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Introduction

On a global scale, the demand for dairy products is increasing and is expected to continue to do so. Much of this comes as a result of rising incomes and expectations in the developing world. While 'local' demand in the developed world is somewhat stagnant, or even declining, the opportunities to help to meet rising demands elsewhere, through exports, are real for those with the ambition to meet them.

These opportunities for growth in the dairy sector are, of course, happening at a time of growing concern over the long-term implications of a changing climate and the need to marshal the world's resources more effectively. Right now, they also coincide with disruptions to the smooth running of many parts of the global economy – which to some extent has taken political eyes off the long-term importance of managing our climate and natural resources. But those issues will not go away.

Business reaction to economic challenges and opportunities is leading to larger scale units of production that can be expected to deliver efficiencies of scale but do raise questions about animal welfare and environmental management. The pros and cons for such moves have recently been discussed at the BSAS meeting on 'Does Big mean Bad?' and they will largely relate to enhancing performance efficiency at the top-end of the performance pyramid. On a broader scale, FAO's Global Agenda for Action (http://www.livestockdialogue.org/) identifies the need to lift performance in the less productive parts of the pyramid to raise natural resource use efficiency for the livestock sector as a whole.

As has always been the case, the foundation for success in all of these developments will rest on the natures of the animals involved and their abilities to cope with the (controllable) systems of management and (rather less controllable) natural events with which they are faced. Striking the right balance between matching systems to livestock, or livestock to systems is part of the art of managing production. Within that mixture, the ability of livestock to cope effectively with a range of challenges and expectations is paramount.

In general, we want livestock to live good lives and productive lives. We want them to be robust both for themselves and for our expectations of them. In the papers that follow, 'robustness' as applied to dairy cows is defined in full – it relates to animals' abilities to deal with the challenges of disease, the availability and suitability of feed supplies, life events (birth, weaning, parturition), reproductive efficiency and temperamental fitness. Our abilities to make selection decisions that will deliver these traits have accelerated with the advent of genomic selection tools – although recording appropriate phenotypes at reasonable cost can be a big challenge.

The 'RobustMilk' project, sponsored by EU Framework Programme 7, has shown what can be achieved by the effective combination of resources and gives some important pointers as to how selection for robustness in cows might be achieved to underpin the next stages in the development of the dairy industry. The outcomes from the project have shown that there are good opportunities to achieve improvements both in milk quality traits (for milk and milk products as part of a healthy diet) and for a variety of traits that contribute to 'robustness'. The partners in the project have shown that mid infra-red spectroscopy has potential for rapid phenotypic screening of a number of relevant traits. The project has also demonstrated the potential for interlinking data on whole animal phenotypes from different locations, nationally and internationally. This approach will be of increasing importance as the costs of managing resources for whole animal phenotyping continue to rise – but the importance of having access to 'gold standard' measurements on cows must be maintained.

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