METADATA

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Abstract

This book provides useful information for the student, grower, and anyone interested in hydroponics and how this method of plant production works as applied to a wide range of growing conditions. Hydroponics refers to the technology of growing horticultural plants without using natural soil. The plants are cultivated either in a pure water solution with inorganic salts (fertilizers), or mainly on inert, porous substrates to which the nutrient solution is added. Hydroponic cultivation is an expanding method of agricultural production, mainly in the greenhouse area, because by optimizing the environment of the crown, which is achieved with the greenhouse, and the environment of the root which is achieved with hydroponics, plant yields increase (up to and over a tenfold degree compared to an outdoor cultivation) and the quality of the produced products is improved. Hydroponics began after the 18th century as a tool for academic research in plant nutrition and much later (20th century) evolved into a production method. The root and the effects of the root environment (such as water, substrate porosity, salt concentration, temperature, pH and microorganisms) determine plant growth and performance. Both in the case of the soil and in the case of hydroponics, the root is the filter that controls the entry of various chemical elements into the plant's organs. The environment in which plant organisms develop determines to what extent the characters determined by their genetic potential (DNA) can be developed and therefore the potential for a successful production. Today, many methods of hydroponics (to regulate the root environment) have been developed and are applied internationally, such as cultivation in a shallow flowing nutrient solution, cultivation in nutrient solution reservoirs, cultivation in sprayed nutrient solution (aeroponics), cultivation in inert materials, and cultivation in organic substrates. The inorganic elements (ions) of fertilizers are irreplaceable for the growth and production of plants. However, due to the interactions between ions and their competition, the various ions that make up plant nutrients, must be in the proper proportion to each other in the solution around the root. Of course, the optimal relationships between these elements are not the same for all species of plants, not even during the entire cultivation period. The basic composition of the nutrient solution must be adapted appropriately during the diffe

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