market.

Both Brazilian and Chinese oils have aldehyde content from 73% to 82% depending on many factors including age. In Brazil, of the 55,000 ha planted with *E. citriodora*, about 12,000 ha are used to produce oil; another 20,000 ha are used exclusively to produce wood for furniture, 10,000 ha for the production of light poles, and 10,000 ha have been abandoned. The Brazilian forest sector is planting annually around 1,500 ha of *E. citriodora*, which could be assigned to oil production (Cury, 2001).

In China, meanwhile, *E. citriodora* trees have been cut and replaced by fruit trees and faster growing eucalyptus trees to supply pulping material for the paper industry.

PRODUCTION AND PROCESSING CHARACTERISTICS

At most distillers the oil is extracted from the leaves through the drag water vapour method at atmospheric pressure. During the dry season the highest level of citronellal and oil production volume (obtained volume x volume of raw materials) are obtained. In the case of Brazil, the dry season is from April to September and the rainy season from October to March.

After 12 months of planting, the tree becomes 2 to 4 metres high. The harvest process comes down to harvesting two-thirds of the total leaves (lower part of the plant). This process is repeated at 12-month intervals for a period of 4 to 5 years, when clearcutting of the tree is done due to the difficulty of collecting the leaves. After clearcutting, the sprouting process occurs, restarting the cycle. The distilleries are usually located within a reasonable distance of where the trees are growing and foliage from the harvesting operation is distilled either the same day or the following day (FAO, 1995).

SOCIAL AND ECONOMIC CHARACTERISTICS

In Brazil, there are at least three companies today that produce and export *E. citriodora* oil. All the others supply the domestic market and, in some cases, sell to intermediary traders who in turn export it.

In Brazil, around 11,000 families are directly involved in the production of *Eucalyptus citriodora* and they derive income of USD 8 million per year from this oil.

In China, there were around 30 distilleries and factories in 2015 and total involved labour amounted to 2,000-3,000 people.

The main producers are improving the quality, increasing the planted area, renovating the existing areas and engaging in forest management. This is being done with an aim to ensure sufficient supplies to the market and give the oil and its derivatives the characteristics of an environmentally friendly product.

The exporting distillers tend to better utilise water and the biomass remaining after the distillation. A quarter of the biomass is used as biofuel for boiler feed and three-quarters as organic fertiliser for

crops. Furthermore, the wood is harvested 4 or 5 years after planting the trees and is used for furniture, construction, sawmills, fencing and charcoal. These practices allow carbon sequestration, thus contributing to the reduction in CO₂ emissions.

CONCLUSION

E. citriodora has been used widely as a natural insect repellent. Apart from medicinal applications many other industrial applications include the cosmetics, fragrance and perfumery industries. Brazil and China are the major producing countries of *E. citriodora* essential oil for its global usage. Overall production of the essential oil is around 1,000 tonnes per year. The production of this oil has a socio-economic impact by directly supporting 12,000-13,000 families in Brazil and China.

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