

WUR GREENHOUSE HORTICULTURE

TEST REPORT

Test number : 2020-934

Subject : Heating tube for greenhouses

Make : KLEDAM

Type : $\frac{3}{4}$ " / 19mm

Code :

Applicant : Mr. P. van der Hagen
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Purpose of the test

The purpose of the test is to check the risk of damage to greenhouse grown horticultural crops by fumes or vapour released from tubes used as flexible parts in a heating system.

Pre-treatment

Heating tubes were preheated for 24 h at 95°C.

Test method

The test was done in a ventilated room in which four flat closed growth chambers were placed. Each chamber had a content of 0.6 m³ and was covered by a pane of glass. The chambers were electrically heated and one central thermostat controlled the temperature in all the chambers. The plants were lit using fluorescent lamps (18 hours). One chamber was used as a control while one of the other chambers was used for testing the above-mentioned heating tube. A steel pipe connected a thermostatic oven with the growth chamber. In the oven a closed drum was placed and a 0.9 m piece of tubing was put in the drum. The tube was filled with water and the ends were plugged. The temperature in the drum was kept constant at 95°C. This temperature corresponds with the external pipe temperature in a commercial greenhouse when the water temperature in the tube is maintained at 120°C. The vapours were blown intermittently by fan through a pipe from the drum into the growth chamber.

During the test the temperature in the chamber varied around 23°C +/- 1°C. Young plants of cucumber, Chinese cabbage and kohlrabi grown under artificial light were used as test plants. The condition of the plants was checked almost daily.

Results of the test

During the test period of 17 days with the heating tube type KLEDAM type $\frac{3}{4}$ " / 19 mm, there were no signs of damage to the leaves on the cucumber plants. The kohlrabi and the Chinese cabbage plants showed no damage.

Conclusion

Taking the result of the test and the large overdose into consideration, it may be expected that this tube will not cause any problems when used in commercial greenhouses after thorough ventilation in the first days of use.

It is strongly advised to heat the tube for 24 hours after installation and before use, together with thorough ventilation.

The approval code KAS 2020-02 for the heating tube KLEDAM $\frac{3}{4}$ " / 19 mm is granted.

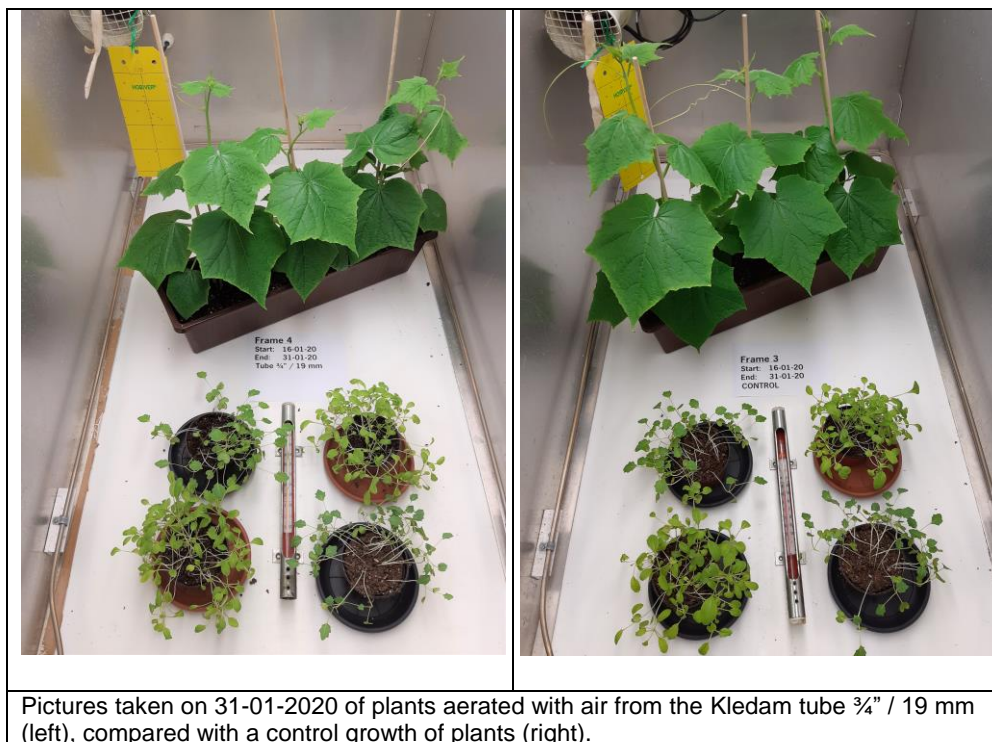
Remark

This report does not consider the quality and reliability of this tube.

Wageningen, 2020-01-31

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Ing. E.A. van Os / B.A. Eveleens



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