

12. Millets as Eco Friendly Crops

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12.1 Introduction:

Millets can counter many of the adverse effects of climate change better than most other food crops. They grow in almost any type of soil – sandy or with varying levels of acidity. They hardly need any fertilizers or irrigation. Millets have a low water footprint, requiring significantly less water compared to traditional grains like rice.

Their efficient water usage, coupled with resilience to arid conditions, makes millets an environmentally friendly choice in regions facing water scarcity. Millets require less water than rice and wheat. They are very tolerant of heat (up to 64 degrees Celsius), drought and flood and it makes the crop an obvious choice for farmers in an era of climate change and depleting natural resources.

Millets encompass a diverse group of cereals including pearl millet, proso millet, foxtail millet, barnyard, kodo, brown top, finger and Guinea millets, as well as fonio, sorghum (or great millet) and teff.

Millets can grow in both low and high altitudes and across a wide latitudinal range, on arid lands, under non-irrigated conditions, in very low rainfall regimes, and have a low water footprint. Millets require less water than rice and wheat.

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Millets are an ideal solution for countries to increase self-sufficiency and reduce reliance on imported cereal grains. They need minimal inputs, are resistant to diseases and pests and offer a reduced dependence on synthetic fertilizers and pesticides.

They are also more resilient to changes in climate than any other cereals. On top of diversifying the food system, millets can help enhance livelihoods for small farmers, including women, nationally and regionally.

12.1.1 Nutritional and Health Benefits of Millet Consumption:

Millets are among the first plants to be domesticated and are considered “**nutri-cereals**” due to their high nutritional content. They are rich in vitamins and minerals, including iron and calcium; are high in protein, antioxidants, resistant starch, and have a low glycemic index, which can help prevent or manage diabetes. Millets are also gluten-free. As whole grains, millets provide different amounts of fiber. Dietary fiber has a role in regulating bowel function, blood sugar and lipids, and satiation.

12.1.2 Millet Production in the World:

Millets have served as a **traditional staple** for hundreds of millions of people in Sub-Saharan Africa and Asia (particularly in India, China, and Nigeria) for 7000 years and are now cultivated across the world.

Estimates show that more than 90 million people in Africa and Asia depend on millets in their diets.

12.2 Millets are Considered Eco-Friendly Crops for Several Reasons:

- a. Drought Resistance:** Millets are known for their ability to thrive in arid and semi-arid regions with minimal water requirements. They can grow in conditions where other crops might struggle, making them a sustainable option, especially in regions prone to water scarcity.
- b. Low Input Requirements:** Millets are generally hardy and require fewer inputs such as fertilizers and pesticides compared to some other major crops like rice and wheat. This leads to lower environmental impact and less dependence on chemical inputs.
- c. Biodiversity:** Growing millets promotes biodiversity as they are often grown in mixed cropping systems. The cultivation of millets can enhance the overall ecological balance and reduce the risk of pests and diseases associated with monoculture.
- d. Carbon Sequestration:** Some millet varieties have deep root systems, which can contribute to soil health and carbon sequestration. This can help mitigate climate change by enhancing the soil's ability to store carbon.
- e. Short Growing Period:** Millets generally have a shorter growing period compared to major cereals like rice and wheat. This allows for multiple cropping cycles in a year, promoting efficient land use.

- f. Nutrient-Rich:** Millets are rich in nutrients such as fiber, vitamins, and minerals. This makes them a valuable dietary source and reduces the need for fortification or supplementation, contributing to food security.
- g. Adaptability:** Millets are adaptable to various agro-ecological zones, making them suitable for diverse climates and soil types. This adaptability reduces the risk of crop failure and enhances overall resilience in the face of climate change
- h. Water Use Efficiency:** Millets are generally more water-efficient compared to traditional staple crops like rice. Growing millets can contribute to sustainable water management practices.
- i. Cultural Heritage:** Millets have been staple foods in many cultures for centuries, and their cultivation is often deeply integrated into local traditions and practices. Preserving and promoting millet cultivation helps maintain cultural and agricultural diversity.

The cultivation of millets aligns with the principles of sustainable and eco-friendly agriculture, offering benefits for both the environment and human health.

However, the specific environmental impact can vary depending on factors such as farming practices, varieties of millets, and local conditions.

12.3 Environmental Benefits of Millets:

A. Millets Are Drought-Resistant Crops and They Can Grow in Adverse Climatic Conditions:

Millets can grow in less fertile soil. They are drought-resistant crops and can survive well in hot temperatures too. This climatic resistance makes millet a preferred choice of crop for arid and semi-arid regions of India where growing other popular crops like wheat, rice etc., is challenging.

B. Millets Require Less Water to Grow:

Water scarcity is one of the major challenges in many parts of the country. As per global trends 2040, developed countries are most vulnerable to water security risk in the upcoming 20 years. Here, again millets come across as a great option to solve the problem. Millets require 70-80% less water than other popular crops like wheat and rice. Thus, millets crops can be a great option to grow with fewer water supplies.

C. Millets Offer Natural Resistance to Pests (Less Requirement of Fertilizers):

Extensive use of fertilizers is extremely harmful to our health and environment. Research shows increased pesticide exposure has a close association with major health problems such as leukemia and non-Hodgkin Lymphoma.

Millets work great in this aspect too. Millets offer natural resistance to pests and insecticides. They require less pesticide to grow and can be a great option to promote organic agriculture.

D. Millets Are Great for Soil Health Too:

Poor soil health is one of the major environmental issues. Millets can help a lot to resolve this issue.

Millets help in preventing soil depletion and improve its fertility and overall soil health.

12.4 Positive Impact of Environmental Benefits of Millets:

Millets' environmental benefits create lots of positive impacts ranging from helping in solving the food security issue to being a prime factor in achieving the SDG goals.

A. Providing Food and Nutritional Security:

India is one of the most densely populated countries in the world. It is challenging to feed the constantly growing population. To solve this issue, increased production and consumption of millets can offer great help.

As per recent scientific research, pearl millet is one of the underutilized crops. It has amazing climate-resistant properties and it can play a vital role in ensuring food security and combating malnutrition.

B. Help in Achieving SDG Goals:

Millet's nutritional and environmental benefits can help a lot in achieving SDG goals. As per United Nations, millets can be a major contributing factor in achieving SDG goals, mainly SDG 2 (Zero hunger), SDG 3 (Good health and well-being), SDG-12 (Sustainable consumption and production) and SDG-13 (Climate action).

C. Great for Farmers:

Because millets can grow in less fertile soil and require less maintenance to grow, they can be beneficial for farmers. They can be great in reducing the economic burden on farmers and providing economic security to them.

Millet's health benefits too are widely known. Millets are a great grain for diabetes. They are high in fiber and help in the weight loss process. Millets are the powerhouse of nutrition. they contain various essential nutrients such as iron, manganese, calcium etc. and work great in preventing and treating various nutritional deficiencies. Moreover, being gluten-free, they are great for those who have gluten sensitivity.

Millets are a wholesome package in terms of nutritional and environmental benefits. Though the United Nations and the Indian government are taking various measures to raise millet awareness, millets still have a long way to go on a global level. If more and more people come forward and help in spreading the millet benefits, then it could be a win-win situation for our farmers and the environment both.

12.5 References:

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