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PROSPECTS FOR USING ENVIRONMENTAL LEVERS IN GREENHOUSES TO STIMULATE PLANT DEFENCES AND THE QUALITY OF FRUITS AND VEGETABLES

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Authors

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Abstract

The environment of greenhouses is commonly modified to reduce the pressure of pests and diseases, but it can also be exploited to stimulate natural defences of plants. In addition to genetic influences, several agronomic factors can be used as levers to increase the concentrations of secondary metabolites involved in the defence of fruit and vegetable crops. Many secondary metabolites involved in plant defences are also phytonutrients, i.e., compounds that have beneficial effects on human health, including protection against cardiovascular diseases, cancers, and metabolic or neurodegenerative diseases. Nitrogen deprivation, photooxidative stress and exposure to specific wavelengths such as those supplied by UV radiations are well known for stimulating the production of secondary metabolites in a large range of plants. We propose here a review of factors meeting the specifications of organic farming, which are both effective and applicable in greenhouse conditions. Among all these factors, mild stress and innovative covering materials emerge as especially promising.

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