

Effects of Climate Variations on Agriculture and Food Safety

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Abstract

The mutual relationship of weather change and agriculture is one of the most important in specific to emerging countries as a result of their requirement on agrarian practice for means of support and their shortage of organization for alteration when associated to developed countries. Agricultural deeds are pretentious by climatically variations have emotive impact due to their direct requirement on climatic influences. In high space areas with low temperature, increased temperature because of climate change could permit for longer increasing season. Cultivation disturbs climate through radiations of greenhouse gases such as carbon dioxide, methane and nitrous oxide. These discharges come straightly from the practice of fossil fuels, plowing practices, pollinated agricultural soils and livestock compost in large proportion. The representations are categorized in subject to the resulting principles: the definite impacts they aim to evaluate, their capability to measure production and/or financial losses, and the approval of social signs of the effects and responses. The faults and assets of the models are also recognized and conferred. The most appropriate factors for the optimal solution of the most proper model are evaluated. On the other hand, agriculture could be a clarification for climate change by the well-known adoption of alleviation and variation actions. This occurs with the help of best management performances such as biological farming, agro forestry training and fertilizer management etc.

Keywords: *climate change, agriculture, biological farming, agro forestry training, fertilizer management.*

I. INTRODUCTION

Universally, climate change is the most severe ecological threat that unpleasantly affects a production. In relation to inter-governmental board on environment change report, climate change denotes to any change in climate over time, owing to natural inconsistency or as a production proliferations. Based on some projections, changes in temperature, rainfall and severe weather events are estimated to reduce crop yield in many regions of the developing world, particularly in Africa and parts of Asia. The effect and significances of climate change for cultivation have a tendency to be more

unembellished for countries with higher primary temperatures, areas with peripheral or already tarnished lands and lower levels of development with little variation capacity. Agriculture is one of the areas most pretentious by enduring climate change.

The extensive range of literature on this subject determines that damages caused by climate change can be related to both gathering and livestock happenings. Weather change will have a substantial result on the pastoral site and the steadiness of agricultural and forest ecosystems. In reality, climate change can distress different agricultural extents, causing losses in efficiency, productivity and service. Food security is evidently susceptible by climate change, as a result of the instability of crop production, and encouraged changes in markets, food prices and supply chain infrastructure. Farming practices and Climate change are intricately related. Agriculture still depends essentially on the weather. Climate change has previously instigated a negative influence on agriculture in many parts of the world owing to progressively severe weather decorations. Climate change is estimated to endure to cause floods, deteriorate desertification and interrupt growing periods.

On the other hand, several studies designate that current agrarian activities are an important source of Green House Gases that intensify climate interruption. The practice of agriculture is not the same in developing and developed counties, which effects in difference of agricultural influence to climate change. In evolving countries, that emission from agriculture sector is considerably more because of large number of cattle and insufficient manure managing, inappropriate use of agro-chemicals and mishandling of the land. Sequentially, CFC impact becomes more severe in developing countries due to their need is on agriculture. Nevertheless, further its principal role in generating food and fibers, agriculture accomplishes also other purposes, such as the management of renewable natural assets, the construction and security of landscape, the preservation of biodiversity, and the influence to sustain socio-economic activities in marginal and rural areas.

Climate change could affects also this multifunctional role of agriculture. According to previous studies, alleviation is an interpolation to

decrease the emissions sources or improve the greenhouse gases descends, however adaptation is the alteration in natural or human systems in reaction to actual or projected climatic change or their effects, to decrease maltreatment or exploit advantageous prospects. Ecological and biological agricultural systems can help decrease agricultural emissions through energy management, minor levels of carbon-based contributions, lower use of copied fertilizer and other structures that reduce those emissions and confiscate carbon in the soil. During modification and

variation of climate change through different agronomic activities, there might be many tasks or obstructions such as economic, policy and application hurdles etc. In common, Agricultural action could be a source of GHGs along with a sink, particularly through the storage of carbon in the soil organic substance and in biomass and swayed by Climatic Changes.

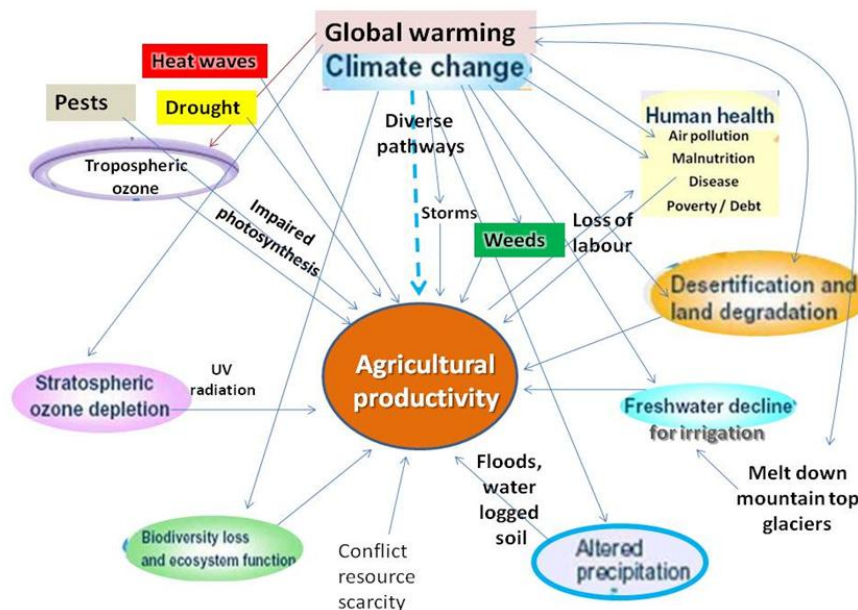


Fig.1: Impacts of Global Warming and Climate Changes on Agriculture

II. RELATIONSHIP BETWEEN CLIMATE CHANGE AND AGRICULTURE

Climate change circumstances include higher temperatures, variations in rainfall, and higher atmospheric CO₂ concentrations which may result on yield, growth rates, photosynthesis and transpiration rates, moisture availability, through changes of water use and agricultural inputs such as herbicides, insecticides and fertilizers etc. Environmental effects such as frequency and intensity of soil drainage, soil erosion, land availability, reduction of crop diversity may also affect agricultural productivity. Climate change is probably to impact food safety at the universal, provincial, and local level. Climate change can interrupt food obtainability, decrease access to food, and affect food quality. For instance, estimated increases in temperatures, changes in rainfall configurations, variations in extreme weather events, and reductions in water availability may all result in concentrated agricultural efficiency. Increases in the frequency and cruelty exciting weather events can also interrupt food delivery, and resulting spikes in

food prices after extreme events are expected to be more frequent in the future. Increasing temperatures can subsidize to decay and adulteration. Universally, these effects of climate change on agriculture and food supply are possible to be related to those seen in the worldwide. Though, other stressors such as population growth may amplify the effects of climate change on food safety. In emerging countries, variation options like variations in crop-management or ranching performs, or improvements to irrigation are more restricted than in the area and other developed nations. A key mechanism of high temperature-induced floret desolation in rice is the reduced ability of the pollen grains to swell, ensuing in poor thecae dehiscence. Important genotypic variation in high-temperature prompted floret desolation happens. Discrepancy in solar contamination, increased conservation respiration fatalities or differential effects of night vs. day temperature on modifying, leaf-area growth, stem elongation, grain filling, and crop phenology have been suggested as possible causes.

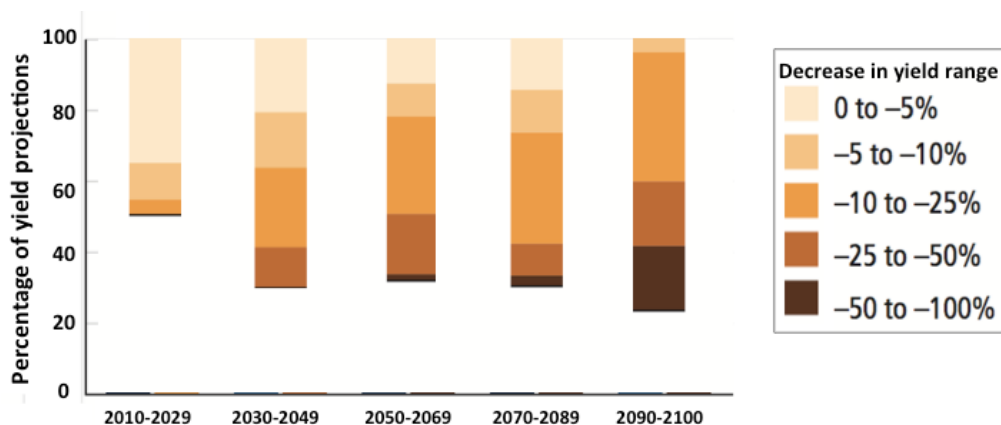


Fig.2: Decrease of Crop Yields Under Climate Change to 2100

III. IMPACT OF CLIMATE CHANGE ON AGRICULTURE

Climate change is possibly to openly influence on food production across the globe. Increase in the mean seasonal temperature can reduce the duration of many crops and hence decrease final yield. Cultivation is an economic activity that is highly reliant on upon weather and climate in order to create the food and fiber necessary to sustain human life. Not surprisingly, agriculture is estimated to be an economic action that is estimated to be susceptible to climate inconsistency and change. It includes natural developments that recurrently require fixed quantities of nutrients, temperatures, rainfall, and other circumstances chains, warming will affect earnings more instantaneously. Climate change affects agriculture in a number of ways; comprising through variations in average temperatures; precipitation and climate dissipations with a significant impression on soil erosion: variations in pests and diseases, fluctuations in atmospheric carbon dioxide, changes in the nutritious quality of some foods, alterations in growing season, and modifications in sea level. Crop yields show a robust correlation with temperature change and with the period of heat or cold waves, and fluctuate based on plant development periods during exciting weather events. Improved rainfall patterns will improve water insufficiency and related drought stress for crops and alter irrigation water provisions. They also decrease the probability for farmers’ design. In an ancillary way, a change in temperature and humidity levels may lead to a change in the concentration rate of manures and other minerals, which decide yield output. Climate change is also prospective to affect the heifers sector both by disturbing the amount and feature of feed and by distressing the frequency and strictness of risky climate actions.

There is a restricted body of literature that agreements with climate change influences on livestock, but region may be mostly vulnerable to the effects of climate change. Climate change provincial influences are possible to be significant and

inconstant, with some regions advancing from a changed climate and other regions undesirably exaggerated. Normally, food production is expected to deterioration in most dangerous regions, however agriculture in developed countries may truly benefit where technology is more offered and if proper adaptive adjustments are engaged.

IV. AGRONOMIC PRODUCTION AND FOOD SAFETY

Food security is both unswervingly and ultimately related with climate change. Any alteration in the climatic parameters such as temperature and humidity which govern crop growth will have a direct impact on quantity of food manufactured. Indirect relation concerns to disastrous events such as flood and drought which are projected to multiply as a consequence of climate change leading to huge crop loss and leaving large patches of land ailing for cultivation and hence menacing food security.

The net influence of food security will rest on the disclosure to global ecological change and the capability to handle with and improve from global environmental variation. On an international level, progressively irregular weather designs will lead to tumble in agricultural production and developed food prices, important to food insecurity. Food uncertainty could be a pointer for evaluating susceptibility to extreme actions and slow-onset changes. This effect of global warming has important significances for agricultural production and profession of developing countries along with an enhanced risk of hunger.

V. ALLEVIATION AND ALTERATION OF CLIMATE CHANGE IN AGRICULTURE

- Contribution farmers in managing with current climatic hazards by providing value-added climate services to agriculturalists. They can adjust to climate changes to some grade by fluctuating establishing dates, selecting

variations with different growth duration, or changing crop rotations.

- Primary threatening system should be put in place to observe changes in pest and disease occurrences. The general pest control approach should be based on combined hassle management because it takes care of multiple pests in a given climatic situation.
- Partaking and recognized plant breeding to improve climate robust crop variations that can endure higher temperatures, drought and salinity.
- Emerging short-duration crop selections that can mature before the peak heat phase set in and choosing genotype in crops that have a advanced per day yield potential to counter yield loss from heat-induced reduction in emerging stages.
- Well-organized water use such as recurrent but trivial irrigation, drip and sprayer irrigation for high value crops, irrigation at serious stages and Periodic weather predictions could be used as a supportive measure to optimize planting and irrigation patterns.
- Be responsible for better coverage of weather related to agriculture-insurance and strengthen the food production system by enlightening the technology and input delivery system.
- Improve a long-term land use plan for confirming food safety and climatic flexibility and National grid grain storages at the household/ community level to the district level must be recognized to confirm local food security and alleviate prices.
- Provide motivations to farmers for resource conservation and productivity by given that credit to the farmers for transition to alteration technologies.
- Make available methodological, influential and commercial support for creation of community banks of food, silage and seed.

VI. CONCLUSION

Climate is the principal factor of agricultural production which directly influence on food production across the world. Agriculture zone is the most penetrating sector to the climate variations because the climate of a region/country decides the nature and features of vegetation and crops. Increase in the mean periodic temperature can decrease the period of many crops and hence condense final yield. Food production systems are enormously thoughtful to climate changes like changes in temperature and rainfall, which may lead to eruptions of pests and diseases thus dipping harvest eventually disturbing the food security of the country. The net influence of food security will depend on the revelation to global environmental change and the ability to manage with and improve from global environmental change. In contrast, by the help of the right farming practice agriculture could be the main resolution for climate

change by extenuation and variation reaction. Within the existing and expected situation of climate change internationally, only climate change justification is not sufficient so long term resolution is significant by absorption climate change variation in agriculture sector. Such performs could be biological agriculture, manure management, agroforestry practice etc.

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