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# Advancements In Plant Bio-Technology For Crop

**Galla.Srinivasa Rao** ,
Assistant Professor, Govt. Kalasala,Jangareddigudem

**Abstract:**
This abstract provides an insight into the recent breakthroughs in plant biotechnology aimed at elevating crop yield, resilience, and quality. It delineates innovative methodologies encompassing genetic engineering, genome editing, and precision breeding techniques, showcasing their application in tailoring crops for heightened resistance to pests, diseases, and adverse environmental conditions. The abstract further underscores the pivotal role of these advancements in meeting the burgeoning demands for food production while promoting sustainable agricultural practices."

**Keywords:** Biotechnology ,Sustainable agriculture

In 1958, rather astonishing evidence by Calendar revealed that atmospheric Co2 levels are increasing mainly due to anthropogenic activities and as a Consequence, the earth's surface began warning up. Perusing over 200 meteorological records over 50 year Calendar. has predicted an annual increment of 0.005 in mean global temperatures.

Combustion of fossil fuels and changes in the land Use pattern has led to a hike of CO2 to 400 ppm in the present day from 280 ppm prevalent during pre industrial levels. The climate changes that may occur due to elevated Co2, could lead to pest and diseases, out breaks often disregarded in enrichment studies.

This phenomenon naturally accompanies changes in temperature and rainfall causing extreme weather events. The mast alarming prediction for Srilanka and the tropics is that even with

warming less than I° C, these regions will experience extreme weather, events much sooner than several other regions of the world For instance, rainfall has significantly increased in Madagascar with an increases of 23% compared to the last 4 decades.

Genomics- assisted breeding, next generating methods, and genome editing are some of the utilized in creating high-yielding better adopt crop varieties that are resilient are to climate change. Biotechnology for climate changes adaptation of crop.

Agriculture plays a major role in climate changes by contributing more than 10-1u of the global anthropogenic green house gas emissions 58,59,60. Biodiversity has been already threatened due to land clearing and fragmentation of habitats for cultivation purposes of 61 and 62. Therefore, agricultural expansions to increase global food production seems not always possible.

FAO introduction the climate smart agriculture who defining it as the agriculture that sustainably Increases productivity, enhances resilience reduce removing greenhouse gases where possible, an enhances achievement of national food security and development goals."

A Statistically significant change in the climate state oven. a long time more than 20 years) is defined as

Climate change". Recent advancements in genetic engineering have revolutionized plant breeding and crop improvement.

Genomics assisted breeding, next-generation sequencing methods, and genome editing are some of the tools utilized in creating high-yielding better adopted crop Varieties that are resilient to climatic changes. This phenomenon naturally accompanies changes in temperature and rainfall causing extreme weather events.

The global demand for crop calories is expected to increase by 100% ±11 % whereas global crop protein demand is expected to increase by 110% ± 7% from 2005 to 2050.

Next generation sequencing (NGS) and genomics NGS techniques are continuing to be developed a covering complex plant genomes using platforms such as 454 Oxford Nan pore which are a few of the most used. The development of NGS has accelerated the GTL mapping

And is successfully winced in the identification of genes conforming defense mechanisms against biotic and biotic stresses. Bio-technology provides formers with tools that can make production cheaper and more manageable.

Biotechnology crops can be engineered to tolerate specific herbicides, which make efficient. used control simpler and more. Global warming causal a range of negative impacts on Mantes especially due to rapid changes in temperatures, alterations of rainfall patterns, floods and out breaks of pests and diseases. or drought conditions.

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