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Opinion

Climate-smart Agriculture: A Response to Climate Change

Mehrdad Niknami*

Department of Agricultural Extension and Education, College of Agriculture, Garmsar Branch, Islamic Azad University, Garmsar, Iran

***Corresponding Author:** Mehrdad Niknami,Department of Agricultural Extension and Education, College of Agriculture, Garmsar Branch, Islamic Azad University, Garmsar, Iran.

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Climate change is one of the biggest challenges to human beings. Agriculture is climate-dependent and it definitely affects climate change; therefore, the activities of rural residents such as farmers and those who are active in agribusinesses interact with climate change. Climate change affects various productive, economic, social, environmental, and human aspects; for example, increase in greenhouse gas emissions, changes in the usual precipitation patterns and their improper distribution, and temperature fluctuations. These changes lead to the destruction of ecosystems, biodiversity loss, and the occurrence of various natural hazards. Increase in risk, reduction of crop production, the spread of poverty, migration, the incidence of physical and mental illness, the occurrence of more harm to farmers, and endangerment of their sustainable livelihoods and ultimately pose a serious challenge to food security, especially in developing countries. In most areas, farmers have resorted to the conventional agricultural model which applies more pressure on soil and water and increase the consumption of external inputs so that they can increase or maintain crop production; however, this model leads to unsustainability in the environment, natural resources, and agricultural and production systems; therefore, it is necessary to transfer or reorganize a system that moderates the interactions of agriculture and climate change to achieve sustainable agricultural development and food security. Climate-smart agriculture (CSA) is a comprehensive and integrated approach that provides appropriate policies, strategies, methods, and technologies for sustainable agriculture production which is adaptable to climate change with cooperation, coordination, and participation between sectors and actors as well as the assessment of the conditions of each situation. The three main pillars of climate-smart agriculture are 1) sustainable productivity and income growth in agriculture, 2) adaptation to climate change and climate resilience, and 3) reduction of agriculture's contribution in both the production and emission of greenhouse gases. Thus, this approach addresses the interlinked challenges of sustainable development, food security, and climate change; however, it is not necessarily "an agenda that can universally be used in all places". It offers specific solutions to each place that create synergies and economic, social and environmental benefits and it is an approach to agricultural management with the formation and establishment of sustainable production systems which have the greatest adaptation and resilience to climate change.