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Editorial

Soil Salinization: A Serious Problem for Agricultural Sustainability

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Soil salinity is considered as a serious drastic abiotic stress as it reins majority of crops grown worldwide. Irrigation system and removal of plants from lands may be a reason for it with many other well-known anthropogenic causes. About 20% of total global cultivable land is now under salinity affected, drastically harassing agricultural production and now it has become a more prominent universal issue. Accumulation of dissolved salts within the soil or irrigation water to a harmful concentration causes reduction of plant growth and development referred as salinity stress. The phrase salinity stress indicates soils that are saline or sodic, and these wrap above 400 million hectares, which is about to 6% of the global land area. The closest areas to the seashore are more prone to salinity where salinity reduces agricultural productions to a large scale. Salt problem in agricultural crops, commonly develops in the irrigated areas where salts from the irrigation water build up in the root zone.

Soil Salinity is being accepted one of the most critical threats to the agriculture and food production in the arid and semi-arid soils. Accumulation of sodium, magnesium and calcium salts causes an enhancement of the alkalinity of the soils creating the crop production complicated. Plant structure has altered to convinced adaptation strategies for tolerating the toxicity of the salts in the soil. Salinity stress sometimes called 'Secrete Murder' as it destroys plants and other organisms grown on it. 'White Death' also used as synonym of it describing white images of lifeless shining lands studded with dead trees. Salinity is one of the most serious problems eradicating global agricultural production.

Plant growth and developments are largely governed by several physiological processes which are mostly inhibited under salinity needed to be properly scrutinized to understand tolerance mechanisms in plants under salinity. Aggregation of Salts is increased to an extreme level to the plants root zone causing salinity-induced stress. For this, reduction in water uptake from soil surface creates water stress, while sufficient water present in the root zone. Water absorption of saline soils requires extra energy expenditure. Thus, higher salinity will always lead to decreased levels of water as well as inducing analogous stresses like water and osmotic stress. High osmotic pressure is created by the high salt concentrations in soil limits water uptake by seeds, responsible for the metabolism of nucleic acid digestion, metabolism of protein changes as well as hormonal offset are aggravated, results in the destruction of the ability to utilize seed stores. There are also varying intramural (plant) and external (natural) processes influencing seed germination under saline conditions incorporating the nature of seed layer, seed torpidity, seedling power, seed polymorphism, seed age, water, gases, light and temperature. Higher concentrations of the salt results hyper ionic and hyperosmotic stress, even cause's death of the plant. Membrane layer harm, nutrient unevenness, distorted levels of enzymatic hindrance, developmental regulators and metabolic abnormality, including photosynthesis, which at last prompts plant demise, may be occurred from the impact of salinity.

Agricultural production of the majority of crops is not only declined by the salinity, but also, soil physicochemical properties, and ecological balance of the area are affected. The impacts of salinity consist of-low agricultural output, squat economic profits along with soil erosions. Salinity possessions are the consequences of multifaceted relations amongst morphological, physiological, as well as biochemical mechanisms counting seed germination, plant development, and water plus nutrient uptake. Salinity affects approximately

every part of aspects of plant expansion accounting: germination, vegetative growth and reproductive development. Soil salinity compels ion toxicity, osmotic stress, nutrient (N, Ca, K, P, Fe, and Zn) insufficiency in addition to oxidative stress on plants, moreover thus confines water uptake from soil. Soil salinity drastically hinders plant phosphorus (P) uptake as phosphate ions precipitate with Ca ions. Several essentials, such as sodium, chlorine, and boron, have precise noxious property on plants.

Saline water in the soil could restrain plant augmentation meant for two acumens. Foremost, the existence of salt in the soil solution reindeers the aptitude of the plant to take up water, furthermore this leads to poor growth rate which is called osmotic or water-deficit consequence of salinity. Second, stipulation of extreme concentration of salt go through the plant in the transpiration stream at hand will be damage to cells in the transpiring leaves furthermore this possibly will be a reason for auxiliary reductions in intensification. The explanation of salt tolerance is typically the percent biomass production in saline soil relative to plants in non-saline soil, after growth for an extended period of time. For slow-growing, long-lived, or uncultivated species it is often tricky to evaluate the diminution in biomass production, so percent continued existence is habitually used.

The extremity of salinity stress inhibits crop production by changing numerous physiological and metabolic activities. Moreover, much accretion of sodium in cell walls can hastily escort to osmotic stress and cell death. Plants perceptive to these elements might be exaggerated at moderately small salt concentrations if the soil contains sufficient of the toxic element. Since numerous salts are in addition plant nutrients, elevated salt levels in the soil can offend the nutrient equilibrium in the plant or obstruct with the uptake of various nutrients. Salinity moreover affects photosynthesis chiefly throughout a lessening in leaf area, chlorophyll content and stomatal conductance, in addition to a smaller degree through a diminish in photosystem II competence. Salinity unfavorably affects reproductive growth through inhabiting microsporogenesis as well as stamen filament elongation, enhancing programed cell death in several tissue types, ovule abortion and senescence of fertilized embryos. The saline growth medium causes lots of unfavorable effects on plant growth, due to a squat osmotic potential of soil solution (osmotic stress), Specific ion effects (salt stress), nutritional imbalances, or a combination of these factors. All these factors cause adverse effects on plant growth and development at physiological and biochemical levels, plus at the molecular level.

An agricultural system which preserves and boosts individuals fitness, repayment producers with consumers equally economically and spiritually, protects the environment, and produces adequate food for an growing world population known as an idle sustainable agricultural system. Abiotic stress environment is one of the most vital hindrances to agricultural production in world existing in the environment.

Investigation of numerous crucial variables such as i) Soil geochemistry (i.e. Salt type, amount, acidity or alkalinity), ii) Hydrology of soil ground water (i.e. Alteration or fluctuation of water table), iii) Environmental fluctuations (rainfall, temperature), together with iv) Genotype of plant cultivars should be taken under consideration as proper agricultural management system.

Sustainable irrigated agriculture in areas where salinity poses a problem can be achieved by adhering to two basic principles: (1) salt balance, defined as salts removed must equal salts added, must be achieved, and (2) systems must be installed to remove drainage water and dissolved salts when the water table reaches the root zone. These principles can be applied on a field, farm or regional basis. In order to identify the cue factors regarding the particular retaliations or cumulating toxic ions, it is crucial to understand the whole process accountable for growth restriction as well as retarding production of plants with the further span of retaliating the same.

Avoidance (aimed to evade advance salinization) and remediation supervision (repossession of accessible Stalinized water) are two principal sustainable agricultural management system, these are frequently overlie. As one of the most crucial processes in plant adaptation to salinity, osmotic adjustment stabilizes metabolic processes in tissue as well as also enables regrowth upon rewetting.

The most important roadways are being followed to perk up salt tolerance: (i) the utilization of ordinary genetic variations, either through direct choice in stressful environments or through mapping quantitative trait loci as well as consequent marker-assisted selection; in addition to (ii) invention of transgenic plants to initiate narrative genes or to amend appearance levels of the on hand genes to have an effect on the extent of salt stress lenience.

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