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# Climate Resilient Agriculture

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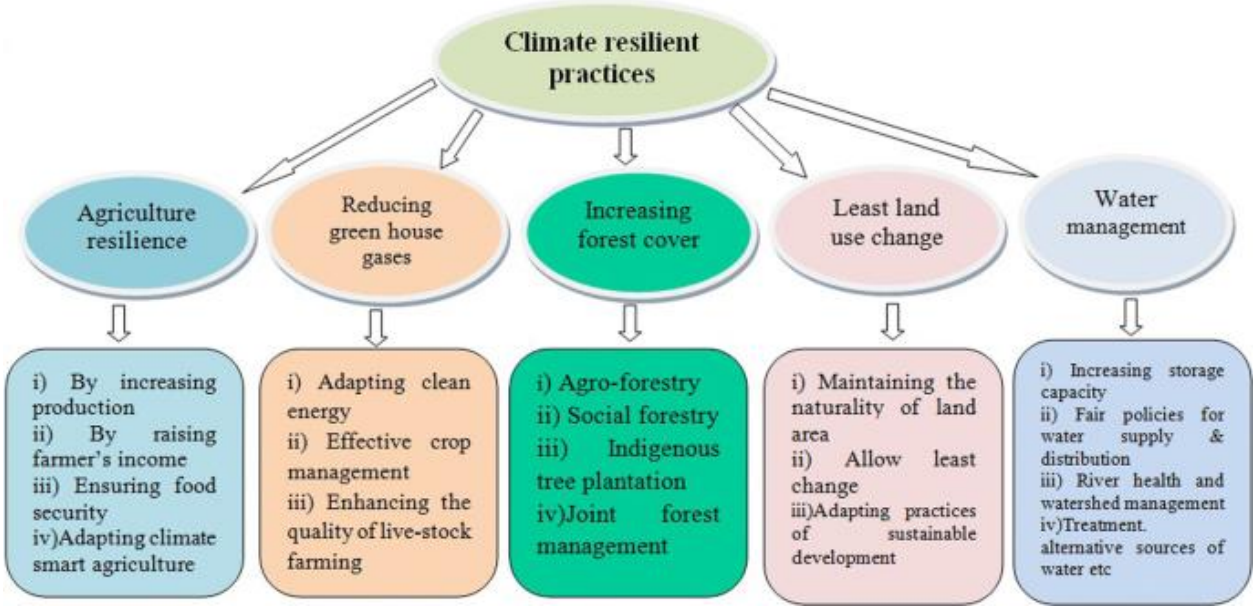
**SUMMARY**

Climate resilient agriculture practices look at adaptive agricultural methods that can withstant the shocks of climate change and weather extremes. These practices must be flexible enough to prepare and tackle long-term climate change as well as short-term weather shocks such as storms, hail, droughts, etc. Climate change often results in deficit or excess water and adverse events require working around them to achieve a win-win situation.

## INTRODUCTION

Climate-resilient agriculture (CRA) is an approach that includes sustainbly using existing natural resources through crop and livestock production systems to achieve long-term higher productivity and farm incomes under climate variabilities. This practice reduces hunger and poverty in the face of climate change for forthcoming generations. CRA practices can alter the current situation and sustain agricultural production from the local to the global level, especially in a sustainable manner.Improved access and utilisation of technology, transparent trade regimes, increased use of resources conservation technologies, an increased adaptation of crops and livestock to climatic stress are the outcomes from climate-resilient practices.Most countries have been facing crises due to disasters and conflicts; food security, however, is adversely affected by inadequate food stocks, basic food price fluctuations, high demand for agro-fuels, and abrupt weather changes.

**Strategies and technologies for climate change adaptation**

**Tolerant crops**: Patterns of drought may need various sets of adaptive forms. To reach deficient downpour conditions, early maturing and drought-tolerant cultivars of green gram (BM 2002-1), chickpea and pigeon pea (BDN-708) were brought on selected farmer's fields in Aurangabad district of Maharashtra (rainfall of 645 millimetres). This provided 20-25 per cent higher yield than the indigenous cultivars. In the same way, drought-tolerant, early maturing cultivars of pigeon pea (AKT-8811) and sorghum (CSH-14) were introduced in the villages of Amravati district, Maharashtra (rainfall of 877 mm).

**Tolerant breeds in livestock and poultry**

Local or indigenous breeds have the notion to forage for themselves. In nomadic systems, the animals show their owners when to move in search of new grasslands. Indigenous breeds have unique characters that are adapted to very specific eco-systems across the world. These unique characters are resistant to droughts, thermoregulation, ability to walk long distances, fertility and mothering instincts, ability to ingest and digest low-quality feed, and resistance to diseases. These livestock breeds may not be highly productive in terms of meat or milk production, but are highly adaptive to the unpredictable nature and have low resource footprints.

**Feed management**: Betterment of feeding systems as an adaptation measure can indirectly improve the efficiency of livestock production. Some feeding methods include altering feeding time or frequency and modification of diet composition, including agroforestry species in the animal diet and training producers in production and conservation of feed for various agro-ecological zones. These measures can decrease the risk from variations of climate by encouraging higher intake or compensating low-feed consumption, decreasing excessive heat load, reducing animal malnutrition and mortality and reducing the feed insecurity during dry seasons respectively.

**Water management**: Water-smart technologies like a furrow-irrigated raised bed, micro-irrigation, rainwater harvesting structure, cover-crop method, greenhouse, laser land levelling, reuse wastewater, deficit irrigation and drainage management can support farmers to decrease the effect of variations of climate. Various technologies based on a precision estimation of crop water needs; groundwater recharge techniques; adoption of scientific water conservation methods; altering the fertilizer and irrigation schedules; cultivating less water requiring varieties; adjusting the planting dates; irrigation scheduling; and adopting zero-tillage which may help farmers to reach satisfactory crop yields, even in deficit rainfall and warmer years. Hence, many international organizations, national governments' research institutions, farmers' organizations, non-profits and private agencies across the world have been focusing their efforts on the design, development of cost-effective and environmentally friendly water-conserving devices to enhance water use efficiency.

**Agro-advisory**: Response farming is an integrative approach; it could be called farming with advisories taken from the technocrats depending on local weather information. The success of response farming, viz., decreased danger and enhanced productivity has already been taken in Tamil Nadu and many other states.Response farming can be a viable choice for climate change adoption strategies, for the variations of climate is not a sudden one. The main cause for the success of response farming is because of both location and time-specific technologies. It is time to take forward the success of response farming to the entire farming community.

**Soil organic carbon**: Different farm management practices can increase soil carbon stocks and stimulate soil functional stability. Conservation agriculture technologies (reduced tillage, crop rotations, and cover crops), soil conservation practices (contour farming) and nutrient recharge strategies can refill soil organic matter by giving a protective soil cover. Integrated nutrient management deals with the application of organic and inorganic fertilizers, in addition to farmyard manure, vermicompost, legumes in rotation, and crop residue for sustaining soil health for the long term.Feeding the soil instead of adding fertilizers to the crop without organic inputs is the key point for the long-term sustainability of Indian agriculture.

**CONCLUSION**

To attain sustainable crop yield and farm income, farmers need to rationally adapt the changing climate. Enhanced resilience of agriculture with respect to the climatic risk is of vital importance for protecting livelihoods

of small and marginal farmers. Farmers need to adapt promptly to enhance their resilence to increasing threats of climatic variabilitynsuch as floods, droughts and other extreme climatic events during climatic change and variability. By practicing resilient agriculture, it is possible to manage the natural resources sustainably, improve the soil health and increase the crop production and livestock. Thereby it helps the farmer to be self - reliant and improve their socioeconomis status.

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