

## **Effect of aqueous neem leaf extracts in controlling Fusarium Wilt, soil physicochemical properties and growth performance of banana (*Musa spp.*)**

### **ABSTRACT**

Neem leaf extracts (NLEs) have frequently been used to inhibit plant diseases and for the development of bio-fertilizer, leading to the commercial exploitation of this tree. However, previous studies have indicated contradictory outcomes when NLE was used as an antifungal disease treatment and bio-fertilizer applied through the soil on several crops, including banana. Therefore, the present investigation was undertaken to examine the physicochemical properties of soil, the growth performance of crops, and the severity of diseases caused by *Fusarium oxysporum* (Foc) on Cavendish bananas treated with aqueous NLE. Banana plants associated with the fungus were significantly affected by high disease severity and symptoms index (external leaves and internal rhizome), a high infection percentage of Fusarium wilt (%), dropping off of leaves as well as rotting of the root. Meanwhile, it was observed that the application of extract significantly improved the crop height, stem diameter, root size and distribution (root surface area, root diameter, and root volume), root–shoot ratio, as well as the soil physicochemical properties (CEC, N, p, K, Ca, and Mg), which enhanced resistance to Fusarium wilt diseases. We conclude that the application of NLE solution promotes better growth of Cavendish banana plants, soil physicochemical properties, and resistance to Fusarium wilt infection.

**Keyword:** *Azadirachta indica* leaves extract; Grand nain; Panama diseases; Bio-fungicide; Bio-fertilizer