

Effect of Mycorrhizal Inoculation on Growth, Nutrient Status, and Rhizosphere Microbes of *Acacia mangium* and *Eucalyptus urophylla*

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Acacia mangium and *Eucalyptus urophylla* are popular species for forest plantation and known for their rehabilitation capability on heavy metal sites. The experiment was conducted to determine the effect of soil inoculants such as arbuscular mycorrhizal fungi (AMF) and nitrogen-fixing bacteria (NFB) on growth, nutrient accumulation, and microbial population of both species under field conditions. The NFB inoculant with *Azospirillum* was produced at BIOTECH UPLB. The seedlings inoculated with AMF from Surigao, Mindanao mine tailing (coded as Sur) with or without NFB were raised at the screenhouse and planted in mine tailing site of Mogpog, Marinduque. After 27 mo, the highest height increment (202.5 cm) was noticed on *A. mangium* (126 cm) and on *E. urophylla* under Sur inoculation alone. The highest stem diameter increment of *A. mangium* (54.7 cm) was observed in Sur+NFB while for *E. urophylla* (29.9 cm) it was observed in Sur alone. Shoot and root dry weights of both species were highest in Sur. Total N uptake of both plants and P uptake of *E. urophylla* was highest in Sur inoculant while the P in *A. mangium* was highest in Sur+NFB treatment. Sur+NFB inoculated plants gave the highest population of NFB with highly significant effect in *A. mangium* while Sur alone accumulated the highest NFB in *E. urophylla* but with no significant effect on Sur+NFB and control counterpart. Mycorrhizal spore count of both plants were highest in Sur, while the highest percent root colonization in *A. mangium* was observed with Sur inoculation and with Sur+NFB inoculation in *E. urophylla*. Correlation analysis among growth, nutrient, and microbial parameters were also obtained. Root colonization and spore count in *A. mangium* were highly correlated. On the other hand, a high correlation between plant dry weight and root dry weight was obtained in *E. urophylla*. The response of both species to mycorrhizal inoculation provides a useful criterion in selecting plant species that can be used in revegetation of mined-out areas and other degraded lands throughout the country.

Keywords: biofertilizer, microbial population, mined-out area, nitrogen-fixing bacteria , root infection