InternationalResearchJournalofBiotechnology(ISSN:2141-5153)Vol11(1)
Available online@http://www.interesjournals.org/IRJOB
Copyright ©2018 International Research Journals

EXTENDED ABSTRACTS

Crop physiology and genetics: The missing links in salinity stress tolerance in cucumber

George Mbira Kere
University of Kabianga, Kenya
E-mail: gmbira@kabianga.ac.ke

ABSTRACT

Salinity is one of the major abiotic stresses limiting growth, productivity and distribution of major food crops globally. The adverse effects of salinity stress in salt sensitive crops such as cucumber is expected to increase due to prevailing negative climatic changes and incorrect fertilizer and irrigation management. Cucumber is an important fruit vegetable that is consumed fresh, pickled and also forms an important raw material in pharmaceutical industries. Research on salt tolerance in cucumber is active at physiological, genetic and molecular levels. However, the interaction of genetics and physiology in salt tolerance in cucumber is not well documented. The complexity of salt tolerance in cucumber necessitates concerted efforts of crop physiologists, geneticists, breeders and agronomists in the quest to develop cucumber genotypes with acceptable yields, quality at high soil or water salinity. The purpose of this review is to provide current advances of salt stress research and highlight major hurdles to development of salt tolerant cucumber genotypes. The paper discusses the interaction between physiological and genetic responses to salinity stress in cucumber. A review of potential genetic and physiological markers with a view of selecting and enhancing salt tolerant cucumber germplasm are presented.

Salinity is a major abiotic stress limiting growth and productivity of plants in many areas of the world due to increasing use of poor quality of water for irrigation and soil salinization. Plant adaptation or tolerance to salinity stress involves complex physiological traits, metabolic pathways, and molecular or gene networks. A major challenge towards world agriculture involves production of 70% more food crop for an additional 2.3 billion people by 2050 worldwide (1).

Salt stress is one of the major abiotic stresses constraining development, efficiency and dissemination of significant food crops all inclusive. The unfriendly impacts of saltiness worry in salt delicate harvests, for example, cucumber is relied upon to increment because of winning negative climatic changes and off base compost and water system the executives. Cucumber is a significant organic product vegetable that is devoured new, cured and furthermore shapes a significant crude material in pharmaceutical ventures. Examination on salt resistance in cucumber is dynamic at physiological, hereditary and sub-atomic levels. Be that as it may, the collaboration of hereditary qualities and physiology in salt resistance in cucumber isn't very much recorded. The intricacy of salt resilience in cucumber requires coordinated endeavors of harvest physiologists, geneticists, raisers and agronomists in the mission to create cucumber genotypes with satisfactory yields, quality at high soil or water saltiness.

Saltiness stress includes changes in different physiological and metabolic procedures, contingent upon seriousness and length of the pressure, and at last represses crop creation [4]. At first soil saltiness is known to stifles plant development as osmotic pressure which is then trailed by particle harmfulness [4]. During the underlying periods of saltiness stress, water retention limit of root frameworks diminishes and water misfortune from leaves is quickened because of osmotic worry of high salt collection in soil and plants, and along these lines saltiness stress is additionally considered as hyperosmotic stress [5]. Saltiness incited ROS development can prompt oxidative harms in different cell parts, for example, proteins, lipids, and DNA, hindering imperative cell elements of plants. In this manner, the advancement of salt lenient plants rely upon the premise of physiological, biochemical and atomic markers are suggested and may give unthinking understanding the term of resilience. Henceforth numerous metabolic changes are known to happen in plants exposed to salt pressure, physiological boundaries, for example, ionic relations have been proposed for use as resilience markers since they can be identified with salt resistance instruments.

Plants create different physiological and biochemical systems so as to get by in soils with high salt focus. Standard components incorporate, however are not constrained to, particle homeostasis and compartmentalization, particle transport and take-up, biosynthesis of osmoprotectants and perfect solutes, enactment of cell reinforcement protein and union of cancer prevention agent mixes, amalgamation of polyamines, age of nitric oxide (NO), and hormone adjustment.

The study demonstrated that, the biochemical parameters associated with salinity tolerance in higher plants. It offers a simple and fast method which can be used to investigate the salinity tolerance of cucumber plant.

This work is partly presented at 23rd World Congress on Biotechnology, November 14-15, 2019, Netherlands