Impact of weather and climate on cropping area and Intensity

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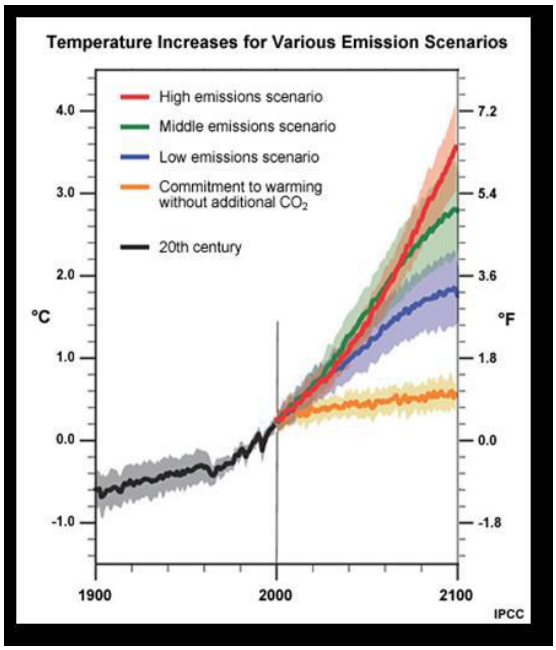
***Abstract*--Various studies of the impact of weather and climate on crop area and intensity have examined the influence on crop yields. Climate influences all components of crop production, includes cropping area (area planted or harvested) and cropping intensity (number of crops grown within a year). Even though crop yield increases have predominantly contributed to increased crop production over the few decades, it increases cropping area as well as in cropping intensity, especially in the have played a substantial role. Therefore, we need to consider these important aspects of production to get a more complete understanding of the future impacts of climate change. We will discuss how farmer decision making and technology might change the production response to climate.The influence of weather and climate on the different components of crop production can differentiate, and often happen at the same time. Further, different types of climatic extremes can affect crop production differently.**

Keyword--Climate ,agriculture

I. INTRODUCTION

Weather change is any significant long-term change in the expected expression of average climate and region over a significant period of time. It is about abnormal variations to the climate, and the effects of these variations on other parts of the Earth. These changes may take tens, hundreds or millions of year. But has increased in anthropogenic activities such as industrialization, urbanization, deforestation, agriculture, change in land use pattern etc. leads to emission of green house gases due to which the rate of climate change is much rapid. The compost manufactured served as a soil enriching agent in agriculture.Currently the plant produced 20 tons of compost daily for vegetation, though the quantity declined in the rainy season depends on weather. Quantity of garbage collected daily required 60 days of processing to convert them to compost. Weather change scenarios include higher temperatures, changes in precipitation, and higher atmospheric CO2 concentrations. There are few ways in which the Greenhouse Effect may be important for agriculture.They are increased atmospheric CO2 concentrations can have an effect on the growth rate of crop plants . CO2-makes changes of climate may alter levels of temperature, rainfall and sunshine that can affect plant and animal productivity. Finally, rise in sea level may lead to loss of farmland by increasing salinity of groundwater in coastal areas. The effect of climate on the different components of crop production can vary, and often happen at the same time. More, different types of climatic extremes can affect crop production differently. This makes it difficult to understand the climatic effects on respective components of crop production. To take a hypothetical case for the purpose of description, let us say a landslide associated with a tropical cyclone occurs and a portion of cropland is buried in dirt. In this case harvested area would decrease, but produce in the harvestable area would not necessarily decrease. In another extreme case, an unfavorable growing-season climate, such as insufficient solar radiation associated with modulated monsoon, would lower yield, but not necessarily decrease harvested area. Both cases would result in a decreased production, but the affected component of crop production.

II. GLOBAL SCENARIO OF CLIMATE CHANGE



III. IMPACT OF CLIMATE CHANGE ON INDIAN AGRICULTURE

The warming may be more seen in the northern parts of India. The extremes are seen in maximum and minimum temperatures and are expected to rise in under changing climate; few places are expected to get more rain while some may remain dry. Leaving Punjab and Rajasthan in the North West and Tamil Nadu in the South, which give away a slight decrease on an average of 20% rise in all India seasons over all the states are expected. Number of rainy days may fall (e.g. MP) but the intensity is expected to increase at least to some parts of India (e.g. North East).

IV. INFLUENCE OF FARMER DECISION MAKING AND TECHNOLOGY

The agronomic technology made available to farmers can increase use of different components of production. Direct seeding, which is a more time consuming and labor-saving effortless planting method than transplanting? The crop duration of directly-seeded rice is always shorter than that of transplanted rice and the shorter crop duration leads to lower yield. These technologies suggest the importance of knowing the technology used by farmers to improve their understanding of how climate affects respective components of crop production. It is also worth emphasizing that the technology available for farmers is linked with their economic conditions and influence farmers decision making on how to deal with climate risk. Farmer decision making also greatly influence which component of crop yields is affected by climate. On the one hand, some farmers may harvest only crop plants that are less damaged. This decision would lead to reduced harvested area, but not decreased yield. On the other hand, other farmers may harvest all crop plants including damaged ones and this leads to decreased yield, but not decreased harvested area. Importantly, both decisions can be reasonable under different economic conditions. The former decision could be expected when the crop price is high enough to compensate for the decreased production. The latter decision would be expected when crop production is covered by crop insurance or governmental subsidy, wherein insurance payouts are calculated based on yield anomaly deviations from a predefined normal yield.

V. CROP RESPONSES TO EXPECTED CLIMATE CHANGE FACTORS

Climate change scenarios include more temperatures, changes in precipitation, and more atmospheric CO2 concentrations which may influence on yield (both quality and quantity), growth rates, photosynthesis and transpiration rates, moisture availability, through changes of water use (irrigation) and agricultural inputs such as herbicides, insecticides and fertilizers etc. Environmental effects such as intensity of soil drainage, soil erosion, land availability, reduction of crop diversity may also affect agricultural productivity.

VI. CLIMATE CHANGE – MITIGATION AND ADAPTATION IN AGRICULTURE

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1. Assist farmers in copying with recent climatic risks by providing value-added climatic services to farmers. Farmers can adapt to climate changes to some degree by changing planting dates, choosing varieties with different growth duration, or changing crop rotations.
2. An Early warning system should be put in place to monitor differences in pest and disease outbreaks. The overall pest control strategy should be based on integrated pest management because it takes care of many pests in a given climatic scenario.
3. Participatory and formal plant breeding to raise climate-resilient crop varieties that can tolerate higher temperatures, drought and salinity.
4. Developing short-duration crop varieties that can develop before the peak heat phase set in.
5. Selecting genotype in crops that have a higher per day crop yield potential to counter yield loss from heat-induced reduction in growing periods.
6. Preventive measures for drought that include on-farm reservoirs in mid lands, growing of pulses instead of rice in uplands, ridges and furrow system in cotton crops, growing of intercrops in place of pure crops in uplands, land grading and levelling, stabilization of field bunds by stone and grasses, graded line bunds, contour trenching for runoff collection, conservation furrows, mulching and more application of Farm yard manure .
7. Efficient water such as frequent but shallow irrigation, drip and sprinkler irrigation for high value crops, irrigation at critical stages.
8. Efficient fertilizers use of optimum fertilizer dose, split application of nitrogenous and potassium fertilizers, deep placement, use of need *and* other such nitrification inhibitors, liming of acid soils, use of micronutrients such as zinc and boron, use of sulphur in oilseed crops, integrated nutrient management.
9. Seasonal weather forecasts could be used as a supportive measure to optimize planting and irrigation patterns.
10. Provide greater coverage of weather linked agriculture-insurance.
11. Intensify the food production system by improving the technology and input delivery system.
12. Adopt resource conservation technologies such as no-tillage, laser land levelling, direct seeding of rice and crop diversification which will help in reducing in the global warming potential. Crop diversification can be done by growing non-paddy crops in rain fed uplands to

perform better under prolonged soil moisture stress in kharif.

13. Develop a long-term land use plan for ensuring food security and climatic resilience.
14. National grid grain storages at the household/ community level to the district level must be established to ensure local food security and stabilize prices.
15. Provide incentives to farmers for resource conservation and efficiency by providing credit to the farmers for transition to adaptation technologies.
16. Provide technical, institutional and financial support for establishment of community banks of food, forage and seed.
17. Provide more funds to strengthen research for enhancing adaptation and mitigation capacity of agriculture.

VII. IMPACT OF IT ON AGRICULTURE

Nowadays human societies can also take advantage of "high" technologies such as earth observation systems that can provide more accurate weather forecasts, or crops that are based on genetically modified organisms. finally too, people can look towards an horizon of future technologies yet to be invented or developed – which might include crops that need little or no water, or a malaria vaccine. Example: Every year millions of people in coastal areas of Bangladesh are exposed to flooding. While much of this is beneficial, indeed essential, for agriculture, in some years it can be on a catastrophic scale, resulting in epidemics and in thousands of deaths as well as causing serious damage to habitats, agricultural production, fisheries and live stock. Bangladesh has therefore been developing more effective early warning systems. Among these is a five-year project, the community flood information system , which is funded by United states agency for international development and operated by the United states company riverside Technology in partnership with two Bangladeshi institutions: the center for environmental and geographic information services, and the Bangladesh disaster preparedness center. Experience has shown that those best placed to prepare for and respond to disasters are local people. prior to the project, most people obtained flood forecast information froma combination of sources: word of mouth, traditional knowledge and local media. But the first two are often inefficient and hit-or-miss, whereas local media reports can be difficult for people to understand. It is designed to help Bangladeshi communities to adapt to the risks off lood sand cyclones through a system of flood monitoring and forecasting and has already shown that timely flood warnings can prompt communities to protect crops, habitat sand live stock. The government of Bangladesh has recommended that the model be replicated inother

IX. CONCLUSION

Climate change, the result of the "Global Warming" has now started showing its impacts over the world. Climate is the important and primary determinant of agricultural productivity which directly affect on food production across the globe. Agriculture sector is the most sensitive sector to the climate changes because the climate of a region determines the nature and features of vegetation and crops. Increase in the mean seasonal temperature can reduce the duration of many crops and hence reduce final yield. Food production systems are extremely sensitive to climatic changes like changes in temperature and precipitation, which may lead to outbreaks of pests and diseases thereby reducing harvest ultimately affecting the food security of the country. The net impact of food is on security that will depend on the exposure to global environmental change and the capacity to cope with and recover from global environmental change.

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