IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.53
Volume 4, Issue 8, April 2024

Evolution of Genetic Engineering for Enhanced Features in Horticultural Crops: A Review

Hemlata Sharma[1] and Dr. Uttam Chand Gupta[2]
Research Scholar, Department of Biotechnology[1]
Research Guide, Department of Biotechnology[2]
Sunrise University, Alwar, Rajasthan, India

Abstract: *Horticulture uses genetic engineering to increase crop output, quality, and resilience to biotic and abiotic challenges. This extensive study covers the latest genetic engineering methods for horticultural crops, including novel plant genome manipulation methods. Genetic engineering in horticulture has progressed through many milestones and achievements, which are discussed in the study. It discusses how CRISPR-Cas9, RNA interference, and synthetic biology may change genes for desired phenotypes. The review emphasizes on disease resistance, insect resistance, abiotic stress tolerance, and post-harvest features. Genetic engineering success stories and future uses in fruits, vegetables, and ornamental plants are shown. Exploring the ethical and regulatory issues of genetic engineering in horticulture addresses environmental effect, biodiversity, and consumer acceptability. The evaluation stresses the significance of appropriate and sustainable genetic engineering approaches for long-term benefits without harm. The paper also discusses genome editing for precision breeding, omics technologies for targeted trait enhancements, and genetic engineering's integration with other breeding methods. It examines worldwide acceptance of GMO horticultural crops' difficulties and prospects.*

Keywords: genetic; synthetic; biodiversity; engineering.