The Pharma Innovation Journal 2023; SP-12(10): 1499-1504

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(10): 1499-1504

www.thepharmajournal.com
Received: 10-07-2023
Accepted: 14-08-2023

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Climate change and food security in India

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Abstract
Accessibility of food implies food creation inside the nation, imports of food and earlier year stock in govt. storehouses. Admittance to food implies having adequate assets both financial and physical to acquired fitting eating regimen. Usage of food implies proper utilize in view of the information on fundamental nourishment which is essential for our wellbeing. Environmental change is any adjustment of environment after some time because of normal fluctuation or as a human movement. The Unified Country's Intergovernmental Board on Environmental change (UNIPCC) has expressed that regular peculiarities with the end goal that sun oriented variety and volcanoes created a large portion of the warming from pre-modern opportunity to 1950 and had a little cooling impact subsequently. As per IPCC (2007) assessments anticipate that the region under food grain, for example tumbled from 126.18 million hectare to 122.23 million hectare during the period from 1975-76 to 2008-09. The concentrate likewise demonstrates that there is an enormous scope variance nearby under the development in the Kharif season. To comprehend its effect on food creation, understanding its key dimensions is significant. Exceptional report on discharge situation (SRES) of the IPCC (2007) notices an alternate improvement way for worldwide harvest yield diminishes. To project the future food grain creation by utilizing relapse procedure, in the wake of ascertaining esteem by utilizing relapse method we find that India's food grains creation will be increment closest 308 million tons. So we presume that nation faces significant difficulties to build its food creation to the tune of 308 million tons by 2020-21, to take care of it's steadily developing populace.

Keywords: Food security, climate change, cultivation, economic & nutritional etc.

Introduction
A country might gain independence in food at a place of time yet the idea of food security necessities that convenient, dependable and healthfully satisfactory stockpile of food ought to be accessible on a drawn out premise. This suggests that a country needs to guarantee the development rate in food supply so that at exceeds the expansion in populace and furthermore the expansion popular coming about because of expansion in the pay of individuals.

The idea of food security has been developed in last quarter of twentieth hundred years, and has been a significant issue of conversation in number of world meetings assembled by the Unified Country Association in the 10 years of 1990's. A significant early move toward further developing world food culmination was the foundation of the worldwide data and early admonition framework on food and farming in Food and Agribusiness Association in 1975 which assists the local area with getting ready ahead of time to meet food crises. "Food security implies all individuals at all-time have physical and monetary admittance to adequate, protected and nutritious food to meet their dietary necessities and food inclinations for a functioning and sound life" (World food culmination 1996). The idea of food security characterized by FAO (1983) [19] planned idea of food security as" access by all individuals , consistently to enough nourishment for a functioning and sound life, it's fundamental components are the accessibility of food, admittance to food and the usage of food"

Environment is one of the principal determinants of agrarian creation and it could cause fluctuation in horticultural creation. Analysts and chairmen are worried about the possible harms and advantages that might emerge in future from environmental change and advantages and its effect on farming, since these will influence home grown and global strategies, exchanging design, asset use, and food security. Straightforwardly or by implication 55% of the nation populace relies upon the environment delicate area horticulture. The rural area is a main impetus in the gas outflow and land use impacts that cause environment. Decline in yield of harvests as temperature expansions in various pieces of India - For instance a 2 °C expansion in temperature, rice yields could diminish by around 0.75 ton/hectare in the high

return regions and by around 0.06 ton/hectare in the low yield waterfront districts, and 2 °C expansion in temperature Wheat Yield decreased by around 0.35 ton/hectare (in the event that northern India). Significant effects of environmental change will be on downpour taken care of yields (other than rice and wheat), which represent almost 60% of cropland region.

In emerging nation like India, the idea of food security goes through a change with the progressive phase arrived at by the general public, and at the current stage the food security in India might be envisioned to make accessible least amount of food grains to the whole populace. Food grains are significant in Indian setting, as our most memorable issue is to decrease hunger as opposed to go for other exorbitant things like vegetables, natural products, meats and so on, thusly drifts in per capita supply of food grain is constantly viewed as a mark of progress in the food security. In this manner to put it plainly, expanded accessibility of food is an important condition in food shortfall nations to accomplish food security which ought to be matched by decrease in destitution to guarantee financial access (for poor people), as well as the actual admittance to food by all individuals consistently both in amount and quality to meet their dietary prerequisite enough for a functioning life.

The Mission was gone on during the twelfth Arrangement with new focuses of extra creation of 25 million tons of food grains containing 10 million tons of rice, 8 million tons of wheat, 4 million tons of heartbeats and 3 million tons of coarse grains toward the twelfth Arrangement's end. Past the twelfth Arrangement (2017-18 to 2019-20), it was chosen to proceed with the program with new focuses to accomplish 13 million tons of extra food grains creation containing rice-5 million tons, wheat-3 million tons, beats 3 million tons and nutricum-coarse grains 2 million tons by 2019-20 with an extra unbiased to upgrade post-collect worth expansion at ranch entryway for better value acknowledgment to ranchers through proficient market linkages. The objective for the year 2020-21 is rice-1.7 million tons, wheat-1 million tons, beats 1 million tons and nutricum-coarse cereals 0.7 million tons.

Data and Methodology

This portion deals with the analytical procedure employed for analysing data to attain the objective of the article and to arrive at relevant conclusion. The estimating in the review utilizes the time series information of food grain creation from 2010-11 to 2019-20, in which year 2010-11 uncovers the base time frames. A period series information, takes just time requested grouping of perceptions of a variable and its investigation foster a model for anticipating future worth using past perception of the variable to be estimated. As in relapse examination during the assessment of boundaries, the equivalent weight is relegated to every one of the years taken in study.

The review is solely founded on Auxiliary information. Optional data got from different government workplaces and factual notices viz., Monetary Review, Service of Money, Horticulture Circumstance in short, Directorate of Financial aspects and Measurement Service of Farming, Govt of India. Different sources viz., Different month to month or quarterly diaries distributed by government and different important site and so on. The quick consequences of the projections of food grains creation in India. As finished up in strategic segment that the relapse approaches is sufficient for anticipating in light of the fact that variable don't connected with it. Hence it was utilized Pattern esteem ('b' coefficient) was found. To project the future food grain creation by utilizing Common Least Square strategy to track down the worth of 'b' coefficient as follows:

$$Y = a + bT$$

Where,
Y = Dependent Variable (production)
a & b = Constraint
T = Time Period (0, 1, 2, 3, ... n)

Make two normal equation (a) and (b) are given below:

$$\sum Y = Na + b\sum T \quad (a)$$

$$\sum YT = a\sum T + b\sum T^2 \quad (b)$$

By using these equations calculate value of constraint (a and b). After calculated the value of these constraint find out the projected requirement for rice, wheat, core cereals and pulses separately.

Result and Discussion

Global climate change is one of the important challenges humanity is facing today. Agriculture will continue to face twin challenges of growing population and sustainable use of natural resources inspite of significant advance made in the past. Thus, keeping the objective of the article in mind, to project future food grain production for the year 2020-21 in India using Regression Analysis in time series data. By using Regression analysis find the value of Trend coefficient (‘b’) for rice, for wheat, for core cereals and for pulses separately. After calculating the value of Trend coefficient (‘b’) calculated projected value of food grains for rice, for wheat, for core cereals and for pulses separately. Trend value (‘coefficient) for rice 1.36, for wheat 1.40, for core cereals 0.79 and for pulses 0.34 respectively. Calculated projected value for rice, wheat, core cereals and pulses on the basis of these trend values for rice, wheat, core cereals, and pulses respectively. Previous value of food grains and projected value of rice, wheat, core cereals and pulses respectively (Table 1 and 2). After calculating value by using this technique we find that India’s food grains production will be increase nearest 308 million tons. So we conclude that nation faces significant difficulties to expand its food creation to the tune of 308 million tons by 2020-21, to take care of its consistently developing populace, which is probably going to arrive at multiple billion by the 2020-21.

Status of food availability and its production

At the outset, it would be useful to understand the growth of food production in India in the recent past. Table -3 provides growth rates in area, production and yield of major food crops for the period 1990-91 to 2010-11. The production of rice & wheat grew at the rate of 0.58 percent & 1.72 percent between 1990-91 to 1999-2000. The growth rate was found 1.59 and 1.61 percent respectively for the period between 2000-01 and 2001-11. The country has imported a significant quantity of wheat when a poor crop forced the country plunder world markets for the first time in six years. (Table-3)

In view of changing dietary habits of the population. The production of 244.46 million tonnes seems sufficient to fulfill the domestic demand. According to Chand, “Per capita production of food grains increased from 18 kg. During early 1970s to 207 kg. By mid 1990s, even when country’s population increased by more than 50 percent. After mid-

1990s, food grains production has failed to keep pace with the population growth. Per capita production of cereals has declined by 17 kg. Per year and pulses production by 3 kg. Per year during the last decade. This could create a serious threat to food security". The production of total pulses has indicated a growth of 0.59 and 2.61 per cent per annum between 1990-91 and 1999-2000 and 2000-01 to 2009-10 while sugarcane production decline at the rate of 2.73 and 0.93 per cent per year in same period.

Evidently, production of some essential food item has increased during the recent period but, there is acute shortage of basic food items like's pulses and edible oil in the market despite huge imports and prices are skyrocketing. The country has been importing these items for others countries. Given the uncertainty of availability and high prices in the world market, it is essential to increase domestic production. Area under food grains for instance fell down from 125 million hectares to 123.2 million hectares during the periods from 2013-14 to 2015-16, and then fluctuated during 2016-17 to 2019-20 whereas the production registered also decline during same period. (Table- 4)

Food is the essential necessity of people yet per capita accessibility of heartbeats, the significant wellspring of protein for Indians, has become close to half since freedom. This is notwithstanding India's outcome in food creation. The typical per capita accessibility of wheat and rice together has expanded apparently during this period. The per capita accessibility of absolute food grain which was 334.3 gms per capita each day in 1951 has ascended to 417.3, 468.5, 386.2,444, and 484.3 gms. per capita each day in 1981, 1991,2001,2011 and 2020 separately. If there should arise an occurrence of heartbeats, it has definitely tumbled from 43 gms per capita each day in 2012-13 to 41.7 gms in 2013-14 and in 2015-16 46.4 gms to 43 gms in 2017-18. But in 2019-20 it was 54.5 gms it's high as compare to 2011-12 but. Availability of pulses gms per capita per day was fluctuated since 2010-11 to 2019-20. (Table –5).

The long attracted stagnation creation of heartbeats is probably going to decrease per capita accessibility of this protein rich food in future with rising salaries and populace pressure. Subsequently, step ought to be taken to improve creation of heartbeats in India. The issue accepts extraordinary importance considering declining accessibility of heartbeats and expanding accessibility of oats. However, for a reasonable eating routine heartbeat protein are fundamental because of other rich parts. The entire situation of net accessibility of heartbeats causes serious worry in the country. This ought to be seen intensely from the mark of safety and nature of food particularly for poor people and the rustic populace. India assumes a vital part by offering in excess of 10% on the planet's food creation. Per capita each day accessibility of food grain in India gradually declined from 468.8 gm each day in 1971 to 443 gm each day in 2007 (Joined Country Improvement Program 2009). The Assembled Country Populace Projection Report (UNPP) demonstrates that total populace will increment to 8.3 billion out of 2025 and 10 billion of every 2050 from the current degree of 6.7 billion.

Status of climate change

Furthermore, environmental change is representing an incredible test to future development potential. Notwithstanding mechanical advances, weather conditions are as yet a critical figure horticultural efficiency. The worldwide mean surface temperature will bit by bit increment. Consequences of environmental change models demonstrate that the world in a century will become hotter than whenever during the most recent 100,000 years or more. Warming will be more prominent in districts in contrast with others. Environmental shift will differ in course and size starting with one country then onto the next. Specialist have completed investigations (Warrick, 1988; Doorman and Semenov, 2005; Repel *et al*. 2004, 2005; Lobell *et al*., 2005) on potential impacts of environmental change on possible changes in grain crop yields, on oat creation, food costs and the ramifications for changes in the quantity of hungry individuals. Environmental change would unfavourably influence worldwide creation between 0 to 5 percent, as an outcomes world cereal costs are assessed to increment by 10 to 100% at relying upon the harvest viable and the quantity of individuals in danger from hunger by 5 to 50 percent (Repel *et al*., 2004). As per Joined Country Intergovernmental Board on Environmental Change (UNIPCC), 2001 the three primary drivers of the expansion in greenhouse gases saw throughout the course of recent years have been petroleum products, land use and horticulture.

In 2009 province of Climate Report by the Service of Climate and Ranger service (MOEF) clubs the issues fewer than five key difficulties looked by India, which are environmental change, food security, water security, energy security, and overseeing urbanization. Worldwide environmental change is one of the significant difficulties mankind is confronting today. To comprehend its effect on food creation, understanding its key dimensions is significant. Yield of harvests diminishes in agricultural nations because of expansion in temperature whereas yield of harvests expansion in created nations because of expansion in temperature. The primary driver of an unnatural weather change has been human movement connected with petroleum product consuming and deforestation. These human exercises expanding ozone depleting substances fixation, which brought about catching the sun radiation in the world's air prompting warming of the earth. The vitally ozone harming substances are carbon dioxcide, nitrous oxcide and methane, out of which carbon dioxide discharge contributed the majority of the absolute greenhouse gases source in 2004, for example to tune of 77%.

India rank among top five nations as far as greenhouse gases outflow. In the year 2007 all out greenhouse gases emanations from India was 1727.71 million tons of carbon dioxcide same, out of which carbon dioxcide discharge was 1221.76 million tons, Methane 20.56 million tons and Nitrous oxide 0.24 million tons Indian Public Environmental Change Activity Plan (INCCAP) in May 2010. In 1994, the all-out greenhouse gases discharge for India was 1228.54 million tons of carbon dioxcide same; it shows a Build Yearly Development Rate (CAGR) of 2.9 percent during that period (Monetary Review 2012). The Unified Country Intergovernmental Board on Environmental Change (UNIPCC), World Bank and the Assembled Country Global Advancement Program cautioned India against the serious and antagonistic outcomes of environmental change. The expanded carbon dioxide level alongside environmental change would influence crop yield from one side of the planet to the other. On-going review lead by Worldwide Food Strategy Exploration Foundation featured that; A) 25 million additional youngsters will be malnourished in 2050 because of environmental change, B) Flooded wheat yield will be marked down around 30%, and watered rice

yield around 15% in 2050, C) Environmental change will expand costs of wheat, rice and maize by 90%, 12% and 35 percent separately in 2050. India's GHG discharge are vigorously impacted by the construction of its enormous and exhausting economy, the restriction on its energy assets, as likewise its on-going status as far as energy access. In 2007, India GHG outflow by sources and evacuation by sinks were 37% of carbon dioxcide the biggest offers from power age (37%), horticulture (21%), ventures (5%), and other assembling Enterprises (17%), and similarly, concrete, transport, iron steel, squander shows in pie graph.

India, as an emerging nation has motivation to be worried about the unfavourable effect of environmental change on its economy. An enormous piece of its populace relies upon environment delicate areas for occupation which makes it exceptionally helpless against environmental change. Country faces significant difficulties to build its food creation to the tune of 300 million tons by 2020; to take care of its steadily developing populace, which is probably going to arrive at more than 1.35 billion by the 2020. GHGs Discharge by Various Area in India portrayed in (Table-6).

The Assembled Country Intergovernmental Board on Environmental Change (UNIPCC), the World Bank and the Unified Countries Modern Advancement Association (UNDP) cautioned India against the serious and unfavourable results of a dangerous atmospheric devotion and environmental change. Researcher accepts that tropical nations, for example, India are more defenceless against environmental change than those in the mild zone. A review distributed in science proposes that, because of environmental change, "Southern Africa could lose in excess of 30% of its principal crop maize, by 2030. In South Asia misfortunes of numerous territorial staples, for example, rice, millet and maize could top 10%". The 2001, IPCC, Third Appraisal Report reasoned that the least fortunate nations would be hardest hit, with decrease in crop yields in most tropical and subtropical locales because of diminished water accessibility and new or changed bug bother occurrence. Clearly, populace would increment in the less evolved nations of the world china, India and Brazil would likewise experience this issue. The expectation of CO2 outflows in 2025 show that for every capita emanation on the planet will practically twofold. This present circumstance is supposed to happen in creating and created countries with the exception of the US (Table 7).

Climate change and food security

As per Food and Horticulture Association gauge 852 million individuals overall were under supported in 2002 because of decline accessibility of land for cultivating and progressively terrify water for agribusiness and different purposes. These two and different powers will challenge the limit of the world's food creation framework. As per above peculiarities the food security in India might be in danger in future because of the danger of environmental change. Indian horticulture previously dealing with issue of slow development will confront new difficulties as outrageous climate, eccentric precipitation example and irritation and illness assaults, which are all certain to hurt crop yield and result over the medium to long haul period. Environmental change prompting enormous harvest misfortune and leaving huge patches of arable land unsuitable for development, and consequently compromising for food security later on. The serious issues defying Indian farming are those of populace pressure, little property, exhausted soils, absence of current innovation and unfortunate offices for capacity. The most concerning issue Indian horticulture faces today and the main source of rancher's self-destruction is obligation. Compelling rancher into an obligation trap are taking off input costs, the diving cost of produce and an absence of legitimate credit offices, which makes ranchers go to private cash moneylenders who charge extravagant paces of revenue. To reimburse these obligations, ranchers get once more and get found out in an obligation trap.

The reason for this article to summed up the consequence of examination on project the future food grain creation for the year 2030 in India, net accessibility of food grain and potential impacts of environmental change on crop yields and oat creation in India.

Policy implication and government programme on food security and climate change

Some policy & programme planed and adopted by Indian Government to secure against increasing food grains requirement in coming years as well as climate change. Name and Nodal agency of the National Mission adopted by Indian government for Securing Climate Change:

1. National Mission on Sustainable Habitat plan implemented by Ministry of Urban Development, and aim to attempts to promote energy efficiency in buildings, management of soil waste and modal shift to public transport including transport options based on biodiesel and hydrogen.
2. National Water Mission prepared by Ministry of Water, and aim to the conservation of Water, minimising wastage and ensuring more equitable distribution both across and within states. The key focus of the mission document is:
    a) Intensive rain water harvesting and ground water charging to meet the demand of 1120 critical blocks during 11th plan and remaining blocks in 12th plan (march 2017) Besides 30 percent of the total urban areas would be covered by March, 2012.
    b) Increasing water use efficiency at least by 20 percent by 2012.
3. National Mission for Sustaining the Himalayan Ecosystem implemented by Ministry of Science and Technology, and aims to evolving management measures for sustaining and safeguarding the Himalayan glacier and mountain eco-system. The mission attempts to address following key issues:
    a) Himalayan Glaciers and the associated hydrological consequences.
    b) Biodiversity conservation and protection.
    c) Wild life conservation and protection.
    d) Planning for sustaining for the Himalayan ecosystem.
4. National Mission for Green India implemented by Ministry of Environment and Forest, and aim to enhancing eco-system services and Carbon sinks through afforestation on degraded forest land in line with the national policy of expending the forest and tree cover to 33 percent of the total land area of the country.
5. National Mission for sustainable Agriculture prepared by Ministry of Agricultural and cooperation, and aim to develop strategies to make Indian agriculture more resilient to Climate change new varieties of thermal resistant crops, new credit and insurance. The main focus of the Mission would be food security and protecting

land, water, biodiversity and genetic resources for sustainable production of food.

6. National Mission on Strategic Knowledge on Climate Change prepared by Ministry of Science and Technology, and aim to identify the challenges of, and the responses to, climate change through research and technology development and ensure funding of high quality and focused research into various aspects of climate change.
7. Indian Network for Climate Change Assessment implemented by Ministry of Environment. The INCCA has been conceptualised as a Network – based Scientific Programme.

Table 1: Food Grains Scenario in India 2010-11 to 20119-20 (million tonnes)

Year	Rice	Wheat	C. Cereals	Pulses	Total
2010-11	95.98	86.87	43.40	18.24	244.49
2011-12	105.30	94.88	42.01	17.09	259.29
2012-13	105.23	93.51	40.04	18.34	257.12
2013-14	106.65	95.85	43.30	19.26	265.05
2014-15	105.48	86.53	42.86	17.15	252.02
2015-16	104.41	92.29	38.52	16.32	251.54
2016-17	109.70	98.51	43.77	23.13	275.11
2017-18	112.76	99.87	46.97	25.42	285.01
2018-19	116.48	103.60	43.06	22.08	285.21
2019-20	118.87	107.86	47.75	23.03	297.50
2020-21*	121.46	108.75	49.66	25.58	305.44

Source: (*) indicate 4th Advance Estimation, Directorate of Economics and Statistics Fourth Advance Estimates of Production of Food Grain Production for 2020-21

Table 2: Projected Food Grains Production Scenario in India (million tonnes)

Year	Rice	Wheat	C. Cereals	Pulses	Total
2011-12	93.99	90.01	38.00	20.31	242.30
2012-13	92.54	78.20	34.64	22.09	227.46
2016-17	109.70	98.51	43.77	23.13	275.11
2020-21*	122.00	108.75	49.66	25.58	305.44
2021-22*	109.28	97.12	466.92	26.72	280.03
2028-29*	116.49	107.08	58.98	31.83	314.37
2029-30*	117.56	108.62	60.99	32.64	319.81

(*) indicate future projection, (c.) indicate core cereals

Source: Working group report on food projection towards 2033, Niti Aayog

Table 3: Growth Rates of Area, Production and Yield of Major Food Crops in India during 1990-91 to 1999-2000 and 2000-01 to 2009-10 (Base TE 1981-82 = 100)

Crop	1990-91 to 2000-01			2000-01 to 2009-10		
	Area	Production	Yield	Area	Production	Yield
Rice	0.68	2.02	1.34	-0.03	1.59	1.61
Wheat	1.72	3.57	1.83	1.21	1.89	0.68
Jowar	-3.53	-3.07	0.48	-3.19	-0.07	3.23
Bajara	-1.46	0.95	2.44	-0.42	1.68	2.11
Maize	0.94	3.28	2.32	2.98	5.27	2.23
Gram	1.26	2.96	1.68	4.34	5.89	1.48
Tur	-0.66	0.89	1.55	0.26	1.82	1.56
Total Pulses	-0.60	0.59	0.93	1.17	2.61	1.64
Other pulses	-1.61	-1.58	0.04	-0.34	-0.32	0.02
Total food grains	-0.07	2.02	1.52	0.29	1.96	2.92

Sources: Agricultural Statistical at a Glance 2020-21

Table 4: Total Yield and Area Production of Food grains in India

Year	Area (M. ha)	Production (M. Tones)	Yield (Q/ha.)
2011-12	124.8	259.3	20.78
2012-13	120.8	257.1	20.79
2013-14	125.0	265.0	21.20
2014-15	124.3	252.0	20.28
2015-16	123.2	251.6	20.42
2016-17	129.2	275.1	21.29
2017-18	127.5	28.0	22.35
2018-19	124.8	285.2	22.86
2019-20	127.0	297.5	23.43
2020-21	129.3	308.6	23.86

Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation.

Table 5: Net Availability of Food Grains in India (2011-18) (gm/capita/day)

Year	Rice	Wheat	Total Cereals	Gram	Pulses	Total
2010	188.4	154.7	63.97	12.9	37	456.97
2011	182.0	168.2	51.47	13.5	35.4	450.57
2012	181.6	163.6	65.5	14.5	43	468.2
2013	190.2	158.4	60.0	13.5	41.7	463.8
2014	197.4	183.1	52.7	15.3	43.3	491.8
2015	198.0	183.0	61.8	16.3	46.4	505.5
2016	186.0	168.0	77.7	14.0	43.8	489.5
2017	184.2	199.7	71.6	13.3	43.0	511.8
2018	183.0	182.7	80.6	17.3	54.7	516.3
2019	189.0	176.4	85.5	N.A	54.5	505.4

Source: Agricultural Statistic at a Glance 2020-21

Table 6: GHGs Emission by Different Sector in India

S. No.	Sectors	Percentage
1	Electricity	37%
2	Agriculture	21%
3	Other Energy Industries	5%
4	Other Manufacturing Industries	17%
5	Cement	5%
6	Transport	9%
7	Iron and Steel	4%
8	Waste	2%
Total		100%

Source: International Energy Agency 2019

Table 7: Status of Carbon dioxide Emission in the world

Population (Billion)			Per capita emission (actual ton)	Per capita emission (ton)
Region	2007	2025*	2007	2025*
World	6.7	8	4.2	7.9
Developed	1.3	1.3	11.2	15.2
Less Developed	5.4	6.6	2.5	6.4

Source: Peterson Institute for International Economics, Washington DC.2007

Acknowledgement

We would like to acknowledge the department of Agriculture Shri Ram College, Muzaffarnagar for providing facilities to conduct the experiment.

Conclusion

We conclude on the basis of above text Climate change drives down yields and nutrition of Indian crops rising temperatures and weather fluctuations may drive hunger and malnutrition in India, unless the country acts urgently. India, home to 1.4 billion people, is ranked 101 out of 116 countries in the Global Hunger Index, indicating a serious problem. It is

true that agricultural productivity in India is very low. if we can improve our productivity, we can ensure that issues related to food security can be fixed and we can fight climate change while ensuring no stomach in the country goes hungry.

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