Note on Salt Tolerance of Bajra Entries during Germination*

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Bajra (*Pennisetum typhoides* L.) is an important foodgrain crop in Gujarat State and it contributes nearly a third of the total food production of the State. Gujarat State has released two hybrids of *bajra*, namely HB-2 and HB-3 and further research work to evolve better hybrids is under progress at Agricultural Research Station, Jamnagar. Northern districts of Gujarat State like Kutch, Banaskantha and Mehsana have very large areas under this crop. Soils of some areas of these districts have a higher salt percentage. Germination is considered by many workers to be the most sensitive stage to excess salt content during crop growth period (Parmar, 1967 and Uhvits, 1946). No information was available on the degree of salt tolerance by different *bajra* hybrids during germination period. A greenhouse study was therefore undertaken to ascertain salt tolerance of different *bajra* entries during germination.

The laboratory experiment was conducted at Agricultural Research Station, Jamnagar during the month of July 1971 to observe the effect of saline water on seed germination. Nine *bajra* entries (HB-3, HB-41, J-934, J-128, J-275, J-87, N-207, N-28-15-2 and Babapuri) supplied by the Millet Specialist, Gujarat State were included in the study. The first six entries are hybrids and the rest three are locally improved strains. Four levels of salt concentrations (NaCl: $CaCl_2$: 1:1) were 1500, 3000, 12000 and 24000 ppm. $CaCl_2$ was added to remove the adverse effect of excessive sodium ions.

Fifty seeds of each *bajra* entry were placed on a filter paper placed in petri-dish and another filter paper was placed on the seeds to cover them. Five ml of the solutions were added to different petri-dishes to soak the filter paper and seeds thoroughly. The petri-dishes were kept moist by adding distilled water taking sufficient care to avoid excess or shortage of water. The treatment combinations were replicated three times.

Germination counts were determined on the 7th, 10th, 15th and 20th day from the date of start of experiment. At each count, the germinated seeds were removed. A seed was considered as germinated when the shoot was at least five mm long, there was a normal primary root and there was no abnormal growth.

Detailed record of the periodical germination counts of different *bajra* entries grown under various salt concentrations is given in Table 1. The data show that different treatments significantly influenced the germination counts on different days. The lowest germination count mainfested by N-207 is to be attributed to the poor quality of seed sample itself and not to the variety as such, as revealed from other studies conducted by the senior author using the same seed lot. The hybrid seed lots, in general, showed greater germination counts than the locally improved strains. Germination counts on the 20th day

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were in the following order: J-87 > HB-41 > J-128 > J-934 > HB-3 > Babapuri > J-275 > N-28-15-2 > N-207.

TABLE—1

Germination Counts on different days after sowing.

Treatment	*Germination Counts (Out of 50) on days after sowing*			
	7th	*10th*	*15th*	*20th*
Seed entry:				
HB—3	21	22	23	23
HB—41	30	30	30	30
J—934	25	27	28	28
J—128	26	27	29	29
J—275	17	21	21	21
J—87	27	31	33	33
N—207	9	10	10	10
N—28—15—2	17	18	18	18
Babapuri	22	23	23	23
S.Em.±	2	2	3	3
C.D. at 5%	6	7	7	7
Salt concentration:				
ppm				
1500	37	39	39	39
3000	34	36	37	37
12000	10	13	15	15
24000	5	5	5	5
SEm.±	2	2	2	2
C.D. at 5%	5	5	5	5

Different salt concentrations also significantly influenced the total germination counts on different days. Increased salt concentrations progressively delayed and reduced germinations. At salt concentration of 24000 ppm, the germination counts were only 10 per cent. The effect of 1500 ppm and 3000 ppm of salt concentrations on germination counts on different days was statistically at par and the same was significantly different from the rest two concentrations, namely 12000 ppm and 24000 ppm.

The information obtained from this study can be utilised to increase the seed rates suitably to ensure an optimum plant stand under saline conditions.

Increasing salt concentrations progressively reduced the germination of seeds of different *Bajra.* entries *Bajra HB-41* showed the highest germination percentage on the 7th day and J-87 on the 20th day. At the salt concentration of 24000 ppm, the germination counts were only 10 per cent.

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