

Salt tolerance in coriander genotypes

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Accepted : October, 2009

ABSTRACT

An experiment was carried out at Department of Crop Improvement, Anbil Dharmalingam Agricultural College and Research Institute, Tamil Nadu Agricultural University, Navalurkuttapattu, Trichy during *Rabi* season 2006 with six coriander genotypes *viz.*, CSO4, CS11, CS13, CS16, CS18, CS32 response to four levels of soil exchangeable sodium percentage (ESP) *viz.*, ESP 2.0 as control, 15, 20 and 25 were studied. The results revealed that plant height, number of branches, leaf yield and seed yield of all coriander genotypes significantly decreased with an increase in ESP levels. At soil ESP of 15, 20 and 25 the decrease in the leaf yield was 30.21, 47.66 and 55.66 seed yield was 39.34, 52.05 and 59.02 percentages respectively over control (ESP 2.0). The growth and yield parameters were decreased when the ESP level increased. Among the six genotypes evaluated, the CS18 recorded higher values for plant height (25.00cm), number of branches (6.00), leaf yield (6.40g/plant) and seed yield per plant (1.60g) at ESP 25.

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Key words : Genotypes, Saline, Alkaline, Tolerance and ESP

Higher salts in the soil inhibit the plant growth through reduction in the water uptake by osmotic effect and its influence on physical and hydrological properties of the soil. In addition, both soil types can affect crop growth and yield due to nutritional disorders and toxic effects (Naidu and Rengasamy, 1993). High content of Na induce inhibition of Ca uptake and transport appears to be more limiting to shoot growth than the Na toxicity *per se*. The capacity of plant to limit the uptake of sodium and maintain sufficient calcium and potassium under salinity or sodicity stress may be an important factor that provides salt tolerance in plants (Sharma, 1986). The ionic imbalance in shoots and ability to absorb less available micro – nutrient; control the tolerance to salinity and sodicity in vegetable crops was reported. Coriander (*Coriandrum sativum*) is an annual herb, mainly cultivated for its fruits and tender green leaves. The dried ground fruits are the major ingredient of the curry powder. The young plants as well as the leaves are used in the preparation of chutney and are also used as seasoning in curries, soups, sauces and chutneys. In India, it is grown in Andhra Pradesh, Tamil Nadu, Karnataka, Rajasthan, Gujarat and Madhya Pradesh to the extent of about 3.51 lakhs hectares with an annual production 1, 67,700 tonnes of grains. In Tamil Nadu it is cultivated in 21062 hectares out of the that 1782 hectares and 1765 hectares in Cuddalore and Perambalur districts, respectively under saline alkaline soil during *Rabi* season as rainfed crop. The yield potential of coriander in these cultivated areas is very less because of non availability of high yielding saline and alkaline tolerant varieties. Hence, an

investigation was carried out to identify stable coriander genotype for leaf and seed yield and under saline and alkaline soil conditions.

MATERIALS AND METHODS

The experiment was conducted at Department of Crop Improvement, Anbil Dharmalingam, Agricultural College and Research Institute campus, Tamil Nadu Agricultural University, NavalurKuttaPattu, Trichy, Tamil Nadu, during *Rabi* season 2006. Totally six gnotypes *viz.*, CSO4, CS32, CS13, CS11, CS16 were evaluated at four levels of exchangeable sodium per cent (ESP) *viz.*, ESP 2.0 (normal soil as control), ESP 15, ESP 20 and ESP 25. A surface (0-15cm) soil sample was collected from college farm. Eight kg of the air – dried soil (<2mm) was used to fill the polythene lined full size earthen pots, ESP levels were developed by adding salts to soil in pots. Different exchangeable sodium levels in the soils *viz.*, ESP 2.0, 15.0, 20.0 and 25. were developed by adding salts of NaHCO₃. The seeds were sown with three replications and the pots were arranged in completely randomized deign. The growth and yield parameters such as plant height, number of branches, leaf yield and seed yield were recorded. ESP levels were maintained during the course of experimentation by not draining the pots and irrigating plants with de-ionized water. The soil was pre mixed with vermicompost @ 5.0 g/kg soil.

Differences in plant height, number of branches, leaf and seed yield were statistically analysed for significance by analysis of variance and treatment means were