

MEDIA RELEASE

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Tackling salinity problem

University of Tasmania researchers believe they have the “missing link” to make plants salt tolerant.

Chief investigator Associate Professor Sergey Shabala said salination causes multi-billion dollar losses to the crop farming industry.

Up to seven per cent of the total land surface is saline and about one-third of the world’s irrigated land suffers from secondary-induced salination, he said.

Previously plant breeding for salt tolerance has achieved only a limited success, mainly due to the physiological and genetic complexity of salinity trait.

“Traditionally, plant breeding for salt tolerance followed two main avenues”, Assoc Prof Sergey Shabala said.

“One was to make sure that plants don’t take up sodium, and another one – to synthesise some chemicals to help them to withstand the water stress imposed by salinity. Unfortunately, neither of them was efficient enough”.

Now Assoc Prof Shabala and his team at the School of Agricultural Science believe they are getting close to solving this problem.

In a project funded by the Australian Research Council and Grain Research and Development Corporation, the scientists have explored some other mechanisms contributing to salinity tolerance in plants.

One mechanism, related to plant’s ability to keep a constant level of potassium within its tissues, seems to be crucial to make plants salt tolerant.

“It appears that we have found a ‘missing link’ in this puzzle”, Assoc Prof Shabala said.

“As far as plants are capable to keep potassium high, they are happy. And all other mechanisms discovered so far appear to be complimentary to this one”.

The National Land and Water Resources Audit estimates that somewhere between 10 and 25 per cent of currently arable land could be out of production by 2020. So creating salt

tolerant varieties is critical for both reclaiming already salinised land and for minimising the overall cost of dryland salinity in Australia which may exceed \$1 billion by 2100.

Assoc Prof Shabala and his team believe that targeting potassium in plant breeding for salt tolerance opens new and exciting prospects to overcome salinity problem and create tolerant varieties.

“Given the large amount of contributing components, it’s a painfully slow process,” he said.

“But the knowledge is in place, so it’s simply a matter of time and appropriate techniques to get it all working in the field.”

For more information contact Assoc Prof Shabala on 6226 7539

Information Released by:

Media Office, University of Tasmania

Phone: 6226 2124 Mobile: 0417 517 291

Email: Media.Office@utas.edu.au