Growth promoting effects of endophytic fungus Phlebia GanoEF3 on oil palm (Elaeis guineensis) seedlings

ABSTRACT

Isolation from trunk and root tissues of oil palms by Malaysian Palm Oil Board (MPOB) has found several promising fungi, mainly Hendersonia GanoEF, Amphinema GanoEF2, and Phlebia GanoEF3. The objective of this study was to investigate the potential of Phlebia GanoEF3 to serve as a biological fertilizer and eventually promote the oil palm seedlings growth. Two types of organic fertilizers; Empty Fruit Bunches (EFB) powder and Real Strong Bioorganic Fertilizer (RSBF) were incorporated into the formulation to develop biofertilizers containing endophytic fungus Phlebia GanoEF3. Five ratios of fertilizer to fungus (10: 50, 20: 40, 30: 30, 40: 20 and 50: 10) for each formulation were prepared and in vitro study and the shelf life of viable cell of Phlebia GanoEF3 in the formulations during storage were determined. After eight months, the ratio of 30 g of EFB powder to 30 g of Phlebia GanoEF3 (30: 30 g) and 10 g of RSBF to 50 g of Phlebia GanoEF3 (10: 50 g) were found to be the suitable ratios for the in vitro study and application in the field. Investigation of endophytic fungus Phlebia GanoEF3 on the growth of oil palm seedlings in nursery trial showed that seedlings treated with EFB and RSBF organic containing Phlebia GanoEF3 increased the growth of the seedlings. All growth parameters measured showed significant difference in the mean values between treated and untreated seedlings. These findings showed that Phlebia GanoEF3 is suitable to be used as biofertilizer for oil palm seedlings.

Keyword: Biofertilizer; Bioorganic phlebia GanoEF3; Endophytic fungus; Growth promoter