UVEX™

UV-C Disinfection Solutions

UV-C Light

UV-C LIGHT

Proven to be effective

UV-C light is proven to be effective at treating the main plant diseases affecting the New Zealand horticulture industry. It alters the structure and molecular bonds in DNA of disease microbes, destroying their ability to reproduce.

AUTONOMOUS UV-C DISINFECTION

The UVEX™ offers a unique combination of battery-powered UV-C treatment and autonomous operation for various plant and vine applications and has proven New Zealand field test results.

HORTICULTURE AND UV-C LIGHT

Effective, efficient economical

UV-C light is effective at treating the following plant diseases:

- Powdery Mildew – a fungal disease affecting plants and crops globally
- Botrytis
- Pathogens, bacteria, and viruses
- Mealy bugs and other pests

AUTONOMOUS TREATMENT

Sustainable, productive, innovative

The benefits of UV-C light delivered via an autonomous treatment system include:

- Improved operational safety
- Optimised management and tracking of treatment with advanced operator interface.
- Real time fault detection, alarms and feedback.
- Minimised labour requirements.

PROVEN RESULTS

Working alongside industry associations across New Zealand, Vertex UV are conducting UVEX™ efficacy field trials on different plants.

THE UVEX™ COMBINES A CUSTOMISABLE APPLICATION OF UV-C LIGHT INTENSITY, ON BOARD A BATTERY-POWERED AUTONOMOUS VEHICLE.

UVEX™ DESIGN

The UVEX™ design is modified for each vineyard or orchard application, based on the following criteria:

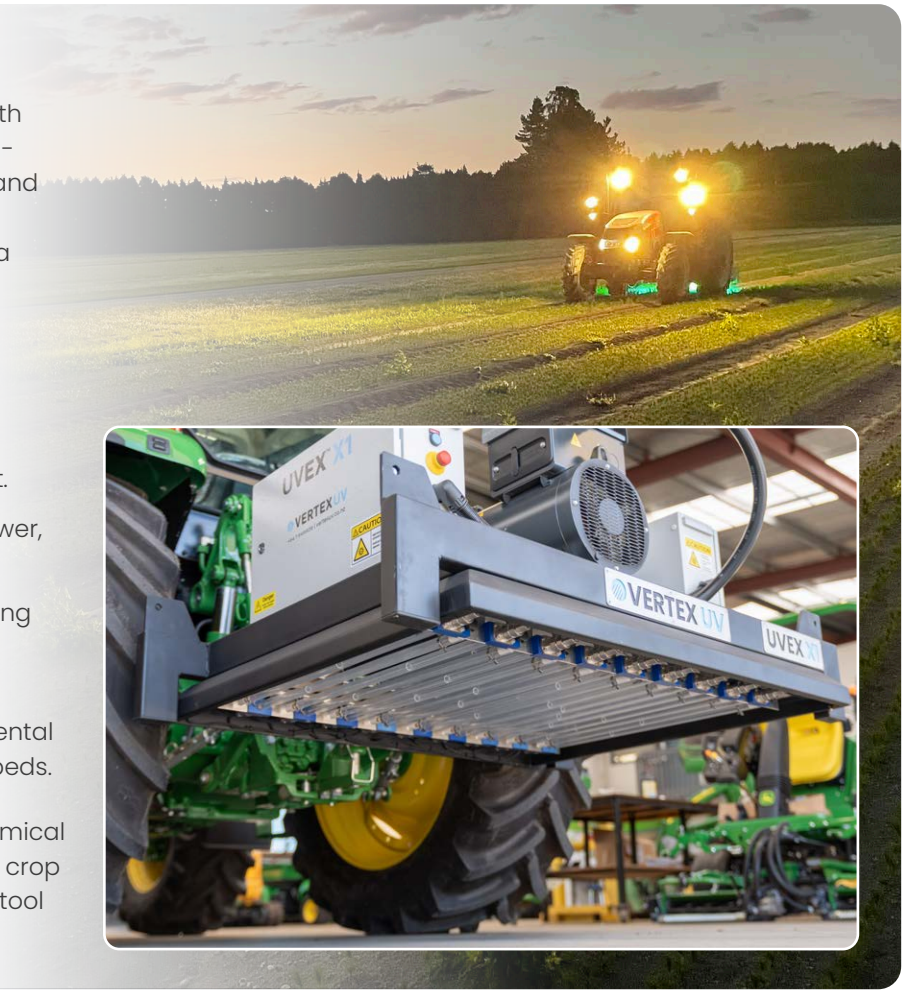
- **Wavelength** - UV-C light at wavelength of 254 nm is most effective for disinfection because it is effectively absorbed by the genetic material of microorganisms, disrupting their ability to replicate.
- **Exposure** - The duration of exposure to UV-C light is critical. Longer exposure times generally result in higher levels of disinfection.
- **Intensity** - The intensity of the UV-C light source impacts its disinfection ability. Higher intensity light can achieve better disinfection results within shorter exposure times.
- **Microorganism type** - Different microorganisms have varying degrees of susceptibility to UV-C light. Generally, viruses and bacteria are more susceptible than fungi and bacterial spores.

SPECIFICATIONS FOR ALL UNITS

- Includes mounting plate for attachment to the Burro or Grande Burro.
- Weatherproof.
- Mains charging through Anderson charging port (below 10 hours charging time).
- Removable emitter cassettes.
- Communications with Burro app via API.

UVEX™ X1 TRACTOR UNIT

UVEX X1 is designed to enhance the health and quality of crops by using downward-facing UV-C light to reduce pathogens and improve plant resilience. This method is particularly effective for crops grown in a bedding-style arrangement.



Applicable Crops:

- Leafy Greens: Lettuce, spinach, kale, arugula, and chard.
- Herbs: Basil, cilantro, parsley, and mint.
- Brassicas: Cabbage, broccoli, cauliflower, and bok choy.
- Strawberries & Small Fruits: Low-growing berries that benefit from disease prevention.
- Nursery Plants: Tree seedlings, ornamental plants, and flowers grown in trays or beds.

UVEX X1 provides an innovative, non-chemical approach to disease management and crop preservation, making them an essential tool for modern, sustainable farming.

UVEX™ SU STRAWBERRY UNIT

UV-C treatment is a non-chemical method used to enhance the shelf life and quality of strawberries by reducing microbial contamination, including mould and pathogens. This short-wavelength ultraviolet light (200-280 nm) disrupts DNA in microorganisms, effectively reducing spoilage and foodborne illnesses.

Specifications:

- UV-C intensity of at least 200 MJ/cm² per dose [trip].
- 3 km/h dosing speed.
- Interchangable arms to suit strawberry tower geometry.

UVEX™ GV GRAPEVINE UNIT

UVEX GV harnesses UV-C light to naturally combat grapevine diseases, reducing chemical dependence while supporting vine strength and productivity. A smarter, eco-friendly solution for both grower and vine.

Specifications:

- UV-C intensity of at least 150 MJ/cm² per dose [trip].
- 6 km/h dosing speed.
- Adjustable arms to suit vineyard geometry.

BENEFITS AND SUSTAINABILITY

- Extended Shelf Life: UV-C light slows down mould growth and decay, reducing food waste.
- Chemical-Free Preservation: Unlike fungicides, UV-C does not leave harmful residues, making it a safer alternative.
- Enhanced Food Safety: Reduces harmful bacteria like E. coli and Salmonella, improving consumer safety.
- Quality Retention: Helps maintain firmness, colour, and overall appearance of strawberries.
- Eco-Friendly: Reduces reliance on chemical preservatives and fungicides, lowering environmental impact.
- Energy Efficient: Requires minimal energy compared to refrigeration and chemical treatments.

HEALTH & SAFETY

Safety-in-design has been a top priority in the development of the UVEX™. The following factors have been considered:

- Exposure to UV-C radiation is eliminated through basic Personal Protective Equipment (PPE) - such as eye protection - and training.
- Electrical safety of the unit. It is weatherproof to IP55.
- Ergonomics of fittings and adjustments for on-farm use.
- Operation of the UVEX™ unit at a safe distance through API programming.
- Autonomous vehicle safety. Both Burro units have safety features to detect obstructions, including people within its proximity.

The UVEX™ is used in orchards, farms and vineyards for plant and fruit disinfection, reducing the need for chemical sprays and bringing many other benefits to growers.

INNOVATIVE PARTNERSHIPS

Vertex UV is a member of the International UV Association.

INTERNATIONAL IUVA ULTRAVIOLET ASSOCIATION

ABOUT THE DESIGN PROCESS

The UVEX™ design has evolved through trials which commenced in 2023. Refinements to the design have been made following an analysis of in-field data and user experiences to establish the UVEX™ units we have today.

VERTEXUV

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