

# Oats to clean up heavy metals in contaminated soil

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Researchers from universities in China, Switzerland and Australia have identified that the naked oat is best suited to remove radioactive strontium from contaminated soils.

The study, published in the *International Journal of Phytoremediation*, investigated 26 cultivars of wheat, husk oat, naked oat and barley for their potential use as a tool to clean up strontium from soils after a nuclear accident.

The naked oat, also known as the 'hulless oat', is a cereal crop with edible seeds in the oat genus *Avena* and during threshing, the hull separates readily from the grain.

Using plants to remove metals and various organic pollutants from the environment is an emerging technology known as phytoremediation.

Co-author Hackett Professor Kadambot Siddique, from The University of Western Australia's Institute of Agriculture, said exposure to radioactive strontium after [nuclear power plant](#) accidents could directly endanger human health, especially if it entered the food chain.

"Food is the most important pathway of strontium into humans, and high doses of strontium increases the risk of cancers and may induce skeletal abnormalities," Professor Siddique said.

"Phytoextraction of soils contaminated with heavy metals uses plants which take up contaminants and accumulate them to elevated levels in the shoots. The plants are then safely disposed of."

The researchers studied 26 species known to have higher accumulation of [heavy metals](#). They quantified the influence, uptake and translocation of strontium on growth of the plants. At maturity, the naked oat cultivar Neimengkeyimai-1 had the highest strontium content at all measured strontium levels.

"The percentage of [strontium](#) removed from the soil to the shoots at harvest time was more than 1.4 per cent after 120 days. Naked oat plants could be selected for phytoremediation to clean up [contaminated soil](#), and Neimengkeyimai-1 in particular could be used as a model for further research, as a starting point for finding more effective cultivars," Professor Siddique said.

**More information:** "Uptake and Distribution of Stable Strontium in 26 Cultivars of Three Crop Species: Oats, Wheat, and Barley for Their Potential Use in Phytoremediation." [DOI: 10.1080/15226514.2014.898016](#)

Provided by University of Western Australia

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