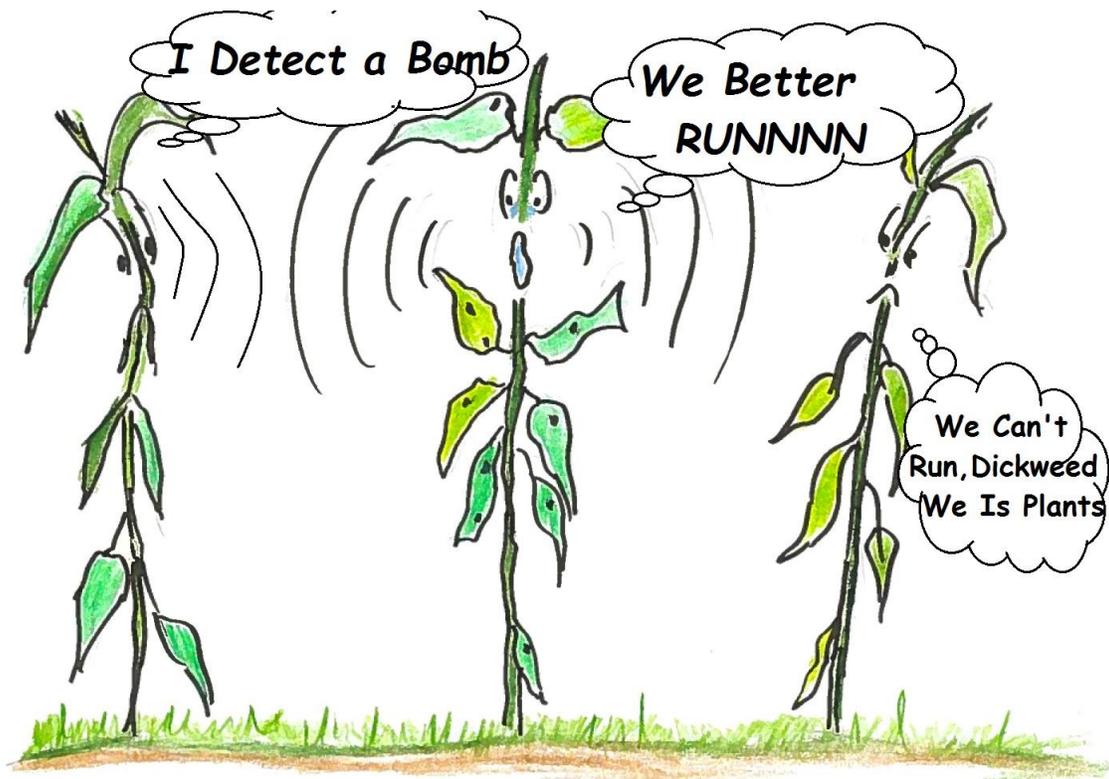


# Plants hooked to Electronics can Detect Explosives: Bionic Spinach With Nanotubes Sniffs Out Bombs

MED EXPO

Several methods have been developed and used over the decades to sense the presence of bombs in several places. Some of these contain the use of chemicals, spectrometry, X-rays, silicon nanowires and animals such as dogs and even bees. **Now plants sniff !!!!**



Using a method scientists are calling “plant nanobionics,” researchers from Massachusetts Institute of Technology (MIT) have implanted carbon nanotubes in spinach that enables the leafy plant to sense explosives and also communicate the information to a handheld device wirelessly.

The approach is grounded on a concept already used in bomb detection — that of identifying the aroma of certain chemicals commonly used in explosives. A statement on MIT’s website explained how it works.

“The plants were designed to detect chemical compounds known as nitroaromatics, which are often used in landmines and other explosives. When one of these chemicals is present in the groundwater sampled naturally by the plant, carbon nanotubes embedded in the plant leaves emit a fluorescent signal that can be read with an infrared camera. The camera can be attached to a small computer similar to a smartphone, which then sends an email to the user.”

Michael Strano, a chemical engineering professor at MIT and leader of the research team, said in the statement: “The goal of plant nanobionics is to introduce nanoparticles into the plant to give it non-native functions.”

Strano, who believes comparable techniques could be used to engineer plant communication warnings for pollutions and environmental conditions like drought, added: “This is a novel demonstration of how we have overcome the plant/human communication barrier.”

A research paper on the subject, titled “Nitroaromatic detection and infrared communication from wild-type plants using plant nanobionics,” was recently published in the journal Nature Materials. Its lead authors were MIT graduate student Min Hao Wong and former MIT postdoctoral student Juan Pablo Giraldo who now teaches at the University of California at Riverside.



**Medical EXPOSE**

<http://www.medicalexpose.com/>

## References and further info:

<https://youtu.be/uyrQl0ITq5A> Plants have consciousness IMUNE intro

<https://www.youtube.com/watch?v=Z1LVQ9wigzQ> Plants have consciousness

<https://www.youtube.com/watch?v=YND9UHjv7Jg> The science of plant consciousness

<http://www.downloads.imune.net/medicalbooks/Plants%20have%20intelligence%20and%20consciousness.pdf>

<http://www.downloads.imune.net/medicalbooks/Psychoactive%20Plant%20Harmine%20-%20May%20Hold%20Key%20to%20Reversing%20Diabetes.pdf>

<https://www.youtube.com/watch?v=GWY7c8JLMrE> return to the garden

<https://www.youtube.com/watch?v=CbFthIBPBj8> open letter to grow oil not dig for it

<https://www.youtube.com/watch?v=fa3e7YAUcLk> farm fuel not fossil fuel

<https://youtu.be/M1fwDRkj20> history of fuel oil

<https://www.youtube.com/watch?v=yq29SgOSCQo> sounds of silence from pollution

[https://www.youtube.com/watch?v=MH\\_EhzQBi\\_k](https://www.youtube.com/watch?v=MH_EhzQBi_k) photosynthesis is not done by the chemical companies



### "Plants have feelings, too"

If concerned about the feelings of plants, all the more reason to go vegan! Animals eat 5–20 times the amount of plants to make a small amount of meat or milk, so you are killing **MANY** more plants by eating animals.

Worried about plants?

Then go vegan.

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