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Indigenous fungal entomopathogens associated with the oil palm leaf miner *Coelaenomenodera lameensis* Berti and Mariau in Ghana

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ABSTRACT

Background and Objective: The oil palm leaf miner *Coelaenomenodera lameensis* (Coleoptera: Chrysomelidae) is the most devastating insect pest of the African oil palm *Elaeis guineensis* Jacquin. Like most insect control programmes, control in Ghana has been through the use synthetic insecticides. The over-dependence on chemical control has brought in its wake adverse effects such as toxicity to the user and non-targeted organism. Entomopathogens have proven to be effective in the management of many insect species and these are environmentally-friendly. In this study we investigated reports by field workers of Council of Scientific and Industrial Research (CSIR)-Oil Palm Research Institute of Ghana who observed the presence of mycelia on the cuticle of cadavers of *C. lameensis* in their daily phytosanitary surveillance.

Methodology and Results: Field surveys were conducted in three oil palm plantations viz: CSIR-Oil Palm Research Institute and a commercial oil palm farm, both at Kusi in the Eastern Region, and Twifo Oil Palm Plantation of Unilever Ghana Limited at Twifo Praso in the Central Region of Ghana to collect cadaver of *C. lameensis* infected with fungi. The cadavers were aseptically cultured in the laboratory on Potato Dextrose Agar and fungi isolated and identified. A total of 17 fungal species were isolated from cadavers of the leaf miner. These include *Aspergillus* sp, *Metarhizium* sp, *Paecilomyces* sp, *Penicillium* sp, *Pestalotia* sp, *Rhizoctonia* sp, and three unidentified species. Bioassays conducted to ascertain the pathogenicity of the fungi against *C. lameensis* adult showed an overall mortality ranging between 12.5% - 77.5% within 7 days. Growth of mycelia on treated dead insects ranged from 0% - 47.5%. The unidentified fungus coded BKFF was found to be the most lethal inducing about 77% mortality in the insect and thus more entomopathogenic, followed by *Paecilomyces* sp. (Ioprik31 and *Pestalotia* sp. (CKFF) (both 65%) whilst *Rhizoctonia* sp was found to be the least lethal.

Conclusion and application of findings: This study presents important naturally occurring fungal species associated with the oil palm leaf miner *C. lameensis* in the field which famers can utilize as a control option upon further field studies.

Key words: *Coelaenomenodera lameensis,* entomopathogenic fungi, isolate, pathogenicity, mycelia