Acta Scientific AGRICULTURE (ISSN: 2581-365X)

Volume 6 Issue 4 April 2022

Perspective

New Insight into Salinity Response and Tolerance in Plants

Shiksha Chaurasia*

ICAR-Central Soil Salinity Research Institute, Karnal, Haryana, India

***Corresponding Author:** Shiksha Chaurasia, ICAR-Central Soil Salinity Research Institute, Karnal, Haryana, India.

DOI: 10.31080/ASAG.2022.06.1122

Received: February 28, 2022

Published: March 25, 2022

© All rights are reserved by **Shiksha Chaurasia.**

Salinity is one of the emerging issues in the 21st century, marked by increased salinization of soil and water. Salinity is often referred to as a "white death" and almost 32 million ha of drylands and 60 million ha of irrigated land have been salinized worldwide by the dint of improper anthropogenic activities. Saline soil generally defined in electrical conductivity (EC) of the saturation extract (ECe) in the plant root zone exceeds 4 dS m^{-1} (40 mM NaCl) with an exchangeable sodium percentage of 15%. The grain yield of most crop plants is reduced at this ECe, though many crops exhibit yield reduction at lower ECes. Furthermore, the salinized areas are increasing within the range of 10% annually for various external reasons, including irrigation with saline water, high surface evaporation, poor drainage practices, weathering of native rocks, and rainfall. Although achieving the food demand and supply of nearly 2.3 billion people is a challenging task by 2050, dealing with the loss of agricultural land because of salinity. The soil and management practices have facilitated crop production marginalized by salt but an additional gain from these applications seems to be problematics. Soils are the major limiting factors for crop production as significantly reduced 50 % grain yields of major crop plants such as chickpea (*Cicer arietinum* L.), wheat (*Triticum aestivum* L.), rice (Oryza sativa L.) and maize (*Zea mays* L.). The higher salt intensity severely affects germination, seedling growth, membrane stability, chlorophyll, and biomass in early vegetative stages and reduced tillering, grain weight, and grain yield in the reproductive stages. Majorly salt tolerance is articulated via three important mechanisms in the plants; osmotic tolerance, ion exclusion, and tissue tolerance. Among these, ion exclusion played a vital role in attributing tolerance against salt stress as it linked with one or more salt tolerance mechanisms governing different biological pathways in plants. Several traits as a seedling (germination, chlorophyll, membrane stability, plant length, biomass), agronomical (plant height, number of spikelets/spike, spike length, days to heading and maturity, thousand-grain weight, grain yield), and ionic (concentration of Na^+, Cl^-, Ca^{2+}, K^+ and Na^+/K^+ ratio in shoot/root) have been identified and exploited as indexes for screening of salt tolerance in plants. Therefore, to achieve global food security and sustainability, there is a necessity to identify salt-tolerant genotypes for utilizing them for developing salt-tolerant cultivars.

In this topic, all kinds of manuscripts dealing with plant response and tolerance to cope with salinity stress are welcome. This includes greenhouse experiments (hydroponics), field trials with several approaches from physiological to molecular levels, including also biochemical focus. In addition, informative review papers which are relevant to the section will also be taken into consideration, provided they contain commented/critical aspects of interest.

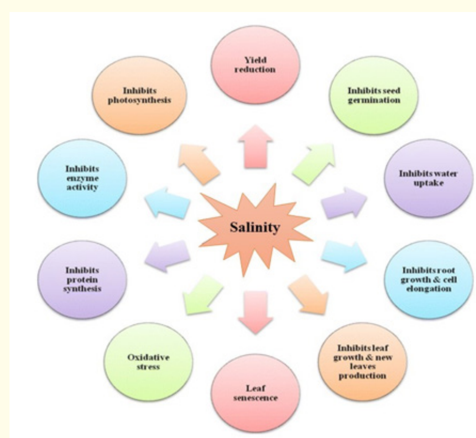

Figure 1: Effects of salinity stress on plants: an overview.

Assets from publication with us

- Prompt Acknowledgement after receiving the article
- Thorough Double blinded peer review
- Rapid Publication
- Issue of Publication Certificate
- High visibility of your Published work

Website: www.actascientific.com/

Submit Article: www.actascientific.com/submission.php

Email us: editor@actascientific.com

Contact us: +91 9182824667