

# ABSTRACT

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## **Impact of Climatic Parameters on Agriculture Productivity: Forecasting through Machine Learning Algorithm**

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The World Commission on Environment and Development (WCED) has defined Sustainable Development (SD) as the one that meets the existing generation's needs without causing any damage to resources meant for future generations. Specific issues were addressed through Millennium Development Goals (MDG), leaving shortfalls. The Sustainable Development Goals (SDGs) Containing 17 goals with 169 targets were declared in the UNSD summit in New York on 25th Sept 2015. The rise in the earth's average temperature is because of increased volumes of CO<sub>2</sub> followed by greenhouse gases released by the burning of fossil fuels and other human activities. The consequences are glaciers melting, droughts, heat waves, ocean acidification, species extinction, and so many.

Agriculture and its subsidiary sectors like animal husbandry, fisheries, and forests are highly prone to climate change. The rise in temperature, erratic monsoon, rainfall, humidity, limited access to water sources adversely affects agriculture production affecting food security. Generally, the nutritional values, proteins, and minerals of plants will decrease with increased atmospheric CO<sub>2</sub> concentration causing a direct impact on human health. Further, restricted access to food causes a hike in food prices leading to security concerns. Crop production is mainly dependent on climatic parameters and would magnify the food security problem.

Machine Learning (ML) has been proven to forecast out of the experience and guide the policymakers to take appropriate decisions at the right time. In the agriculture sector, ML algorithms provide a prediction for the crop, soil and water management, crop production, disease detection, crop quality. In this work, we use the ML algorithm (Linear Regression) to predict the future climatic parameters in different parts of India and its influence on crop yield. Strategies like change in crop management, resilient food systems through sustainable agricultural practices, improved irrigation technologies, and climate-smart agriculture could be adopted.