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Contents

Crop Improvement of Ginger (*Zingiber officianale* Rosc.) Through Biopriming

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Ginger (*Zingiber officianale* Rosc.) is a crop which mainly cultivated for its underground spicy rhizomes. Currently various methods are adopting for crop improvement, among these techniques, priming is the best method for agriculturist for the better establishment of crops. Various chemicals, UV rays, magnetic field, nanoparticles and biological organisms are used as priming agents. In this work, ginger (var. Karthika) is primed with various concentrations (10^5-10^9 cfu) of *Pseudomonas fluorescence*, a well-known bacterium that is widely used for crop improvement program. Surface sterilized ginger rhizome cuttings were incubated with solutions containing bacteria for different time duration (6,12,18 and 24 hrs). The entire process was maintained in the germ-free conditions with sterile soil and pots in the culture room. The primed ginger showed sprouting within six days, while the sprouting took more than 20 days for unprimed ones. All bacterial concentrations primed at 6 h and 12 h were rejected due to poor growth patterns. The selected concentration was 10^6 CFU for 24 hours, which showed the highest growth rate in terms of morphological attributes (shoot length 61 cm and leaf length 28 cm). Moreover, the plants also showed highest chlorophyll content in the leaves when compared to control and other priming treatments. In conclusion the bio-primed(10^6 CFU for 24 hours) plants showed an enhancement in germination, growth and photosynthetic pigment, hence this priming concentration and duration was suitable for the biopriming and crop improvement of ginger plants.

KEYWORDS: Biopriming, Ginger, Growth, Improvement, *Pseudomonas*.