

***IN VIVO* MONITORING OF DROUGHT RESPONSE MECHANISMS IN TOMATO TO COPE WITH CLIMATE CHANGES AND SAVE WATER IN AGRICULTURE**

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Drought stress imposes a major constraint over plant growth and accordingly crop yield. Agriculture is by far the largest consumer of the Earth's available water, withdrawing 70% of "blue water". Given this scenario, improved methods are needed to facilitate plant monitoring via the prompt detection of the onset of stress, to support crop management and sustain plant breeding for drought tolerance.

Here, a description is provided on the use of an in vivo biocompatible electrochemical sensor device, referred to as bioristor, in the context of drought monitoring in tomato plants.

Herewith, bioristor has been applied under controlled conditions allowing the detection of drought stress and its correlation with environmental conditions. Furthermore, the application as field phenotyping tool was tested identifying bioristor as optimal drought stress indicator, able to reduce water application as much as 36 % of the normal irrigation, paving the way for its use for in vivo phenotyping and precision agriculture.