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Popular Article

Climate Change and Sustainable Agriculture: An Overview

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Abstract

Climate change is a red-hot topic now a days. It directly affecting agriculture in various ways. To eliminate the impact of climate change on agriculture farmers need to adopt sustainable agriculture. Adopting sustainability is the only way to minimize the effect of climate change in the food and agricultural sector. This technical article has contained numerous ways and practices to adopt in sustainable agriculture. The author also tried to give a glimpse on the various effect of climate change and its future thrust on agriculture.

Introduction

Global warming, ozone depletion, acid rain, resource degradations in many countries in the world has become a challenge. Now time has come to protect environment wealth, human capital stock, land, water and ecosystem. Due to frequent climate change and its effect on agriculture and allied sector causes irreparable loss to the production process. According to the Intergovernmental Panel on Climate Change (IPCC) the global temperature during 1900-2018 increased ranging from 0.8^{o}C to 1.3^{o}C. It has been estimated that by 2039 there may be production loss in agriculture will be more than 9% due to the vulnerability of climate change. When we emphasize sustainable agriculture in the context of climate change, sustainable agriculture needs to engage the successful and proper management of different resources to convince changing human needs while maintaining on enhancing the quality of environment and conservation of natural resources. In order to attain sustainability plants and programmes must be framed to focus on the principle of ecology, economy and equity. Therefore, certain reorientation is needed in agricultural education, research and extension of the latest developed

technologies, strategy and methodology for achieving ecologically, economically and social sound agriculture. The planners and policy makers may focus on following issues for achieving sustainable agricultural development, food, nutrition and livelihood security of the people in general and farmers in particular.

The thrust areas of sustainable agriculture are as follows:

I. **Soil and Land Management**

- Effective land utilisation planning
- Use of modern tools and techniques such as rover mapping and drone technologies for classification of land on the basis of both biological diversity and biological potential
- Improvement of degraded lands.
- Prevention of soil erosion and soil acidity

II. **Water management**

- Effectiveness of water saving
- Fairness in water sharing
- Efficacy in water delivery and use of surface and ground water resources.
- Application of remote sensing for ground water survey
- Suitable technology for exploiting water and recharging
- Construction of environmentally sound, small and median scale dams.
- Judicious use of water resources.
- Promotion of precious farming for judicious utilisation of available water particularly in rain fed areas.

III. **Water harvesting/conservation of Rain water**

- To supplement soil moisture under unirrigated condition, conservation of rain water, efficient storage and optimum utilisation of storage water for maximum benefits of farmers as well as surrounding eco-system

IV. **Integrated Nutrition Management**

- Efficient nutrient scheduling for different crops
- Application use of FYM, green manuring, bio fertilizer for crops and vegetables. Land based cropping system and efficient irrigation scheduling for sustainable agriculture.
- Development of mechanism to provide up to date weather information to grass root level farmers

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V. Integrate Pest Management

- Appropriate techniques and suitable methods to sustain the pest population at levels below those causing economic injury.
- Breeding of strains possessing resistance to biotic and abiotic stress
- Conservation of natural enemy of the pests that are vital for maintain excess use of insecticides resistant pest or pest resurgence
- Promotion of botanical and selective microbial pesticides to maintain the sustainability.
- Effective monitoring and forecasting of population development of pest organism
- Awareness to people for less dependence on synthetic pesticides and its use at right time and in correct dosages.

VI. Post Harvest Technology

- Low cost drying and storage facilities.
- Cold storage at block level.
- Application of modern technology for grading, processing, value addition and packaging

VII. Marketing

- Promotion of E-marketing at grass root level.
- Up to date marketing information to farmers.
- Awareness to farmers on MSP for different crops to prevent distression of farm commodities.

Conclusion

To achieve sustainability it's compulsory for conservation, collection, evaluation and improvement of different crops genetic resources directly related to endorsement of sustainable advances in crop productivity, scientific management of soil, water, better utilisation of degraded lands, livestock farming ,in land fisheries and education to farmers, farm women and youth to sustain rural economy through generation of more jobs in agriculture and allied sectors and socio-economic improvement of the farm families sustainability in agricultural productivity cannot fulfil without people's education, information, training and effective participation of people.

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