Air-Assisted Electrostatic Sprayer (AAESS)

Introduction

Electrostatic force field has been exploited in the design and development of an air-assisted electrostatic sprayer for agricultural applications to increase the mass transfer efficiency, pesticide bio-efficacy, uniform deposition, maximum canopy coverage and liquid pest to reach the hidden areas and underside of the target by reducing the drift of active ingredients of pesticides from the target microorganism. Electrostatic force field application is the current trend in pesticides spraying to protect the crops, vineyards, orchards and trees from many dreadful diseases and insects. This is the first work of its kind in India and very few are practising it worldwide. Electrostatic spraying technology offers a very favourable approach to increase pesticide droplet deposition onto biological surfaces with two-fold of mass-transfer efficiency. The equipment is specifically useful for small scale farms with a specific focus on Indian agricultural and rural developing economies. The nozzle is light weight, highly efficient, reduces pesticide use and human health risks, and eco-friendly.

Features

- Globally competitive, at par with international standards.
- Indigenous technology with state-of-art features and specifications.
- Foreign exchange saving and highly cost effective.
- Reduction for pesticide use results in growth of economy of the country and reduces the environmental pollutions and health hazardous.
- Adaptable to various platforms owing to its modular structure.
- Uniform deposition, higher bio-efficacy and longer distance coverage.
- Reduction of pesticide use and increase in deposition efficiency.
- Uniform canopy coverage and variable liquid flow rate.
- Deposition behind the leaves and hidden areas.
- Reduction of environmental pollution.
- Easy to operate and maintenance.

Technical Specifications

- Liquid flow rate : 150-200 ml/min
- Air pressure : 30-40 psi
- Spray coverage : 25-35°
- Resistivity range : $10^{-1} - 10^{3}$ Ω-m
- Deposition efficiency : 2-3-fold
- Power supply : 9.0 dc battery
- Uniformity coefficient : 2.52.
- Droplet density : 283droplets/cm^2
- Spray deposition : 55.04*10-6 cc/cm^2
- Horizontal spray loss : 24.38*10-6 cc/cm^2
- Vertical spray loss : 90*10-6 cc/cm^2
- Bio- efficacy : 64.20%

Applications

The equipment may be used for spraying of liquid-based pesticides to crops as well as orchards. It is a very efficient method to spray the protective liquid sprays to any kind liquid sprays to protect from diseases and insects. Other variants for various applications are electrostatic dust mitigation and environment protection device, electrostatic food coating system, electrostatic high range sprayers.

Users

- Farmers, land owners, municipal corporations, marketing agencies and private firms.
- Food processing industry as a disinfection and sanitization for fruits and vegetables.
- Environmental agencies for dust mitigation and pollution control.

Status

- The know-how of Advanced Electrostatic Spraying Technology has been transferred to M/s. Dashmesh Industries, Alwar, Rajasthan for commercial production on February 27, 2017.
- This company has marketed the product with the brand name eSPRAY; India's first electrostatic spraying technology (www.espray.in).

Electrostatic Pesticides Sprayer for Crops (All rights reserved @CSIR)

Electrostatic Sprayer for Orchards (All rights reserved @CSIR)