



# Damage to plants by volatile emissions on heating (synthetic) materials

## Motivation

Many different materials and substances are used to build and equip greenhouses that could potentially damage a crop; flexible rubber heating pipes, types of paint, benching, gutters, screens, ground cloths, coatings and plastic piping and tubing. Damage occurs soon after installation of new material, especially in the winter with less ventilation and as plants are relatively weak. Wageningen UR Greenhouse Horticulture offers a service to test and certify gas emission safety for piping, screens, coatings and other materials before use in the greenhouse.

## Method

The test involves placing the plants in the fumes of a specific heated material. Uniformly grown cucumber, Chinese cabbage and kohlrabi plants are used in this test to give the same year round quality. These plants are sensitive to volatile substances. The test units are equipped with light and controlled temperature conditions.

The material to be tested is heated to the required temperature and the vapours are blown gently into the test units. The plants are regularly inspected during 16 days and any effect of the test material compared to the control is recorded. A report is compiled with the results including a code to denote that the material is safe under the conditions in the test.



Fig. 2: Above: damage from fumes from flexible heating pipes in Chinese cabbage and cucumber. Below: test facilities.

## Conclusion

- Test facilities available to test heated material for toxic fumes before use in greenhouse;
- A certification report for supplier/ producer;
- Minimum chance of toxic fumes in greenhouse.



Fig. 3: Certified flexible heating pipe



Fig. 1: Materials that could produce toxic fumes.

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