

An overview of some important essential oils and other naturals

Following the reports on patchouli oil (May 2014 edition of IFEATWORLD) and cornmint (September 2014), the IFEAT Socio-Economic Sub-Committee has now finalised its report on the socio-economic impact of citronella oil production, mainly in China and Indonesia. This is the third of twelve reports which will be produced by the committee on the importance of specific naturals to the livelihoods of those involved in their production. The twelve products chosen for analysis by the committee have been picked because of their high impact on the lives of those involved in producing them and the large number of people affected.

IFEATWORLD will continue to give updates on the work of the Socio-Economic Sub-Committee, chaired by Jorge Miralles, over forthcoming months and report on the production of the other nine vital raw materials that are included in the committee's remit. This is an important study for IFEAT, as the information gathered could help to reinforce federation views in future legislative/regulatory discussions.

CITRONELLA

Cymbopogon winterianus Jowitt

INTRODUCTION

Citronella oil is classified in trade into two types – Ceylon citronella oil, obtained from *cymbopogon nardus*, and Java citronella oil, obtained from *cymbopogon winterianus*. The Java type oil is produced and traded in greater volume than the Ceylon type oil, and it is the most widely used. Thus, the Java type oil is the subject of this report.

Citronella essential oil is widely used in perfumery, cosmetic and other fragrant products to give fresh, floral, green odour with citrus notes. In oriental medicine and aromatherapy it is applied as an antiseptic (especially antifungal) and antiphlogistic ingredient, and is also used as a calming antidepressant in various preparations. In natural cosmetics citronella oil is used to soothe dermatosis, skin infections of various origin, bad skin odour and eczema. On the basis of long time experience and numerous scientific publications, citronella oil is widely used as an active ingredient in insect repellent preparations, especially against mosquitos (including dengue fever mosquito), ticks, head lice and stable flies (registered as insect repellent in USA since 1948 – EPA 021901). It is an effective natural bio-pesticide. It is also used in the flavour industry, especially in fast food products.

The two main producers of Java citronella are China and Indonesia. With a world production of around 1,800 metric tons, China annual production varies between 800 and 1,500 metric tons, and Indonesia production between 250 and 500 metric tons. (Besar, 2005; IFEAT, 2011; Lawrence, 2009; Le Li, 2009; Yeung, 2005).

In China, citronella is concentrated in remote mountain areas of southern and far western regions of Yunnan Province, particularly in Luchun County, Honghe Prefecture, Mojiang, Simao Prefecture and Yingjiang County, Dehong Prefecture. In Indonesia, citronella is

mainly grown in Java, as well as West and North Sumatra.

PRODUCTION AND PROCESSING CHARACTERISTICS

Citronella grows in clumps producing a perennial aromatic grass. The first harvest is around 6 to 8 months, thereafter every 75-90 days from April to late December. The leaves are cut to around 5 cm from the base of the plant. The plant produces a better yield between years 2 and 3 of a 4 year life span, with yields of around 10 kg per hectare. Cutting is always undertaken first thing in the morning to obtain the maximum yield or around 0.8%, this is then left to dry for 4-8 hours to remove the excess moisture before distilling (IFEAT, 2011).

The processing of the citronella takes place mainly at farm level.

SOCIAL AND ECONOMIC CHARACTERISTICS

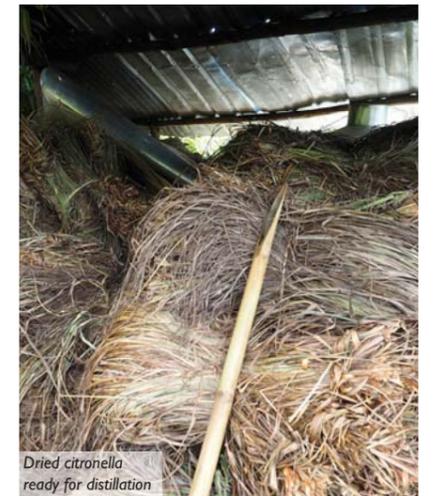
In China, the economies of the production areas are comparatively underdeveloped. Cultivation and distillation is undertaken by farmers, and the crop is an important cash income source for them. About 20-30 thousand people are engaged in the citronella business in the producing areas. The total cultivation area is about 6,600 hectares. In the past, a conflict existed between the farmers and the provincial authorities over citronella production in that fuel for the distilleries was obtained from the wild forest and this has caused serious damage to the forest ecosystem (Le Li, 2009; Ni Bo, 2005). Although there is some production reduction in China, the total supply amount remains unchanged because almost 30% of crude oil is imported from Burma and Laos through border trade.



Head loading dried citronella



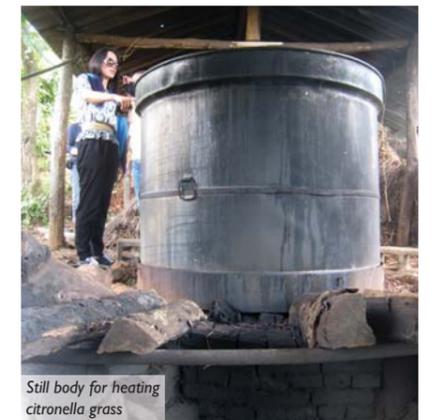
Using overhead cable to transport citronella



Dried citronella ready for distillation



Citronella steam distillation plant



Still body for heating citronella grass

In Indonesia, considering an average production of citronella per annum of 400 metric tons, it is estimated that ca. 5,000 people make a living from citronella oil. Each farmer has an average of 2 hectares of land. One ha produces around 10 metric tons of citronella grass per annum. Total grass production for an average oil production of 400 metric tons is around 20,000 metric tons, i.e. 2,000 hectares and 1,000 farmer families, each family comprising a minimum of four members. The number of farmers could be doubled if non full time citronella farmers are taken into account, thus taking the number of people involved in the citronella business up to 10,000.

CONCLUSIONS

With a wide use, not only in cosmetics and perfumery, but also as a proven active ingredient in insect repellent preparations and various medicinal purposes, citronella oil supports approximately 20 to 30 thousand people in the producing areas in China, where this crop is an important cash income source for farmers. Similarly, in Indonesia, it is estimated that the number of people involved in the citronella

business could amount to as many as 10,000, with half of them making a living from citronella oil. These figures show the economic and social importance of this oil for people in the respective countries of production.

REFERENCES

- Besar, A., 2005. Update on the essential oils industry in Indonesia. In: IFEAT International Conference 2005. Cochin, India 16 – 20 October 2005. London: IFEAT.
- IFEAT, 2011. IFEAT Indonesia Study Tour July 3 – 10 2011 Final Report. London: IFEAT.
- ISO 3848:2001/Cor.1:2002. Oil of citronella, Java type.
- ISO 4720:2009. Essential oils. Nomenclature.
- Lawrence, B. M., 2009. A Preliminary Report on the World Production of Some Selected Essential Oils and Countries. Perfumer & Flavorist, January 2009, 34, pp.38-44.
- Le Li, 2009. The Outlook for Chinese Essential Oils. In: IFEAT International Conference 2009. Shanghai, China 18 – 22 October 2009. London: IFEAT.
- Ni Bo, 2005. Trends in the Essential Oils Industry of Yunnan Province, PRC. In: IFEAT International Conference 2005. Cochin, India 16 – 20 October 2005. London: IFEAT.
- Yeung, W., 2005. An overview of trends in China's Essential Oil Industry. In: IFEAT International Conference 2005. Cochin, India 16 – 20 October 2005. London: IFEAT.

The 2014 IFEAT Study Tour visited a producer of citronella oil in the remote hills of Yunnan Province, China, close to the Burmese border. These photos were kindly supplied by Study Tour participants Peter Greenhalgh and Stephen Pisano.