

PLANT RESPONSE TO BIOFERTILIZERS UNDER DIFFERENT LIGHT REGIMES

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By
PIYUMI CHATHURIKA WIJEPALA

**Faculty of Animal Science and Export Agriculture
Uva Wellassa University**

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ABSTRACT

Seasonal differences in light intensity affect productivity of some crops. Under low light condition there is a reduction of plant growth which may cause to have lower productivity of the plant. This study was conducted to evaluate plant growth with microbial biofertilizers under two different light regimes by using strawberry as a test plant. Three diazotrophs, two fungal strains, five fungal-bacterial biofilms were inoculated to plants as treatments. Every treatment was coupled with 50% recommended chemical fertilizers. Control was maintained without adding any microbes or chemical fertilizers. There were three replicates for each treatment. Two blocks of treated potted plants were maintained under low light (400 lx) and normal light (1600 lx) under glass house conditions. Under each block treatments were arranged in Complete Randomized Design (CRD). Through the study suitable biofertilizer which shows better growth responses under low light was found and the growth promotion activities of developed biofertilizers under different light regimes were recognized. Measurements have done for certain plant parameters (height, number of leaves, flowering) and soil parameters (soil moisture content, pH, nitrate, ammonium and phosphate) in different time interval. At harvest same soil data and plant data such as plant dry mass, shoot dry mass, root dry mass, chlorophyll content were recorded. All the data were statistically analyzed. Biofertilizer treated plants under low light regime showed high dry mass compared to control treatments in same light regime. Fungal monoculture showed the highest ability to compensate the plant growth under limiting light condition ($P=0.046$). This indicates that there is an effect of microbial activities to compensate the reduced plant growth and plant production under limited light condition. Since, there is a lack of research in this field, further studies are needed to identify the mechanism.

Key words: biofertilizer, strawberry, light, diazotrophs, fungi, fungi-bacterial biofilms