WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.453
Volume 13, Issue 17, 257-260. Review Article ISSN 2277–7105

CLIMATE CHANGE AND FARMERS: COUNTER STRATEGIES BETWEEN LIVELIHOOD AND ADAPTATIONS

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Article Received on
08 July 2024,

Revised on 29 July 2024,
Accepted on 19 August 2024

DOI: 10.20959/wjpr202417-33714

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ABSTRACT

Agriculture is the main back bone of society. Agriculture system provides the highest amount of revenue to a state even in greater extent than industry. Due to the advancement of our society contribution of science and scientific equipments are of highest importance. The blur scenario is that the excessive consumerisms have led to a greater extent of pollution and other impacts. As a result, the balance of eco-system is being harmed to larger extents, which in turn result in climate change. The impact of climate change is greatly manifested in agricultural system and thus, further incur in our livelihoods. The present study is a small effort to put some light on the causes and impacts of climate change with a note on to the precautionary measures.

KEYWORDS: Agriculture, Adaptation, Climate, Farmer, Livelihood.

BACKGROUND

Agriculture is very sensitive to weather and climate. It also relies heavily on land, water, and other natural resources that climate affects. While climate changes (such as in temperature, precipitation, and frost timing) could lengthen the growing season or allow different crops to be grown in some regions, it will also make agricultural practices more difficult in others. The effects of climate change on agriculture will depend on the rate and severity of the change, as well as the degree to which farmers and ranchers can adapt. U.S. agriculture already has many practices in place to adapt to a changing climate, including crop rotation and integrated pest management. A good deal of research is also under way to help prepare for a changing climate.

Top Climate Impacts on Agriculture

Climate change may affect agriculture at both local and regional scales. Key impacts are described below.

1. Changes in Agricultural Productivity

Climate change can make conditions better or worse for growing crops in different regions. For example, changes in temperature, rainfall, and frost-free days are leading to longer growing seasons in almost every state. A longer growing season can have both positive and negative impacts for raising food. Some farmers may be able to plant longer-maturing crops or more crop cycles altogether, while others may need to provide more irrigation over a longer, hotter growing season. Air pollution may also damage crops, plants, and forests. For example, when plants absorb large amounts of ground-level ozone, they experience reduced photosynthesis, slower growth, and higher sensitivity to diseases. Climate change can also increase the threat of wildfires. Wildfires pose major risks to farmlands, grasslands, and rangelands. Temperature and precipitation changes will also very likely expand the occurrence and range of insects, weeds, and diseases. This could lead to a greater need for weed and pest control.

Further, it can also affect pollination. Pollination is vital to more than 100 crops grown in world. Warmer temperatures and changing precipitation can affect when plants bloom and when pollinators, such as bees and butterflies, come out. If mismatches occur between when plants flower and when pollinators emerge, pollination could decrease.

2. Impacts to Soil and Water Resources

Climate change is expected to increase the frequency of heavy precipitation in the India and world, which can harm crops by eroding soil and depleting soil nutrients. Heavy rains can also increase agricultural runoff into oceans, lakes, and streams. This runoff can harm water quality. When coupled with warming water temperatures brought on by climate change, runoff can lead to depleted oxygen levels in water bodies. This is known as hypoxia. Hypoxia can kill fish and shellfish. It can also affect their ability to find food and habitat, which in turn could harm the coastal societies and economies that depend on those ecosystems. Sea level rise and storms also pose threats to coastal agricultural communities. These threats include erosion, agricultural land losses, and saltwater intrusion, which can contaminate water supplies. Climate change is expected to worsen these threats.

3. Health Challenges to Agricultural Workers and Livestock

Agricultural workers face several climate-related health risks. These include exposures to heat and other extreme weather, more pesticide exposure due to expanded pest presence, disease-carrying pests like mosquitoes and ticks, and degraded air quality. Further, language barriers, lack of health care access, and other factors can compound these risks. Heat and humidity can also affect the health and productivity of animals raised for meat, milk, and eggs.

Agriculture and the Economy

Agriculture contributed more than $1.1 trillion to the U.S. gross domestic product in2019. The sector accounts for 10.9 percent of total U.S. employment—more than 22million jobs. These include not only on-farm jobs, but also jobs in food service and other related industries. Food service makes up the largest share of these jobs at 13million. Cattle, corn, dairy products, and soybeans are the top income-producing commodities. The United States is also a key exporter of soybeans, other plant products, tree nuts, animal feeds, beef, and veal.

Environmental Justice and Equity

Many hired crop farm workers are foreign-born people from Mexico and Central America. Most hired crop farm workers are not migrant workers; instead, they work at a single location within 75 miles of their homes. Many hired farm workers can be more at risk of climate health threats due to social factors, such as language barriers and health care access. Climate change could affect food security for some households in the country. Most U.S. households are currently food secure. This means that all people in the household have enough food to live active, healthy lives. However, 13.8 million U.S. households (about one-tenth of all U.S. households) were food insecure at least part of the time in 2020. U.S. households with above-average food insecurity include those with an income below the poverty threshold, those headed by a single woman, and those with Black or Hispanic owners and lessees. Climate change can also affect food security for some Indigenous peoples in Hawai and other U.S.-affiliated Pacific islands. Climate impacts like sea level rise and more intense storms can affect the production of crops like taro, breadfruit, and mango. These crops are often key sources of nutrition and may also have cultural and economic importance.

What We Can Do?

We can reduce the impact of climate change on agriculture in many ways, including the following:

- ✓ Incorporate climate-smart farming methods. Farmers can use climate forecasting tools, plant cover crops, and take other steps to help manage climate-related production threats.
- ✓ Join AgSTAR. Livestock producers can get help in recovering methane, a potent greenhouse gas, from biogas created when manure decomposes.
- ✓ Reduce runoff. Agricultural producers can strategically apply fertilizers, keep their animals out of streams, and take more actions to reduce nutrient-laden runoff.
- ✓ Boost crop resistance. Adopt research-proven ways to reduce the impacts of climate change on crops and livestock, such as reducing pesticide use and improving pollination.
- ✓ Prevent food waste. Stretch your money and shrink your carbon footprint by planning your shopping trips carefully and properly storing food. Donate nutritious, untouched food to food banks and those in need.

CONCLUSION

In conclusion it can be suggested that excessive consumerism lead the country towards either hyper-productivity or towards to the famine. As a result of the both, these lead to climate change. The impacts of climate change are multi-furious but it is highly impactful on agriculture in particular. Thus, we should have to follow the precautionary measures taken against environmental pollution. It must be suggested that, only the least extent of pollution minimize the extent of climate change and thus we can also save our agriculture system.

REFERENCES

1. https://epa.gov/climate-indicators/climate-change-indicatorsseasonaltemperature>
2. https://epa.gov/climate-indicators/climate-change-indicators-drought>
3. https://epa.gov/climate-indicators/climate-change-indicatorsfreezethaw-conditions>
4. https://epa.gov/climate-indicators/climate-change-indicatorslengthgrowing-season>
5. https://epa.gov/climate-indicators/climate-change-indicatorsgrowingdegree-days>
6. <https://www.ers.usda.gov/>
7. <https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/>