EDITORIAL

Simple Low Cost Technology Used to Evaluate Field and Vegetable Crops for Salinity Tolerance

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Increasing global warming associated with salinity, drought and other abiotic stresses affect crop production drastically. With respect to salinity, 2/3rd of the world arable land is affected by soil salinity. This urges the necessity to select and breed crop cultivars for salinity tolerance which might have great potential in increasing crop production in saline soils.We did not attempt to study the mechanism of salt tolerance in crops which have been well documented. In order to increase crop productivity under saline soil and under drought condition, we adopt a new strategy to screen a set of crop cultivars of each crop species with good agronomic back ground (in place of germplasm or genetic resources) and finally select particular crop cultivars with good agronomic background. In this endavoura semi-hydroponic simple and cheap technique using coco-peat in plastic glasses and NaCl concentration has been developed. This involves growing various crop cultivars in saline solution in a laboratory, such as 1.25 to 1.50 mMNaClin coco-peat in plastic containers for about 15 to 30 days and finally select crop cultivars tolerant to salinity on the basis of growth responses (plant height, root dry mass, root length). We applied salt concentration one time at the time of sowing. The specific salt concentration for each crop cultivar was selected as optimum in a preliminary experiment. Using this simple low cost technology we evaluated crop cultivars with good agronomic backgrounds of several crops such as Bt-cotton, sunflower, castor and few cereal crops such as maize, pearl millet, rice and wheat and few vegetable crops (papers published, few not published) under laboratory conditions. In all these studies highly genotypic variability was observed among cultivars of each crop species and thereby salt tolerant cultivars were selected on the basis of growth responses.

During the course of the experiments, we observed in few crop cultivars especiallyin cotton, sunflower, pearl millet, that with an increase in salinity concentrations there was an increase in root elongations associated with increase in root density in few of them specially in pearl millet, rice, and wheat. Therefore, an increase in root elongations and root density could be consideredas a growth induce function due to osmotic adjustment. On the basis of these results it may be concluded that root responses with respect to root elongation and increase in root density could be used as selection criteria for salinity tolerance in crops which needs to be confirmed in future studies.It is expected that salt tolerant crop cultivars of each crop species could have enough potential to increase crop productivity under salt prone areas.

We observed that in the case of Bt-cotton, the salt tolerant cultivar selected in the laboratory showed good performance in the farmers' fields and well accepted by the farmers. The same phenomenon was observed in the case of sunflower and maize which needs to be confirmed in future studies. This clearly reveals the transfer of technology from the lab to land. There is a great necessity to utilize and confirm its validity in future research.