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## Millets for Climate-Resilient Agriculture: A Sustainable Future for Farming

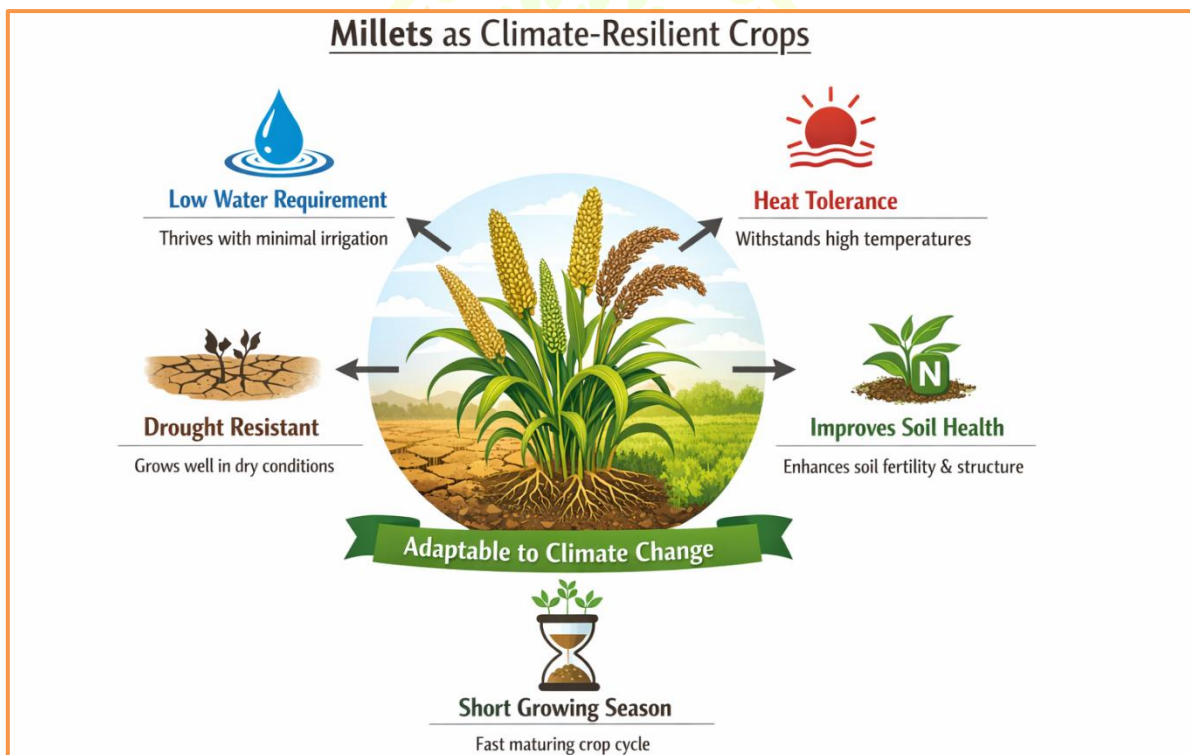
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Climate change has become one of the greatest challenges facing global agriculture. Increasing temperatures, irregular rainfall patterns, frequent droughts, and extreme weather events are affecting crop productivity and threatening food security. In such a situation, climate-resilient crops are gaining increasing attention among scientists, policymakers, and farmers. Millets are considered one of the most climate-resilient crops due to their ability to grow under harsh environmental conditions. These crops require less water, tolerate high temperatures, and can grow well in poor soils where other cereals often fail. Because of these unique characteristics, millets are increasingly being recognized as an important component of sustainable and climate-smart agriculture.



### Importance of Millets in Sustainable Agriculture

Millets are a group of small-seeded cereal crops that have been cultivated in India for centuries. Major millets include pearl millet (bajra), sorghum (jowar), finger millet (ragi), foxtail millet, and little millet. These crops are highly adaptable and can grow in arid and semi-arid regions with minimal inputs. One of the key advantages of millets is their low water requirement compared to crops such as rice and wheat. While rice cultivation requires

large amounts of irrigation water, millets can be grown successfully with limited rainfall. This makes them particularly suitable for regions facing water scarcity and climate variability. Millets also contribute to soil health and biodiversity. Their deep root systems improve soil structure and help conserve soil moisture. In addition, millets require fewer chemical inputs, which supports environmentally sustainable farming systems.

### Nutritional and Economic Benefits

Millets are often referred to as “nutri-cereals” because of their high nutritional value. They are rich in dietary fiber, protein, minerals, and essential micronutrients such as iron, calcium, and zinc. Including millets in the diet can help address problems such as malnutrition and micronutrient deficiencies. From an economic perspective, millets provide farmers with a reliable crop option in drought-prone and marginal areas. Because they require fewer inputs and have relatively stable yields under adverse conditions, millets reduce the risk of crop failure and improve farm resilience.

### Millets and Climate Resilience

Millets play a significant role in climate-resilient agriculture due to several important characteristics:

- **Drought tolerance:** Millets can survive under low rainfall conditions.
- **Heat tolerance:** They can grow well in high temperatures where other cereals may fail.
- **Low input requirement:** Millets require less fertilizer, irrigation, and pesticides.
- **Short crop duration:** Many millet varieties mature quickly, allowing farmers to adapt to changing climatic conditions.

These traits make millets an ideal crop for building resilient farming systems in the face of climate change.

### Government Initiatives Promoting Millets

Recognizing the importance of millets for food and nutritional security, the Government of India has taken several initiatives to promote their cultivation and consumption. The year 2023 was celebrated globally as the International Year of Millets 2023, highlighting the importance of these crops in sustainable agriculture. In India, the National Food Security Mission includes special programs to increase the production and productivity of millets. Additionally, the Pradhan Mantri Krishi Sinchai Yojana supports efficient water management practices that complement millet cultivation in water-scarce areas. Research institutions and agricultural universities are also working on developing improved millet varieties and agronomic practices to enhance their productivity and adaptability under changing climatic conditions.

### Role of Millets in Future Farming

Promoting millet-based farming systems can play a crucial role in achieving sustainable agriculture. Millets can be integrated into crop rotations, mixed cropping systems, and dryland farming systems. Their inclusion can reduce dependency on water-intensive crops while improving farm resilience and income stability. Increasing awareness about the nutritional and environmental benefits of millets is also important to expand their cultivation and consumption. Encouraging farmers to adopt millet-based cropping systems will contribute to sustainable agriculture and climate change adaptation.

### Conclusion

Millets represent a powerful solution for climate-resilient agriculture. Their ability to grow under harsh environmental conditions, require fewer inputs, and provide high nutritional value makes them an important crop for sustainable farming systems. Promoting millet cultivation can help conserve water resources, improve soil health, enhance nutritional security, and strengthen farmers resilience against climate change. With strong policy support, research advancements, and increased awareness, millets can play a significant role in building a sustainable and climate-resilient agricultural future.