

Thinking and Strategies in Agriculture Based on Climate Change

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SUMMARY

The decade has witnessed the development of horticulture, which has resulted in appreciable growth and laudable achievements, owing to technological advancement and policy environment. But day by day drastic changes happened in climate and its adverse effect on each and every living entity. Also adverse climatic effect on horticulture crops in respect with physiological and chronological growth and development of crops and its directly influence on quality and quantity of yield. Therefore upcoming future it is an big challenges in front of horticulturist and farmers to growing crop as per the climate changes. So that need to develop new research strategies as well as used some integrated approach to fight and adjust with climate and crops.

INTRODUCTION

The crop productivity is subjected to number of stresses and potential yields are seldom achieved with stress. The present challenges like global climate change or global warming and its adverse impact on horticultural farming. Horticultural crops are omnipresent and require specialized care for high production and quality. Fruits, vegetables, flowers, medicinal plants tubers are grown from tropical to temperate, some horticultural crops like spices and plantation are location specific. In order to sustain our horticultural production with present day challenges we have to have packages to manage abiotic stresses.

Climate change poses serious challenges to human and places unprecedented pressures on the sustainability of horticulture industry. Developing technologies to meet the needs of growing populations and increasing demand for fruits, vegetables, and other horticultural products is essential. Climate models indicate that warming over the next several decades will take place irrespective of any action taken today. Therefore, the development of horticultural crops that can withstand abiotic stress will be the single most important step we can take to adapt to the changes we face today and in the future. There for this burning issue need to sort out causes, implication, remedies and solution to fight against the climate change.

Climate:

Climate is the average of weather over time. Climate tells us what weather is usually like in a given place.

Causes of Climate Change

Main cause of climate change is human being and his activities! Because changing the life style and forgotten our Indian culture and tradition. Human being day by day lost his samskaras, compassion towards others, sensitivity, carefulness towards environment and living entities that why its reflect on his thoughts action behaviours, heard heartness, lots of grids and unnecessary desires that leads to detoriate the beautiful nature and environmental ecosystem. Also disturbed the food chain in biodiversity our traditional farming principle is '*Jivo Jivtsya jivanam*' but current situation this principle is drained out because of extra intervention by human being for fulfil his extra grids, that leads to changing the climate and ultimately effect

on environment, other living things and specially direct impact on horticulture crops and farming.

Global Warming

Global warming refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. It is due to emission of carbon dioxide, methane etc, deforestation and the last half of the 20th century, the use of chemical fertilizers has risen dramatically. The high rate of application of nitrogen-rich fertilizers has effects on the heat storage of cropland (nitrogen oxides have 300 times more heat-trapping capacity per unit of volume than carbon dioxide) and the run-off of excess fertilizers creates 'dead-zones' in our oceans. In addition to these effects, high nitrate levels in groundwater due to over-fertilization are cause for concern for human health.

Impact of Global Warming

- 150,000 people already die every year from climate change (World Health Organisation).
- The area of the world stricken by drought has doubled between 1970 and the early 2000s (Greenpeace).
- The economic costs of global warming are doubling every decade (UN).
- Rise in sea levels worldwide: Scientists predict an increase in sea levels worldwide due to the melting of two massive ice sheets in Antarctica and Greenland.
- More killer storms: The severity of storms such as hurricanes and cyclones is increasing
- Massive crop failures: Climate change is expected to have the most severe impact on water supplies. "Shortages in future are likely to threaten food production, reduce sanitation, hinder economic development and damage ecosystems.

How Will Climate Change Due to Increasing Green House

The planet will warm, more so in middle and high latitudes than in the tropics;

- The hydrologic cycle will speed up;
- The area covered by snow and sea ice in winter will decrease;
- The interior of continents will be drier in the summertime;
- The sea level will rise.
- The atmosphere, land (including soil and vegetation) and the oceans.
- However, it is the anthropogenic GHG emissions that are ultimately responsible for current climate change.

Implications of climate change in Horticulture:

Two major parameters of climate change that has far reaching implications on agriculture in general and horticulture in particular are increasing temperature and changes in the rainfall (both in terms of quantity and intensity). These parameters necessitate the intensification of research toward abiotic stress. The climate change will have many impacts on horticulture and one example is given below.

In konkan region of Maharashtra due to erratic rainfall occurs during pre flowering stage it leads to delay the flowering as well as delay the fruiting and outbreaks of pest and diseases viz., mango hoppers and powdery mildew and ultimately reduction in yield quality and quantity also. Such type of cases occurs in different areas with different fruit crops. Now need and necessity of researchers and horticulturist to think on that how to adapt by climate change and adjust our cultivation practices and necessities of research in coming future.

Adaptation Strategies for Climate Change

In farmers point of view some strategies are useful for reduce the impact of climate change such as, suitable crop varieties biotic and abiotic stress resistance should planted Increase water saving technologies, Changing planting date, Increased use of integrated farming system, crop diversification, provide more non-crop flowering resources in the field, integrated pest management, crop insurance, improved weather-base agro-advisory, improved nutrient management, used indigenous technical knowledge of fruit growing and also used soil moisture conservation techniques, enhancing soil organic matter content and protected cultivation also useful for growing crops under adverse climatic condition.

Researcher Should Think

Researcher is a major role for growing agriculture and help to the farmers through provide the technological aspect. In climate change researcher should think on such type of research i.e. development of biotic and abiotic stress resistance varieties and also need to search ecofriendly races and promotes it via breeding programme. Also biotechnological aspects, precision farming, and organic as well as traditional farming will help to reduce the impact on cultivation of farmig. My opinion is that researchers should search such a thing which will be not harmful to the nature and its things in next future. In view of these climate change and agriculture, horticulturists will have to play a significant role in the climate change scenario and proper strategies have to be envisaged for saving agriculture the most effective way to control climate change and its adverse effect is to adopt conservation agriculture, using renewable energy, forest and water conservation, reforestation etc. to sustain the productivity modification of present horticultural practices and greater use of greenhouse technology are some of the solutions to minimize the effect of climate change. Development of new cultivars of horticultural crops tolerant to high temperature, resistant to pests and diseases, short duration and producing good yield under stress conditions, as well as adoption of hi –tech horticulture and judicious management of land use resources will be the main strategies to meet these challenge.

Various cultivation practices like zero tillage, crop rotation, mulching, drip irrigation helps mitigate the climate change. Farmers should be provided with proper tools & technologies, valued climatic risk management services, early warning systems and crop weather insurance. New technologies and mitigation strategies should be based on regional requirement. Improved crop management practices can considerably reduce the emission of greenhouse gases by reducing dependence on energy needs. Advances in genome sequencing, development of high throughput genomic technologies, quantitative genetics, and bioinformatics offer good opportunity to meet challenges of climate change Climate change should be a central focus for existing and future research programs Programs should be highly targeted, networks and collaborative links have to be developed at national and global level on climate change.

CONCLUSION

Farmers, researchers, horticulturist and related all department, agencies should think, thought, acting, and apply integrated approached like used traditional, organic practices as well as combination with modern agriculture technology for cultivation of crops and growing agriculture without hazarding, overwhelmed the nature is an effective way to control climate change.

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