Study on Effect of Degrading Methoxyl-Pectin Solution on Lycopersivon esculentum Growth and on Its Bactericidal Activity

張榮貴、張耀南

E-mail: 9509762@mail.dyu.edu.tw

ABSTRACT

In this study, the degrading high-methoxyl-group-pectin and low-methoxyl- group-pectin solutions (DHMGPS and DLMGPS, respectively) by using pectinase treatment were prepared to immerse tomato seeds of Lycopersivon esculentum and to spray the growing tomato off-springs. The effects of DHMGPS, DLMGPS and WS (only water solution) treatments on the germination and growth of tomato seeds and off-springs, and the wilt-disease-resistance of the tomato plants to Pseudomonas solanacearum were investigated in the greenhouse. The highest value of the seed germination rate, of the plant growth height, and of the cotyledon quantity was obtained from the results of this experiment for DLMGPS, DHMGPS, and WS treatments, respectively. The effect of the pectin-degrading solutions on the yellow-colored leaves of the tomato plants during the off-spring period was in following order: DLMGPS > DHMGPS > WS treatments. From the results of the wilt-disease-resistance of the tomato plants to Pseudomonas solanacearum, all the tomato plants for WS treatments were withered and totally dead during three days and one week, respectively, after the infection of the bacterial wilt. There was no fruit for WS treatments in one week after bacterial infection. The percentage of the withered tomato plants for DHMGPS treatments was 50% and 80% at the second and third week, respectively, after the bacterial infection. There were a few fruits for DHMGPS treatments after bacterial infection. The color of the leaves of the no-withered tomato plants for DLMGPS treatments was green during three weeks after bacterial infection. At the beginning of the fourth week after bacterial infection, there were the bright red-colored fruits with large size to result for DLMGPS treatments. The amount of the tomato fruits for DLMGPS treatments was higher than that for the DHMGPS treatments.

Keywords : Degrading methoxyl-group-pectin solution ; Lycopersivon esculentum ; Pseudomonas solanacearum

Table of Contents

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