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Research Notes

Salt tolerance of pigeon pea (*Cajanus cajan* L.) varieties during germination

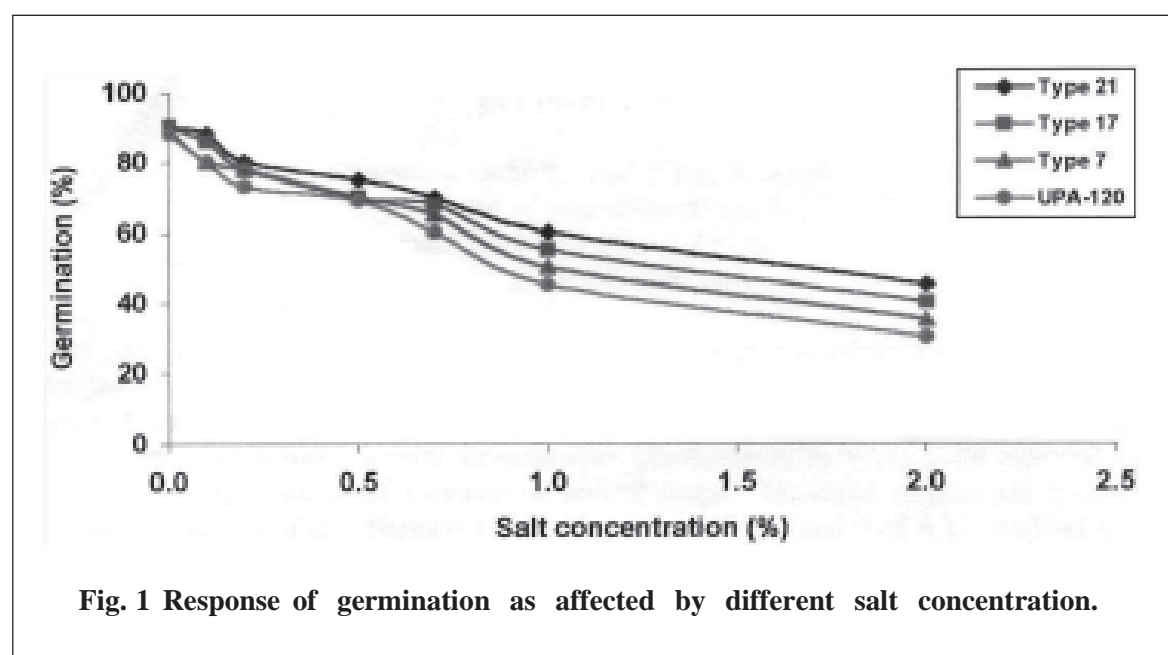
DHARMENDRA SINGH AND VINAY KUMARI

Department of Agricultural Botany, Janata Mahavidyalaya, Ajitmal, Auraiya (U.P.)-206121

Pigeon pea considered as most important pulse crop is grown in an area of 3.8 m ha in India and 5.30 lakh ha in U.P. It contributes to 16.37 % of total area and 18.62 % of total production in India. The average productivity of this crop in India and U.P. is 6.21 and 10.20 q / ha respectively. Several investigators (Abel and Mackenzie, 1964; Ayers, 1948; Bernstein and Ayers, 1951; Bernstein *et al.*, 1952; Brown and Hayward, 1956 and Ghorashy *et al.*, 1972) had reported on difference in salt tolerance of varieties of several crops. However, pigeon pea was not included in these studies. Bernstein and Hayward (1958) and U.S.S.L. staff (1954) suggested that germination percentage would

give a good indication of salt tolerance. Thus present investigation was undertaken to assess the possible difference in salt tolerance among four varieties of pigeon pea.

A laboratory experiment was conducted during February, 2002 at Janata Mahavidyalaya, Ajitmal, Auraiya (U.P.). Four Indian varieties of pigeon pea namely, Type-7, UPA-120, Type-21 and Type-17 were used in this study. A preliminary experiment utilizing 30-seeds per replication per variety was conducted and germination percentage of each seed lot was obtained. The seeds were placed in standard size, sterile petri dishes on wet filter paper and kept at $30 \pm 2^\circ\text{C}$ for germination. Maximum



germination (95-100%) was obtained in 5 days. Each of the above varieties was placed in sterilized petri dishes on filter paper moistened with 0.0,0.1,0.2,0.5,0.7,1.0 and 2.0% NaCl.

The design of the experiment was split plot with three replications with varieties as the main plot and different levels of salinity as sub plot.

The seeds were treated with 10% solution or "Clorox" for 5 minutes before placement on filter. The control treatment was watered with double distilled water and the other treatments with their respective NaCl solutions. Petri dishes were placed in germination room for 5 days at $30 \pm 2^{\circ}\text{C}$. After five days percentage of germination was determined.

The germination percentage, when averaged over all the salt concentrations for Type-21, Type-17, Type-7 and UPA-120, was 71.5, 69.5, 66.7 and 63.0 percent respectively. The percent germination for UPA-120 was significantly lesser than the remaining three varieties. During the study Type-21 showed the greatest salt tolerance. The pattern of germination reduction was almost similar. For all the varieties, there was very less interaction between varieties and salinity level for lower concentrations of salt (Fig.1). Type-21, Type-17 and Type-21 showed 10-12% reduction in germination at 0.5% NaCl concentration whereas UPA-120 exhibited 15% reduction in germination at the same concentration level. However, beyond this level there existed some interactions among varieties.

Salt concentration more than 0.5% reduced the germination percentage in all the varieties.

The laboratory study showed that variation in germination existed among pigeon pea varieties in relation to salinity. Although salt concentration greater than 0.5% significantly reduced the germination in all varieties, the response of these varieties to various salt concentrations requires further investigation.

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