Global Science Research Journals

Available online at
www.globalscienceresearchjournals.org/

Perspective Open Access

International Review of The Agricultural World

ISSN: 2705-1447 Vol. 1 (3), pp. 1-2, December, 2022

Article remain permanently open access under CC BY-NC-ND license
https://creativecommons.org/licenses/by-nc-nd/4.0/

Enhancing plants with DNA marker technology

P Donna*

Department of Agriculture, University of Texas, Texas, USA

*Corresponding author. E-mail: donna@gmail.com

Received: 18-Nov-2022, Manuscript no: IRAW-22-83135; **Editorial assigned:** 21-Nov-2022, Pre QC no: IRAW-22-83135; **Reviewed:** 30-Nov-2022, QC no: IRAW-22-83135; **Revised:** 16-Dec-2022, Manuscript no: IRAW-22-83135; **Published:** 22-Dec-2022, DOI: 10.15651/2705-1447.22.1.015.

DESCRIPTION

DNA marker technology has advanced significantly and in an interesting way. Numerous analyses, including phylogenetic analysis and the positional cloning of genes, have benefited from the use of DNA markers as useful tools. The creation of high-density molecular maps, made feasible by PCR-based markers, has made it possible to map and tag practically every trait. The use of advantageous gene combinations for disease prevention may be made possible *via* marker-assisted selection. Utilizing these markers, comparative research between incompatible species has produced synteny maps that are practical for plant breeding as well as beneficial for forecasting genome organisation and evolution. Genotype fingerprinting, seed purity testing, systematic germplasm sampling, and phylogenetic analysis are all uses of DNA marker technology.

Quantitative biology holds genetic markers for a thorough analysis of challenging issues. The development of DNA markers has substantially increased the number of genetic markers that are currently available, enabling researchers to start to realise the full potential of this technology, which will increase both the productivity of agriculture and basic biology. For the near future, genetic markers will significantly advance the biological sciences, particularly agriculture. Numerous breeding projects can be greatly accelerated with DNA markers. They could offer fresh perspectives on some goals that have proven challenging to accomplish using conventional methods, like the introduction of desirable characteristics from foreign germplasm into native cultivars. Applications of DNA markers to plant breeding are covered. Genetic variation is represented by genetic markers, which makes it possible to determine how closely related various genotypes are to one another and to foresee which matings can result in novel and superior gene combinations.

The interaction between pathogenic and helpful organisms in the rhizosphere occurs at the location of interactions with roots, which also serve as storage organs organs, attach the plants to the soil, and perform critical tasks such as the uptake of water and nutrients for plant growth. The ability to find advantageous root features to increase plant production in agricultural systems is made possible by the plasticity of root growth and development in response to shifting soil moisture and nutrient status. Root System Architecture (RSA) refers to the spatial arrangement of all root components within a specific development environment. The external environment (soil moisture, temperature, nutrients, and pH) and the surrounding microbial populations have an impact on RSA, which is dynamic and affects how a plant senses and reacts to its surroundings. In order to respond, adapt, and thrive in various situations, plants need diverse types of roots.

CONCLUSION

Numerous plants are engaged in technology-based research to modify crops for improved performance, and breakthroughs in transgenic plants are having an unmatched impact on crop advancements. Over the past 20 years, remarkable progress has been made using genetic engineering technologies to manipulate genes from various and exotic sources and introduce them into crop plants to induce desired qualities. Recent research has shown RNA interference (RNAi) as a natural method for controlling gene expression in all higher species, including humans and plants. RNAi holds the possibility of improved accuracy and precision in plant breeding. RNAi technologies allow the very specific down-regulation of any gene's expression without impacting the expression of any other genes.

Other studies in this subject have concentrated on microRNAs, hairpin RNA, and promoter methylation, among other topics. New quality traits and improved potential for resistance to abiotic and biotic challenges can be produced by manipulating new RNAi pathways that release tiny RNA molecules to change gene expression in crops. Other benefits of RNAi technology include improved nutrition, morphology, or increased secondary metabolite synthesis. RNAi controls gene expression in addition to acting as a natural defensive system against molecular parasites like jumping genes and viral genetic elements that threaten genome stability.