Advanced soilless growing systems for standard, safe and premium leafy vegetable production

6th Balkan Symposium on Vegetables and Potatoes






September 29 – October 2, 2014

Zagreb, Croatia

BOOK OF ABSTRACTS

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Advanced Soilless Growing Systems for Standard, Safe and Premium Leafy Vegetable Production

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Keywords: pre-harvest, growing efficiency, floating systems, safety, yield, inherent quality

The ultimate potential postharvest quality and shelf-life of fresh vegetables are determined before harvest. Cultivars, weather conditions, irrigation practices, fertilizers, and pest control programs all affect produce quality. Postharvest handling practices do not improve quality, they can only slow the rate at which deterioration occurs by applying optimal processing and packaging techniques and storage and supply chain temperature. New cultural techniques have been developed to satisfy market requirements and to produce healthy and sustainable foodstuff. In protected cultivation there is an increasing development of the implementation of soilless culture systems (SCS). SCS is a valid alternative to traditional culture systems (TCS) to avoid soil-borne diseases, to control mineral plant nutrition and to standardize qualitative characteristics of the final product. Considering that the SCS can improve raw material quality at harvest and enhance the postharvest shelf-life of many vegetables and herbs, a standardized growing system is required to obtain premium quality raw material in terms of commercial stage, low nitrate content and long shelf-life. Among the SCS used, the floating systems (FS) are among the most suitable systems to grow leafy vegetables because the plants can be grown at high densities, thereby producing high yields in a short time. FS, avoiding over-head irrigations and the contact between nutrient solution and edible parts, allow for greater qualitative and quantitative yields than the traditional cultivation techniques, reducing pollution, crop and substrate residues. The FS is a modern technology that could be exploited more to enhance yield, quality and safety of fresh and fresh-cut baby leafy vegetables.