



PANAMA DISEASE TROPICAL RACE 4 RESEARCH UPDATE

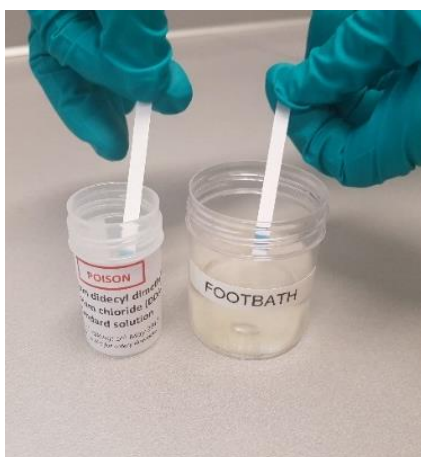
Quaternary ammonium (QA) products: How can you monitor them? How long are they effective for and are they corrosive?

Quaternary ammonium (QA) products containing 120 g/L didecyl dimethyl ammonium chloride (DDAC) applied at a 1% solution (1200ppm) have shown to kill fungal spores that cause Panama disease (Race 1 and Tropical Race 4). Research has been undertaken to determine how growers can effectively manage and monitor the concentration of QA products in biosecurity infrastructure such as footbaths, spray shuttles and wash-down facilities.

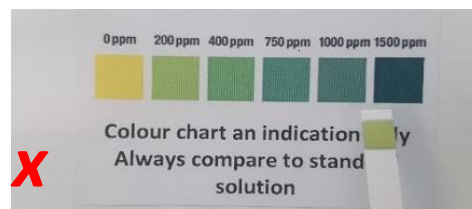
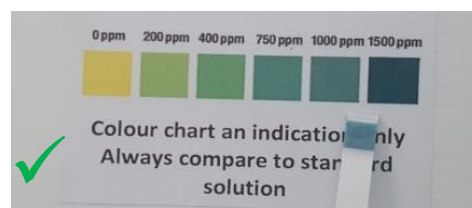
Monitoring QA products

Quaternary ammonium compound test kits which measure the concentration of active ingredient in a sample have been trialled. High range QA compound test strips have provided consistent and accurate results, and are proving to be an effective tool for routine monitoring of QA products containing DDAC 120 g/L (e.g. Sporekill®, Steri-max® & Path-X™). The easy-to-use test strips don't require a dilution of the sample and are used by comparing colour development of the test strip to the colour scale.

Soil has the potential to influence test strip results. It is important to replace or top up disinfectants if they become contaminated with soil and organic matter.



High range QA test strips dipped into a 1% standard solution and test solution simultaneously



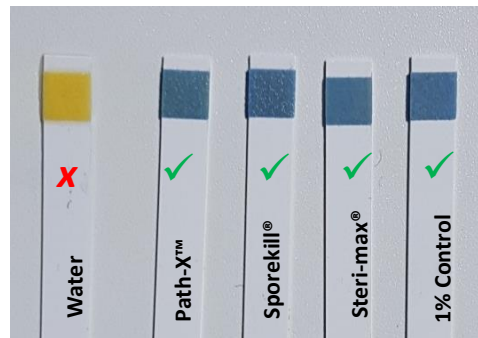
Test strips immediately compared to colour scale - maximum reading time of 5 seconds

Managing QA products

The longevity of QA products containing DDAC 120 g/L (e.g. Sporekill®, Steri-max® & Path-X™) was investigated. Using the high range QA compound test strips as indicators, in the absence of soil and organic matter the DDAC products have remained at a 1% solution when exposed to sunlight, temperature and humidity for **4 months**. The accuracy of the test strips were confirmed by taking sub-samples of the disinfecting solutions and inoculating the DDAC solutions with Panama disease (Race 1). The inoculation results show that no colony growth was detected at an instant contact time (≤ 30 seconds). The DDAC products are continuing to be monitored over the coming months.



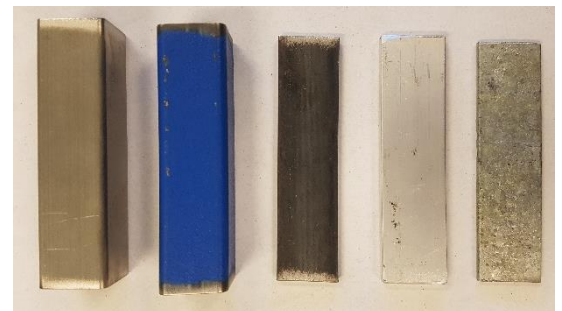
QA products exposed to field conditions



QA products tested at 4 months

Corrosive abilities of QA products

Two small demonstration experiments have been conducted to help understand the corrosive effects of various cleaning and disinfecting products on different types of metals. The products included in the experiments were water, a detergent (Farmcleanse) and three QA products containing DDAC 120 g/L (Sporekill®, Steri-max® and Path X™). In the first experiment, the metals were completely submerged in solution for two months. The results from this experiment show that all products including water have the ability to cause surface rust and/or oxidation to some extent, and water may have similar corrosive abilities as the other products tested. Painted and unpainted steel were the most susceptible metals to rust development. The second experiment consisted of the metals being dipped frequently (2-3 times per week) and exposed to field conditions. The results from this experiment show that unpainted steel was the most susceptible metal to rust development, and all three QA's appeared to be relatively more corrosive on unpainted steel than water and Farmcleanse treatments.



Metals included in demonstration experiments



Products included in demonstration experiments

Farmcleanse was included in the experiments as an example of a detergent-based cleanser that can be used to clean surfaces. Detergent-based cleansers have been shown not to be 100% effective against the fungal spores that cause Panama disease.

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