

## **Introduction:**

In India about 8.1% of total geographical area is affected by salinity ( Rao, 1990). The agricultural use of saline soils and saline water can benefit many developing countries. Salt tolerant plants can harness saline resources that are generally neglected and usually considered as impediments rather than opportunities for the economic production of food, fodder, fuel, and other products. Throughout the world, there are thousands of hectares of coastal land where fresh water is not available for irrigation. In developing countries in particular large areas of land are salinized due to poor irrigation practices. Although, these lands would require large quantities of fresh water to leach away the salts before conventional crops become advantages. Due to the fact there is lot of interest of scientists on the development of salt tolerant cultivars of crop species, which could, with appropriate management, be used for the exploitation of saline soils.

There are two options for exploitation of these saline soils to meet the increasing demands of expanding population for food and energy: either change the environment to suit the plant or

modify the plant to suit the adverse environment. Since the cost of modifying the environment is very high, the biological manipulation of plant seems to be more promising and energy efficient. In some species, genetic diversity of salt resistance occurs quite extensively among their cultivars. In species where such variation is limited or lacking genetic variability can be induced either through in vitro techniques or by transferring genes from wild or closely related salt tolerant species.

Although, economic considerations of halophytes is just beginning, they are now receiving increased attention in arid regions where intensive irrigation has led to salinization of soils due to forced use of ground saline water. Most interestingly, halophytes should not be used as a substitute to good agricultural practice except in the areas where conventional crops can not be grown. They should not be used as a palliative for improper irrigation. Halophytes often have poor agronomic qualities such as wide variations in germination and maturation. Soil salinity is a persistent challenge to crop productivity all over the world (Tangi, 1990). Salinity was shown to account for about 70% of the loss in crop yield (Pasternak, 1982). Yields are usually lower than conventional plant species. Nutritional characteristics or even

potential toxicity's have not been established for many edible halophytes.

In halophytes, much work has taken place to understand the mechanism of salt tolerance that must be operating at the cellular level ( Warren & Gould, 1982; McCoy, 1987; Blits et al,1993) even than there are contradictory reports that the tolerance shown by whole plant is not always cellular based & vice & versa ( Heden strom and Beckle, 1979; Smith & Mc Comb, 1981; Blits et al, 1993). Among these halophytes, *Salicornia and Suaeda* are the two main plant species where salt tolerance and ecological aspects are studied in greater details and have potential for commercial exploitation.

The potential of tissue culture and genetic transformation, strategies used for in vitro of salt tolerant cell/plants have not been dealt earlier in detail. The salt tolerant cell line was first isolated from *Capsicum annum* by Dix and Street (1975). Since than such cell lives have been isolated from more than 36 species of 28 genera belonging to 16 families.

During the present studies efforts were made to describe some of the biological processes involving generation of callus/ cell cultures and mechanism of salinity tolerance of tissues

under suspension culture. Emphasis has been laid on studies on ameliorating effect of hormones and determines effect of various chemicals on in vitro initiation of callus culture from different plant parts. Subsequent regeneration of rooted plant lets either through somatic embryogenesis or direct organogenesis. has also been worked out.