IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

COMMERCIAL CULTIVATION AND COLLECTION ASPECTS AND USES OF TULSI (Ocimum sanctum) PLANT.

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Abstract : Tulsi (Ocimum sanctum) is cultivated commercially for a variety of uses.The cultivation techniques, harvesting procedures, and possible financial advantages of tulsi are examined in this abstract.It explores the ideal growth conditions, agro-ecological needs, and the effects of environmental factors on the yield of Tulsi.The abstract also emphasizes Tulsi's importance in a number of industries, including as herbal products, cosmetics, and medicines, and how it can help rural communities become more economically empowered.The maintenance of the plant's ecological balance and medicinal qualities while satisfying the growing market for herbal goods depends on the sustainable management of tulsi production.
Cultivation of tulsi plants has both spiritual and practical significance that connects the grower to the creative powers of nature, and organic cultivation offers solutions for food security, rural poverty, hunger, environmental degradation and climate change. The use of tulsi in daily rituals is a testament to Ayurvedic wisdom and provides an example of ancient knowledge offering solutions to modern problems.
Of all the herbs used within Ayurveda, tulsi (Ocimum sanctum Linn) is preeminent, and scientific research is now confirming its beneficial effects. There is mounting evidence that tulsi can address physical, chemical, metabolic and psychological stress through a unique combination of pharmacological actions. Tulsi has also been shown to counter metabolic stress through normalization of blood glucose, blood pressure and lipid levels, and psychological stress through positive effects on memory and cognitive function and through its anxiolytic and antidepressant properties. Tulsi's broad-spectrum antimicrobial activity, which includes activity against a range of human and animal pathogens, suggests it can be used as a hand sanitizer, mouthwash and water purifier as well as in animal rearing, wound healing, the preservation of food stuffs and herbal raw materials and traveler's health.

IndexTerms **-Ayurveda, holy basil, lifestyle, Ocimum sanctum, stress, tulsi.**

INTRODUCTION

Commercial cultivation and collection of Tulsi (Ocimum sanctum), commonly known as Holy Basil, present a promising venture with multifaceted applications.Tulsi is an aromatic shrub in the basil family Lamiaceae (tribe ocimeae) that is thought to have originated in north central India and now grows native throughout the eastern world tropics.Within Ayurveda, tulsi is known as “The Incomparable One,” “Mother Medicine of Nature” and “The Queen of Herbs,” and is revered as an “elixir of life” that is without equal for both its medicinal and spiritual properties. Within India, tulsi has been adopted into spiritual rituals and lifestyle practices that provide a vast array of health benefits that are just beginning to be confirmed by modern science. This emerging science on tulsi, which reinforces ancient Ayurvedic wisdom, suggests that tulsi is a tonic for the body, mind and spirit that offers solutions to many modern day health problems.
Tulsi is perhaps one of the best examples of Ayurveda's holistic lifestyle approach to health. Tulsi tastes hot and bitter and is said to penetrate the deep tissues, dry tissue secretions and normalize kapha and vata. Daily consumption of tulsi is said to prevent disease, promote general health, wellbeing and longevity and assist in dealing with the stresses of daily life. Tulsi is also credited with giving luster to the complexion, sweetness to the voice and fostering beauty, intelligence, stamina and a calm emotional disposition. In addition to these health-promoting properties, tulsi is recommended as a treatment for a range of conditions including anxiety, cough, asthma, diarrhea, fever, dysentery, arthritis, eye diseases, otalgia, indigestion, hiccups, vomiting, gastric, cardiac and genitourinary disorders, back pain, skin diseases, ringworm, insect, snake and scorpion bites and malaria.
The medicinal properties of tulsi have been studied in hundreds of scientific studies including in vitro, animal and human experiments.

TULSI

Origin: Tulsi, or Holy Basil, originates from India and holds significant cultural and religious importance in Hinduism. It has been cultivated in India for over 3,000 years and is revered for its medicinal properties. The plant has spread to other tropical regions and is recognized for its aromatic leaves and uses in traditional medicine.
Botanical Characteristics: An overview of the botanical features of Tulsi, including its various species and cultivars, serves as the foundation. Understanding the plant's growth habits, leaf morphology, and adaptability to different soil and climate conditions is crucial for successful cultivation.
Distribution: Tulsi, originating in India, has a widespread distribution in tropical and subtropical regions, including Southeast Asia, Central Asia, and parts of Africa. It is cultivated for its cultural, religious, and medicinal significance, often found near Hindu temples and households.
Phenology: Tulsi, or Holy Basil, follows a distinct phenology. It typically begins germinating during the monsoon season, grows through the rainy season, and starts flowering as the weather transitions to a drier period. Flowering is a crucial phase, as the concentration of bioactive compounds often peaks during this stage. Harvesting is commonly done after flowering when the plant reaches maturity.

Cultivation Prospects:
Agro-climatic Requirements: Tulsi exhibits versatility in adapting to diverse agro-climatic zones. This section discusses the optimal conditions for cultivation, addressing factors such as temperature, rainfall, sunlight, and soil composition. Insights into geographic variations and their impact on Tulsi's growth patterns are also explored.
Tulsi (Holy Basil) thrives in warm tropical climates. It prefers temperatures between 20-30°C, well-suited for regions with a distinct dry and wet season.
Climate & Soil Requirements: Tulsi grows well in well-drained loamy soil with a slightly acidic to neutral pH (6-7). It requires good sunlight exposure and is sensitive to frost.
Propagation: Commonly propagated through seeds, tulsi can also be grown from cuttings. Sow seeds directly in the field or in seedbeds during the appropriate season.
Manures & Fertilizers: Organic manures like compost and well-rotted cow dung are beneficial. Nitrogen-rich fertilizers can be applied in moderate amounts during the vegetative phase.
Irrigation: Tulsi requires regular watering, especially during dry spells. However, waterlogging should be avoided. Drip irrigation is often preferred.
Maturity & Harvesting: Tulsi is generally ready for harvest in about 75-90 days from sowing. Harvest when the plants are in full bloom but before flowering, as this is when the essential oil content is highest.
Yield: Yield varies based on factors like variety, soil, and climate. On average, one can expect 10-15 tons of fresh leaves per hectare.

Cultivation Techniques: Detailed information on cultivation techniques, including seed selection, sowing methods, spacing, and irrigation practices, is provided. The incorporation of organic farming practices and innovative technologies for enhancing yield and quality is emphasized.
Sustainable Harvesting Methods: Examining sustainable harvesting practices is pivotal to maintaining Tulsi's ecological balance. The paper explores strategies to avoid over-exploitation, ensuring continuous availability and ecological conservation. Harvesting at the right growth stage and selective pruning techniques are discussed.

Post-harvest Processing: The quality of Tulsi products depends on post-harvest processing. This section evaluates drying methods, storage conditions, and value-added processing techniques to preserve the medicinal compounds present in Tulsi leaves.
Post-Harvest Handling: Harvested leaves should be dried in shade to retain essential oils. Proper ventilation is crucial to prevent mold formation. Store in airtight containers.

Preparation for the Market: Tulsi leaves can be processed into various forms such as dried leaves, essential oil, or powder. Proper packaging and labeling are essential for market readiness.
Economic Importance and Challenges: An analysis of the economic significance of Tulsi cultivation in various regions is presented. Additionally, challenges such as pests, diseases, market fluctuations, and regulatory constraints are addressed, offering insights into potential solutions.

USES:

Tulsi is an aromatic medicinal plant that is often taken in combination with other herbs. The fragrant leaves and flowers, in the form of tincture, tea or decoction are considered to be stomachic and expectorant, used in treating coughs, bronchitis, skin diseases, and diarrhea. These preparations are considered to be prophylactic against epidemics including cholera, influenza and malaria. The tulsi seeds, taken mixed in water, juice or cow's milk, are antioxidant, nourishing, mucilaginous and demulcent.

They are used in treating low energy, ulcers, vomiting and diarrhea or as an overall tonic. The powder of the dried root, taken in milk, ghee or as a decoction, is recommended to treat malarial fever as an analgesic application to the bites and string of insects and also to increase sexual stamina and prevent premature ejaculation. The herb improves resistance to stress and has a normalizing influence on blood pressure and blood sugar imbalances. Tulsi is likely to prove prophylactic against the negative effects of environmental toxins, including cancer. The plant is also richly endowed with bioavailable antioxidants, vitamins A and C and calcium. It has marked insecticidal activity against mosquitoes.

CONCLUSION:

This comprehensive review consolidates key aspects of Tulsi cultivation and collection, providing a valuable resource for farmers, researchers, and policymakers. The synthesis of knowledge in this paper aims to contribute to sustainable practices, promoting the continued growth and utilization of the Tulsi plant in commercial settings.

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