

germplasm is under-exploited, and of unknown contribution to varietal performance in farmers field. He described how varieties need to fit into farmers' crop management. Cereals are being drilled earlier, but to date breeding developments have not exploited the lengthening of the early stages of crop establishment in terms of resource capture. These early drilled crops need to have later onset of reproductive development, to avoid frost damage, and a greater understanding of the genes controlling developmental responses to temperature, day length and vernalisation are essential. Further variation results from geographical location, farm management and climate: the genotype by environment interaction.

A detailed understanding of the existing variation needs to be justified in terms of genotypes for specific environments and the trade-offs which do, without doubt, exist. How much variation is feasible within the UK breeding programme? And what environmental variation is predicted in the future?

The difference in farm yields compared to Recommended List Trials is likely to be dominated by variations between arable fields; to include management, soil, system and climate. Is there a need to switch alliances to focus on the stability of production, compared to optimal yields under increasingly rare, optimal conditions?

The introduction of genetically modified crops may have a place in such a debate, but when breeding programmes have an enormous resource of under-exploited germplasm, of which the physiological basis is unknown, it could be argued that we should be focusing on the genes that are present in successful varieties, to improve the physiological basis of plant breeding.

-Hannah Jones



Water and nitrogen use efficiency and plants and crops

The Olde Barn Hotel, UK, 15–16 December 2010

One only has to open the paper or look at news websites to see that the issue of food security and climate change are becoming headlines. Shortages of water and the cost of fertilizer are clearly going to be problems in particular. The idea for this meeting was to bring together people from plant science, crop science and agriculture to present work and spark some cross-disciplinary ideas and emphasise the need to draw solutions from different areas. Not an easy task but Prof Bill Davies from The Environment Centre at Lancaster University struck the right note with the plenary describing how crop improvement efforts in terms of drought and water use efficiency are now exploring the chemical regulation of growth, development and functioning. Using the example of China which is facing acute water shortages in many regions he described how this approach is already helping to achieve higher water use efficiencies in many parts of the world.

The goal of this meeting was no doubt helped by the diverse backgrounds of the delegates, not just in terms of discipline but geography, coming from Spain,

France, Morocco, Belgium, Sweden, Germany, Malaysia and UK. We are grateful to those who came long distances to contribute. We heard talks covering crops including UK cereals, African Bambara groundnut, biomass crops, potato, salad crops, oil seed rape and others. The level of systems analysed was also diverse from the molecular systems biology of individual plants, crop management to the impact of social changes in farming in China. On a scientific level this was therefore a fascinating opportunity to see how this topic affects food production and the environment and how each discipline has a part to play and some excellent discussion was initiated between and within groups in each session. The venue and catering was ideal for a conference of this size and the bar was definitely large enough! This type of inter-disciplinary meeting seems to represent a theme in AAB at the moment and I notice the upcoming 'systems approach to crop improvement meeting'. I hope these meetings continue to help to bring together plant and agricultural scientists towards common goals.

-Erik Murchie