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Smart sensors for plants

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The increased global population has led to the emergence of smart sensor technology to increase agricultural output from harsh environments. This smart sensor technology is the ultra-light sensors placed on leaves to monitor and control important environmental and botanical aspects of each plant in greenhouse environment. Researchers have recently designed such compliant wearable for plants with the help of flexible and biocompatible materials. This includes compactly integrated temperature, humidity and strain sensors that can detect environmental conditions as well as the growth rate of an individual plant. This multisensory system is ultra-light and can function autonomously with miniaturised programmable-system-on-chip (PSoC). This system is flexible as polydimethylsiloxane (PDMS) is used as a stretchable substrate material and thin; this can adapt to the uneven surface of the leaves for data collection. This technology can be employed to continuously and economically monitor plant growth in a reliable manner. With the help of this sensory platform, the growth needs of each individual plant can be understood clearly and local optimisation actions could be performed immediately without delay to increase the yields even in unfavourable environments.

Keywords: Plant sensors, Temperature, Humidity, Plant growth, Agriculture

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