PHYSIOLOGICAL STUDIES ON THE ADAPTATION OF SOME TOMATO VARIETIES UNDER SALINE CONDITION.

BY

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B. Sc. Agric. Sci., Hort. Dept., Ain Shams Univ. 1992

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Abbreviation

cm = centimeter
cv./cvs. = cultivar / s
DAT = Days After Transplanting
dS. m^{-1} = deciSiemens per meter
EC= Electrical Conductivity
fed.= fedden
g = gram
kg = kilogram
m = meter
mg/g = milligram /gram
mM = milli Mole
mS. cm^{-1} = milliSiemens per centimeter
nm = nano meter
ppb = part per billion
ppm = part per million
TDZ = Thidiazuron
wt = weight

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ABSTRACT

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Physiological studies on the adaptation of some tomato varieties under saline condition.

Master of science

Agricultural science (Plant Physiology) Department of Agricultural Botany, Faculty of Agriculture, Ain shams University.

Two experiments were carried out on tomato plants at two different locations; the first one was performed at the greenhouse of Desert Research Center, El-Mataria, Cairo in 1996 on four tomato cultivars in pot experiment under saline stress (Na Cl) and treatments of different thidiazuron (TDZ) concentrations. TDZ was applied in two ways either by seed soaking or through irrigation water. The second experiment was conducted at Wadi Sudr Agricultural Experimental station, South Sinai Governrate in 1997 and 1998 seasons to evaluate the salt resistance of two tomato cultivars under saline conditions of the area. Furthermore, the possibility of increasing salt resistance of these cultivars was also studied by applying some treatments of the bioregulator, thidiazuron (TDZ) and/or KCl as foliar spray.

Different physiological parameters including growth characters, yield and yield components, nutrient elements(Na, K, Ca and Mg), proline and protein contents were determined.

Result indicated that Castle Rock cultivar was more salt tolerant than Edkawy cultivar. Meanwhile, the lowest concentrations of thidiazuron, (0.5 and 1.0 ppb) enhanced salt resistance of the plant at the vegetative and flowering stages as well as yield. On the other hand, KCl improved growth,

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yield and chemical composition of tomato cultivars as compared with control.

Key Words

Tomato – adaptation – salt tolerance – salt resistance – Thidiazuron – KCl – growth – Yield – Chemical Composition – nutrient elements – proline – protein.

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