

Organic Greenhouse Tomato Production in a Closed System.

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Background:

Environmental concerns have led to major changes within the greenhouse vegetable industry, mainly when it comes to the recirculation of effluent. This is especially important in organic cropping systems where raised bed and reconstructed growing media are used.

Project Overview:

A three-year project was done to evaluate organic tomato production in raised bed containers and the effect of recirculation of effluents on such a system. For the third year of the project, tomato plants were grown in three different growing media: A muck soil (from St-Thomas-de-Joliette) used for a second cropping cycle, “Agromix Bio” (Fafard) an organic peat-based medium used for a fourth cropping cycle and a custom peat based medium containing 5% of clay (Tourbières Berger) used for a second cropping cycle. Tomato plants were grown under independent recirculating systems for each growing medium. Plants were fertilized using certified organic fertilizers following a weekly schedule. Biological activity in the growing media was evaluated periodically whereas three plant biomass and fruit organoleptic quality evaluations were done during the crop.

Overall, yield and fruit quality of this organic tomato crop were considered to be comparable to a conventional crop grown under the same conditions. Also, four bioassays to evaluate the use of rootstocks and mycorrhiza were completed in the same growing media. These bioassays also aimed at evaluating nutrient mineralization and plant uptake following incorporation of different certified organic fertilizers in the medium.

Conclusions:

This project showed that using a peat-based medium in raised bed containers for multiple greenhouse tomato cropping cycles under recirculation of effluents can result in high greenhouse tomato yields. No negative effect on plant development was observed resulting from effluent recirculation or from the observed accumulation of certain salts in the growing media.

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