ABSTRACT

The effect of Macrophomina phaseolina causing leaf spot disease on Ipomoea batatas was found to affect the chlorophyll content and yield of Ipomoea batatas. Koch’s postulate was employed to ascertain the pathogenicity of the test fungus \([1 \times 10^6 \text{ spores per ml}, 1 \times 10^7 \text{ spores per ml and } 1 \times 10^8 \text{ spores per ml}]\) to cause leaf spot disease on Ipomoea batatas. The effect of leaf spot diseases on anatomical features of the test plants were assessed through stomatal size, density and index was assessed. Results revealed the reduction in stomatal number and distribution thereby resulting in significant reduction in the stomatal size, density and index on adaxial and abaxial surfaces of affected plant leaves compared to healthy plant leaves. The plants leaves treated with test fungus spore suspension concentration of \(1 \times 10^8 \text{ spores per ml}\) showed the smallest stomatal size value of 1.08 μm at both adaxial and abaxial surfaces compared to the control plant leaves [healthy plant leaves] with 1.17 μm at both surfaces. Stomatal index value was 8.33 mm\(^2\) and 9.63 mm\(^2\) at adaxial and abaxial surfaces compared to the control plant leaves with 11.28 mm\(^2\) and 11.96 mm\(^2\) respectively. The stomatal density of 3.6 mm\(^2\) and 4.5 mm\(^2\) at adaxial and abaxial surfaces compared to the control plant leaves with 5.0 mm\(^2\) and 6.0 mm\(^2\) respectively. This study showed that the degree of severity of the leaf spot diseases varied with fungal spore suspension concentration.

Keywords: Fungal spores, Ipomoea batatas, leaf spot disease, stomata.
*Correspondence*: temmitade@yahoo.com; tosamuel@unilag.edu.ng