RN Robertson Travelling Fellowship report by Stephanie Watts-Williams

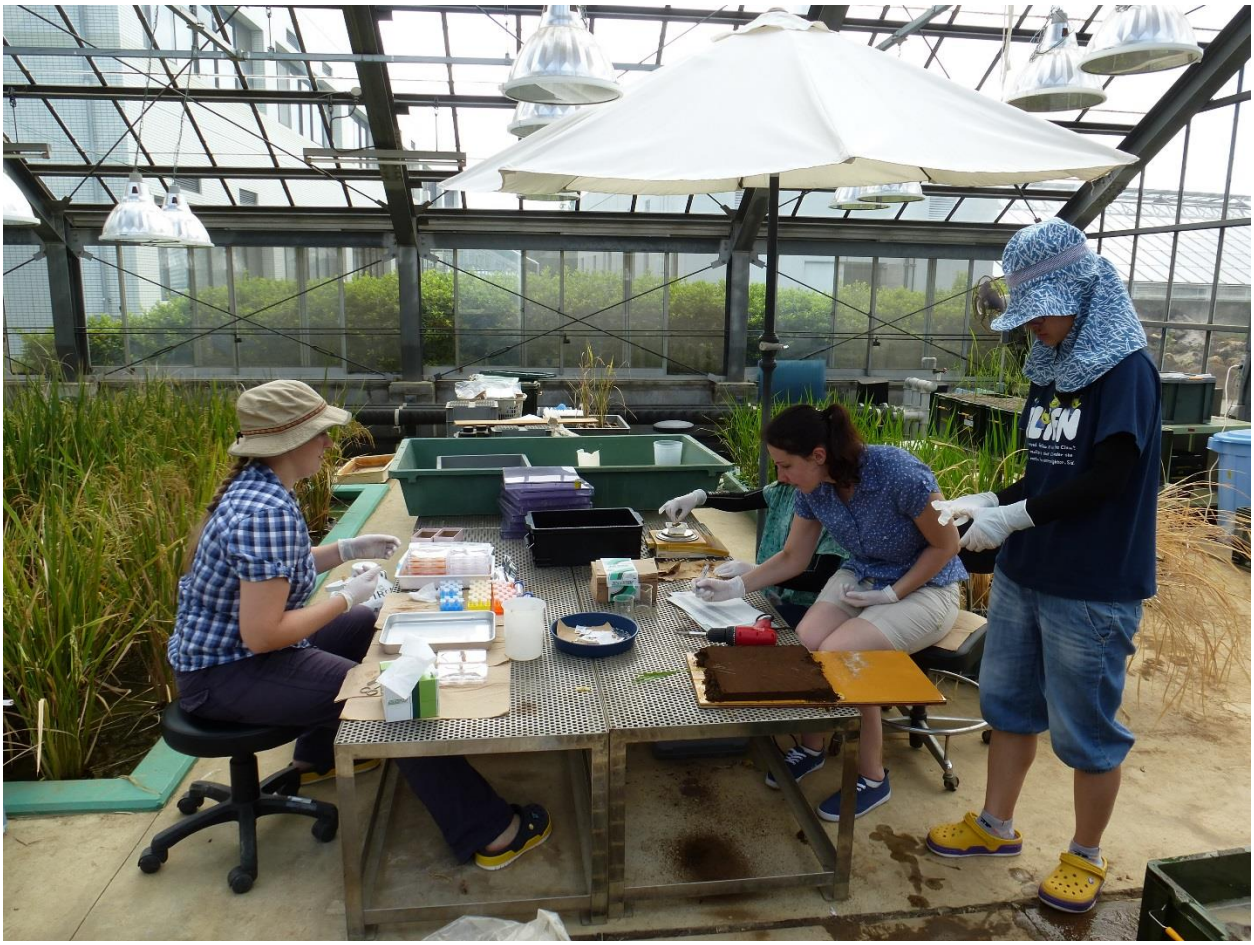
01 August 2014

RN Robertson Travelling Fellowship

I arrived in Japan in late June, and it was already beginning to heat up, with relentless humidity and frequent rain. When I arrived on the express train into Tsukuba from Tokyo though, the weather seemed to fit nicely with the scene before my eyes – fields of rice paddies as far as the eye could see. All of them growing luscious, green, heathy rice plants. Rice was the reason I came to Tsukuba, in fact. Through the generosity of the ASPS and the R.N. Robertson travelling fellowship, I was able to visit the lab of Prof. Matthias Wissuwa at the Japan International Research Center for Agricultural Sciences (JIRCAS, for short). JIRCAS is located a short bike ride out of central Tsukuba, dubbed the 'Science City' of Japan, which is home to countless research institutions and its own University. It is located 65 km out of Tokyo, and is a buzzing hub of science, technology, and home to many foreign researchers.

Prof. Wissuwa is an expert in phosphorus (P) and zinc (Zn) nutrition in crop plants, working primarily with rice. My PhD research so far has focused on arbuscular mycorrhizas (AM) and plant P and Zn nutrition, so it fit nicely with what was already being done at JIRCAS – except with the added factor of AM. While at JIRCAS, I sampled roots of different rice genotypes growing in Low P and High P fields, that ranged widely in their root morphology, biomass, and P uptake. Barely any work with regards to AM had been done on any of Prof. Wissuwa's rice genotypes, although there were some preliminary data on extent of mycorrhizal colonization that helped us to select four varieties to focus on. With just a couple of weeks to analyse my root samples, I focused on two main tasks – staining roots to visually quantify the extent that they were colonized by AM, and quantifying the expression of the mycorrhizal-induced P transporter – *OsPT11*, by qPCR. I also spent a lot of time helping other people with their work, whether it be harvesting plants, sampling in the field, or maintaining the field sites (weeding).

The results were interesting, and demonstrated that the different rice genotypes varied greatly in their expression of *OsPT11* and also in percentage of root colonised. This may point to the potential for AM to improve the P nutrition of rice, and further exploration into AM enhancement of rice nutrition will be of interest. Thank-you to the ASPS for bestowing the RN Robertson fellowship upon me so I could make the most of my visit to JIRCAS.



In the glasshouse harvesting rhizo-boxes (I am second from the right)



A long ditch was dug to observe root architecture of many different rice varieties



Different rice varieties in the field