

## Millets- A Climate Smart Crop

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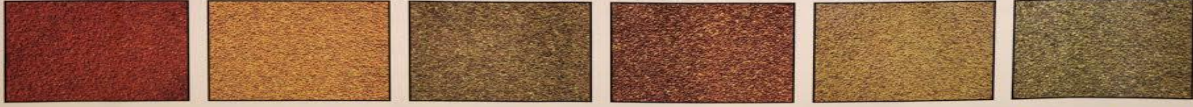
### Introduction

India is the nation of farmers and an agrarian economy. As a nation, we are self sufficient in production and export of cereals and their value added products. Changing drastic climatic condition and depleting groundwater level makes thing worse for farmers to sustain in agriculture. In India, millets are grown on about 15 million hectares, with an annual production of 17 million tonnes and contribute 10% to the country's food grain basket.

Group of crops comprising sorghum, pearl millet, finger millet and small millets viz; little millet, kodo millet, barnyard millet, foxtail millet all together comes under Millets which is now called as 'Nutri-Cereals' due to their high nutritive value. Millets are known for their climate-resilient features including adaptation to a wide range of ecological conditions, less irrigational requirements, better growth and productivity in low nutrient input conditions, less reliance on synthetic fertilizers, and minimum vulnerability to environmental stresses and mitigate effect of climate change in long run to ensure future food and nutritional security.

Millets were important crops in the country with higher area coverage as compared to wheat and rice before green revolution period. After launching green revolution, the area of millets drastically reduced due to shifting of irrigated area from millets to more remunerative crops. Suitable for mixed and intercropping, crops like maize and broad bean, grown with millets, offer food and livelihood security to farmers. "Promoting millets was not only to supply or market to the outside world, but also for the consumption of the farmer as it means better nutrition.

| <b>NUTRIENT COMPOSITION OF SMALL MILLETS AND OTHER CEREALS</b> |              |         |         |                 |                   |               |         |         |              |                 |             |
|--|--------------|---------|---------|-----------------|-------------------|---------------|---------|---------|--------------|-----------------|-------------|
| (per 100 g of edible portion; @ 12 per cent grain moisture)    |              |         |         |                 |                   |               |         |         |              |                 |             |
| Food   | Prot-ein (g) | Fat (g) | Ash (g) | Crude fibre (g) | Carbo-hydrate (g) | Energy (kcal) | Ca (mg) | Fe (mg) | Thiamin (mg) | Riboflavin (mg) | Niacin (mg) |
| Rice (brown)   | 7.9          | 2.7     | 1.3     | 1.0             | 76.0              | 362           | 33      | 1.8     | 0.41         | 0.04            | 4.3         |
| Wheat  | 11.6         | 2.0     | 1.6     | 2.0             | 71.0              | 348           | 30      | 3.5     | 0.41         | 0.10            | 5.1         |
| Maize  | 9.2          | 4.6     | 1.2     | 2.8             | 73.0              | 358           | 26      | 2.7     | 0.38         | 0.20            | 3.6         |
| Sorghum  | 10.4         | 3.1     | 1.6     | 2.0             | 70.7              | 329           | 25      | 5.4     | 0.38         | 0.15            | 4.3         |
| Pearl millet   | 11.8         | 4.8     | 2.2     | 2.3             | 67.0              | 363           | 42      | 11.0    | 0.38         | 0.21            | 2.8         |
| Finger millet  | 7.7          | 1.5     | 2.6     | 3.6             | 72.6              | 336           | 350     | 3.9     | 0.42         | 0.19            | 1.1         |
| Foxtail millet   | 11.2         | 4.0     | 3.3     | 6.7             | 63.2              | 351           | 31      | 2.8     | 0.59         | 0.11            | 3.2         |
| Common millet  | 12.5         | 3.5     | 3.1     | 5.2             | 63.8              | 354           | 8       | 2.9     | 0.41         | 0.28            | 4.5         |
| Little millet  | 9.7          | 5.2     | 5.4     | 7.6             | 60.9              | 329           | 17      | 9.3     | 0.30         | 0.09            | 3.2         |
| Barnyard millet  | 11.0         | 3.9     | 4.5     | 13.6            | 55.0              | 300           | 22      | 18.6    | 0.33         | 0.10            | 4.2         |
| Kodo millet  | 9.8          | 3.6     | 3.3     | 5.2             | 66.6              | 353           | 35      | 1.7     | 0.15         | 0.09            | 2.0         |



**Fig 1: Nutrient composition of millets**

Due to their higher iron, calcium and overall mineral content than wheat and rice, hold the potential to address India's malnutrition problem. Millets are rich in nutrients. While the iron content of barnyard millet is 18.6 mg, that of rice is 1.8 mg. While the percentage of nutrients varies with each variety of millet, in general they are richer in calcium, iron, fibre content etc. than rice and wheat. Millets are rich in dietary fibre, which is negligible in rice. With no gluten and low glycaemic index, millet diet is ideal for those with celiac diseases and diabetes.

### Millets and climate change

Climate change refers to the rise in average surface temperatures on Earth. It is due to the human use of fossil fuels, which releases carbon dioxide and other greenhouse gases into the air. The gases trap heat within the atmosphere, which can have a range of effects on ecosystems, including rising sea levels, severe weather events and droughts that render landscapes more susceptible to wildfires.

Climate change poses a serious threat to environment and food. The basic requirement for any living organism is food and water. During our ancestral period, millet was the staple food. They knew the value of the crop, they planted, rise, eat and lived in a healthy way. Due to lifestyle changes, people food consumption pattern changed and it leads to low demand for millet

and millet foods. In 21<sup>st</sup> century, climate change is a global issue. Due to change in climatic conditions, people try to utilize the natural resources in a sustainable way.

One way to use the natural resources in a sustainable way by means of cultivating millets. PM Modi emphasized the concept of the Millet Revolution through Strengthening Adaptive Farming in India, Bangladesh and Nepal, plays a significant role in creating awareness for small farmers to cultivate millet that is less sensitive to the changing climatic conditions. Increased millet cultivation will help in recovering the depleting water table in India. Water table in India is decreasing due to increased cultivation of paddy and wheat by farmers.

The General Global Environment Change's report of 2017 has claimed that in comparison with wheat and paddy, millets consume very less water. All the crops are sensitive to the sudden climatic changes, except millets. Millets are known for its climate compliant characteristics with adaption to a variety of climatic changes, need less irrigational facilities, not depend on synthetic fertilizers, disease and pest resistance, nutritional benefits, market demand, fodder value and mainly not affected by any environmental stresses. Millet is being considered as a smart crop because it is tolerant to increased temperature and droughts, can be cultivated in dryland areas and it requires low water footprint.

### **Conclusion**

Rice and wheat enjoying minimum support price and promotion through the public distribution system (PDS), so the rice consumption increased in India. With shrinking market for millets, farmers switched over to rice and wheat. Government should take steps to include millets under PDS. Then, Farmers will automatically increase the acreage allocation for millets and PDS will address the malnutrition problems in low income group. Trainings on post harvest technology and value addition on millets and mass awareness amongst the millet farming communities as well as consumers should be given importance. Facilitate millet farmers access to more markets should be given. By continuous efforts, millets will be the wonder crop providing food, nutrition and livelihood security, beating the adverse effects of climate change.