



Image of a transgenic soybean | Photo source Inner Plant

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## PROJECT AIMS TO TURN PLANTS INTO LIVING SENSORS

 FOOD & DRINK

### The development involves recording plant DNA so that crops can communicate through fluorescent proteins produced in their leaves

**Spotted:** San Francisco based agtech company InnerPlant is working on a new project to change plant DNA, creating 'living sensors' that will 'give plants a voice' and mitigate crop losses. So far, InnerPlant has raised \$5.65 million (€4.73 million) in funding.

InnerPlant features a data platform that increases field health by spotting threats to plant growth – such as pests, nutrient deficiencies, and water stress. To do so, the company re-codes DNA so that crops can communicate through fluorescent proteins produced in their leaves. When looked at with the proper technology, the modified proteins light-up. The mechanism transforms plants into living sensors that warn farmers about threats to their health – within hours, rather than weeks of a problem arising.

“Plants communicate all the time, sending chemical signals to warn each other about threats. InnerPlant makes it possible to understand what plants are saying,” explains the company.

A complementary app featuring InnerPlant’s augmented reality technology allows farmers to photograph their fields and identify possible concerns. The signals can also be picked up via drone and satellite. Moreover, only tens of these sensor plants are needed for each field. InnerPlant claims that the concept is based on the natural process of signals that plants transmit to one another when they are in a state of threat. Recoding the DNA to incorporate the protein simply ‘amplifies’ these natural signals.

InnerPlant released its first product, 'the InnerTomato', in 2020. With new financial resources in hand, the company will work on extending the technology to be used in Soy crops.

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### **Takeaway:**

According to the United Nations Food and Agriculture Organisation, up to **40 per cent** of global crop production is lost to plant pests and diseases, while each year plant diseases cost the global economy more than \$220 billion (around €193 billion), and invasive insects cost at least \$70 billion (around €62 billion). At the same time the World Resources Institute reported in 2019 that **one-third** of irrigated plants face extremely high water stress. By providing an early warning system, InnerPlant's technology could help to mitigate these challenges, improving crop yields and mitigating losses in the food system.