I J R B A T, Issue (Special-15), Feb 2020: 01-06
A Double-Blind Peer Reviewed & Refereed Journal
OPEN ACCESS
e-ISSN 2347 – 517X
Original Article

INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY

 www.ijrbat.in

IMPACT Of CLIMATE CHANGE AND GLOBAL HUNGER ISSUES

Chetana V. Donglikar
Kalikadevi Arts, Commerce & Science College, Shirur (ka.) Dist. Beed.
Email: - crabarshikar@gmail.com

ABSTRACT:
Climate change has the potential to make life vulnerable on the earth and its impact is a matter of great concern among all countries of the world because Human race, in deficiency of food couldn't be able for healthy development. Extreme events, such as droughts and floods, are forecast to increase as climate change and global warming. Ranging from overnight floods to gradually worsening droughts, have a range of effects on the agricultural sector as well as the species of crops that various communities are able to grow. Climate change and Food Security goes hand in hand. The annual UN report found that climate variability affecting rainfall patterns and agricultural seasons, and climate extremes such as droughts and floods are among the key drivers behind the rise in hunger and economic slowdowns. Climate change attack crops with various diseases, affecting the quality and quantity of food production. Food insecurity exists when all people, at all times, do not have physical and economic access to the sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. New evidence continues to signal that the number of hungry people in the world is growing, reaching 821 million in 2017 or one in every nine people, according to The State of Food Security and Nutrition in the World 2018 released report. The alarming signs of increasing food insecurity and high levels of different forms of malnutrition are a clear warning that there is considerable work to be done to make sure that 'Everyone is secure and satisfied' on the road towards achieving the Sustainable Development goals on food security and improved nutrition.

Key words: - Climate Change and Agriculture, Food Security Solutions, Solutions for sustainable agriculture

INTRODUCTION:

Today the greatest challenges to the food security are the growing world population, environmental degradation, limited natural resources and climatic change. In last decade irregular Climate change and extreme weather events with higher intensity and frequency are seriously affecting the agricultural sector and are creating serious instability in food production and farmers' livelihood. Changes in climate are affecting the production of major crops such as wheat, jawar, rice and maize, without strengthening environmental and climate issues, this is expected to worsen as temperature is increasing and becoming more extreme.(1)

From last few reports it is evident that the prevalence and number of undernourished people is higher in countries exposed to highly sensitive to rainfall and temperature variability. Undernourishment is where a high proportion of the population depends on agricultural systems.(2) Temperature abnormalities over agricultural cropping areas continued to be higher in last decade i.e. 2011–2019, leading to more frequent droughts.

In 2018, the United Nations warned that because of climate change hunger around the world was a matter of great concern.(3) The United Nations Specifically reported that extreme weather events, land degradation and desertification, water scarcity and rising sea

levels sabotage global efforts to eradicate hunger.(4) Since 1991s, the number of extreme climate-related disasters including extreme heat, droughts, floods, and storms, all of which harm agricultural productivity and contribute to food shortages, has been doubled. These shortages result in increases in food prices and income losses that reduce access to food for the affected population. In particular, droughts cause more than 80% of the total damage and losses in agriculture and if they are widespread enough they can contribute to national food shortages and thus prevalence of undernourishment.(4)

Global Hunger Index 2019

The report of GHI on 2018 found that 785 million people were suffering while 822 million were found affected with hunger. GHI highlights that among the 117 countries ranked, 47 countries are in 'serious' and 'alarming' hunger levels. India ranked 102 out of 117 countries in the GH I 2019 that is placed at much below to its South Asian neighbors such as Nepal, Bangladesh, Pakistan. The GHI report pointed out that "India is suffering from a serious hunger problem" the report highlights that climate crisis is bringing alarming levels of hunger in the world(5) Hunger has been on the rise over the past three years, returning to levels from a decade ago. This reversal in progress sends a clear warning that more must be done and urgently if the Sustainable Development Goal of Zero Hunger is to be achieved by 2030.

Key facts and figures of Global Hunger

- Number of hungry people in the world in 2017: 821 million or 1 in every 9 people; in Asia: 515 million
- Children under 5 affected by stunting (low height-for-age): 150.8 million (22.2%)
- Children under 5 affected by wasting (low weight-for-height): 50.5 million (7.5%)
- Children under 5 who are overweight (high weight-for-height): 38.3 million (5.6%)
- Percentage of women of reproductive age affected by anemia: 32.8%
- Percentage of infants aged below 6 months who were exclusively breastfed: 40.7%
- Adults who are obese: 672 million (13% or 1 in 8 adults).(6)

Climate Change and Food Security Solutions

To solve a problem of Global Hunger or Food Security the problem should be understood first; its severity, time frame and obstacles to develop proper strategies. The main problem is atmospheric pollution with several greenhouse emissions which also have to be addressed. Such as industrial age food production which is a large source of emissions. We know that Green Revolution has increased food production but at the same time it has affected environment a lot. But at the same time solution to loss of food security under climate change is first, solving the global climate change problem is also prior but it is not accepted yet so this should also be equally treated. The issue of loss of food production devoted to global warming is a **Global Climate Change Food Security Emergency**. Which is unrecognized and it has to be put forth.

Genetically Modified Foods:

GM crops are thoroughly evaluated for environmental effects before entering the marketplace. They are assessed by many stakeholders in accordance with principles developed by environmental experts around the world. (7,8,9) Among those who conduct risk assessment procedures are the developers of GM crops, regulatory bodies, and academic scientists. GM traits can also help farmers produce crops that are more resistant to extreme weather conditions. In recent years, several extreme weather disasters around the world have significantly damaged regional crop production.(10) reduced pesticide spraying (11) reduced the release of greenhouse gas emissions (12) They are herbicide tolerant (13) no-till cultivation practices (14)

Green Revolution versus Sustainable Agriculture

In the mid- and late-20th century a revolution occurred that dramatically changed the field of agriculture, and this revolution was known as the Green Revolution. Because of Green Revolution the productivity of global agriculture increased drastically. New Chemical advances were utilized during this time period as a result; high-yield crops were developed and introduced along with multiple cropping. These new farming techniques and advances in agricultural technology were utilized by farmers all over the world, which intensified the results of the Green Revolution (15) and made it possible to feed the growing human population. India began its own Green Revolution program of plant breeding, irrigation development and financing of agrochemicals. Today India is exporting food and this story is repeated by other nations. (16, 17)

Organic Agriculture:

In last few years Organic Agriculture has been stepped forward as one of the best practice for addressing Food productivity and Climate Change. Organic farming attributes to the phenomena of improving taste and nutritive value of produced food. Organic farming also has bundles of Ecological benefits (19, 20, 21) which are;

- **Exposure To Harmful Chemicals is Reduced**
- **Organic Farming Consumes Less Energy**
- **It helps in Reducing Nitrogen Run-Off Induced Pollution**
- **Facilitates Healthy Soil Formation and** helps in Combating Erosion
- It Fights the Effects of Global Warming
- It Supports Water Conservation and Water Health
- **Organic Farming** Discourages the Algal Blooms
- It Supports Animal Health and Welfare
- Organic Farming Supports Biodiversity
- Organic Farming is **Sustainable over the long term**

Basic Agronomy Practices:

The old agronomic practices help in decreasing investment in production of farm products. This increases the quality and quantity of yield significantly. These agronomic practices help farmer in maintaining the environment by reducing pollution. Appropriate practice decrease water usage and proper use of fertilizer can maintain the quality of land and incorporate

many areas of conservation. Sustainable agronomy can lead us into a future where feeding the world is balanced with protecting, preserving and even regenerating our farmland. Through agronomy changes might be small, but the results are massive. These practices have yielded major significant dividends that farmers enjoy. Some of the best agronomic practices include (22, 23);

- Land Preparation, Fertilizers and Method of Sowing
- Reducing water usage
- Soil tillage
- Manage plant populations
- Seed Rate and Seed Treatment
- **Selection of Drought-Resistant Varieties**
- **Early Maturing Varieties**
- **Wider Spacing**
- Cover crops
- The most important 4R which are used in agronomy are;
    - Right nutrient application rates
    - Right application methods
    - Right application timing
    - Right nutrient source

Plant Based Diet:

It's a fact that food systems are major drivers of poor health and environmental degradation; global efforts are needed urgently for collective **transform of diets** and **food production. (24)** Many studies have reviewed the effects of food production on human health and the environment; which concluded that a dietary shift toward plant foods and away from animal products is essential for promotion of human health and planet (25).

As per the report of ***Livestock's Long Shadow,*** Animal agriculture is responsible for emission of greenhouse gases. Cattle's grazing contributes to climate change by producing a lot of gas such as methane and CO2. (26) The food used in raising animals could be used in elevating human hunger. Eating plant food can also help in preventing premature deaths from heart disease, diabetes, and other chronic conditions every year. After many researches it is evident that livestock farming consumes a significant amount of water for production of meat. For instance 13.500 liters of water are used to produce 1kg of beef meat. Animal farming also pollutes water source as the waste produced by the livestock ends up in waterways. (26)

CONCLUSION:

Many studies have come forward regarding impacts of climate change on agriculture and its effect on food security. From these studies it is clear that impact of climate on food security is serious, and thus we have to go for more research that directly informs the actions needed to tackle food security challenges. At the same time food systems need transformative options in the coming decades, for which we have to go for some challenges such as Change the research culture, involvement of extensive stakeholder engagement, priorities of communities, achieving social inclusion through a focus on people who are most vulnerable to climate change and to address adaptation and mitigation together in the context of food security, at farm, national and global levels. To meet these challenges, we must work with science; hand in hand with practitioners and policy-makers, to devise sensible options that

meet current needs and capacities, we have to try our best and learn from the experiences.

REFERENCES:

https://www.who.int/news-room/detail/11-09-2018-global-hunger-continues-to-rise---new-un-report-says

Concern Worldwide. "The Top 9 Causes of Hunger Worldwide." (February 27, 2018) https://www.concernusa.org/story/top-9-causes-world-hunger/. Accessed on 10 October 2018.

United Nations Climate Change. (September 12, 2018) "UN Warns Climate Change is Driving Global Hunger." https://unfccc.int/news/un-warns-climate-change-is-driving-global-hunger. Accessed on 10 October 2018.

FAO. "2018: The State of Food Security and Nutrition in the World." http://www.fao.org/state-of-food-security-nutrition/en/. Accessed on 10 October 2018.

https://www.jagranjosh.com/current-affairs/global-hunger-index-2019-india-slips-to-102nd-place-pakistan-ranked-94-1571209500-1

https://www.who.int/news-room/detail/11-09-2018-global-hunger-continues-to-rise---new-un-report-says

Canola Council of Canada. 2001. An agronomic and economic assessment of transgenic canola. Canola Council of Canada: 1-95. http://www.canola council.org/production/gmo1.html

US National Research Council. 1989. Field testing genetically modified organisms: framework for decisions. Committee on Scientific Evaluation of the Introduction of Genetically Modified Microorganisms and Plants into the Environment. National Academy Press, Washington, DC

Organization for Economic Cooperation and Development. 1992. Safety considerations for biotechnology. OECD, Paris, 50 pp.

Carpenter, J, A Felsot, T Goode, M Hammig, D Onstad and S Sankula. 2002. Comparative environmental impacts of biotechnology-derived and traditional soybean, corn and cotton crops. Council for Agricultural Science and Technology, Ames, Iowa, June.

Klümper, W and M Qaim. 2014. A Meta-analysis of the impacts of genetically modified crops. PLoS ONE 9(11): e111629. https://doi.org/10.1371/journal.pone.0111629.

Brookes, G and P Barfoot. 2018. GM crops: Global socio-economic and environmental impacts 1996- 2016. PG Economics Ltd, UK. p 1-204

Perry, ED, F Ciliberto, DA Hennessy, and GC Moschini. 2016. Genetically engineered crops and pesticide use in U.S. maize and soybeans. Science Advances 2(8): e1600850. http://advances.sciencemag.org/content/2/8/e1600850.full.

Fawcett, R and D Towery. 2002. Conservation tillage and plant biotechnology: how new technologies can improve the environment by reducing the need to plow. Conservation Tillage Information Center, West Lafayette, Indiana.

https://study.com/academy/lesson/what-is-the-green-revolution-definition-benefits-and-issues.htm**l**

UN (16 October 2013). "Sustainable food systems vital to end hunger, malnutrition, UN says on World Food Day". Retrieved 2 November 2013.

http://www.ipsnews.net/1995/06/india-from-green-revolution-to-sustainable-agriculture/

Kilusang Magbubukid ng Pilipinas (2007). Victoria M. Lopez; et al. (eds.). The Great Riice Robbery: A Handbook on the Impact of IRRI in Asia (PDF). *Penang, Malaysia:* Pesticide Action Network Asia and the Pacific. ISBN 978-983-9381-35-1. *Archived from* the original (PDF) *on 25 July 2011*. Retrieved 8 August 2011.

http://www.fao.org/organicag/oa-faq/oa-faq6/en/

https://suminterindiaorganics.com/here-are-the-5-key-environmental-benefits-of-organic-farming/

https://www.thebalancesmb.com/environmental-benefits-of-organic-farming-2538317

https://www.forbes.com/sites/gmoanswers/2016/11/18/gmos-help-reduce-food-waste/#139e64a43bce

https://www.bio.org/blogs/gmos-have-benefits-environment

https://www.pcrm.org/news/blog/how-eating-more-plants-can-save-lives-and-planet

https://www.greenmatters.com/p/environmental-benefits-plant-based-vegan-diet

https://refillmybottle.com/blog/how-a-plant-based-diet-can-impact-our-environment

https://www.frankbayvillas.com/?p=132

https://www.agronomy.org/about-agronomy