

## **Evaluation of resistance in response to infection of Southern corn leaf blight disease and determination of secondary metabolites produced during the interaction**

### **ABSTRACT**

In Malaysia, corn is produced in small scale due to many diseases affecting this crop and by planting susceptible hybrids. Southern corn leaf blight (SCLB) is a foliar disease caused by a fungus *Cochliobolus heterostrophus*. This research was aimed to evaluate resistance in selected inbred lines in response to infection of SCLB disease, and to determine the plant secondary metabolites produced during the interaction. Only one isolate (CH001) was used for this study. This isolate was identified using morphological and molecular methods, the aggressiveness of the isolate was also determined. Based on morphology and molecular results, this isolate was identified as *C. heterostrophus*. Pathogenicity test result showed that, the isolate was very aggressive with mean disease severity index (DSI) of 60%. Based on assessment of resistance in selected inbred lines of corn, line SLBR5 was the most resistant line with DSI mean of 20.30% at the fifth week after inoculation, line SLBS3 was the most susceptible line with DSI mean of 51.70%. The concentration of peroxidase (PO), polyphenols oxidase (PPO) and total phenolic content (TPC) were determined. In PO, resistant line SLBR5 produced higher compounds with 6320, 7600 and 5800 mgGAE/g at the 1st, 2nd and 3rd week after inoculation, respectively. Susceptible line, SLBS3 was found to produce less with 1640, 1800 and 1920 mgGAE/g at the same assessment periods. For PPO, line SLBR5 also produced higher PPO with 2440, 2560, and 2760 mgGAE/g at the 1st, 2nd and 3rd week after inoculation, respectively. Line SLBS2 produced less PPO with 1080, 1240 and 880 mgGAE/g at the same period. Similarly, in TPC, line SLBR5 produced the highest TPC with 15720, 15960 and 17720 mgGAE/g at the 1st, 2nd and 3rd week after inoculation, respectively. Line SLBS3 produced less TPC with 11960, 10240 and 10840 mgGAE/g at the same assessment periods.

**Keyword:** Corn; Evaluation; Resistance; Secondary metabolite; Southern leaf blight