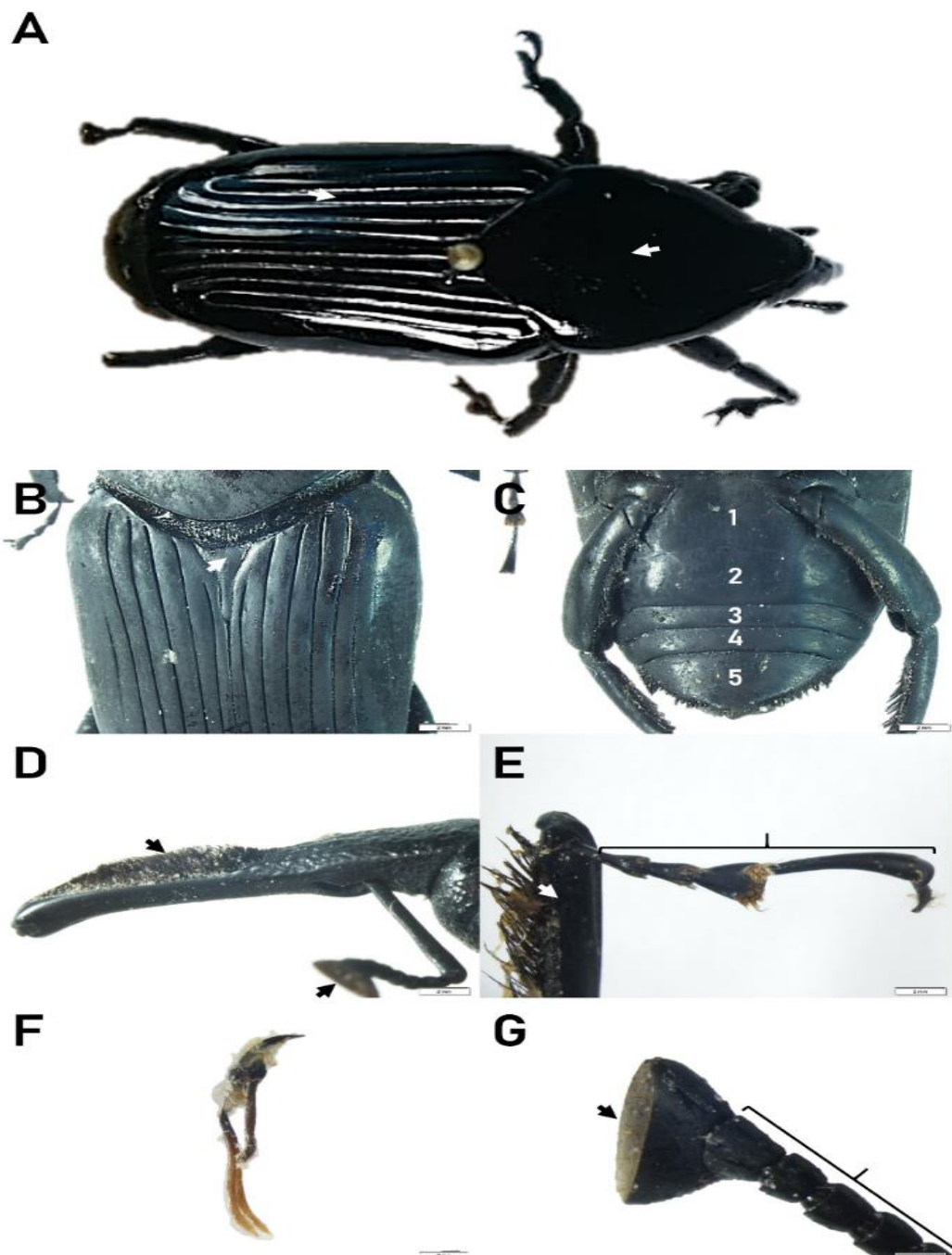


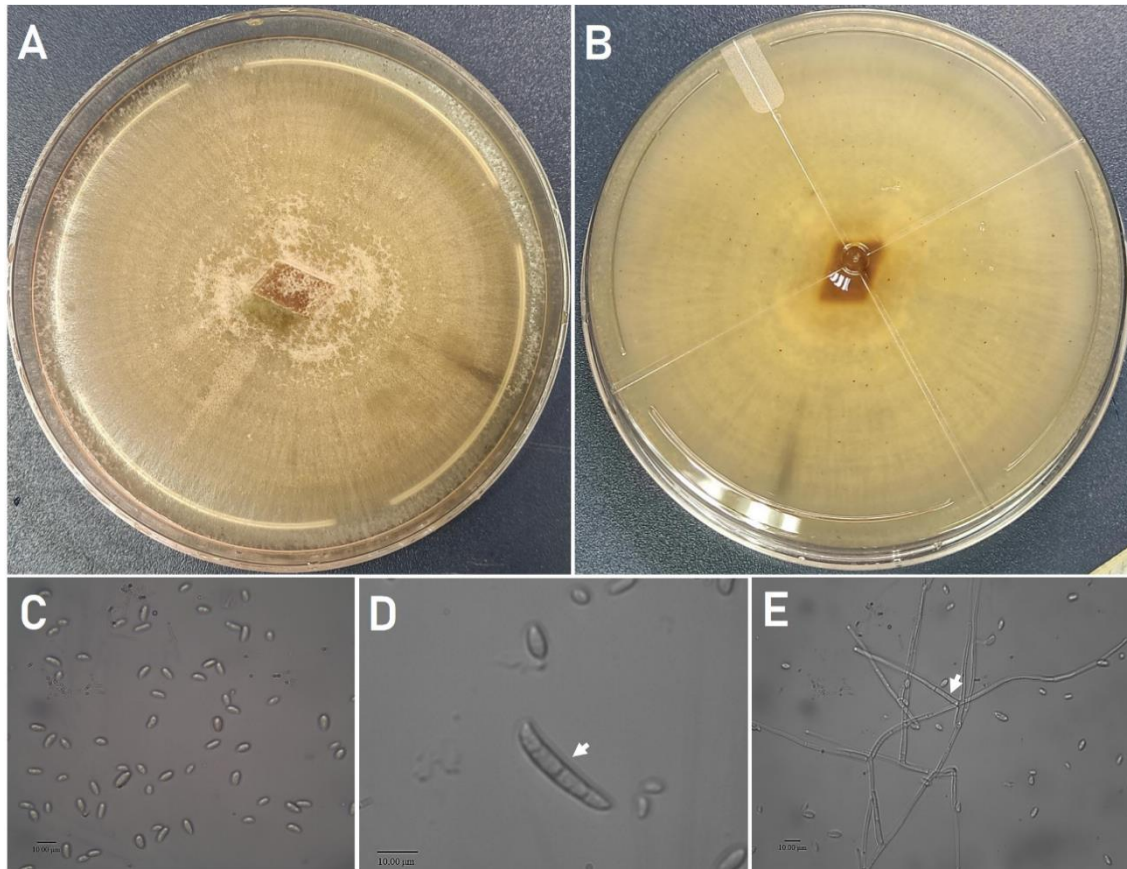
Supplementary Figure S1. Capture of Black weevil in traps (A–C) and on IRHO (D,E) oil palm trees. A–C, traps made from plastic containers (A), containing inside sugar cane pieces smeared with a solution (250 mL) composed of water and molasses, as well as a Rhynchophorol aggregation pheromone (B), were placed next to the tree at one-meter-high from the soil base of each oil palm tree (C). (D,E), adult insects were collected inside trees at stem base (meristem).



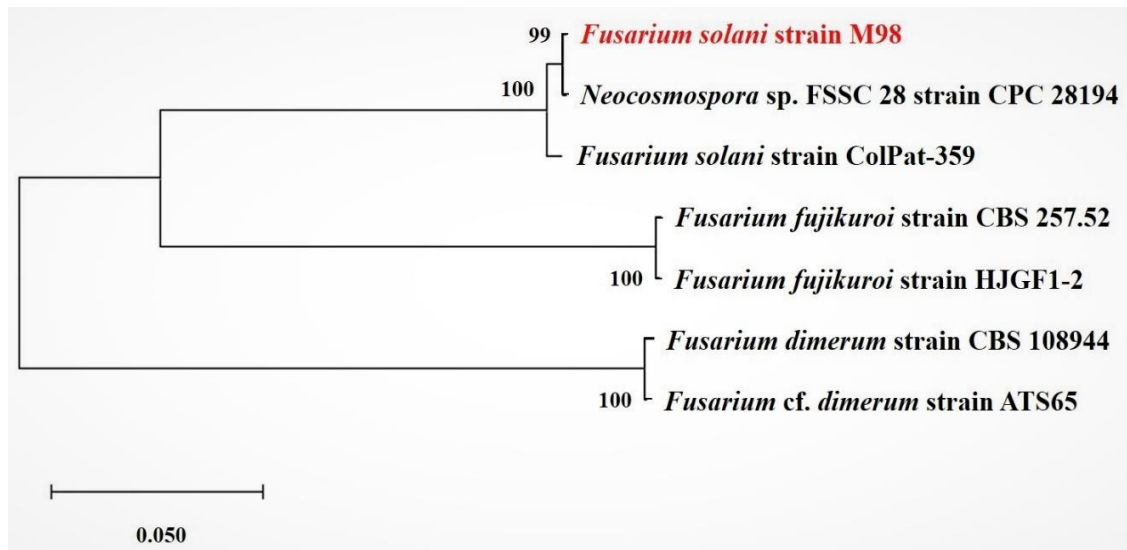
Supplementary Figure S2. Spear rot on IRHO (A–G) and INIAP-TENERA (H) oil palm trees. (A–C), tree (A) and lance-shaped leaf (B,C) showing a severity among 20.1% and 40%. (D–F), tree (D) and lance-shaped leaf (E,F) showing a severity among 60.1% and 40% of the injured lance-shaped leaf). (G,H), Trees totally devoid of inflorescence and fruits (G), showing even crater symptoms (H).



Supplementary Figure S3. Male adult, habitus *Rhynchophorus palmarum* L. **A**, whole weevil dorsal view. **B**, scutellum always black, smooth, large, triangular-elongate, produced at apex, about one-fourth the length of elytron, concave anteriorly. **C**, first abdominal sternite shorter and medially fused with second, the latter one and one-third times wider than third and fourth combined; fifth segment broad, almost triangular, fringed with a row of thick, long dark brown setae laterally, and without apical emargination. **D**, rostrum with three pairs of tubercle-borne setae, two located on the elevated tubercle at base of rostrum. **E**, middle and hind tibiae without distal spines and tarsus aligned posteriorly along sternum. **F**, aedeagus oval distally and truncate proximally, lateral arms slender and joining aedeagal apodemes. **G**, antennal club large, broadly triangular with several setae dorally and ventrally; inner side of spongy area with eight to ten setae. Arrows or brackets indicate different parts of the insect. Scale bars: 2 mm.



Supplementary Figure S4. *Fusarium solani* monosporic strain FIAG-Fs1 isolated from INIAP-TENERA symptomatic plants with Spear rot. (A,B), top (A) and bottom (B) view of *F. solani* mycelium on Petri dish containing potato-dextrose agar culture media. C, microconidia. D, macroconidia. E, phialides. Arrows indicate the structures of the fungus. Scale bars: 10 μm (C–E).



Supplementary Figure S5. Phylogenetic analysis of the concatenated sequences ITS + EF + rpb2 of the M98 isolate with other six different accessions queried in the GenBank. The evolutionary history was inferred by using the Maximum Likelihood method and Kimura 2-parameter model. The tree is drawn to scale, with branch lengths measured in the number of substitutions per site.