

## Genotype variability on coriander to salinity at emergence and osmotic stress at germination

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### ABSTRACT

An experiment was conducted at the Department of Crop Improvement, Anbil Dharmalingam Agriculture College and Research Institute, Tamil Nadu Agricultural University, Navalurkuttapattu, Trichy, Tamil Nadu in 54 coriander genotypes to study the effect of salinity on the emergence. CS18, CS13, CS32, CS16, CS123 and CS 04 were more vigorous than other genotypes. Only one genotype CS18 registered highest mean emergence (8.10) at 0.1M NaCl and was found to be highly tolerant. CS36, CS51, CS88, CS115, CS120, CS121, CS159, CS169, CS182, CS188, CS214 were found to be highly susceptible to saline concentration of 0.05M and 0.1M NaCl. The highest mean emergence in the genotypes was in the range of CS18 (20.10) >CS13 (18.0) >CS32 (18.0) >CS16 (17.40), >CS123 (17.20) at 0.05M NaCl. Fifty four different coriander genotypes were evaluated at different levels of osmotic stress. Six coriander genotypes viz. CS18, CS13, CS32, CS16, CS123 and CS104, were more vigorous than rest of genotypes. CS18 could withstand more negative water potential of -8Mpa and put forth around 85 per cent germination. Very low (5%) germination was observed in CS216, CS03, CS02, CS215, CS65 and CS124 at -8Mpa. CS36, CS188, CS214 were highly susceptible even at low level of moisture stress -2Mpa. CS18 was found to be tolerant and has recorded 100 and 85 per cent germination at -2 and -5Mpa respectively.

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Excess salt in the soil is an ever increasing problem in the world today. More than 50 per cent of the irrigated land in the world over suffers from different degrees of salinization. In India, alone 30 – 50 per cent of land is salt affected. Most of the arable land has become salinized and unproductive. The salt stress adversely affects the growth and productivity of crop plants. The need for salt tolerant crops around the world increases each year due to decreasing soil resources and dwindling fresh water supplies. The development of salt tolerant crop cultivars has been considered to be an efficient and economic means of overcoming salinity problems. Coriander (*Coriandrum sativum*) belongs to the family, Apiaceae. It is an annual herb, mainly cultivated for its fruits as well as for the tender green leaves. The fruits have a fragrant odour and pleasant aromatic taste. The odour and taste are due to the essential oil content which varies from 0.1 to 1.0 per cent in the dry seeds. These essential oils are used for flavouring liquors, cocoa preparations in confectionary and also to mask the offensive odours in pharmaceutical preparations. The dried ground fruits are the major ingredient of the curry powder. The whole fruits are also used to flavour foods like pickles, sauces and confectionary. 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. It has medicinal properties too. Fruits are said to have carminative, diuretic, tonic, stomachic and aphrodisiac properties. It is native of the Mediterranean region and is now commercially grown in India, Morocco, Hungary, Poland, Rumania, Czechoslovakia, Guatemala, Mexico and the U.S.A. In India, it is grown in Andhra Pradesh, Tamil Nadu, Karnataka, Rajasthan, Gujarath 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 that 1782 hectares and 1765 hectares in Cuddalore and Perambalur districts, respectively under saline alkaline soil. It is cultivated during Rabi season as rainfed crop in these districts. The yield potential of coriander in these cultivated areas is very less due to the non availability of high yielding saline and alkaline tolerant varieties. Hence, an investigation was carried out to identify stable genotype for seed yield and its components in coriander for saline and alkaline soil conditions.

### MATERIALS AND METHODS

The experiment was conducted at Department of Crop Improvement, Anbil Dharmalingam, Agricultural College and Research Institute, Tamil Nadu Agricultural