

Effect of plant growth regulators on soybean and red bean seedling growth

Won Hee Lee, Hee La Ryu, Eun Ju Jeong and In Jung Lee*

School of Applied Bioscience, Kyungpook National University, Daegu, Republic of Korea

Abstract

In recent years the growth rates of world agricultural production and crop yields have slowed because of rapid urbanization but the agriculture mechanization implies the use of various power sources and improved farm tools and equipment to enhance the efficiency of utilization of various crop input. Therefore the current study was conducted to investigate the growth characteristics of seedlings treated with plant growth regulators for the production of seeds suitable for mechanical formulations of soybeans and red beans. The seeds of Uram bean and Arary red bean were sown in 128 well plug tray as the testing varieties. Three growth inhibitors such as 0.05% hexaconazole, prohexadion-calcium, and 0.1% diniconazole were treated and fifteen representative plants were collected from each treatment at 2, 5, 7, 13, 16, 17, 19, and 20 days interval after treatment. The collected plants were examined for the growth attributes such as plant height, root length, leaf area and chlorophyll. The growth promoter was treated at the 13th day after treatment with growth inhibitor and treated with 0.1% concentration of Pomina (GA₄₊₇ 1.8% + 6-benzylaminopurine 1.8%) and Nonaji (gibberellic acid 2% + GA₄₊₇ 2%). Initially the growth data was recorded to examine the effect of growth inhibitor, while after treatment with growth promoters, the growth attributes were recorded at 4th and 7th day. As a result of measuring the growth parameter of soybean, the inhibitory effect was shown in the aerobic treatment at the ground level at the 7th day after treatment. At the 4th day of growth promoting agents treatment, the stimulation effect of non - treated plants was greater than that of formalin treatments. As a result of measuring the growth attributes of red bean, In the latter part of the growth, at the 4th day after the growth promoter treatment. This study was able to confirm the effective growth regulators and treatment periods for each crop, and it was possible to control the growth of seedlings. Based on these results, it can be expected that the basis of seedling production technology of crops which is necessary for sowing and transplantation mechanization of agricultural field can be established.

Keywords: Upland Agricultural, Mechanization, Stable Crop Production Technique, Raising Seeding, Upland Crop

This work was supported by Korea Institute of Planning and Evaluation for Technology in Food, Agriculture, Forestry and Fisheries(IPET) through Agriculture, Food and Rural Affairs Research Center Support Program, funded by Ministry of Agriculture, Food and Rural Affairs(MAFRA)(716001-7)

Corresponding author*

In-Jung Lee

School of Applied Bioscience, Kyungpook National University, Daegu, Republic of Korea

Tel. 053-950-5708

E-mail : ijlee@knu.ac.kr