

Hydroponic technologies in the regulation of crop quality

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Hydroponic culture is still undervalued as a promising biotechnology for obtaining high-quality environmentally friendly crop products. Essentially, that it provides an opportunity to ensure the supply of mineral elements to plants in the mode of selective or forced absorption by means of high- or low-affinity ion transport systems functioning adaptively in open and closed hydroponics. In addition, hydroponics technologies create the possibility of targeted impact on the formation of mineral and biochemical composition of plants, accelerating the development and increasing the yield and quality of the crops. For a number of plants (cabbage, beets, carrots) we have demonstrated the effectiveness of the nutrient stress strategy (impossible under soil cultivation), for initiating and enhancing the outflow and reallocation of assimilates from donor (leaves) to acceptor (commercial parts of plants) with increase in their carbohydrate content. Equally important is the established possibility to reduce nitrates accumulation in various parts of plants by means of operational changes in nutrient solution composition at different stages of plant cultivation without decrease in their productivity.

The main publications of authors on the subject of the abstract:

Osmolovskaya N.G. et al. Ion homeostasis response to nutrient- deficiency stress in plants //Cell Growth. Ed. by Biba Vikas and Michael Fasullo (2019). IntechOpen. 23 pp. DOI: 10.5772/intechopen.73916

Take-home message:

Nutrient stress provoked by temporary decrease of macronutrients concentrations in the supplied solution becomes a trigger for the redistribution of assimilates within the whole plant providing increase in the crop yield and improving its quality.