

Media Release

Adelaide, Australia, 10 September 2010



Salt-tolerant rice offers hope for global food supply

A team of scientists at the Australian Centre for Plant Functional Genomics has successfully used genetic modification (GM) to improve the salt tolerance of rice, offering hope for improved rice production around the world.

The research team has used a new GM technique to trap salt in the root of the rice plant, reducing the amount of toxic salt building up in the plant and increasing its tolerance to salinity.

This new research into rice builds on previous work into the salt tolerance of plants led by scientists from ACPFG. The research has been conducted in collaboration with scientists now based in universities in Cairo, Copenhagen and Melbourne.

"Rice is the staple food for billions of people around the world," says Dr Darren Plett, lead author and Research Associate with the ACPFG, a key partner of the Waite Research Institute at the University of Adelaide.

"Rice is often grown on land that is prone to high levels of salinity. Lands that accumulate salt have lower crop yields, which can threaten food supply. This has made salinity tolerance an increasingly important factor in the efforts to secure global food production," Dr Plett says.

The research team expressed a gene to increase the number of salt-transporting proteins in specific cells in the roots of the rice plant. The genetic modification resulted in salt being trapped in the root, where it is less harmful to the plant, thus avoiding salt travelling to the shoot where it does the most damage.

Dr Plett says the new GM technique is an "efficient and robust biotechnological approach" to helping rice grow in saline conditions.

"Our results provide a new approach for genetic modification to increase the tolerance of crops to the toxic sodium ion (Na⁺), which is a major environmental stress. Successful genetic engineering efforts using this technology should assist in global food production. The same technology can be used to improve the nutrient levels within rice grain, which would be very important for consumers the world over," Dr Plett says.

The results of this work have been published in the online peer-reviewed science journal *PLoS ONE*. Work is now underway to transfer the technology to wheat and barley.

PLoS ONE paper: <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0012571>

For media contact:

Dr Darren Plett
Research Associate
ACPFPG, University of Adelaide
Ph: +61 4 05 277 379 or +61 8 8303 6665
darren.plett@acpfg.com.au

Amanda Hudswell
Communications Manager
ACPFPG
Ph: + 61 4 03 166 947
amanda.hudswell@acpfg.com.au

ACPFPG scientists are improving cereal crops' tolerance to environmental stresses such as drought, heat, salinity and nutrient toxicities. These stresses are a major cause of yield and quality loss throughout the world and cause significant problems for cereal growers. For more information on ACPFG visit www.acpfg.com.au