

Genomic Designing for Abiotic Stress-Resistant Cassava

Abstract

Several abiotic factors mostly drought, extreme temperatures, and high salinity negatively impact crop growth and productivity. As more fluctuations in these climatic elements are projected into the future, there is an urgent need to redesign breeding strategies to develop crop varieties that will withstand the impacts of these stressors. Cassava is an ideal stress-tolerant and staple crop grown around the regions of the world where the impacts of rising crop stressors will likely be felt more. To ensure continuous food production, and income generation to millions around the world, this chapter discusses the recent advances in understanding crop abiotic stress resistance mechanisms and the adoption of modern, especially genomics and phenotyping technologies in addressing abiotic stress tolerance in cassava. Although not in full use, the benefits of genetic engineering and genome editing in improving abiotic stress resistance in cassava were highlighted. Overall, the inclination and success in responding promptly to the demand for more tolerant and sustainable cassava rely on integrating various fields of studies in genomics, phenomics, transcriptomics, metabolomics, engineering, etc., using the rich germplasm resources in overcoming the limitations of conventional breeding technology to mitigate the impact of abiotic stressors.