

Symposium Synthesis

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On behalf of the President of EGF and all delegates, I wish to offer thanks and congratulations to our hosts. This has been an excellent meeting. Aslaug Helgadóttir gave tremendous commitment and leadership and had great support from her colleagues. It seems that quite a high proportion of the Icelandic population have been involved in making our stay in Iceland such a valuable and enjoyable experience. I do not think that any country can have more choirs, expert tour guides and story tellers than Iceland! Thanks to you all.

The remaining comments are my own reflections on the Symposium. This has been a truly European meeting with wide attendance. We are seeing the benefits of the multi-national and multi-disciplinary projects on grassland that have been carried out in recent years, often with funding from the EU or through Nordic collaboration. The EGF meetings have provided good fora for the encouragement of these projects and for reporting their progress. This contrasts with the early days of EGF, when most papers reported the results of work carried out in one Institute in one country.

In the Opening Session the hope was expressed that during the meeting the ‘Scientific spirit erupts’ (rather than an Icelandic volcano erupts!). Athole Marshall, EGF President, encouraged ‘Social and scientific interactions’. There has undoubtedly been success in both of these directions. The hospitality and social side has been so good, that it is rather difficult to remember all that has happened!

In this summing up I return to the theme of the meeting – **‘The role of grasslands in a green future: threats and perspectives in less favoured areas’**.

We can draw a very definite conclusion that grasslands will continue to have a major role in less favoured areas. Grasslands are resilient and able to withstand stress, whilst the multi-functionality of grasslands will be crucial, with the ability to supply feed and energy, to contribute to biodiversity, to protect water and the atmosphere and to sequester carbon all being important.

Threats The main threats to grassland systems in these areas are political. Livestock production is dependent on government support and the same applies to energy production and the provision of ecosystem services. Aslaug Helgadóttir put this bluntly with her statement that ‘Iceland’s agriculture is vulnerable and non-competitive: the future rests in the hands of politicians and policy makers’. This comment would apply to grassland in less favoured areas throughout Europe. This support from government is provided because of concerns for food and energy security and for the provision of ecosystem services or non-market goods, and in some cases for maintaining populations in rural areas. Our systems are thus exposed to cuts in overall government expenditure (eg because of economic recession) or reduction in the proportion of funding devoted to agriculture and the environment (eg because of increased priority given to welfare or security).

There are actions that we could take to respond to this threat:

- (a) Research alternatives, in order to provide policy makers with options (but we are less likely than in the past to have sufficient funds to carry out a very broad research portfolio).
- (b) Increase our contact with policy makers in order to understand and influence developments. In this context the involvement of EGF with the EU has increased and, as a result, grassland will have a stronger political voice.
- (c) Make our research effort more effective to deliver increased value for money. The increase in collaborative research is an important move in this direction and the contacts and discussions held at EGF meetings make a big contribution.

Other possible threats are from **climate change** and from alternative uses of land. We have heard though this meeting that the projected increases in temperature are likely to benefit grassland production in northern regions, although perhaps presenting new challenges for the winter survival of some of our grasses. Increased global demands for food and for bioenergy may well produce



pressures to increase **arable cropping** at the expense of grassland (e.g. production of barley in Iceland), but it seems probable that the pressures on grassland from more arable cropping will be greatest in the more favoured areas of Europe. I suspect that **woodland**, either from planned planting or resulting from land abandonment, will be less able than grassland to deliver the required multi-functional outputs.

Perspectives The meeting has discussed approaches to improve production efficiency and to increase ecosystem services from grassland. There are though often conflicts between these objectives.

Considering firstly grassland for the production of feed and animal products, I was struck by progress in four areas:

- (a) Research on mixtures, particularly those involving different functional types. This research is now progressing to increase understanding of the reasons why over-yielding may occur, with attention being given to niches and exploitation of resources.
- (b) Research on forage legumes, again with concentration on using legumes in mixtures with grasses, rather than as pure swards. Many papers reported aspects of the production and quality of legumes and although some problems of persistence remain, much progress has been made. I was surprised though that the only legume that I saw during the Symposium visits in Iceland was the Alaskan lupin, that, although apparently an efficient fixer of nitrogen in challenging conditions, can be toxic to livestock.

- (c) Research on festuloliums. Several papers, particularly Humphreys, reported very positive results with festuloliums of different types, with progress being made in production, quality and environmental benefits. With progress in genetics and prospective increases in temperature in less favoured areas, we may now be poised for festulolium to make a major contribution in practice.
- (d) Research on cold hardening and winter survival. Whilst many of the posters at the Symposium reported agronomic research, it was good to see some posters from Norway and Finland that dealt with more physiological aspects.

Research on using grass as a source of energy has much increased over a short period of time with many papers and posters presented at this meeting. At the International Grassland Congress held in Dublin in 2005, the Scientific Committee, that I chaired, requested the submission of papers on novel uses of grassland, including grass as a source of energy, but we received only one offered paper, and that was from USA. The topic is clearly still controversial, but I thought the papers presented here increased the case for a role in less favoured areas. The paper by Seppälä indicated that the harvest window for ensiling grass for methane production may be broader than that for grass silage for dairying. If confirmed, this could be particularly important for northern latitudes in which changes in grass composition can be very rapid. She stressed the importance of a long harvest season to reduce machinery costs and potential complementarity in the use of grass for energy and for dairy production.



The presentations and discussion on the environmental aspects of grassland were dominated by consideration of carbon sequestration and biodiversity. I was particularly interested in the several posters from Austria that reported the development of techniques for harvesting seed from species-rich grassland and for its subsequent introduction into species-poor grassland. It looks as though this technique could find application in other regions. Most of the papers on biodiversity focussed on the plot or field level. I would have welcomed more attention to biodiversity at the level of the farm or landscape. The poster by Chanséaume touched on this issue and stressed the large impact of 'agro-ecological structures' such as hedges in affecting overall biodiversity.

With the dependence of our grassland systems on governmental financial support, it will be particularly important to identify 'win-win' situations in which a technical development produces benefits both for production efficiency and for the environment.

This is still a difficult challenge, but some emerging possibilities were reported:

- (a) Grignard and colleagues in the Dairyman project reported large variation between farms in the relationship between farm profitability and nitrogen surplus, with some farms combining high profitability with low N surplus (with environmental benefits). It will be important to characterise these systems and to promote their wider use.
- (b) In his invited paper Lüscher indicated that in some treatments, mixtures resulted in more yield with reduced inputs.
- (c) Dumont described an 'ecological' grazing rotation that increased biodiversity whilst maintaining production.

If we are able to identify more of these situations we will be more likely to achieve a positive reaction from politicians and society at large and also be able to reduce dependence on the public purse.

We have had a great debate over the last three days. I wish to thank the organisers again for their hospitality and for putting on such a great meeting. The UK team and the EGF Executive Committee look forward to seeing you in Aberystwyth in September 2014.