Report on the American Society of Agronomy (ASA), Crop Science Society of America (CSSA) and Soil Science Society of America (SSSA) International Annual Meeting in Tampa, Florida, November 3rd – 6th 2013

By Frederick T. Steinmeyer, Ph.D. Research Student (Agriculture)

I would like to start this report by extending my deepest thanks to the providers and administrators of the Arthur Hoiser & Meyer Sassoon Travel Award, the Perry Foundation and the School of Agriculture, Policy and Development at Reading University, for sponsoring my travel to this conference. Held annually, this tri-society meeting of the ASA/CSSA/SSSA, was held in Tampa, Florida, November 3rd – 6th 2013 and is one of the largest conferences of its kind in the USA. This was the 58th annual meeting of the Crop Science Society of America.

A poster abstract was submitted for consideration during the summer of 2013 and was subsequently accepted for a poster presentation. The poster was presented to the conference in order to showcase my Ph.D. work and develop collaborative links to researchers in the field. The title, authors and their affiliations, as well as the main body and key words of the abstract are given below.

Title: Wheat Floret Development And The Relationship To Ear Temperature: The Interaction With Genotype And Stress.

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Abstract: The use of thermal imaging is a valuable tool in the elucidation of thermal dynamics between a plant and its surrounding environment. Previously, studies have successfully investigated the spatial and temporal dynamics occurring in the wheat ear, as well as highlighting ways in which these may contribute to the development of a novel high-throughput screening tool for early generation selection of stress tolerant wheat lines. This work has however been limited to controlled environments and consequently further validation is needed in the field to be of direct value to breeders and physiologists. Therefore, a field scale study took place using six spring wheat (*Triticum aestivum* L.) genotypes of the elite recombinant inbred line Seri/Babax at CIMMYT in NW Mexico, during April and May 2013. Plants were grown under conditions of heat and drought stress in 0.8m x 2.0m blocks. Over the period of anthesis, Average Ear Temperature (AET) was recorded using a hand held infrared camera whilst the floret development stage of the ear was monitored. Infra red images and physiological data were gathered and correlated to grain yield. Additionally, a high-throughput Remote Sensing Platform (RSP) was utilized to conduct multi-spectral analysis to compare and contrast the six different genotypes. The RSP, based on both a helicopter and helium filled blimp, collected data which were used to calculate a range of physiological indices including canopy temperature, biomass, chlorophyll content and crop reflectance. Results and methodologies will be presented.

Keywords: Wheat, heat stress, drought stress, anthesis, thermal imaging

Saturday, November 2nd 2013

I flew from London to Tampa International Airport and checked into my accommodation opposite the Tampa Conference Centre in the early evening. I completed registration at the convention centre and picked up the programme as well as my identification in order to be able to access the conference the following day.

Sunday, November 3rd 2013

On the first day of the conference, I attended a Workshop aimed at Grad Students entitled 'Navigating the Maze: A Users Guide To Grad School Success' (Marriott Tampa, Grand Ballroom H, 1.00pm-4.30pm). Led by a panel of academics, we discussed ways to effectively manage out projects, time and mentors whilst in Grad School.

At the end of the workshop, I moved to Ballroom B in the Tampa Convention Centre to attend the Opening Remarks of the ASA/CSSA/SSSA conference by David Baltensperger, David Mengel and Jan Hopmans (6.00pm-7.00pm). During the Keynote address, the three societies outlined their vision for the future of research in the coming year as well as encouraging us to network, within and between disciplines, as much as possible whilst at the conference

After the Opening Remarks were adjourned, I attended the opening night of the vendors' exhibition at the East Hall in the Tampa Convention Centre (7.15pm-9.00pm). Here I was given the unique opportunity to talk to experts supplying the crops research industry with cutting edge technology. LI-COR, ADS, MO BIO, Spectrum Technologies and Biochambers were some of the vendors present which directly supply products of value to my project. In addition to vendors, I was able to discuss future employment opportunities with recruiters from leading companies such as Monsanto, Dow Agro Sciences and DuPont. All recruiters expressed a strong interest in my project and a number of excellent connections were established.

That evening, I attended at Grad Student mixer in Downtown Tampa, where I got to meet many fellow Ph.D. students working at institutions across the US, as well as in Mexico, Argentina and China.

Monday, November 4th 2013

During the morning, I attended a workshop entitled 'The Secrets To Surviving The First Year On The Job' presented by Prof. Kabengi (Tampa Convention Centre, Room 13, 10.30am-12.00am). This was an extremely valuable workshop, involving a number of private industry leaders, consultants and academics. Advice was given on the importance of efficient and rapid project completion, taking time in choosing a suitable job and what to expect from ones peers as an early career scientist.

In the afternoon, I attended the Stress Physiology Poster Session (C02 Crop Physiology and Metabolism) in the East Hall of the Tampa Convention Centre (4.00pm-6.00pm). I got to see a number of extremely well presented posters which highlighted work in which I too had a strong interest. The poster that I found most interesting was entitled 'Photosynthesis In Two Contrasting Mexican Landraces Of Maize In Response To Water Stress And High Temperature Under Controlled Conditions.' and was

presented by Sergio Castro. A similar experimental design and a comparable use of equipment we both use, made his poster and findings extremely interesting to discuss.

Tuesday, November 5th 2013

At 7.30am, I set up my poster in the East Hall of the Tampa Convention Centre in order to prepare for the Graduate Student Poster Completion that afternoon (4.00pm-6.00pm). Immediately after setting up my poster, I was able to talk to recruiters from a number of leading US universities about the requirements for taking on a postdoctoral position at their institutions. The recruiters I was able to speak to represented universities including Cornell University, Iowa State University, University of Kansas, Oregon State University and Texas A&M University.

After the poster had been setup, I attended four oral presentations given during the Symposium entitled 'Adaptation of Temperate Crops To Climate Change' in the Tampa Convention Centre (Room 22, 8.30am-12.00am). Much of what was discussed was directly related to my work, such as the talk entitled 'Breeding Tolerance To Drought In Winter Wheat ', presented by Patrick Bryne.

Between 3.00pm and 6.00pm on this day, I was present at my poster discussing my findings and answering questions visitors had. During this period, I was approached by a number of academics and industry experts who found my project extremely interesting. I was able to interact with conference attendees in the fields of crop physiology, plant breeding and Remote Sensing Technology, including Prof. Tim Setter (Cornell University, New York) and Dr. Yoshio Inoue (University of Tsukuba, Japan). Many of the conference attendees, who stopped to talk to me about the poster, found the research extremely novel and our findings intriguing. At 6.15pm, after the Ph.D. students presenting had a chance to look around and ask their own questions, the posters were taken down.

Wednesday, November 6th 2013

On the final day of the conference, I attended the morning Session No. 368 (Water Stress and Temperature Stress) in the Marriott Waterside (Room 1, 10.00am-12.00am). This symposium consisted of eight, 15-minute talks by Ph.D. students and faculty members from around the US. There was a significant amount of overlap between the work that was presented and my area of work. The two key presentations that were of importance to my work were entitled as follows: 'Can Genotypic Variability In Membrane Thermo-Stability and Chloropphyll Flourescence Be Used To Improve Heat Tolerance In Wheat?' (presented by Mariano Cossani, CIMMYT) and 'Identifying Drought Tolerant Wheat Genotypes Using Wireless Infrared Thermometers In The US Southern High Plains' (presented by Gautam Prasad Pradhan, Kansas State). Both projects were of direct relevance to my work and gave me interesting insights into how I could conduct my own research. A number of the results presented during these presentations were in line with findings that I have made as part of my own work. At the end of the session, I was able to discuss my project in greater detail with a number of the speakers who presented during the session.

After having lunch with fellow Ph.D. students who attended the conference, I made my way to the airport to catch my evening flight back to London.