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“CASCADE HYDROPONICS”

An integrated approach to increase productivity, resource use efficiency and sustainability of protected horticulture

CasH

Deliverable 5- [3.1.1]: *[Adapted fertigation model]*

Version 1.0: first version delivered on 28-03-2019

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Project Details:

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Deliverable Details

WP: [WP3-Cultivation practices]

Task(s): [T3.1: [Evaluation of primary crops]

Deliverable Title: [Adapted fertigation model]

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Involved Partners: [Hochschule Geisenheim University]

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1. Summary

In soilless culture, especially in closed-loop hydroponic systems offers a great option for reducing environmental and economic costs. (Massa et al., 2011; Katsoulas et al., 2015). The reuse and the recirculation of Fertigation solution is an increasing need but the nutrient management is one of the biggest challenges in Hydroponics. Monitoring ions in solution, at frequent intervals at various growth stages of crops, is extremely expensive (Bugbee, 2004) however, can provide sufficient information about ion imbalances in hydroponic solutions and this may result in rich yields and high market value products. Other option is recommended the solution composition (the ratio of nutrients) and concentration. Consequently, to facilitate the practical application of nutrient management a Decision Support System (DSS) will be adapted in the Head Unit. It is necessary to indentify general inputs and outputs that will characterize the core of the DSS for regional planning. In this workpackage **[WP3]** [Cultivation practices] we are interested in identifying requirements for the decision support system. Therefore, we consider as DSS inputs for secondary crop the outputs of primary crop. Indeed, the DSS should provide assistance regarding the selection of suitable primary, secondary and tertiary crops as well as Fertigation Control, generally. So, the current deliverable [**D5_(3.1.1)**], entitled "Adapted fertigation model", will estimate the nutrient needs (outputs) for the crops and develop an appropriate refill solution. The objective is to evolve a recipe for a refill solution that replenishes both nutrients and the water. Plants have evolved to tolerate large nutrient imbalances in the root zone, but in recirculating hydroponic systems, imbalances in nutrient replenishment are cumulative. It is thus important to understand the principles for nutrient replacement, especially when the solution is continuously recycled over the life cycle of a crop. (Bugbee, 2004).

The deliverable is available upon request

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