



Plants dealing with salt - let me count the ways

ONE project Dr Xavier Sirault is working on at the High Resolution Plant Phenomics Centre at CSIRO Plant Industry in Canberra is aimed at understanding the biological mechanisms involved in salinity tolerance.

In one of the state-of-the-art growth chambers an infrared camera is focused on barley plants growing in pots to compare those growing in saline soils with those in normal soil.

Dr Sirault (pictured), who is both an engineer and plant scientist, has unique qualifications for the task of developing the necessary technology, and bubbles with enthusiasm as he describes the

new facility and his project.

He says the pores (stomata) in plant leaves allow the exchange of carbon dioxide and water, but saline soil can cause the stomata to shrink, which limits the plant's transpiration and reduces its growth.

The extent to which this is happening can be assessed by using infrared thermography to track leaf temperature, which shows temperature differences through changes in colour in the images.

Dr Sirault is developing an automated conveyor system that will roll plants past the camera to allow many more measurements to be taken.

He said plants could respond to saline soil in several ways, such as excluding the salt at the root, locking it up in "compartments" within its cell structure or suffering osmotic stress which made it much harder to take up water because of the salt.

"We want to be able to process 10,000 images an hour, which will be much faster than traditional processes," he said.

The next step will be to try to find out which genes are involved in salinity and develop gene markers for plant breeders to use in making selections.

