



Lemon Grass (*Cymbopogon, L spreng*) Valuable Grass But Underutilized In Northern Nigeria

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ABSTRACT

Cymbopogon, better known as lemongrass, is a genus of Asian, African, Australian, and tropical island plants in the grass family. Some species are commonly cultivated as culinary and medicinal herbs because of their scent, resembling that of lemons. Common names include lemon grass, barbed wire grass, silky heads, citronella grass, cha de Dartigalongue, fever grass, tanglad, serai, hierba Luisa, or gavati chahapati. Lemongrass is a plant. The leaves and the oil are used to make medicine. Lemongrass is commonly taken orally, applied directly to the skin, or inhaled as aromatherapy for many different conditions and used in different parts of the world. Citronella is usually planted in home gardens to ward off insects such as whitefly adults. Its cultivation enables growing some vegetables (e.g. tomatoes and broccoli) without applying pesticides. Intercropping should include physical barriers, for citronella roots can take over the field. It is commonly used in teas, soups, and curries. It is also suitable for use with poultry, fish, beef, and seafood. It is often used as a tea in African countries such as Togo, South Eastern Ghana, Tanzania and the Democratic Republic of the Congo. Research also shows that lemongrass oil has antifungal properties. Despite its ability to repel some insects, such as mosquitoes, its oil is also commonly used as a "lure" to attract honey bees. To freeze lemongrass, the thinly sliced pieces are stored in single layers in zipper-seal bags. To use it again, it can be broken off as much as one need for individual dishes. Or, the frozen lemongrass be minced or used as a purée. The leaves are used to make a great addition to marinades and can be steeped in hot water for tea. After use, the leaves can be added to compost pile or pureed to be scatter in the grass along the edges of a patio or deck to help deter insects. Lemongrass is also used as an addition to tea, and in preparations such as *kadha*, which is a traditional herbal brew used in Ayurvedic medicine. Apart from the uses enumerated above there are also some surprising benefits of lemongrass, which goes thus: The health benefits of lemongrass are numerous and include relief from insomnia, stomach disorders, respiratory disorders, fever, pain, swelling, and infections. The antioxidant activity of the lemongrass herb maintains the immune system and protects against antibiotic-resistant *Staphylococcus aureus*. It even helps in maintaining optimum cholesterol levels, managing type 2 diabetes, and promoting healthy skin. It is extensively used in aromatherapy and helps combat fatigue, anxiety, and body odor. With all these benefits and uses found in lemon grass little attention is given to the grass to derived benefit and uses to humans in terms of protection and healthy living in the northern part of Nigeria. It is also recommended that, more research be conducted on the growth, multiplication, storage, curative and medicinal values of the plant so as to benefit humans, animals and the ecosystem.

Keywords: Lemongrass, Gardens, Insects, immune system.

INTRODUCTION

Cymbopogon, better known as lemongrass, is a genus of Asian, African, Australian, and tropical island plants in the grass family. Some species are commonly cultivated as culinary and medicinal herbs because of their scent, resembling that of lemons. Common names include lemon grass, barbed wire grass, silky heads, citronella grass, cha de Dartigalongue, fever grass, tanglad, serai, hierba Luisa, or gavati chahapati.

East Indian lemongrass (*Cymbopogon flexuosus*), also called Cochin grass or Malabar grass, is native to Cambodia, Vietnam, Laos, India, Sri Lanka, Burma, and Thailand, while West Indian lemongrass (*Cymbopogon citratus*) is native to South Asia and maritime Southeast Asia. While both can be used interchangeably, *C. citratus* is more suitable for cooking. In India, *C. citratus* is used both as a medical herb and in perfumes. *C. citratus* is consumed as a tea for anxiety in Brazilian folk medicine, Blanco M.M *et al* (1992), but a study in humans found no effect as reported by Leite JR; *et al* (1986). The tea caused a recurrence of contact dermatitis in one case, as also reported by the findings of Bleasel, N; *et al* (2002).

Morphology: Each plant can grow to between 30cm and up to 1.5m high if grown outside. But it will be somewhat smaller if one have to keep it inside. But, Citronella grass (*Cymbopogon nardus* and *Cymbopogon winterianus*) grow to about 2m and have magenta-colored base stems. These species are mostly used for the production of citronella oil, which is used in soaps, as an insect repellent (especially mosquitoes) in insect sprays and candles, and in aromatherapy. The principal chemical constituents of citronella, geraniol and citronellol, are antiseptics, hence their use in household disinfectants and soaps. Besides oil production, citronella grass is also used for culinary purposes, as a flavoring. There are 2 kinds of lemongrass: East Indian and West Indian but there is little difference between them in terms of culinary use and growing.

Lemongrass is planted in a large pot that is at least 30cm across, or use a 5-gallon bucket. One should be sure to use a premium quality potting soil when growing lemongrass. As lemongrass grows tall, and pots can easily tip in windy weather, so placing containers in a slightly protected location is mostly recommended.

Uses: Lemongrass is a plant. The leaves and the oil are used to make medicine. Lemongrass is commonly taken orally, applied directly to the skin, or inhaled as aromatherapy for many different conditions and used in different parts of the world. Citronella is usually planted in home gardens to ward off insects such as whitefly adults. Its cultivation enables growing some vegetables (e.g. tomatoes and broccoli) without applying pesticides. Intercropping should include physical barriers, for citronella roots can take over the field, Takequma Massahiru, 2019.

Lemongrass is best known for its use in Asian cuisine, especially Thai and Vietnamese and also a medicinal herb in India. It has a subtle citrus flavor and can be dried and powdered, or used fresh. It is commonly used in teas, soups, and curries. It is also suitable for use with poultry, fish, beef, and seafood. It is often used as a tea in African countries such as Togo, South Eastern Ghana, Tanzania and the Democratic Republic of the Congo and Latin American Countries such as Mexico.

Lemongrass oil is also used as a pesticide and a preservatives. Research shows that lemongrass oil has antifungal properties as reported by Shadab *et al* 1992. Despite its ability to repel some insects, such as mosquitoes, its oil is also commonly used as a "lure" to attract honey bees. Lemongrass works conveniently as well as the pheromone created by the honeybee's Nasonov gland, also known as attractant pheromones. Because of this, lemongrass oil can be used as a lure when trapping swarms or attempting to draw the attention of hived bees; Wikibooks on beekeeping guide to essential oils, 2019.

In the kitchen, the tender inner stalk bases are also used in stir fries, salads, and sauces. To freeze lemongrass, the thinly sliced pieces are stored in single layers in zipper-seal bags. To use it again, it can be broken off as much as one need for individual dishes. Or, the frozen lemongrass be minced or used as a purée.

The leaves are used to make a great addition to marinades and can be steeped in hot water for tea. After use, the leaves can be added to compost pile or pureed to be scatter in the grass along the edges of a patio or deck to help deter insects. To dry the leaves, it can be bundled and hanged upside down in a dark place until dry. It can also be stored in tightly sealed jars. Dried lemongrass can retain its flavor from six months and up to one year. Lemongrass is also used as an addition to tea, and in preparations such as *kadha*, which is a traditional herbal brew used in Ayurvedic medicine.

Surprising Benefits of Lemongrass: Apart from the uses enumerated above there are also some surprising benefits of lemongrass, which goes thus: The health benefits of lemongrass are numerous and include relief from insomnia, stomach disorders, respiratory disorders, fever, pain, swelling, and infections. The antioxidant activity of the lemongrass herb maintains the immune system and protects

against antibiotic-resistant *Staphylococcus aureus*. It even helps in maintaining optimum cholesterol levels, managing type 2 diabetes, and promoting healthy skin. It is extensively used in aromatherapy and helps combat fatigue, anxiety, and body odor.

Lemongrass – An Aromatic Healer: *Cymbopogon citratus*, also known as lemongrass, is an herb which belongs to the grass family of Poaceae. It is utilized for its distinct lemon flavor and citrusy aroma. It is a tall, perennial grass native to India and tropical regions of Asia. It is a rough and tufted plant with linear leaves that grow in thick bunches. They emerge from a strong base and stand about 3 meters high with a meter-wide stretch.

In addition to its culinary usage, this herb offers an array of medicinal benefits and is in extensive demand due to its anti-bacterial, anti-fungal and anti-microbial properties across Southeast Asia, Africa and America.

The genus *Cymbopogon* comprises 55 species of grasses, two of which are referred to as lemongrass, Soenarko S. 1977; Flora of China. These are *Cymbopogon citratus*, which is famously preferred for culinary use and *Cymbopogon flexuosus*, used in the manufacturing of fragrances because of its extended shelf life, owing to the low amount of myrcene in that variety.

Lemongrass contains antioxidants, flavonoids and phenolic compounds such as luteolin, glycosides, quercetin, kaempferol, elemicin, catechol, chlorogenic acid, and caffeic acid, which help in providing an impressive range of medicinal aids. The main component of this fragrant herb is lemonal or citral, which has antifungal and anti-microbial qualities.

Lemongrass is an aromatic storehouse of essential nutrients providing an array of health benefits. The USDA National Nutrient Database 2011 shows that, it is a source of essential vitamins and minerals such as vitamin A, B-vitamins, folate, and vitamin C, potassium, magnesium, phosphorous, manganese, zinc, and iron, which are required for the healthy body function

Health Benefits of Lemongrass: These are some of the most well-known health benefits of lemongrass:

Lowers Cholesterol: Research published in 2011 in Food and Chemical Toxicology journal revealed that lemongrass possesses anti-hyperlipidemic and anti-hypercholesterolemic properties that support healthy cholesterol levels. One animal study has also shown that regular consumption may assist in sustaining healthy levels of triglycerides and reducing LDL or bad cholesterol. This may help in preventing the accumulation of lipids in the blood vessels and promoting an unobstructed flow of blood in the arteries, thereby preventing various cardiac disorders, such as atherosclerosis.

Detoxifies the Body: According to a 2003 animal study, lemongrass may help in cleansing and flushing harmful toxic wastes from the body, as a result of its diuretic properties. Detoxification helps in the regulation of various organs of the body, including the liver and kidneys, while also helping to lower the levels of uric acid. The diuretic effect of the herb helps in increasing the quantity and frequency of urination, which helps in maintaining digestive health and detoxifying the body.

Anticancer Potential: Lemongrass may be effective in preventing the growth of cancer cells without affecting the healthy cells of the body. Research conducted to assess the anticancer activity of lemongrass has shown promising outcomes in the prevention of skin cancer. This is mainly because of the presence of a chemical compound called citral.

Research conducted on the effects of citral on cancer cells shows its efficacy in inhibiting the growth of hepatic cancer cells during the initial phase and prevents further growth of cancerous cells. Another study provides supporting evidence regarding the anti-proliferative effect of citral in impeding the growth of human breast cancer cells and the induction of apoptosis (programmed cell death).

Fights Staphylococcus aureus: Research published in the Journal of Applied Microbiology has shown that lemongrass essential oil has an anti-biofilm capacity and is beneficial against the infection caused by *Staphylococcus aureus*. It contains phenols and essential oil, which may disrupt the growth of infections and germs and help inhibit the formation of the biofilms.

Stomach Disorders: Studies have shown that lemongrass essential oil has anti-microbial and anti-bacterial properties which help in fighting the infections caused by various pathogens such as *Helicobacter pylori* and *Escherichia coli*.

It is beneficial in assuaging gastrointestinal disorders and reducing inflammation; it may be helpful to consume to improve digestion and if you suffer from gastric ulcers, constipation, ulcerative colitis, diarrhea, nausea and stomach aches

Relieves Insomnia: Lemongrass tea is considered to be helpful in calming muscles and nerves that may aid in promoting sleep. Research has shown that its herbal tea has sedative and hypnotic properties, which can help in increasing the duration of sleep.

Respiratory Disorders: Lemongrass is widely used in Ayurvedic medicine for its healing effects in treating cough and cold. Along with other beneficial components, the vitamin C content present in it may help in providing relief from nasal blockages, flu and other respiratory disorders such as bronchial asthma.

Reduces Fever: Lemongrass is a febrifuge also known as the 'fever grass', due to its beneficial effects in lowering fever. The antipyretic and diaphoretic effect is extensively used in Ayurvedic medicine for curing fevers by inducing sweating.

Helps Treat Infections: Lemongrass works as an antiseptic and is effective in treating infections such as ringworm, sores, Athlete's Foot, scabies, and urinary tract infections (UTI) because of its antimicrobial and anti-fungal properties. Studies have shown that the herb exerts healing effects on dermatological infections, such as yeast infections, by inhibiting the growth of pathogens. Another study provides supporting evidence that demonstrated the efficacy of lemongrass over thyme, patchouli, and cedarwood oil in the treatment of various diseases such as oral or vaginal candidiasis.

Reduces Aches: Lemongrass may alleviate the pain and discomfort caused by headaches and migraines due to its analgesic properties. The phytonutrients present in it improve blood circulation and help in relieving spasms, muscle cramps, sprains, and backaches. It is also valuable in treating sports wounds, including dislocations, internal injuries, and bruises.

Nervous System: Lemongrass is nervine and is considered to be a tonic for the nervous system. It stimulates the mind and helps in combating convulsions, nervousness, vertigo, and various neuronal disorders. It is used in therapeutic baths, which assist in calming the nerves and alleviating the symptoms of anxiety and fatigue caused by stress.

Type-2 Diabetes: Lemongrass has been shown to have beneficial implications for managing type-2 diabetes. An animal study indicates that the citral present in lemongrass may help maintain optimum levels of insulin and improve the tolerance of glucose in the body. However, more research needs to be conducted on a human population to truly understanding the effects.

Relieves Pain and Inflammation: Lemongrass is effective in relieving the pain and discomfort caused by rheumatism. It can be applied topically on both lumbago and sprains and helps in relieving neuralgia.

Boosts Immunity: Lemongrass extracts have a beneficial effect on the inflammatory actions of cytokines, which are the signaling molecules through which the cells communicate and respond to the body. Studies have shown that lemongrass exerts anti-inflammatory action and its constituent, citral, may be the cause of its inhibitory effect on cytokine production.

Skin Care: Lemongrass has been treasured as a skin tonic and makes an effective cleanser for oily or acne-prone skin, due to its astringent and antiseptic qualities. It helps in strengthening the skin tissues and toning up the pores while also sterilizing them. Care should be taken while using lemongrass products, as the undiluted application might lead to dermal irritation in some cases.

Cellular Health: Lemongrass possesses antioxidant qualities and helps in protecting the body cells from oxygen-derived free radicals.

Antioxidant power can help with the regeneration of new cells and with discarding of the old. The folate and potassium content in the stem and leaves of lemongrass aids in DNA synthesis and promotes cell division.

Relief from Edema: Lemongrass is effective in providing relief from the condition of water retention or edema. It has a cleansing effect on lymphatic congestion and helps soothe the swelling.

Aromatherapy: Lemongrass consists of beneficial ingredients, most notably essential oils such as neroli, citronellol, myrcene, dipentene, geraniol, and methyl heptenone. These possess antifungal, insecticidal,

and antiseptic properties. Lemongrass oil is extensively used in aromatherapy due to its therapeutic effects, which help in revitalizing the body.

The cooling effect of lemongrass oil is beneficial for the body during hot weather and promotes the revival of both the mind and soul. This oil possesses natural astringent and toning qualities that help stimulate blood circulation and tone up the dermal tissues. It is also thought to help in tightening, uplifting and firming sagging skin.

Reduces Obesity: Lemongrass contains citral, which has been shown to be effective against obesity. It lessens the accumulation of abdominal fat and promotes the use of stored energy, which helps in preventing diet-induced weight gain. It aids in healthy metabolism and enhances the oxidation of fatty acids in the body.

Eliminates Body Odor: Lemongrass is used in the manufacturing of deodorants due to its cleansing and antibacterial properties. Deodorants help combat unpleasant body-odor and prevent fungal and bacterial infections. It can also be added to footbaths for sanitizing sore and odorous feet.

Insect Repellent: Lemongrass is used as a natural insect repellent and helps in preventing the occurrence of insect-borne diseases such as malaria, dengue, and possibly Lyme disease. Studies have provided supporting evidence regarding the anti-malarial and anti-protozoan properties of lemongrass, which makes its oil an effective ingredient in mosquito repellents.

Culinary Use: Apart from folk medicines, lemongrass is commonly used in Asian cuisines, especially those of Vietnam, Thailand, and Malaysia. It is used for adding flavor to beverages such as teas, curries, and soups. It is also found extensively in the preparation of pudding, meat products, candies, and baked goods.

Other Uses includes:

- i. the manufacturing of perfumes, deodorants, polishes, candles, and waxes. It is also used to add fragrance to soaps and cosmetic products and
- ii. to lure and attract honey bees for various commercial purposes;

Some hydrophobic properties of lemongrass is for preserving ancient palm leaf manuscripts which protects them from the damage caused by microorganisms. It also strengthens the leaves by providing the required moisture to the fragile palm leaves without letting the humidity cause any loss to the stored text. This protective effect is attributed to the hydrophobic properties of lemongrass oil.

Pet Products are also not left out, lemongrass is used in the manufacturing of shampoos and grooming products for pets due to its repellent effects on lice and ticks.

Side Effects: Although considered safe, the topical use of lemongrass oil or the ingestion of herbal tea can result in allergic reactions in some people.

Undiluted or concentrated lemongrass oil should not be applied directly on the body as it may result in harmful reactions to some people. It is always advisable to keep the pure essential oil out of the reach of children.

It is also strongly recommended to consult a health professional before considering lemongrass oil for therapeutic usage. This is especially true during pregnancy, when trying to conceive, breastfeeding, and during the course of any ongoing medical treatments and consultations.

The herb has galactagogue properties, which promote the formation of milk in breasts. It is also effective in stimulating menstrual flow and helps in soothing menstrual cramps and discomfort. It helps relieve the swelling and conditions of varicosity.

Nutrition Facts.

Amount per Calories 62g.	%Daily Value*
Total Fat0.1 g	0%
Cholesterol0	0%
Sodium0 mg	0%
Potassium35 mg	1%
Total Carbohydrate1 g	0%
Protein0.1 g	0%
Vitamin A	0%
Calcium	0%
Vitamin D	0%
Vitamin B-12	0%
Vitamin C	0%
Iron	0%
Vitamin B-6	0%
Magnesium	0%

Calories5%	Daily Value*
	0%
Saturated fat0 g	0%
Polyunsaturated fat0 g	
Monounsaturated fat0 g	
Trans fat0 g	
Cholesterol0 mg	0%
Sodium0 mg	0%
Potassium35 mg	1%
Total Carbohydrate1 g	0%
Protein0.1 g	0%
Vitamin A	0%
Calcium	0%
Vitamin D	0%

Vitamin B-12	0%
Vitamin C	0%
Iron	2%
Vitamin B-6	0%
Magnesium	1%

Calories66

%Daily Value*

Total Fat0.3 g	0%
Saturated fat0.1 g	0%
Polyunsaturated fat0.1 g	
Monounsaturated fat0 g	
Trans fat0 g	
Cholesterol0 mg	0%
Sodium4 mg	0%
Potassium484 mg	14%
Total Carbohydrate17 g	6%
Protein1.2 g	2%
Vitamin A	0%
Calcium	4%
Vitamin D	0%
Vitamin B-12	0%
Vitamin C	3%
Iron	31%
Vitamin B-6	5%
Magnesium	10%
Calories99	

Total Fat 0.5g

%Daily Value*

	1%
Saturated fat0.1 g	0%
Polyunsaturated fat0.2 g	

Monounsaturated fat	0.1 g	
Trans fat	0 g	
Cholesterol	0 mg	0%
Sodium	6 mg	0%
Potassium	723 mg	21%
Total Carbohydrate	25 g	8%
Protein	1.8 g	4%
Vitamin A		0%
Calcium		6%
Vitamin D		0%
Vitamin B-12		0%
Vitamin C		4%
Iron		46%
Vitamin B-6		5%
Magnesium		15%

Percent Daily Values are based on a 2,000 calorie diet. One's daily values may be higher or lower depending on your calorie needs.

Carbohydrate, by difference [g]	25.31
Calcium, Ca [mg]	65
Iron, Fe [mg]	8.17
Magnesium, Mg [mg]	60
Phosphorus, P [mg]	101
Potassium, K [mg]	723
Sodium, Na [mg]	6
Zinc, Zn [mg]	2.23
Vitamin C, total ascorbic acid [mg]	2.6
Thiamin [mg]	0.07
Riboflavin [mg]	0.14
Niacin [mg]	1.1
Vitamin B-6 [mg]	0.08
Folate, DFE [µg]	75
Vitamin B-12 [µg]	0
Vitamin A, RAE [µg]	0
Vitamin A, IU [IU]	6
Vitamin D (D2 + D3) [µg]	0
Vitamin D [IU]	0
Fatty acids, total saturated [g]	0.12
Fatty acids, total monounsaturated [g]	0.05
Fatty acids, total polyunsaturated [g]	0.17
Fatty acids, total trans [g]	0
Cholesterol [mg]	0

Sources include : USDA Lemongrass Nutrition Facts.

CONCLUSION

With all these benefits and uses found in lemon grass little attention is given to the grass to derived benefit and uses to humans in terms of protection and healthy living in the northern part of Nigeria. It is also recommended that, more research be conducted on the growth, multiplication, storage, curative and medicinal values of the plant so as to benefit humans, animals and the ecosystem.

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