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**STUDY THE INTERACTION OF SALT AND ASCORBIC ACID ON GERMINATION
INDICES IN THREE VARIETIES OF CORN PLANT**

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ABSTRACT

study the effects of salinity and also in the presence of ascorbic acid with different concentrations 3 varieties of corn germination test to assess indicators factorial in a randomized complete block design with three replications was conducted in a greenhouse environment. In this study, days to germination, final germination percentage and germination rate were evaluated. The results showed that the levels of sodium chloride and the significant difference in the rate of germination the two traits days to germination and final germination percentage is significant at the 1% level. 704 percent, respectively, compared with an average of 97.3 and 3.895 Days and days to maximum germination and maximum germination, respectively. The level of ascorbic acid, 75 mM + 2.0 mM the highest germination percentage, mean germination rate was 99.52.

Keywords: Corn, Salt, Germination Index, Ascorbic Acid

INTRODUCTION

No doubt that maize is one of the first crop species that has been domesticated by man. Because wild forms of maize are not known. So it is reasonable to believe to a saying that maize has been domesticated around 7 to 10 thousand years ago in south Mexico. Several

studies on this problem within past 60 years indicated that there is no general consensus regarding the origin and evolution of maize. Maize was developed rapidly across America after domestication [1].

Maize firstly origins from Central America and was accounted as one of the main crop in supplying food in North, central and south America before discovering the New continent. Archaeological Researches in Mexico has identified that maize has been planted there around 4500 years B.C. [quoted by 2]. Efficiency of plaint corn yield per hectare in irrigated farms of Iran equal 7289.68 kg and is 4808.06 kg/ha in rained lands. The highest and the lowest irrigated flint corn in Iran is for Qazvin and Guilan with 10032.49 kg and 2500 kg/ha respectively. The highest and the lowest dryland flint corn is of Mazadaran and Guilan provinces in Iran with 5362.59 kg and 1371.81 kg/h respectively [3].

Seed priming, seed amplifier is one of technologies through which the seed before germination, water absorbs but not to the extent that exit take root. During priming, the water absorption, the physiological processes necessary for germination (eg, enzyme activity, analysis, and synthesis of new seed stocks) are doing thus, primed seed germination when placed in the environment, while this is faster than conventional seeds germinated, the duration of exposure to environmental conditions, are reduced. Salinity is one of the main limiting factors for growth and production crops three times the

area of the world are faced with the problem of salinity three times the total area of land under cultivation and saline soils and sodium in about 27 million hectares is estimated that more than half of the land is arable [4].

Approximately 10% of the Earth's surface is covered with different types of soils and the dominance of NaCl. Also, more than 30 percent of land under cultivation and irrigated land worldwide is affected by salinity located Hdvd30-50 percent [5 and 6].

Continuous plants are affected by environmental factors such as stress, tension; some of these plants are limited in their growth and development. One way to increase strength, raise the level of antioxidant enzymes substrates and intracellular antioxidants such as ascorbic acid. Ascorbic acid has a central role in photosynthesis and is found in high concentrations in chloroplasts. Cleansing is the first enzyme superoxide dismutase, which converts superoxide radicals to hydrogen peroxide non-radical is a molecule that has the properties [7].

MATERIALS AND METHODS

To study the effects of salinity and ascorbic acid on growth parameters of maize varieties, The possible mechanisms of salt tolerance and identify the best cultivars of rapeseed cultivars tested on three cultivars tested in the

greenhouse of Islamic Azad University Ardabil Farvardin 92 factorial based on a randomized complete block with three replications. The seeds were obtained from the Department of Agriculture Magi. Factors include three varieties of maize (single cross 700, 704 and 302) and four levels of salinity in salt NaCl (zero, 75, 100, 150 mM) and the third factor in the level of ascorbic acid and 0.2 mM, respectively zero, in a factorial experiment in a randomized complete block design with three replications. Due to changes in soil salinity by other elements in the soil in this study, the substrates were used perlite in pots salinity treatments carried out during the period from the first day of planting pots twice instead of accidentally changed (Random) and environmental conditions are the same for all pots. R: rate of seed germination and coefficient of velocity of germination (CVG) final germination percentage (FGP) number of seeds germinated per day were: Statistical analysis by ANOVA and by software SPSS (ver.18) was performed comparing the data using Duncan test was performed with 95% confidence intervals. Graphs were plotted using Excel software.

RESULTS AND DISCUSSION

Days to Germination

Data on days to germination (**Table 1**) showed significant differences between the levels of sodium chloride and 1% probability level and sodium chloride level \times cultivar interaction was insignificant. Comparison of data (**Figure 1**) The numbers 704 mean days to germination highest 3.895 Days won group were statistically superior. In contrast, the shortest days to 402 days with an average germination rate was 2.965.

Comparison of the mean levels of sodium chloride for days to germination by Duncan at the 5% level showed that the levels of sodium chloride, 2.0 mM ascorbic acid levels and controls, respectively, with an average of 3.782 and 3.529 days were the longest days to germination and were placed in a class and 150 mM sodium chloride, with an average of 2.125 Days shortest days to germination was studied in sodium chloride levels (**Figure 2**).

Germination Percentage

Comparison of data (**Figure 3**), the numbers 704 mean 97.37 of the most germination percentage allocated to the and with the 700 group were statistically superior the difference did not vary. In contrast, the lowest germination percentage was 402 percent of average 91.21. 75 mM + 2.0 mM ascorbic acid 99.52% of maximum germination percentage, mean, and with control surfaces and 2.0 mM ascorbic acid

were placed in a class and showed the highest germination in contrast, 150 mM NaCl, with an average of 83.7 was the lowest value was in the class d (**Figure 4**).

Germination Rate

Depending on the speed of germination (**Table 1**) showed that the levels of sodium chloride, sodium chloride levels \times cultivars and cultivar interaction was not significant.

Table 1: Analysis of variance for germination

S.O.V	df	Mean of Square		
		Days to germination	Germination percent	Germination rate
Levels of sodium chloride (A)	2	6.726*	324.2**	0.000066
Genotype (B)	7	13.7**	208.13**	0.0032
A \times B	14	0.438	8.94	0.000005
Error	48	0.425	6.22	0.121
C.V.%		18.7	2.64	15.25

NOTE: * and ** significantly at $p < 0.05$ and < 0.01 , respectively

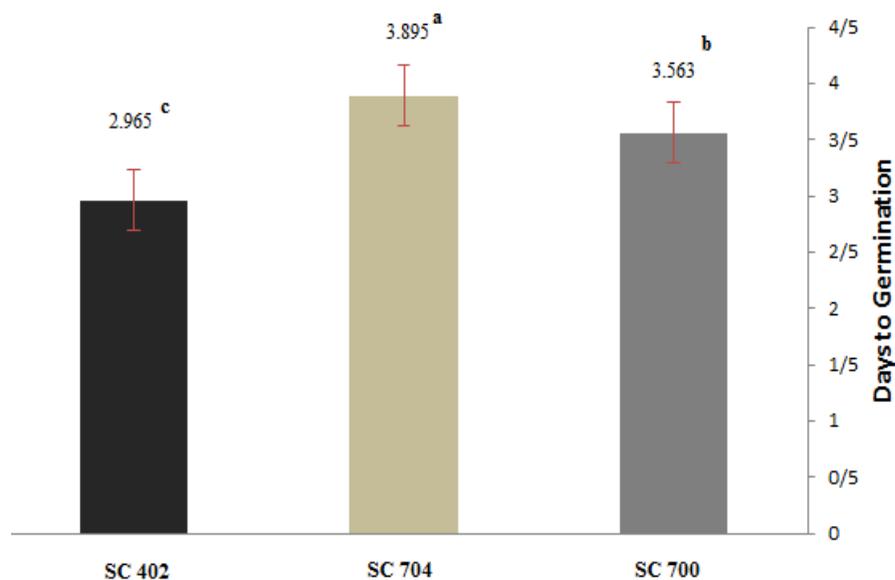


Figure 1: Mean comparison of cultivars for days to germination

NOTE: Differences between averages of each column which have common characters are not significant at probability level of 5%

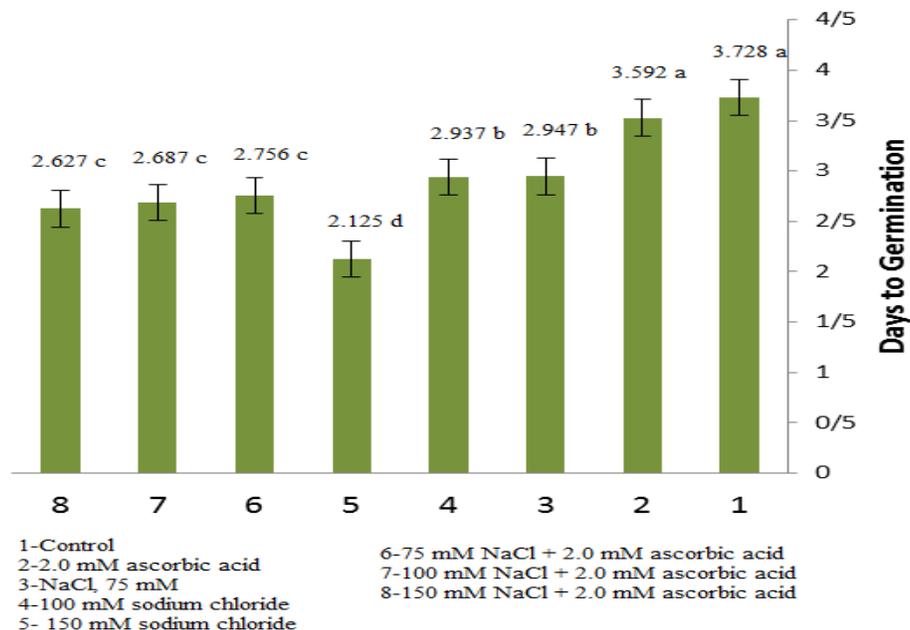


Figure 2: Comparison of the mean levels of sodium chloride for days to germination

NOTE: Differences between averages of each column which have common characters are not significant at probability level of 5%

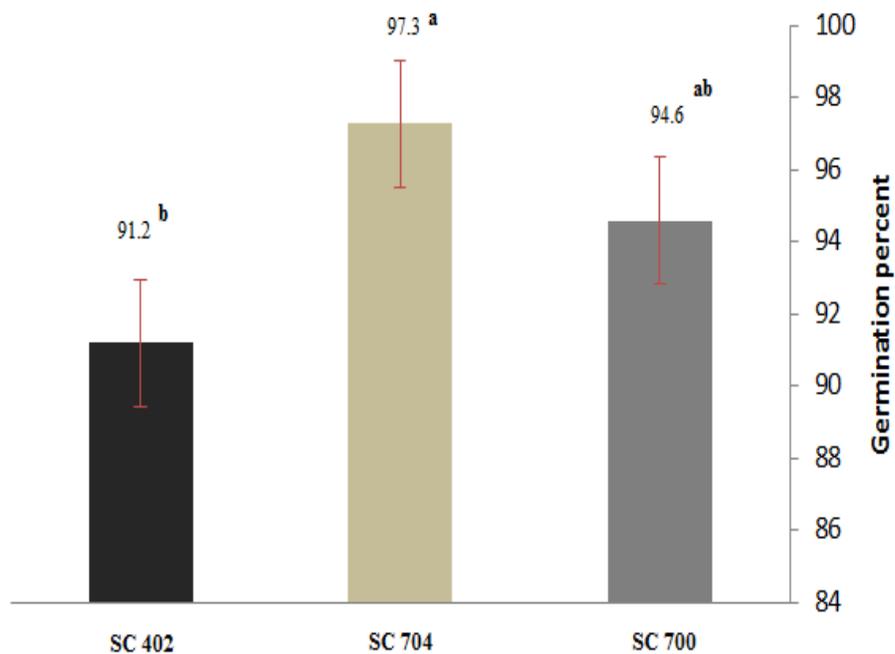


Figure 3: Mean comparisons of cultivars for germination

NOTE: Differences between averages of each column which have common characters are not significant at probability level of 5%

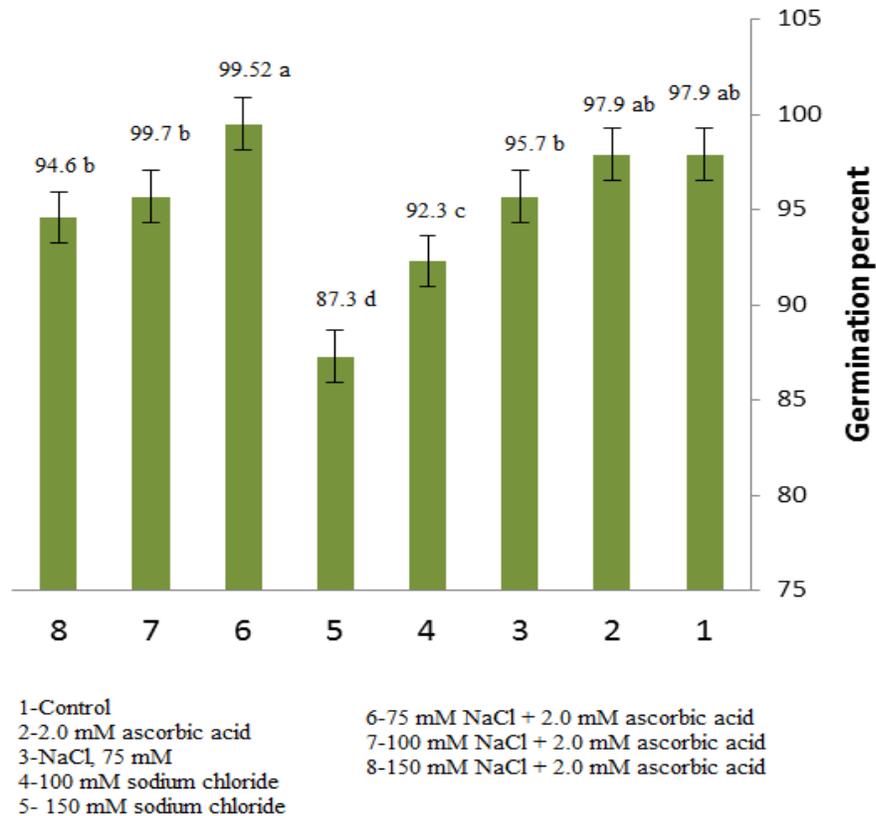


Figure 4: Comparison of the mean levels of sodium chloride for germination

NOTE: Differences between averages of each column which have common characters are not significant at probability level of 5%

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