

Ray of Light for Agriculture: UV Lamps Eliminate The Use of Pesticides

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New Application for UV Lamps in Agriculture

- Swiss Company Develops PhytO3-machines with UV lamps from Heraeus Noblelight
- Eliminates Pesticides
- Patented Method

UV lamps from Heraeus Noblelight are used to treat water, air and work surfaces. Often, these specialist light sources find application in the treatment of drinking water or in the disinfection of packaging materials in the foodstuffs industry.

The destruction of micro-organisms with UV light is now also taking place in the agricultural sector. The Swiss company SwissFood Tech Management AG, following its field tests carried out in 2006, is now using UV lamps from Heraeus Noblelight in its PhytO3 machine, which uses the combination of ozonised water and UV light for the treatment of agricultural fields in order to replace the use of pesticides and insecticides.

PhytO3 Method With UV Light Replaces Pesticides.

The PhytO3 process replaces the use of pesticides by using the combination of ozonised water and UV light. Extensive field research has validated the effectiveness of this process.

In operation, a structure suspended at the end of a tractor is equipped with Heraeus lamps. Ozone is generated by silent electrical discharge in a separate unit, which is mounted on the forks at the front of the tractor, and is dissolved in water. The PhytO3 method combines two effects: the plants are sprayed with ozonised water and irradiated with UVC light. Biological pests often live on plant surfaces. Small animals, such as beetles, are simply sprayed with water on the ground but are not destroyed. Micro-organisms such as viruses, bacteria and moulds on the plants are targeted and destroyed in a controlled manner by UVC radiation at a wavelength of 254nm. The energy rich UVC radiation neutralises micro-organisms, as it damages the genetic make-up. In addition, the UV radiation activates the ozone enriching the water on the plant surface and generates excited oxygen. This destroys the cell walls of the micro-organisms.

By the removal of the pests, the risk of plant damage or damage to the field is significantly reduced. This pesticide technique, employing UV lamps, is environmentally-friendly and there is no need for chemicals. There are no biological or chemical residuals on the plant surfaces, in the soil or in the environment. The ozone will usually decay within a maximum of 15 minutes, i.e, some time after the spraying takes place the ozone concentration falls to zero.

UV-Amalgam Lamps from Heraeus Noblelight

The amalgam lamps used in the PhytO3 method generate UV radiation at a wavelength of 254 Nanometers.

Longlife Amalgam lamps, as the name implies, are high power, low pressure lamps with extremely long operating lives. They can achieve up to ten times the UV power density of classical mercury low pressure lamps and are insensitive to temperature fluctuations. Heraeus Amalgam lamps are fitted with a unique coating, which prevents the transmission losses of quartz glass associated with conventional UV lamps. The result is a virtually constant disinfection sanction throughout the lamp's life.

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Heraeus Noblelight GmbH with its headquarters in Hanau and with subsidiaries in the USA, Great Britain, France, China, Australia and Puerto Rico, is one of the technology- and market-leaders in the production of specialist light sources. In 2007, Heraeus Noblelight had an annual turnover of 90 Million € and employed 666 people worldwide. The organisation develops, manufactures and markets infrared and ultraviolet emitters for applications in industrial manufacture, environmental protection, medicine and cosmetics, research, development and analytical laboratories.

Heraeus, the precious metals and technology group headquartered in Hanau, Germany, is a global, private company with over 155 years of tradition. Our businesses include precious metals, sensors, dental and medical products, quartz glass, and specialty lighting sources. With product revenues of € 3 billion and precious metal trading revenues of € 9 billion, as well as over 11,000 employees in more than 100 companies worldwide, Heraeus holds a leading position in its global markets.

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