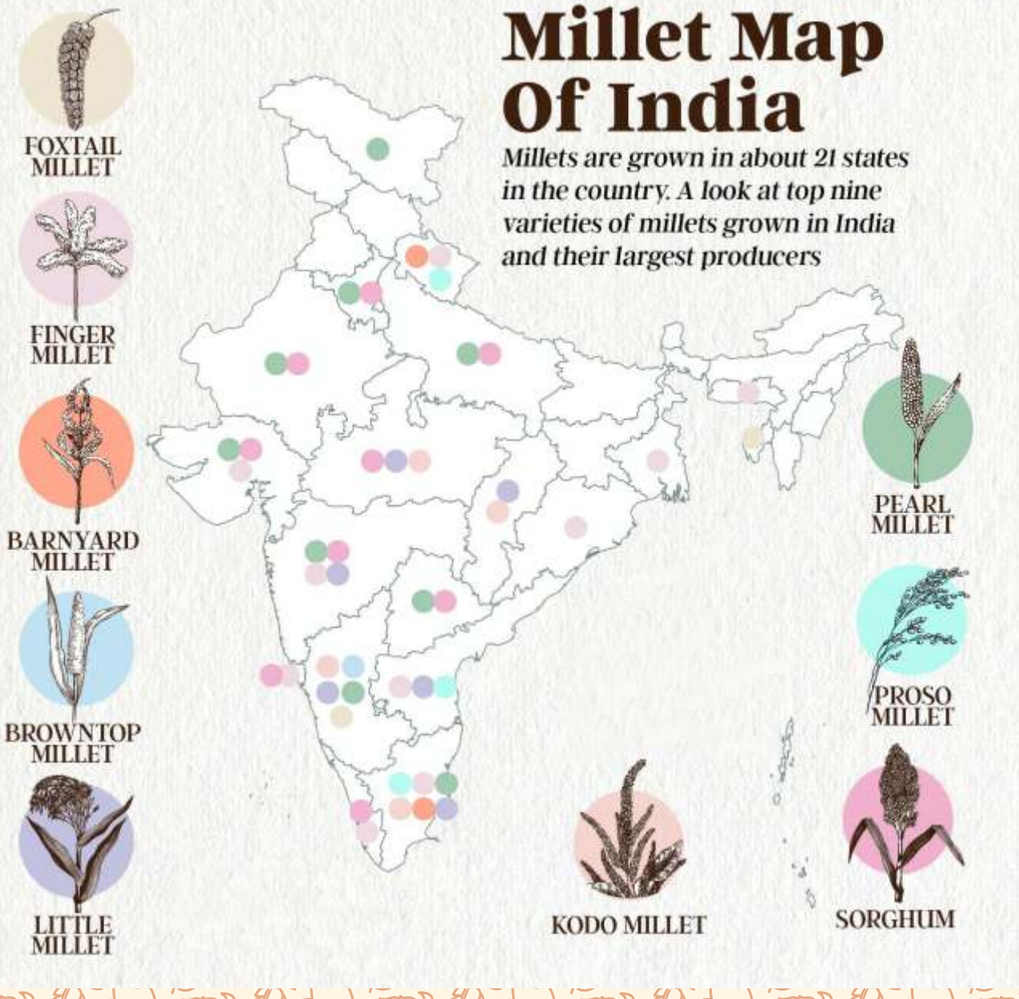
Millet Map Of India

Millets are grown in about 21 states in the country. A look at top nine varieties of millets grown in India and their largest producers



Source of Nutritive Value- **Source:**
Indian Food Composition Tables, NIN – 2017;
Nutritive value of Indian Foods, NIN – 2007, USDA (2019)

Source for millet information:
https://www.millets.res.in/pub/2018/The_Story_of_Millets.pdf and
https://wholegrainscouncil.org/

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INTERNATIONAL YEAR OF MILLETS 2023

Millets- The Nutri-Cereals of India

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What are millets?

Millets are small cereal grains that belong to the grass family. Resilient in harsh environments, it's commonly cultivated in Asian and African countries. The word millet is derived from the French word "mille" which means that a handful of millet contains thousands of seed grains (Taylor and Emmambux 2008).

Did you know?

Globally, India is the largest grower of millets with 26.6% of the world and 83% of Asia's millet cropping area. In India, millets have been an integral part of tribal food in the states of Odisha, Madhya Pradesh, Jharkhand, Rajasthan, Karnataka, and Uttarakhand (Sood et al. 2019)

What are the benefits of Millet?

- Millets are highly adaptive to a wide range of ecological conditions and thrive well in rain-fed; arid
- climate and they have minimal requirement of water, fertilizers, and pesticides.
- Millets have many nutritional, nutraceutical and health promoting properties especially the high
- fibre content. They are good source of minerals like iron, zinc, and calcium.
- Millets have a low Glycemic Index (GI) and also associated with the prevention of diabetes.
- Millets are gluten-free and can be consumed by celiac disease patients.
- Niacin in millet can help lower cholesterol. Millet has a beneficial effect on the management and
- prevention of hyperlipidemia and risk of CVD.
- Millets are found to be helpful with the reduction of weight, BMI, and high blood pressure.
- In India, Millet is generally consumed with legumes, which creates mutual supplementation of
- protein, increases the amino acid content, and enhances the overall digestibility of protein.
- All millet varieties show high antioxidant activity.
- Millet cultivation helps to reduce the carbon footprint.

How much millet to Eat per day?

According to the ICMR-National Institute of Nutrition the quantity of millet should be around 33% of the total cereal consumption during the day. For example, for a reference man with sedentary activity 275 g of cereals is recommended including Nutri-Cereals(Millets). So, if you are taking millets then you 5 can take about 1/3rd or 33% (90-100gm of millets per day) of the recommended quantity .

Side effects of millets only occur if it is consumed excessively. A balanced diet can help in lowering these adverse millets' side effects. Furthermore, if millet is soaked overnight, rinsed, and then cooked, the antinutrient content can be decreased significantly.

How to include millets in our diet?

Millets can be used in preparing many dishes. Cereals can be replaced with millets for any preparation like roti, dosas, cheela, cookies, cakes, porridges, upma, biscuits, idli, pancakes, tikki, salad, ladoo, pulao, payasam, breads etc. Also note that the proportion of essential amino acids in millets and legumes complement each other. So, combinations provide a higher quality of complete protein. It is recommended to add legumes (Pulses) to millets in the ratio of 3:1 (Millets: Pulses).

What are the types of millets?

The major millets include sorghum (jowar) and pearl millet (bajra). The finger millet (ragi/mandua), foxtail millet (kangni/Italian millet), little millet (kutki), kodo millet, barnyard millet (sawan/jhangora), proso millet (cheena/common millet), and brown top millet (korale) are categorized under minor millets.

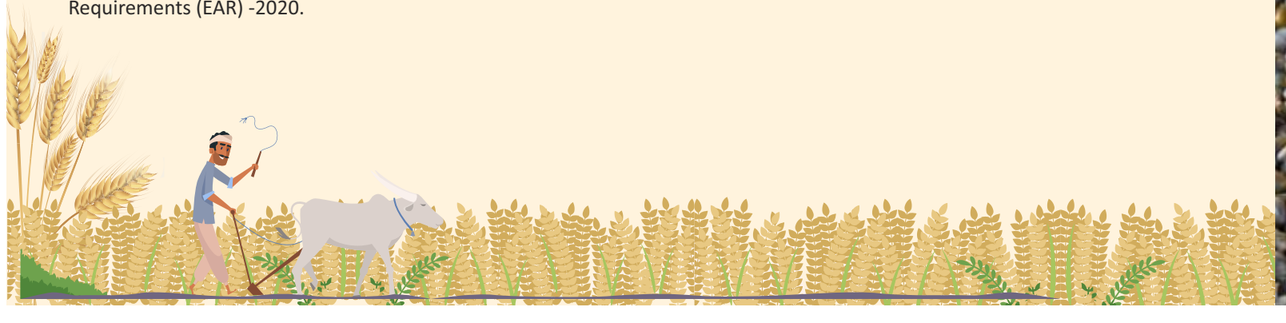
[1]Taylor JRN, Emmambux MN (2008) Gluten-free cereal products and beverages. In: Arendt EK,Bello FD (eds) Gluten-free foods and beverages from millets. Elsevier, Amsterdam, p 464.

[2]Sood S, Joshi DC, Chandra AK, Kumar A (2019) Phenomics and genomics of finger millet: currentstatus and future prospects. Planta 250:731–751.

[3]https://www.millets.res.in/pub/2018/The_Story_of_Millets.pdf

[4]https://apeda.gov.in/apedawebsite/SubHead_Products/Indian_Millets.htm

[5]ICMR-NIN Expert Group on Nutrient Requirement for Indians, Recommended Dietary Allowances (RDA) and Estimated Average Requirements (EAR) -2020.



Pearl Millet (Pennisetum glaucum (L.) R. Br.)

Common name:
Bajra

Vernacular names:
Spiked millet or Pearl millet (English), Bajra (Bengali, Hindi, Oriya, Punjabi, Urdu), Bajree (Rajasthani, Gujarati, Marathi), Sajje (Kannada), Kambu (Tamil), Sajja (Telugu)

Cultivation areas:
Rajasthan, Maharashtra, Gujarat, Uttar Pradesh and Haryana

Nutritional Profile:

Highest niacin content amongst all cereals; rich in protein and dietary fiber.

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	347
Protein (g)	10.9
Fat (g)	5.43
Carbohydrate (g)	61.8
Ca (mg)	27.4
Fe (mg)	6.4
Folic Acid (µg)	36.1

It is the sixth major cereal in terms of area and production and has the highest drought tolerance potential of all millets. Pearl millet is the most widely cultivated cereal in India after rice and wheat.

Health benefits:

- Reduces cholesterol
- Promotes bone health
- Beneficial in treating stomach ulcers
- Promotes heart health
- Aids in weight loss

Uses: DKhichdi, Roti, Upma, Idli, Khakhra, Parathas

Sorghum

Common name:
Jowar (Hindi), Great millet

Vernacular names:
Jwari (Marathi), Juar (Bengali, Gujarati), Jola (Kannada), Cholam (Malayalam, Tamil), Janha (Oriya), Jonnalu (Telugu), Other names: Milo, Char

Cultivation areas:
Maharashtra, Karnataka and Tamil Nadu

Nutritional Profile:

Presence of prolamin makes it easily digestible on cooking- helps certain dietary groups; rich in ß-carotene, folic acid, and riboflavin;

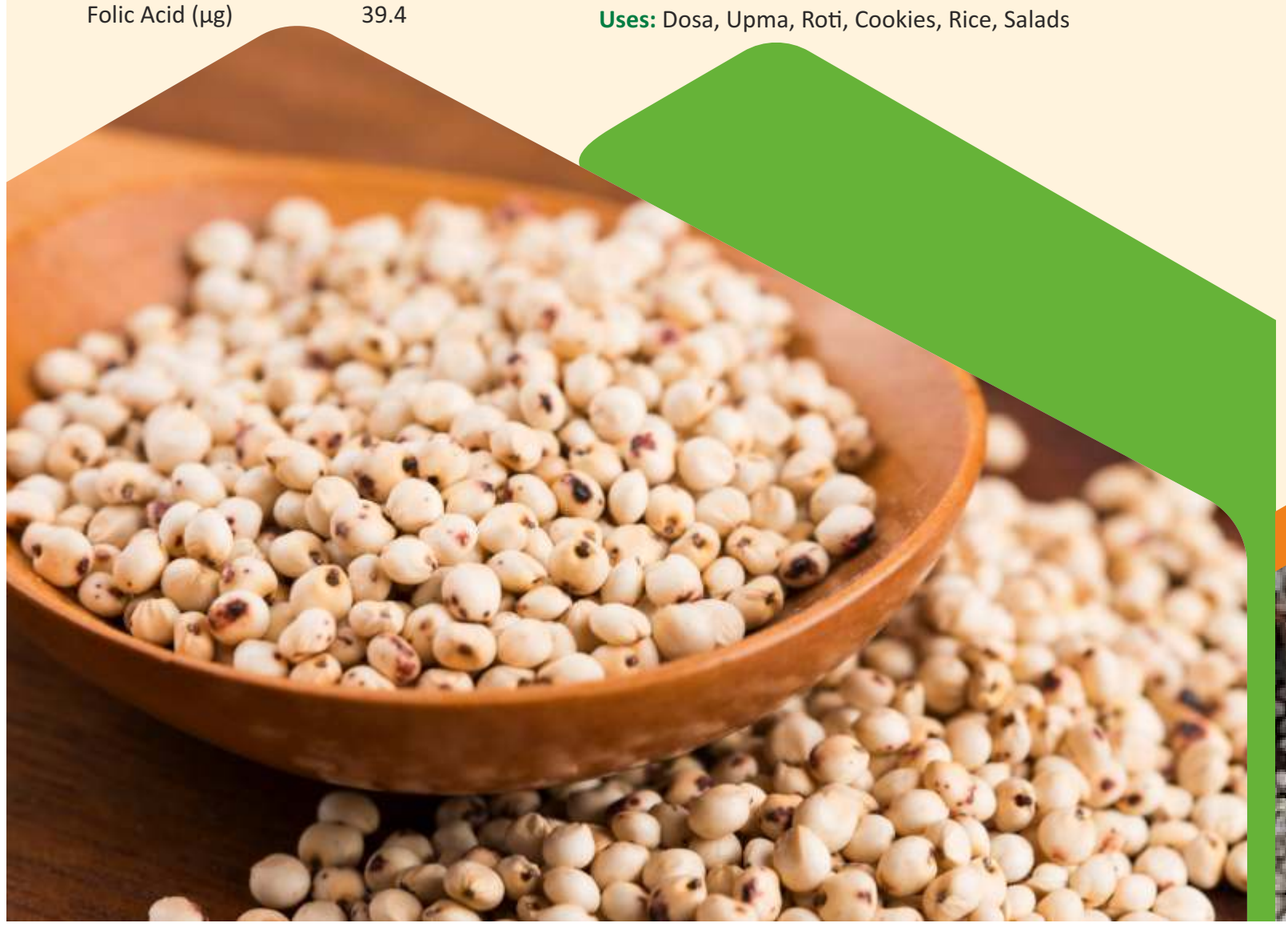
NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	334
Protein (g)	9.9
Fat (g)	1.73
Carbohydrate (g)	67.7
Ca (mg)	27.6
Fe (mg)	3.9
Folic Acid (µg)	39.4

Sorghum is traditional staple food of the dry land regions of the world, a warm season crop intolerant to low temperatures, resistant to pests/diseases and highly nutritious. It ranks fifth in cereals produced world-wide and fourth in India.

Health benefits:

- Helps in enhancing bowel movement
- Anti-inflammatory&anti-carcinogenic properties
- Helps in improving blood circulation
- Aids in cell regeneration
- Aids in weight loss

Uses: Dosa, Upma, Roti, Cookies, Rice, Salads



Little Millet (Panicum sumatrense L.)

Common name:
Kutki

Vernacular names:
Kutki, Shavan (Hindi), Sava, Kutki (Marathi), Same, Save (Kannada), Samalu (Telugu), Samai (Tamil), Sama (Bengali), Gajro, Kuri (Gujarati), Suan (Oriya), Swank (Punjabi)

Cultivation areas:
Madhya Pradesh, Orissa, Jharkhand, and Uttar Pradesh.

Nutritional Profile:

High Dietary fiber and antioxidant activities along with high iron content;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	346
Protein (g)	10.1
Fat (g)	5.89
Carbohydrate (g)	65.5
Ca (mg)	16.1
Fe (mg)	1.2
Folic Acid (µg)	36.2

Little millet is grown throughout India and is one of the traditional crops. It is mostly mix cropped with other millets, pulses and oilseeds. Little millet appears related to proso but is generally shorter, has smaller panicles and seeds, and is grown on a limited scale voluntarily or with minimum care on poor lands. Little millet matures quickly and withstands both drought and water logging. It is generally consumed as rice and any recipe that demands staple rice can be prepared using little millet.

Health benefits:

- Rich in antioxidants
- Helps in decreasing blood cholesterol levels
- Helps in regulating blood sugar levels
- Improves respiratory ailments

Proso Millet (Panicum miliaceum L.)

Common name:
Chena,
Common Millet,
Brown-corn millet

Vernacular names:
Hena, Barri (Hindi), Vari (Marathi), Baragu (Kannada), Variga (Telugu), Pani Varagu (Tamil), Cheena (Bengali), Cheno (Gujrati), Bacharibagmu (Oriya), Cheena (Punjabi)

Cultivation areas:
Northern states of India

Nutritional Profile:

Highest protein content with high calcium; lowers the risk of heart diseases by reducing cholesterol levels;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	341
Protein (g)	12.5
Fat (g)	2.55
Carbohydrate (g)	70.4
Ca (mg)	14
Fe (mg)	0.2

Proso millet is a short season crop that grows in low rainfall areas. This millet can be cultivated along with red gram, maize and sorghum. Proso millet is well suited for many soil types and climate conditions. Proso millet is highly drought-resistant, which makes it of interest to regions with low water availability and longer periods without rain.

Health benefits:

- Helps in bone growth and maintenance
- Helps in smooth functioning of nervous system
- Good for skin
- Helps in strengthening bones

Uses: Idli, Khaja, Burfi, Samosa

Amaranth (Amaranthus cruentus)

Common name:
Rajgira

Vernacular names:
Hena, Barri (Hindi), Vari (Marathi), Baragu (Kannada), Variga (Telugu), Pani Varagu (Tamil), Cheena (Bengali), Cheno (Gujrati), Bacharibagmu (Oriya), Cheena (Punjabi)

Cultivation areas:
Kerala,
Tamil Nadu,
Karnataka and
Maharashtra

Nutritional Profile:

A pseudo millet, carrier of amino acids and other bioactive peptides; having cancer-preventive and antihypertensive properties;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	356
Protein (g)	13.3
Fat (g)	5.6
Carbohydrate (g)	61
Ca (mg)	162
Fe (mg)	8
Folic Acid (µg)	24.7

Amaranth is one of the ancient groups of plants and has great potential for combating under-nutrition and malnutrition. Amaranth is an edible plant adaptable to tropical and subtropical climates; its culture possesses valuable characteristics, such as fast growth and cultivation under water deficit. Amaranth leaves and grain have good nutritional value.

Health benefits:

- Helps in decreasing blood cholesterol levels
- Helps stimulate the immune system
- Helps reduce risk of osteoporosis
- Helps reduce anemia
- Anti allergic and antioxidant properties

Uses: Roti, Tikkis, Salads, Cupcakes, Cookies, Chikki and Laddoo

Kodo Millet (Paspalums crobiculatum L.)

Common name:
Kodo

Vernacular names:
Kodon (Hindi), Kodra (Marathi), Harka (Kannada), Arikelu, Arika (Telugu), Varagu (Tamil), Kodo (Bengali), Kodra (Gujrati), Kodua (Oriya), Kodra (Punjabi)

Cultivation areas:
Odisha, Madhya Pradesh, Karnataka and Tamil Nadu

Nutritional Profile:

Rich in niacin, pyridoxine, folic acid, and other minerals; consists of lecithin known to strengthen the nervous system;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	331
Protein (g)	8.9
Fat (g)	2.55
Carbohydrate (g)	66.2
Ca (mg)	15.3
Fe (mg)	2.3
Folic Acid (µg)	39.5

Kodo millet was domesticated in India almost 3000 years ago. It is reputed to be extremely hardy, drought resistant and grows on stony or gravelly soils which would not support other crops. It is relatively long in duration requiring four to six months to mature compared with two to four months for the other millets. Short duration varieties have now been developed. It is an annual tufted grass that grows up to 90 cm high. The grain may vary in colour from light red to dark grey. It has the highest dietary fiber among stall the millets.

Health benefits:

- Prevents constipation
- Strengthens nervous system
- Helps in blood sugar control
- Beneficial for postmenopausal women sufferingfrom any metabolic diseases

Uses: Chapati, Idli, Porridge, Cheela, Khichdi, Dal & Pulao

Finger Millet (Eleusine coracana L.)

Common name:
Ragi

Vernacular names:
Ragi, Mandika, Marwah, Mandua (Hindi), Nagli, Nachni (Marathi), Ragi (Kannada), Ragulu, Chodi (Telugu), Keppai, Kelvaragu (Tamil), Marwa (Bengali), Nagli, Bavto (Gujrati), Mandia (Oriya), Mandhuka, Mandhal (Punjabi)

Cultivation areas:
Karnataka, Rajasthan, Andhra Pradesh, and Tamil Nadu

Nutritional Profile:

High antioxidant activity; one of the best sources of calcium; sulphur-rich amino acids make it ideal weaning food;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	320
Protein (g)	7.2
Fat (g)	1.92
Carbohydrate (g)	66.8
Ca (mg)	364
Fe (mg)	4.6
Folic Acid (µg)	34.7

It is an important primary food especially for the rural populations of Southern India and East & Central Africa. Finger millet or ragi can be grown under wide range of adaptation ie from sea level to hilly regions of Himalayas but thrives best under well drained, loamy type of soils. About 60% of finger millet is produced by the state of Karnataka which is about 34% of global production. Finger millet is a dwarf, highly tillering plant with characteristic finger like terminal in florescences. The height of a mature plant ranges from 30-150 cm and the seeds are very small like mustard and are light brown, or dark brown or white in colour.

Health benefits:

- Reduce blood glucose levels
- Promotes bone health
- Repair injured muscle tissues
- Anti microbial properties
- Revive skin and hair health

Uses: Roti, Dosas, Cheela, Cookies, Cakes, Porridges, Upma

Barnyard Millet (Echinochloa frumentacea L.)

Common name:
Sawan

Vernacular names:
Sanwa, Jhangora (Hindi), Bhagar (Marathi), Oodalu (Kannada), Udhalu, Kodisama (Telugu), Kuthiraivali (Tamil), Shyama (Bengali), Khira (Oriya), Swank (Punjabi)

Cultivation areas:
Uttarakhand, Tamil Nadu, Andhra Pradesh, and Karnataka

Nutritional Profile:

Presence of gamma amino butyric acid (GABA) and beta-glucan contents reduce blood lipid levels; good source of crude fiber and iron;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	307
Protein (g)	11.2
Fat (g)	2.2
Carbohydrate (g)	65.5
Ca (mg)	11
Fe (mg)	15.2

It is predominantly cultivated in India, China, Japan, and Korea for food as well as fodder. Japanese and Indian species of this millet are vigorous and have a wide adaptation in terms of soil and moisture requirements. They grow well in different seasons and at higher elevations, but require three to four months for maturation. It is cultivated on marginal lands where rice and other crops will not grow well. Barnyard millet is an erect plant 60-130 cm tall and are brownish to purple.

Health benefits:

- Rich source of fibre - both soluble and insoluble
- Anti mutagenic, anti inflammatory & antioxidantproperties
- Prevents constipation and high blood pressure
- Helps in controlling blood glucose levelsand lipid levels. metabolic diseases

Uses: Porridges, Dosas, Idlis, Upma, Chapatis, Khichdi, Cutlets, Payasam & Pulao

Foxtail Millet (Setaria italica L.)

Common name:
Kakun

Vernacular names:
Kangni, Kakum (Hindi), Kang, Rala (Marathi), Navane (Kannada), Korra (Telugu), Keppai, Thenai (Tamil), Kaon (Bengali), Kang (Gujrati), Kanghu, Kangam, Kora (Oriya), Kangani (Punjabi)

Cultivation areas:
Meghalaya, Karnataka, Andhra Pradesh, Telangana and Rajasthan

Nutritional Profile:

One of the best digestible and non-allergic grains with a nutty flavor and high content of copper and iron;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	331
Protein (g)	12.3
Fat (g)	4.3
Carbohydrate (g)	60.1
Ca (mg)	31
Fe (mg)	2.8
Folic Acid (µg)	15

Foxtail millet is one of the oldest cultivated millets. It is the third largest crop among the millets, cultivated for food in semi-arid tropics of Asia and as forage in Europe, North America, Australia, and North Africa. Foxtail or Italian millet may well have unrealized potential for grain production. It forms a slender, erect, leafy stem varying in height from 1-5 feet. Seeds are borne in a spike-like, compressed panicle resembling yellow foxtail, green foxtail, or giant foxtail. The grains are very similar to paddy rice in grain structure. They contain an outer husk, which needs to be removed in order to be used. It matures in 65-70 days. Three to four decades ago, foxtail millet was consumed as the staple food. It has double quantity of protein content compared to rice.

Health benefits:

- Proper functioning of the nervous system
- Helps in maintaining bone and muscle health
- Good for cardiac health
- Good for skin and hair growth
- Improves immunity

Uses: Dosas, Cheelas, Chapatis, Breads, Kheer/Pudding & Pancakes

Teff Millet (Eragrostis tef)

Common name: Abyssinian lovegrass

Cultivation areas: Karnataka

Nutritional Profile:

High polyphenols suitable to aid people with celiac disease;

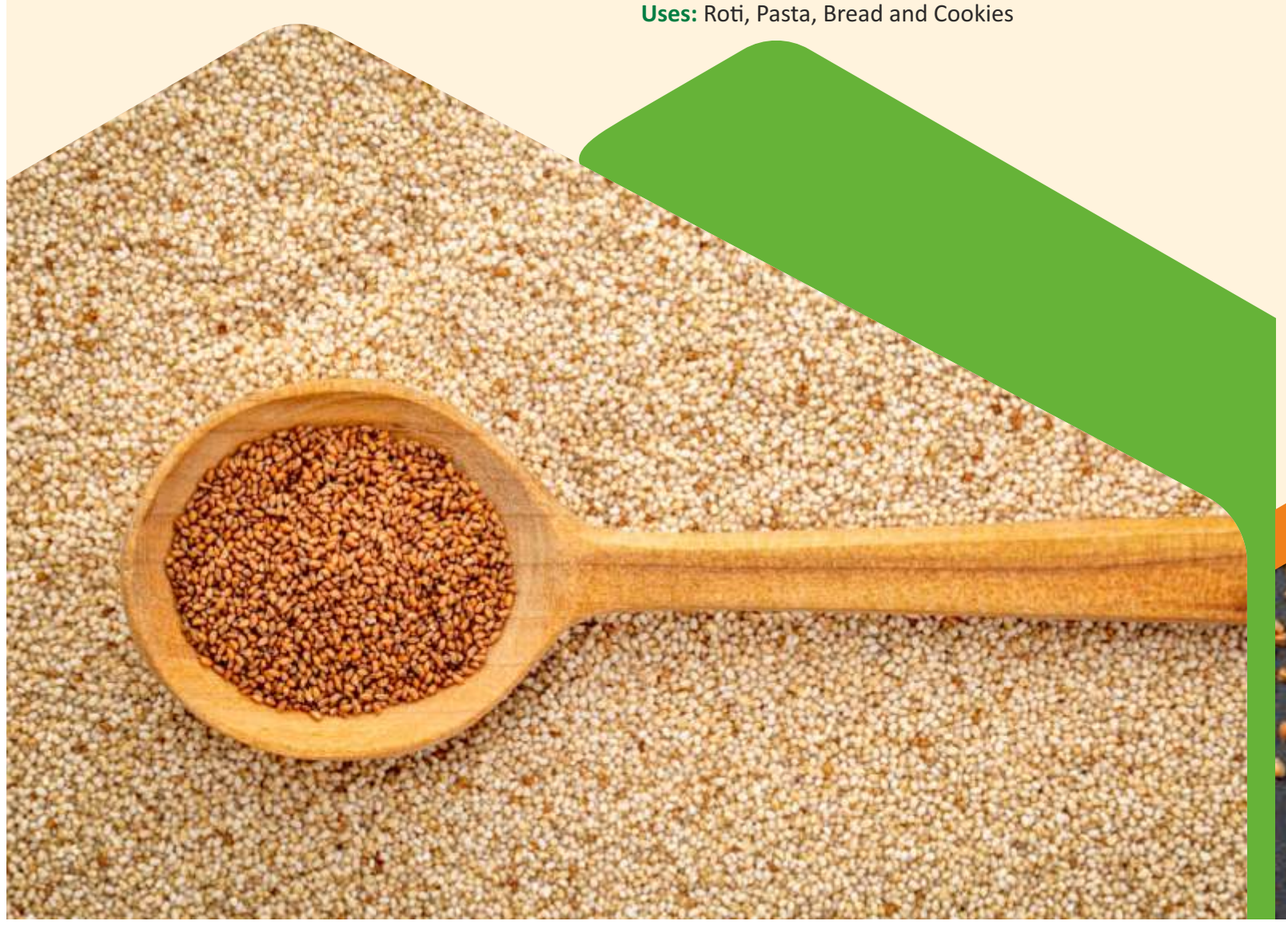
NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	367
Protein (g)	13.3
Fat (g)	2.38
Carbohydrate (g)	7.13
Ca (mg)	180
Fe (mg)	7.63

It is a high-elevation (up to 2700 meters) cereal confined largely to the highlands of Ethiopia and Eritrea. Tef is more like a grass, can be grown under a wide range of conditions, including situations not suitable for other cereals. Teff also thrives in both waterlogged soils and during droughts. It bears very tiny seeds which are highly nutritious, especially in protein content. This crop needs minimum tillage to cultivate, though productivity is less. A handful of teff is enough to sow a typical field, and it cooks quickly, using less fuel than other foods.

Health benefits:

- Excellent source of amino acids, especially lysine which is deficient in cereals.
- Rich in fiber and iron.
- Helps in absorption of calcium

Uses: Roti, Pasta, Bread and Cookies



Browntop Millet (Panicum ramose L.)

Common name: Dixie signalgrass

Vernacular names: Korale (Kannada), Andukorralu (Telugu)

Cultivation areas: Karnataka and Andhra Pradesh

Nutritional Profile:

A good source of zinc, iron and fibre;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	338
Protein (g)	11.5
Fat (g)	1.89
Carbohydrate (g)	71.3
Ca (mg)	0.01
Fe (mg)	0.65

A native millet of India, has relatively limited cultivation to the parts of Karnataka and Andhra Pradesh, though its occurrence as a weed is noted in all states of India. It is primarily used as a food crop in India. It can be grown even in less fertile sandy loam soils and matures in 60-80 days and is the most inexpensive crop to grow and does not need weeding and has no serious pests and diseases.

Health benefits:

- Promotes digestion.
- Helps in maintaining blood glucose level.
- Helps in strengthening of bones and muscles.
- Optimising heart health and lowering the risk of developing

Buckwheat (Fagopyrum esculentum)

Common name:
Kuttu

Cultivation areas:
Jammu & Kashmir, Uttarakhand, Himachal Pradesh and Chhattisgarh

Nutritional Profile:

A pseudo millet with lysine and polyphenol compounds which controls blood pressure;

NUTRIENTS	VALUE PER 100 GRAMS
Energy (Kcal)	343
Protein (g)	13.3
Fat (g)	3.4
Carbohydrate (g)	71.5
Ca (mg)	18
Fe (mg)	2.2

Buckwheat can grow on infertile, poorly drained soil and is relatively well suited for rough land. Globally, buckwheat is a minor crop and is often planted as a crop cover in order to protect soil from erosion between planting seasons. Its short growth period offers the flexibility of planting late in the season, and its deep root system helps prevent erosion. Buckwheat further benefits a farmer's field by smothering weeds and attracting beneficial insects.

Health benefits:

- Aids in weight loss.
- It helps in lowering blood pressure and improvingcardiovascular health.
- Having low glycemic index helps in improving bloodsugar control.

Uses: Khichdi, Chapatis, Dosas, Puri, Laddoo, Sandwich, Halwa, Cutlets & Cheela

Pearl Millet

Sorghum

Little Millet

Proso Millet

Amaranth

Kodo Millet

Finger Millet

Barnyard Millet

Foxtail Millet

Buckwheat