

**EFFECTIVENESS OF SOLAR-POWERED ELECTRIC FENCING TO
MITIGATE THE HUMAN-ELEPHANT CONFLICT IN
GOMARANKADAWALA DIVISIONAL SECRETARIAT DIVISION,
TRINCOMALEE**

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Human-elephant Conflict (HEC) is a significant issue in the *Gomarankadawala* Divisional Secretariat (DS) Division of *Trincomalee* district, Sri Lanka. The problem has intensified due to human population growth and decreasing forest cover. Hence, this study aimed to assess the effectiveness of the 30 km solar-powered electric fence installed in 2022 in the 'Twelve Yaya' area of the *Gomarankadawala* DS Division *Trincomalee*. For this study, detailed information on HEC incidents including human and elephant deaths and injuries, as well as crop and property damage was gathered for the periods before and after the fence installation. Data collection involved questionnaire surveys and reviewing records available in the Department of Wildlife Conservation, Agrarian Service Centers, and the DS office at *Gomarankadawala*. T-test method was used to determine the statistical significance of the differences in HEC incidents before and after installation of the electric fence. The results revealed a 90% reduction in crop and property damage incidents after the installation of the solar-powered electric fence. Furthermore, an independent T-test indicated a significant difference ($p < 0.05$) in crop and property damage across the Twelve Yaya in the *Gomarankadawala* DS division between *Maha* (2022/23) and *Yala* (2023) seasons. After the installation of the fence, a few elephant approaches were reported but damage was minimal. Overall, the solar-powered fencing effectively mitigates human-elephant conflict by safeguarding crops and property of the residents in the study area ensuring the lives of both elephants and humans.

Keywords: Crop damage, Elephant conflict, Property damage, Solar-electric fence