

Stimulation Effects of Gamma Radiation on Growth and Yield of Two Tomato (*Lycopersicon esculentum*, Mill) Cultivars

H.M. Badr, A.A. Alsadon and A.R. Al-Harbi

Plant Production Department, College of Agriculture, King Saud University,
Riyadh, Saudi Arabia

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Abstract. Dry seeds of two tomato (*Lycopersicon esculentum*, Mill) cultivars, namely Roma VF and Pearson A-1 Improved, were exposed to gamma radiation from a cobalt - 60 source to study the stimulation effects of radiation on growth and yield. Six radiation doses were used as follow, 0 (Control), 500, 1000, 2000, 3000 and 4000 R. Sensitivity assessments were based on measurements of plant height, shoot fresh weight, leaf area, early yield, total yield and average fruit weight and number of fruit per plant. Different stimulating effects were observed in the studied characters due to the used doses of gamma radiation. These stimulating effects were more obvious when the dose 1000 R was used. Moreover, the two cultivars varied in their response to the different radiation doses, indicating the presence of interaction effects between radiation treatments and cultivars.

Introduction

Stimulation effects following low dose irradiation of seeds have been reported by many investigators since the turn of the century and has been reviewed by Sax [1]. The commonly reported expressions of these effects were more vigorous vegetative growth [2, 3, 4], earlier maturity [5, 6] and higher yield [7, 8, 9].

Irradiation of seeds before sowing has many advantages. Its chief merits are : 1) organization of irradiation treatment in specially equipped places with subsequent transportation of seeds, thus facilitating easy handling and store of the irradiated material, 2) irradiation of material in due time, and 3) complete absence of radioactivity both in the seed and in the harvested yield.