

Design and Development of Solar (Photo-Voltaic)-Based Insecticide Sprayer

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Abstract: *Agriculture plays a vital role in global food security but faces significant challenges, particularly pest infestations that threaten crop quality and productivity. Conventional pest control methods, particularly the use of chemical pesticides, have been effective but are associated with significant environmental and health hazards. This study aims to design and develop a solar photovoltaic (PV)-based insecticide sprayer that utilizes renewable energy to improve pest management in agriculture. The system integrates solar panels, batteries, DC motors and adjustable spray nozzles, all mounted on a mobile chassis for ease of use. The research emphasizes the importance of adopting sustainable agricultural practices and highlights the potential of solar energy in reducing dependency on fossil fuels while promoting eco-friendly solutions. The findings provide insights into the viability of renewable energy technologies in enhancing pest control efficiency, supporting sustainability and addressing the energy needs of agriculture, particularly in resource-limited regions*

Keywords: Solar photovoltaic sprayer, renewable energy, pest management, sustainable agriculture, eco-friendly technology