# Abstracts

## 5th National Seminar

### Climate Resilient Saline Agriculture: Sustaining Livelihood Security

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normal (0.75-0.45 dS $m^{-1}$) conditions. Significant genetic variation ($P < 0.01$) in salinity tolerance was observed among wheat genotypes. In this study, an equation was developed for estimating a stress tolerance score (STS). The results of the equation were identical to those of multivariate analyses. The STS equation is much easier to use than complicated multivariate analyses. Therefore, STS equation is suggested as a screening tool for identification of salt-tolerant wheat genotypes. Ten lines (KRL 390, KRL 391, KRL 392, KRL 393, KRL 394, KRL 395, KRL 396, KRL 397, KRL 398 and KRL 399) having higher salt tolerance than check varieties were identified. These lines can be used in the future wheat breeding programmes for developing high yielding and salt tolerant cultivars.

**Halophyte plants in Ranns of Kachchh: Adaptation strategies under extreme salinity and its implications on fodder availability**

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**Abstract**

Kachchh, the second largest district of the country has more than 53% of the total geographical area under Ranns (saline marshy lands). Soil salinity in this regions ranges from 3.2 to 32 dS $m^{-1}$ and sodicity in terms of pH from 8.0 to 10.0. Animal husbandry is the major source of livelihood for the local inhabitants. However, due to high environmental stress and huge population of livestock, the region always remains fodder deficient. Heavy grazing pressure degrades the natural resource diversity of the region. In this region, apart from inherent salinity, a significant portion of agricultural lands has recently developed secondary salinity due to faulty practices. This region is rich in halophytic plant diversity. Halophytic plants tolerate excess levels of salt and are valued as a fodder resource, source of oils or source of salt tolerant genes for agricultural crops. The major halophytes identified at Ranns of Kachchh were *Suaeda nudiflora, Aeluropus lagopoides, Urochondra setulosa, Cressa cretica, Cyperus* sp., *Tamarix gallica, Salvadora persica, Salvadora oleoides* and *Prosopis juliflora*.. Studies were conducted to identify morphological and anatomical features of halophyte plants under salinity. As salinity increased, trichomes developed in *Cressa cretica*, no. of pointed trichomes increased in *Urochondra*, thickened epidermis developed in *Aeluropus* and *Urochondra* and stomatal density increased in *Suaeda*. In various plant parts of *C. cretica*, the content of anions followed the pattern $Cl^- > SO_4^{2-}$ and $Na^+ > K^+$ among cations. The highest $Na^+/K^+$ ratio was observed in dicots compared to monocots. In *C. cretica*, higher $Na^+/K^+$ ratio was noticed in leaves followed by shoots and the lowest in roots indicating preferential accumulation of sodium over potassium in the leaves compared to roots. These plants also respond to salinity by manipulating anti-oxidants and osmolytes. The osmoprotectant glycine betaine linearly increased in *U. setulosa* with increase in salinity (0.0127 to 0.2755 mg $g^{-1}$). In *Aeluropus*, the content of superoxide dismutase linearly increased with salinity (0.3715 to 0.8408 mg $g^{-1}$). The study on nutritional quality of halophytes revealed their potential to serve as feed resource to tackle fodder deficiency in the region.