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Plants could detect landmines

By Ayesha Lawrence
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LONDON, England (CNN) -- Landmine detection may be easier in future, if trials of genetically-engineered plants by the University of Copenhagen prove successful.

Traces of explosive that leach into soil from mines could trigger colorful tell-tale pigments in the leaves of a tiny cress plant.

The plant, which is sensitive to nitrogen dioxide -- a product released by landmines as they lie underground -- has been genetically altered to change color from green to red after approximately three weeks in contact with contaminated soil.

Project researcher Simon Ostergaard says the plant could be used to help find landmines in countries including Afghanistan, Iraq, Angola and Cambodia.

He says the plant, a type of Thale cress, occurs naturally around the world, has a fast growth rate of six to eight weeks and is dependent upon a growth factor contained in a special fertilizer, "so we can control the spread."

However a spokesperson for the chief U.N. Center for Humanitarian De-mining, Davide Orifici expressed concerns about the project.

"Our main concern is that other types of munitions in the field, such as scattered cartridges, may also contaminate the soil and the plants may react," he told CNN.

"Also we have concerns about the limited use of the plant. What works in the lab does not exactly work in the field."

Orifici said problems with availability of water for growth in certain climates and methods of sowing seed could present costly problems.

Ostergaard said researchers for the university's commercial biotechnology arm Aresa were aware they would need to prove the plant's uses to those with direct responsibility for mine detection. "Our core competencies are in research and in the lab," he said.



The plant is sensitive to nitrogen dioxide.

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"We need to collaborate with organizations because they have experience of the environments where the mines actually are and they have knowledge and expertise of how it is.

"It is important that we work together until they actually say 'yes -- we can really use these'."

He said the benefits of carefully targeted GM technology outweighed arguments against it and told CNN researchers had taken care not to add genetic properties which were outside the specific purposes of the GM plant.

Anti-GM lobbyists have expressed concern that latest developments distract the international community from the source of the landmine problem.

Greenpeace campaigner Ben Ayliffe says effective ways of detecting landmines already exist.

"What we really need is the political will to address these problems," he said. "This is a distraction from the main issues.

"It's a clear problem and there are means of addressing it which already exist, and they don't have to involve GM."

Ostergaard said he and his colleagues aimed to prove the growth control measures for the GM cress were safe. "We certainly believe that it is safe, and we are working to show this," he said.

Orifici agreed further trials were necessary.

"I would say the next step for these researchers is to go into the field in areas like Mozambique and Afghanistan and see how these plants work in the field," he said.

Uncleared landmines reduce food production in many of the world's poorest farming communities, and disrupt aid work and transport networks long after conflicts have ceased according to the U.N.

It says a landmine that brings a vendor \$3 in revenue, costs the international community between \$300 and \$1,000 to clear.

Current methods of detection -- including the use of hand-held mine detectors, metal detectors, armored clearance vehicles, and trained dogs with handlers -- are costly, slow and often dangerous.

Signatories to the 1997 Ottawa Treaty have called for greater cooperation between developers of mine-detection technology.

The U.N. has set a target of 2009 for the clearance of the majority of the world's estimated 110 million currently buried landmines,

U.S. Assistant Secretary of State Lincoln Bloomfield recently told the Financial Times newspaper last month that the U.S., which refused to sign the Ottawa Treaty, would phase out use of enduring landmines by 2010 and replace the country's arsenal with detectable self-destructing landmines.

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