

## RESEARCH NOTES:

### Effect of salinity on the South Indian field crops : Germination and Early vigour of chillies (*Capsicum annuum*, Linn.)

Chilli is cultivated under irrigated and rainfed conditions and also in tracts having considerable salinity. The present study aims at the assessment of the performance of different varieties under saline conditions. Three varieties of chillies (*Capsicum annuum*) viz. K1, B24-A2 and 618-14 were selected for the study. The seeds were sown in pots containing 2.5 kg of soil. The soil selected was a red loam having a pH of 7.6 and EC of 0.2 mhos per cm at 25°C. There were four salinity treatments besides a control of rain water as follows: (1) control (Rainwater), (2) 2000 ppm, (3) 4000 ppm, (4) 6000 ppm and (5) 8000 ppm. There were two replications. The saline solutions were prepared artificially with sodium chloride and calcium chloride on equal basis. Rainwater was used in preparing the saline solutions. The total soluble salts of 300 ppm in rainwater was also taken into consideration. Selected seeds were sown in lines at the rate of 100 seeds per pot. The cultures were irrigated with saline solutions according to the treatments. Seedlings of well developed radicle were selected as germinated seedlings. The shoot height and root length were measured on the 15th day selecting five seedlings per treatment at random.

The data in Table 1 show the germination of three varieties under salinity. It is apparent that the germination is reduced by increased salinity.

TABLE 1. Germination under salinity (Figures shown as percentage over control)

Treatments Varieties	Rain Water					Sig.	S.E.	(P=0.05) C.D.
	300 ppm (C)	2000 ppm (T <sub>1</sub> )	4000 ppm (T <sub>2</sub> )	6000 ppm (T <sub>3</sub> )	8000 ppm (T <sub>4</sub> )			
K. 1.	100.00	95.72	72.78	43.87	13.96	Yes	3.01	9.07
B-24-A2	100.00	105.40	63.56	13.95	13.95			
618-14	100.00	86.12	93.53	34.76	25.92			

Conclusion :  $\overline{C}$     $\overline{T_1}$     $\overline{T_2}$     $\overline{T_3}$     $\overline{T_4}$

Shoot height and root length of the fifteen days old seedlings are presented in Tables 2 and 3 respectively.

TABLE 2. *Height of shoot of 15 days old seedlings (cm)*

Treatments	Rain Water					Sig.	S.E.	C.D. (P=0.05)
	300 ppm (C)	2000 ppm (T <sub>1</sub> )	4000 ppm (T <sub>2</sub> )	6000 ppm (T <sub>3</sub> )	8000 ppm (T <sub>4</sub> )			
K. 1.	5.65	4.95	3.48	3.40	2.67	Yes	0.16	0.49
B-24-A2	5.54	4.75	3.04	3.56	2.57			
618-14	4.70	4.06	4.28	3.47	2.25			

Conclusion : C T<sub>1</sub> T<sub>2</sub> T<sub>3</sub> T<sub>4</sub>

TABLE 3. *Length of root of 15 days old seedlings (cm)*

Treatments	Rain Water					Sig.	S.E.	C.D. (P=0.05)
	300 ppm (C)	2000 ppm (T <sub>1</sub> )	4000 ppm (T <sub>2</sub> )	6000 ppm (T <sub>3</sub> )	8000 ppm (T <sub>4</sub> )			
K. 1.	9.28	11.15	9.00	6.77	3.19	Yes	0.38	0.98
B-24-A2	11.30	10.15	7.95	6.55	4.45			
61-14	9.11	9.30	9.71	5.40	3.95			

Conclusion : T<sub>1</sub> C T<sub>2</sub> T<sub>3</sub> T<sub>4</sub>

From the result on shoot height and root length, it is seen that the early vigour is controlled by salinity.

The data on the germination of three varieties of chillies indicated that all the varieties are influenced by salt levels. There was no difference in germination due to the variety. The treatment receiving 4000 ppm is on a par with the control indicating that the germination was not much affected due to salinity upto a concentration of 4000 ppm. The shoot height and the root length was much affected due to salinity. With regard to the shoot height control and the treatment receiving 2000 ppm had independent effect. The treatment receiving 8000 ppm recorded significantly lower height when compared to the other treatments. In the case of root length, the control and the treatment receiving 2000 ppm were on a par and the other treatments significantly differed with each other. There was no difference in early vigour (shoot height and root length) due to variety. The reduction in germination and early vigour of chillies due to salinity is attributed to the osmotic concentration of the media and the ionic effect of salts in the substrate.

The findings reported in this paper are in line with Balasubramanian (1965) investigating with Rice, Kurian and Iyengar (1966) with *Sesamum* and Kaliappan *et al* (1968) with ragi (*Eleusine coracana*). Daito (1967) reported that the growth of root and top of citrus were significantly different between plots of different salt treatments.

The results on germination and early vigour indicated that all the three varieties were highly influenced by salinity. Differential behaviour of the varieties was not observed. The germination was highly affected at the salinity level of more than 4000 ppm. The reduction in germination and early vigour is attributed to the osmotic concentration and the ionic effect of the substrate. It is concluded that the germination of chilli crop is found to be satisfactory upto a salt level of 4000 ppm with a soil having a pH 7.6 and EC 0.2. However, the early vigour is affected by salinity even in the treatment receiving 4000 ppm indicating the sensitiveness of chillies crop to salinity.

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#### ERRATA

- In Volume 57(2) February, 70 Issue, Page 93, the name of the 6th Author is to be read as R. Venu Reddy instead of P. Venu Reddy.
- Volume 57(3) March, 70 Issue, Page 184, the name of the 1st Author is to be read as N. Mohamed Sheriff instead of R. Mohamed Sheriff.
- In Volume 57(3) March, 70 Issue, Page 175 in the Table in the first line under the heading 'Number infected' the figure is to be read as 6 instead of 9.
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