

A Little Mustard that looks for Land Mines **by Peter Lesica**

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Land mines are a persistent residue of wars that seem to plague our world. It is believed that there are more than 100 million land mines in at least 45 countries and that land mines kill or injure 26,000 people each year. Recently a Danish biotech company announced they believe they have modified a little weed in such a way that it can detect land mines and help save lives.

Early this year Aresa Biodetection announced that they have developed a genetically modified form of Thale cress (*Arabidopsis thaliana*) that turns red when its roots are exposed to nitrogen dioxide, a gas given off by unexploded ordnance. Thale cress is a small annual weed in the Mustard Family native to Europe and Asia but widely introduced throughout the world. It is predominantly self-pollinating. In Montana Thale cress is uncommon in the western portion of the state. The Aresa form of Thale cress is male-sterile so that it cannot interbreed with wild populations. It is not "transgenic" in the usual sense of the word because only genes found in the species were used to develop the mine-detecting variety. This means that the same mine-detecting form could have been developed using traditional plant breeding techniques, but would have been much slower.

It is hoped that the modified Thale cress can be sowed into fields to locate the land mines which are then removed, making the field safe for agriculture. Aresa plans to perform restricted tests this year with field-tests in Denmark and abroad soon after. It is hoped that mine-detecting Thale cress will be available for use in a couple of years.

There is a great deal of concern over genetically modified organisms (GMO) among many biologists as well as the general public. It has been shown that GMOs can transmit their modified genetic makeup to wild relatives, possibly resulting in an ecological imbalance in native communities. It is also feared that

genes from other species can make transgenic crops different in undetected ways, resulting in human health problems. Aresa scientists appear to have sidestepped these potential problems by developing a male-sterile variety and using only genes native to Thale cress. If their mine-detecting weed does what it is designed to do, we may have an example of universally acceptable genetic engineering.