Effect of Plant Growth Promoting Rhizobacteria (PGPR) on Native Korean Wheat

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Chemical fertilizers, though productive in the short-run, rely heavily on nonrenewable resources that may deplete in the near future. Besides, oversupplied nutrients can harm nearby environments by causing eutrophication. Plant Growth Promoting Rhizobacteria (PGPR) is a group of bacteria that can directly and/or indirectly assist in the growth of the target plant. In light of the long-run inefficiency of the conventional chemical fertilizer, our research aimed to examine the potential effectiveness of organic fertilizers, by inoculating different types of PGPR in soil of wheat (Triticum aestivum L.) indigenous to Korea. Serratia rubidaea, Pseudomonas fluorescens, and Burkholderia pyrrocinia were each cultured in separate Luria-Bertani (LB) Broth and stored at 4?. Four treatment groups (three experimental groups inoculated for each bacteria and a control group) were given equal conditions before inoculation: soil autoclaved to remove any external microorganism acting as a potential confounder, seeds germinated within minutes of time, light applied with same strength, duration, and distance (256 LED 4000W, 50cm away from the subject). Each groups that was to be inoculated was treated accordingly by spraying 200μL (concentration approximately 5.4-6.6×108 CFU/mL) once a day for four days a week. Dry weight for each treatment group was measured every week, three times (23, 30, 37 days after germination). During the time of sampling, the S. rubidaea inoculation group and the control group continued to show gradual increase in mass, while the P. fluorescens and B. pyrrocinia inoculation group displayed a tendency of slight increase and decrease in mass, respectively.

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