



Electrostatic Sprayers



ADVANCED SPRAYING TECHNOLOGY



Orchard Sprayers

Crop Sprayers



Brief Profile of Technology/Product

Electrostatic force field has been exploited in the design and development of an air-assisted electrostatic nozzle for agricultural applications to increase the mass transfer efficiency & pesticides bio-efficacy. It provides an uniform deposition onto the directly exposed as well as obscured surface of the crops and reaches to the hidden areas of target canopy. It reduces the drift of active ingredients of pesticides from the target microorganisms. It provides a means for efficient use of agricultural chemicals and natural resources. This nozzle is light weight, highly efficient, reduces pesticide use and human health risks, and eco-friendly.

Validation Level

All the field level tests have been carried out at Punjab Agricultural University (PAU), Ludhiana as well as farmers land. The technology is validated fully and the unit is ready for the deployment in field conditions.

Relevance of Technology in Present Times

Air-Assisted Electrostatic Sprayer (AAESS) is normally used for agricultural pesticides spraying to protect the crops and orchards from many dreadful insects and diseases. It is basically for reducing the pesticides and environmental pollution with increased efficiency and bio-efficacy. It is a multi-functional/multi-purpose device which can also be used for respirable dust suppression and environment protection.

IPR Status

It is a patented technology nationally as well internationally (All rights reserved).

National (India Patent) : 3045DEL2014 (27.10.2014)

PCT Patent: PCT/IN2015/050146 (27.10.2015)

WO2016067310A1, WO2016067310A4, CA 2966129

US Patent: 15/522,082 (26.04. 2017)

IN201711007875 (07.03.2017)

Sponsoring Agency

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Electrostatic Sprayers



Principle of Operation

- Based on electrostatic force field.
- Induction based electrostatic charging.

Air-assisted Electrostatic Crop Sprayer



Returns/Benefits

- Globally competitive, at par with international standards.
- Foreign exchange saving and highly cost effective.
- Indigenous technology with state-of-art features and specifications.
- 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.
- Demand driven, huge business potential and worldwide market.



Technical Specifications of an Electrostatic Sprayer

Liquid flow rate	: 150-200 ml/min
Air-feed rate	: 190-220 lit/min
Air pressure	: 30-40 psi
Spray angle	: 25-35°
Resistivity range	: $10^{-1} - 10^3 \Omega\text{-m}$
Deposition efficiency	: 2-3 fold
Power supply	: 9.0 dc battery
Uniformity coefficient	: 1.71
Droplet density	: 283 droplets/cm ²
Spray deposition	: $55.04 \times 10^{-6} \text{ cc/cm}^2$
Horizontal spray loss	: $24.38 \times 10^{-6} \text{ cc/cm}^2$
Vertical spray loss	: $90 \times 10^{-6} \text{ cc/cm}^2$
Bio- efficacy	: 64.20%

Air-assisted electrostatic sprayer for conductive liquid based pesticide sprays

All operating and user safety conditions are addressed

Air-assisted Electrostatic Orchard Sprayer



Features/Uniqueness/Novelty

- Uniform deposition
- Higher bio-efficacy
- Longer distance coverage
- Reduction of pesticide use
- Increase in deposition efficiency
- Uniform canopy coverage
- Variable liquid flow rate
- Normal pressure requirement
- Deposition behind the leaves
- Reduction of environmental pollution
- Easy to operate
- Easy maintenance