Palmarosa Oil

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Product Info and Benefits to Nepal

Description

The botanical name for the source of palmarosa oil is *Cymbopogon martinii* which belongs to the grass family Poaceae (Graminae) (Prashar, Hili, Veness, & Evans, 2003) (Rajeswara Rao, Kaul, Syamasundar, & Ramesh, 2005). This grass grows fairly tall, ranging from (1.3-3 meters) in height with a pale green colour and has a strong thin stem. This crop grows slow, taking 3 months to flower; once it has flowered it can be harvested. It received the name palmarosa from the sweet-smelling floral rose aroma it gives off (Rajeswara Rao, Rajput, & Patel, 2014). It is widely used for rose smelling perfumes and cosmetics around the world (Mallavarapu, Rajeswara Rao, Kaul, Ramesh, & Bhattacharya, 1998). It is also known to help repel mosquitos and flavour tobacco products. It has been added into medicinal solutions for stiff joints, bilious complaints, skin disease and also aromatherapy (Rao et al.)

Where/how the product is grown, raised, processed

Palmarosa is wildly grown in wetlands in provinces of India, including Nepal (Guenther, 1952). The Palmarosa oil is extracted from the stem of the grass by distillation of dried leaves (Kumaran, D'Souza, Agarwal, Bokkolla, & Balasubramaniam, 2003). Once the stems and leaves have been distilled for two to three hours, to separate the oil from the palmarose, then the leftover distilled grass is turned into organic matter and becomes manure or is composted (Rajeswara Rao et al. 2014).

Growing conditions

The most efficient way to grow palmarosa is in a nursery with lots of irrigation and soil pH of 7-8 (Maheshwari, & Tandon, 1959). Two or three days before planting, it is best to overwhelm the soil with water to increase soil moisture above 60% when planting the seeds. This moisture increases the germination of the seed and increases weed control in the nursery beds as well. It is also recommended to flood the soil once a month to maintain a high moisture level in the soil. Irrigation in a nursery is most important for the first 40 days. Palmarosa grass grows well in sandy texture soil with low nitrogen, sufficient phosphorous and potassium. Weeds are a problem and keeping them out of the nursery beds will increase the yield. Manual weeding must be done often and involves a well-trained eye to uncover the weeds (Singh, A., Singh, M., & Singh, D. 1997). Also, palmarosa is often intercropped to help suppress the weeds, thus increasing yields and the land efficiency. Mostly farmers intercrop with pigeon pea, also millet and sorghum work well with row or strip intercropping because palmarosa can be harvested three to four times a year (Maheshwari, & Tandon, 1959) (Rajeswara Rao et al. 2014).

Labour cost and issues

It is mainly used in the perfumery industry not just for the pleasant smell but also as a source of high-grade geranial (Prashar et al., 2003). The geranial level received from the palmarosa oil is not always the same -- it depends on three factors: first being how the diphosphate is removed from the geranyl diphosphate (GPP); second the process of converting geranial into the form of geranyl acetate; and lastly the process of converting geranyl acetate into the geranial. If these steps are done

incorrectly the level of geranial will be low along with the profits (Dubey, Bhalla, & Luthra, 2003).

Inputs required

A nursery is needed or there will be poor growth yields, that may not bring any profit to the farmer and potentially the farmer could have an economical loss. This requirement increases the startup cost for farmers which some farmers are unable to pay (Maheshwari, & Tandon, 1959). If not grown in a nursery this will increase the weeding labour inputs by over 70% and decrease the yield. Farmers will be spending more time weeding the plots and will receive a smaller return then if they had a nursery (Singh et al. 1997).

Health or nutritional informant

Palmarosa oil is also known as an antifungal that fights against *Aspergillus niger*, commonly known as black mold, *Chaetomium globosum* also known as moldy soil and *Penicillium funiculosum*, which is a plant pathogen (Prashar et al., 2003).

Export Potential

Evaluate the market opportunity

Canada does import some of our palmarosa oil from India but the United States of America is the biggest importer from India. The U.S.A imports over 50% of India's exports while Canada only imports 3%. Most of the palmarosa oil imported into Canada is used in perfumes and cosmetics. There are many more uses, and Canada could expand its use for the oil and import more (Analysis of Exports of Palmarosa

Oil Export graph). India also exports large quantities to Egypt and Red Sea ports mainly just for cosmetics in perfumery (Maheshwari, & Tandon, 1959).

Canadian government or international loan/grants programs to get the project started

Government grants or programs should be put into place to help the financial stress to farmers wanting to build nurseries. This will allow the startup cost to not be so extreme and more farmers will be able to afford to start a palmarosa grass farm. Assisting farmers with start up costs through grants will allow for increased exports and boost the local economy with employment opportunities.

Future studies required to properly evaluating the export potential

More research is needed on farming palmarosa oil. With future studies, the yield can be increased, weed control can be suppressed and many other uses of the oil can be established. Palmarosa oil is even in studies on the preventive of colon cancer. The geraniol that comes from palmarosa, has been stated that it can restrict DNA synthesis and decreases the size of tumors in the colon (Singh, A., Singh, M., & Singh, K. 1998). Also geraniol and palmarosa oil have been demonstrated to help reverse the fungus infection established during the last stages of AIDS. The fungus is called *Cryptococcus neoformans* and is enclosed yeast that can live in animals and plants (Prashar et al., 2003). Continued research will allow us to learn more about other uses of palmarosa oil therefore, increasing demand, employment opportunities and export markets.

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