Zinc switches found in plants

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Geneticists have discovered two gene switches in plants which enable better zinc intake. This paves the way for plant breeders to reduce malnutrition.

An international research team, comprising VENI laureate Ana Assunção and geneticist Mark Aarts of Wageningen UR, has discovered two gene switches which regulate the zinc intake in the model plant Arabidopsis thaliana. Zinc is an essential nutrient for plants and animals. A shortage of zinc causes some plants to increase their intake capacity, in a hitherto unknown way. Aarts and his colleagues found two gene switches, bZIP19 en bZIP23.

If both of these stop working, the mouse-ear cress becomes hyper sensitive for zinc shortage. If just one of these works, it has hardly any effect on the plant, as shown by research into mutants of Arabidopsis.

The two gene switches are also found in edible vegetation. The challenge for the breeders is to find out how to activate them in times of acute zinc shortage so that they would react earlier and absorb more zinc. Many people in developing countries suffer from a shortage of zinc due to often unbalanced diets. By activating the mechanism which enables plants to absorb more zinc, this problem can perhaps be solved. This discovery also leads to possibilities to clean up land contaminated by zinc , postulate the researchers.

Their findings have been published on May 18 in the online edition of the Proceedings of the National Academy of Sciences (*PNAS*).

Provided by Wageningen University