Deutscher Tropentag, October 9-11, 2002, Witzenhausen

"Challenges to Organic Farming and Sustainable Land Use in the Tropics and Subtropics"

Testing Salt Tolerance of the Main Sorghum Cultivars for Semi-Arid Conditions of Sudan

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Abstract

Sorghum is considered as the main food of more than 80 % of the population of Sudan. It is grown nearly in all regions of Sudan, mainly as rainfed agriculture. However, irrigated sorghum is also practised, particularly in the Gezira scheme, for farmers' local consumption. The increase of demand due to increase of population forces extension of sorghum cultivation in marginal areas, that are salt affected.

Because of environmental problems and infeasibility of reclamation in many cases, this study is an attempt to find feasible and practical means to cultivate salt-affected soils for sorghum production under semi-arid conditions in Sudan.

To attain sustainable sorghum production under such above mentioned conditions, six sorghum cultivars were tested against different levels of salt concentrations. Other than the control the three levels were 2, 4 and 8 $dS\,m^{-1}$ at 25 °C in the extract of the saturated soil paste. For artificial salinization NaCl was used because NaCl is found to be the dominant salt in salt-affected soils of the semi-arid conditions of Sudan.

The *Sorghum bicolor* (L.) Moench cultivars selected for this study were ICV 207, ICV 112, F. W. Ahmed, Elingaz Tabat and B/16, they were provided by the Sorghum Breeding Centre of Sudan. Germination percentage and seedling shoot dry weight were recorded at 3 and 7 days after sowing, respectively.

The preliminary results showed varietal differences in responses to different levels of salt. The sorghum cultivar F. W. Ahmed was found to be a high salt tolerant variety compared to the others. Nevertheless, different salt levels differ in their effect on both germination and seedling shoot dry weight for each sorghum variety. However, the high salt concentration, i.e. 8 $dS\,m^{-1}$, showed a drastic effect on all varieties in both germination and seedling shoot dry weight.

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