**Millets for Sustainable Food Security**

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Millets are heritage crop among others; in India farmers are growing as it is traditional crop from long back. In India, millets have been mentioned in some of the oldest Yajurveda texts, identifying foxtail millet (priyangava), Barnyard millet (aanava), and black finger millet (shyaamaka), thus indicating that millet consumption was very common, pre-dating to the Indian Bronze Age 4,500 BC. Millets have been a staple food for centuries, especially in rural areas in India. Millets were traditionally grown as rain-fed crops and were well-suited to the dry climate of the Deccan Plateau in southern India. From green revolution world are considering wheat and rice only are staple food for the people and millets get ignored. This leads to create loss of water, excess use of fertilizer and detoriation of soil health and ultimate damage environment and human health. This issue again turns to concentrate on millets production and consummation.

Millets are hardy, drought tolerant, growing in wide range of climatic condition. Millets are drought-resistant and able to survive varied environmental conditions. Millets can grow with low input therefore it is mostly grown by small and poor farmers to complete the family food demand. Millets are rich in proteins, minerals, and vitamins, consumption of millets grains have several health benefits as well as protection against chronic and different health issues caused by modern lifestyle. Despite of their lots of health benefits and agro-economic potential their coarse nature makes the millets unpopular and underutilized in developed countries.

**Millets: An approach sustainable agriculture and health benefit**

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| **Food and Economic security**   * Sustainable food source to feed people in changing climate * Resistant to drought, stress, pest etc * It known as climate resilient crop * Production with low investment * Value addition leads to more income. | **Nutrition security and safety from disease**   * Rich in mineral, micronutrient, vitamins and protein * Rich in bioactive compound * Gluten free: Good for Celiac disease * Low GI: Good for diabetic persons * Helps to control cardiovascular disease, anemic patients etc |

## Millets

## Millets are classified under cereal or known as part of cereals, family of millet is Poaceae. Millets are coarse grains of cereal family and known as Small seeded cereal grasses: coarse grains: Nutri cereals/ valuable food grains. They are raised mainly as rain-fed Kharif crops (sowed with the onset of the monsoons) in India. Sorghum, Bajra, Proso millets, finger millets, foxtail are comes under the head millets

**Types of millets**

### 1. Sorghum Millet (Jowar)

**Growing State :** **Maharashtra, Karnataka, Rajasthan,**TN, Andhra Pradesh, UP, MP, etc.

**Nutritional Value:** High in fiber, protein, and minerals such as phosphorus and iron

**Commonly used :** Roti, Bhakri, Khichdi, Porridge

### 2. Proso Millet (Chena / Barri)

**Growing Area :** Uttar Pradesh, Rajasthan, Haryana, Gujarat, Maharashtra, Karnataka,

Tamil Nadu

**Nutritional Value:** High in protein, fiber, and minerals such as iron and phosphorus

**Commonly used :** Roti, Khichdi, Kheer, Porridge

### 3. Pearl Millet (Bajra)

**Growing State :** Rajasthan, UP, Haryana, Gujarat, Madhya Pradesh, Maharashtra, and

Karnataka.

**Nutritional Value :** High in fiber, protein, iron, magnesium, and calcium

**Commonly used :** Roti/ Bhakri, Khichdi, Porridge

### 4. Foxtail Millet (Kakum / Kangni)

**Growing State :** Tamil Nadu, Andhra Pradesh, Karnataka, Odisha, Maharashtra, Madhya

Pradesh

**Nutritional Value :** High in protein, fiber, and minerals such as copper and iron

**Commonly used :** Upma, Pongal, Kheer, Pulao

**5. Finger Millet (Ragi)**

**Growing State :** Karnataka, Tamil Nadu, Andhra Pradesh, Telangana, Kerala

**Nutritional Value:** High in calcium, iron, fiber, and protein

**Commonly used:** Ragi Mudde, Dosa, Idli, Porridge

### 6. Browntop Millet (Korle)

**Growing State:** Karnataka and Andhra Pradesh.

**Special Character:** less fertile soil.

### 7. Barnyard Millet (Sanwa)

**Growing State :** Uttar Pradesh, Rajasthan, Madhya Pradesh, Gujarat, Karnataka,

Tamil Nadu

**Nutritional Value :** Rich in fiber, protein, and minerals such as calcium and phosphorus

**Commonly used :** Khichdi, Dosa, Idli, Upma

**8. Little Millet (Moraiyo/ Kutki)**

**Growing State:** Karnataka, Tamil Nadu, Maharashtra, Uttar Pradesh, Uttarakhand

**Nutritional Value:** Rich in fiber, protein, and minerals such as potassium and magnesium

**Commonly used:** Khichdi, Dosa, Idli, Upma

**9. Kodo Millet**

**Growing State :** Maharashtra, Odisha, Uttar Pradesh, Tamil Nadu, Andhra Pradesh,

Telangana

**Nutritional Value:** High in protein, fiber, and minerals such as calcium, iron, potassium,

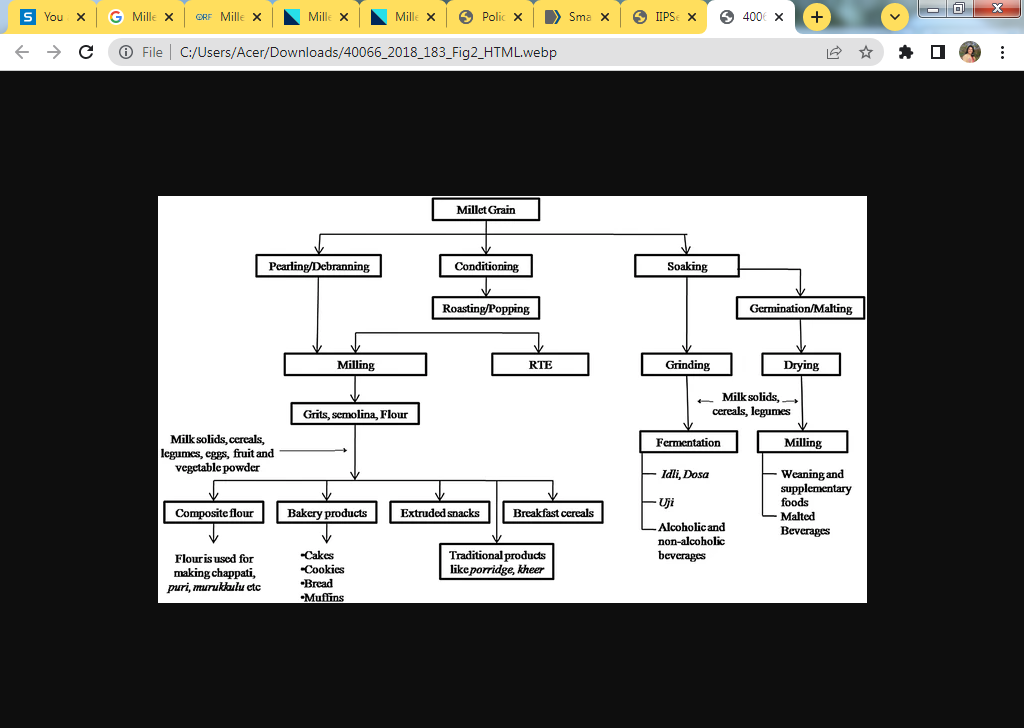
magnesium and zinc It helps to strengthened neurological system.

Niacin, B6, and folic acid, among other B vitamins and other vitamins

and minerals, are especially abundant in kodo.

**Commonly used:** Khichdi, Pulao, Upma, Kheer

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**Millet-based contemporary foods**

**Schematic diagram for developing millet-based composite foods**

Some researcher and food scientist work on development of value added product from millets and its combination with others. Shadang and Jaganathan formulated the bakery products like biscuits, cakes and cookies using foxtail millet, finger millet, proso millet and pearl millet added with wheat flour. For biscuit and cake, the ratios of 10:90, 20:80 and 30:70 were selected, whereas for cookies, the flours were used in the ratios of 15:85, 20:80 and 25:75, respectively. The sensory evaluation of their products revealed that the combinations of all the three levels were well acceptable for the three products. Rai et al. utilized alternate flours/meals based on rice (*Oryza sativa*), maize (*Zea mays*), sorghum (*Sorghum vulgare*) and pearl millet (*Pennisetum glaucum*) for the preparation of gluten-free cookies. Their study revealed that the combination of pearl millet and sorghum flour had the maximum sensory scores followed by the cookies prepared from rice and sorghum, maize and pearl millet, rice and pearl millet and control cookies. Best pasting properties were obtained from blends of maize and pearl millet followed by pearl millet and sorghum flour. However, maximum yield was obtained in control (wheat) cookies, i.e. 186.8%, while cookies prepared from rice and maize had the highest spread ratio. The cookies prepared from blend of pearl millet and sorghum was nutritionally rich and had higher fat, protein, ash and calorific values.

**Conclusion**

Millets are place important role in changing climate and them stand in varied environment also require low input in such hard situation they give return in farmers hands. Millets are miracle crop which can save the environment and give healthy food, fodder to the human. They save the natural resources such as water, nature, soil for now and future generation. They many health benefits so peoples are now preparing millets as food in their daily diet. To feed the increasing population without damaging resources millets production and value addition is can be one of the ways. Eat millets for stay healthy

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