

The following article has been published in 'De Groenten en Fruit' week 43 and translated into English. You can find a copy of this article and the original version at www.Grodan.com in the news section

Reusing stone wool slabs is a risky business even in tough economic times

Daniel Ludeking Product Manager of crop health at the diagnostic laboratory Blgg in The Netherlands poses a very topical question for crop turn round in 2009. Is reusing stone wool slabs for another year a smart way of economising in tough economic times or are growers taking a huge gamble with their business?

Many growers will soon be ready to rotate their crops and clean the glasshouse in preparation for the new crop. This year, the economic situation resulting from low product prices in Europe has forced many growers to consider their budgets for the coming crop. Hard choices will need to be made. One such choice is the reuse of the stone wool slabs for another season. This in spite of the news surrounding viruses such as Cucumber Green Mottle Mosaic Virus and Pepper Mild Mottle Virus (Pepper Mosaic Virus), crazy roots, and of course Clavibacter. Therefore from a plant health perspective there are strong arguments against reuse.

No guarantee of safety

The fact that production in 2009 may have been disease free is no guarantee that 2010 will be the same on the same stone wool slab. It is important to consider that pathogens could still be present in the old slabs and on crop debris. At the end of cultivation, the plants are fully grown and therefore much more resistant to disease than young plants, which are far more vulnerable when placed on the slab after the old crop has been removed. That vulnerability is connected with the fact that the transition from young plant producer, together with the stress involved in transport, is a giant step, for the plants when being placed in the greenhouse.

Apart from the hygienic dilemma, one cannot ignore the life span of a stone wool slab either. Cultivation changes considerably the structure of the slab. The increased organic matter content from decaying roots and a low pH result in a slab with different physical properties. This alters the water content control range and Ec steering of the substrate. The slab stays wetter for longer and its air buffering capacity is vastly reduced. The result is that watering becomes much more difficult especially in darker or changeable weather.

In order to be able to make an informed decision with regard to reusing the slabs or replacing them, it is important to make an analysis. This will highlight any potential disease pressure. Furthermore, any diseases which affected cultivation during the current season will have to be taken into account. Using this information and the hygiene protocol of the nursery a plan can be drawn up for crop rotation.

Points of attention crop rotation

- Thoroughly study the hygiene protocol for crop rotation and implement those points that are applicable to your particular situation.
- Analyse drain water for any current problems regarding diseases in your crop.
- Have suspect plants tested.
- Subject to the results, undertake action against any pathogens that are identified. If you are thinking of reuse, replacing the slabs may be inevitable at this point.

- If the decision is made to reuse the slabs steaming (15 minutes at 100 degrees Celsius) is recommended.
- Remember steaming of old slabs also has cost implications and will alter their structure and impact on their water and Ec characteristics.
- If steaming is not an option, set up a control strategy dependent on the established pathogen in order to suppress it, but consider the risks carefully.
- Ultimately make a well informed decision based on sound business economics.

Potential threats: Tomato and Aubergine

Over the last season, the production of tomatoes once again suffered from the phenomenon of excessive root or “crazy root” growth caused by the *Agrobacterium rhizogenes*. If this bacterium is present, reusing the same stone wool slabs will lead to guaranteed problems in the new crop.

The threat presented to tomatoes by *Clavibacter michiganensis subsp. michiganensis* remains high. This Bacterial Wilt disease is very infectious and can easily spread through water and the slab. In case of an infection everything possible needs to be done in order to make a clean start after crop rotation. If Bacterial Wilt is present, reusing the slabs is not an option. Tomato growers should also not forget the 'standard' threats, caused by fungi such as *Phytophthora*, corky root (*Pyrenochaeta lycopersici*) or *Fusarium*. These may cause a lot of damage to young and vulnerable crops.

Potential threats: Sweet Pepper

Phytophthora capsici can cause major problems in the root zone, leading to serious consequences above ground. As soon as the conditions for *Phytophthora capsici* become unfavourable, the fungus will start producing survival spores. When reusing the slabs, these survival spores may rapidly cause infection of the new crop. The spores have a thick cell wall, which means that they can easily survive outside a crop even under adverse conditions. However, the spores can be controlled with a contact fungicide, seek expert advice as to which treatment to apply.

In 2009 Sweet Pepper Mild Mottle Virus (PMMV) seriously hindered production. This mosaic virus is very persistent and because of its thick protective ‘coat’ it can easily survive outside the plant. The virus may be spread through water. Any crop debris that is left behind during crop rotation may be a source of infection for any young, recently planted crop. In case of PMMV being present, reusing stone wool slabs is not an option.

Potential threats: Cucumber

Currently, Cucumber Green Mottle Mosaic Virus (CGMMV) is observed in many crops. This virus is one of many Tobamoviruses, which also include Tobacco Mosaic Virus (TMV) and the Sweet Pepper Mosaic Virus (PMMV). This group of viruses is very resistant against any outside influences and very capable of surviving in adverse conditions. The viruses are usually spread through operations that take place within the crop, as well as water and the root environment. If these viruses are present you are strongly advised not to reuse the slabs.

Pathogenic fungi such as *Fusarium oxysporum f. sp. radicum-cucumerinum*, *Fusarium oxysporum f. sp. cucumerinum* and *Pythium aphanidermatum* are also regularly found. These fungi are responsible for a serious degree of foot and root rot in cucumber. In case of an infection with these fungi, whole plants may die.

Reuse a real option?

When growing greenhouse vegetables, it is not recommended to re-use the slabs. The structure of the slab will be altered making the root zone harder to manage. There is also an increased risk of disease

outbreak and crop failure.

A plant pathology analysis might help you further

Blgg laboratories offers a broad range of analyses to check for the presence of fungi, bacteria and viruses in water or plant material. This analysis can offer clarity and makes a based decision possible. Feel free to contact Blgg for some additional information or other inquiries on +31174626624

Please send your samples to Blgg laboratories

Mariendaal 8

6861 WN OOSTERBEEK



1. More prolific branching and production of roots on the stone wool pot is caused by an infection with *Agrobacterium rhizogenes*
2. Cucumber with symptoms of the cucumber mosaic virus
3. Leaves with serious symptoms of bacterial wilt caused by *Clavibacter michiganensis* subsp. *michiganensis*.