WHITE PAPER

There's no such thing as out of the blue! Why WEED-IT relies on car and truck technology

WEED-IT Quadro, the newest precision spraying technology from Dutch selective weed spraying specialist Rometron, uses blue LED-lighting to identify weeds and plants. But it isn't the colour that counts, says the company's founder and owner, it's the technology.

If you spot a sprayer out in the fields at night with red light irradiating from the spray boom, you can be sure that you've caught a WEEDit Ag system helping its owner to eliminate weeds. The red light comes from Light-Emitting Diodes, LEDs, that have been programmed to irradiate red light. They can however irradiate any type of colour. Something you've surely noticed from modern cars and trucks and even tractors that use LEDs to provide white head lighting, orange indicator lighting and red rear lighting. The LED 'bulbs' themselves however, are fully transparent.

Why use red LED's?

The WEEDit Ag system, predecessor of the latest WEED-IT Quadro system, uses red LEDs. This red colour was chosen for a specific reason says Rometron's founder and owner Roel de Jonge: "Since its initial development in 1997, our technology has been relying on fluorescence technology to detect weeds or rather living plants. With this technology, we illuminate every single centimetre underneath the spray boom with LEDs. As soon as the LEDs illuminate living plant material, the plant chlorophyll emits a small portion of near infra-red (NIR) light as a reaction which is called 'chlorophyll fluorescence'. You could say that each plant briefly becomes a weak little light. WEED-IT measures the wavelength emitted from the living chlorophyll to distinguish living plants from dead plants, soil and any other substances. Until recently, research together with Dutch Wageningen University and Research (WUR) proved that red LED light was the most energy efficient for use in mobile weed detection technology. You could say, it was the most state-of-art technology available and feasible. Similar to red rear LED lights on cars."

Why shift from red to blue?

Roel continues: "But, LED-technology is getting better and better at an incredibly rapid pace. Just think of the number of LED-lights you might already have in your house, on your car/truck and on your tractors and machinery, including head and work lights. The massive use of LEDs accelerates their development tremendously. At WEED-IT, we always aim to incorporate the best of the best technologies and innovations to keep our competitive advantages and to enable users to eliminate more weeds with less effort and the least chemical crop protection needed."

Therefore, Rometron and Wageningen University and Research (WUR) started about 5 years ago to research and test if red LED-lighting still was the most state-of-art technology available and feasible. "That research proved that blue LED-lighting hadn't only become technically feasible, it also proved to be superior in energy efficiency to any other colour including red. Blue LEDs, in fact, are currently 150 percent more efficient than red LEDs. So, at the moment, blue LEDs are the most state-of-art technology available and feasible, and that's why WEED-IT Quadro relies on blue LED-lighting to identify weeds and plants."

Why aren't blue LEDs 'forever'?

In its never-ending quest for the best of the best, Rometron constantly researches and investigates which innovations are interesting to consider to further optimise and develop its precision spraying technologies. "Not just on weed detection hard- and software, but also on Pulse Width Modulation (PWM) technology << link naar PWM white paper >>. We strive to remain the number 1 spot and precision spraying system in the world and use the technologies we see fit best to accommodate our customers and their businesses. And therefore, blue LEDs aren't forever."

++

About this white paper

This white paper is offered by Rometron, the Dutch manufacturer of WEED-IT precision spraying technology. The author, Roel de Jonge, graduated on spot spraying from Dutch Wageningen University and Research (WUR) 1997 and founded Rometron in 1999.

WEED-IT - works!

++