

16th EGF Symposium 2011, 28-31 August 2011
Grassland farming and land management systems in mountainous regions

Conference Synthesis

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Ladies and Gentleman,

EGF2011 is coming to an end and it is now my pleasure to summarise and conclude from what we have seen, heard, learned and discussed during the last three days. As I had been involved in EGF businesses and been a member of the Executive Committee of EGF for several years it happened that I came across the official EGF constitution which originates from the sixties of the last century. There, it is laid down what the objectives of this federation are. It simply says that the contact between European grassland organisations should be strengthened and that the interchange of scientific and practical experiences between grassland experts should be promoted. EGF activities such as symposia and meetings should therefore be evaluated against this background.

However, a sound evaluation of EGF activities would require a more thorough consideration of what EGF intends apart from this general aim. And it might be useful to think about the particular nature of grassland science. To achieve this we might take a short look into EGF history. Since ever EGF has been focussing on managed grasslands in an agricultural framework. Rangelands without any agricultural use were not to the fore. Managed grasslands fulfil important functions for man, the production function but also other ecosystem services. The starting point of grassland research is usually a question that arises from the needs of the society or the practical farming. Grassland scientists are concerned with challenges that are more or less directly related to the living and survival of farmers and of society. Due to this, grassland science is often characterised as being an applied science. In his introductory lecture *Buchgraber* strongly pleaded for applied research taking the farmers need into the core of our considerations. I think that we are all quite aware of this and yet, answers to the questions of grassland research often require fairly fundamental methodology which is commonly seen as a specific of basic sciences.

Let me now start my conclusions. First of all I have to admit that my view is inherently biased, so you may apologise if something important is left out. And it is an immediate response, as this synthesis was prepared during this conference.

The first question is whether this conference selected a relevant general theme 'Grassland farming and land management systems in mountainous regions'?

As we have learned, mountainous areas make up 30 % of Europeans total land area and they are scattered all over Europe. Apart from forests, natural and managed grasslands are the dominating vegetation of mountainous areas. Although mountainous grasslands in Europe differ widely in their specific conditions, there are some general features: a rough climate with stronger winters than in the lowlands, lower temperatures, shorter vegetation periods, poorer soils and a land surface with steep slopes and often inaccessibility for common agricultural machinery. Consequently, arable farming is usually not possible and grasslands and grassland based systems are dominating the land use. We might even say that there is no alternative to grassland apart from forests. It is quite obvious that these conditions set tight limits for agricultural management measures and for the improvement of production. That's why we often characterise mountain grasslands as disadvantaged areas. But, this only refers to the production function. In terms of landscape and ecosystem services, mountainous grasslands are not disadvantaged at all - rather they are an extremely valuable resource for society. However production as well as the other functions are highly threatened by processes that we are all aware of: intensification and abandonment of traditional land use, economic pressure on farmers, inadequate farm structure, globalisation of markets, climate change and so on.

This description of the situation of mountain grasslands demonstrates that the chosen theme of this conference is very topical and relevant for farming and society. Feeding ruminants with grass is an excellent mean to maintain the overall value of grasslands. A particular strength is that feeding of ruminants does not compete with that of monogastric livestock or the nutrition of the people. During the tours yesterday we got a strong impression of the relevance of the conference's theme: small farms trying to cope with the limitations of this particular environment and making a living out of grassland farming.

Having now confirmed the relevance of the theme I will be trying to look at how science performed at this conference. The framework was set by the scientific programme which covered the necessary broad range of topics. These can be grouped as follows and with this grouping I follow a somewhat different structure compared to the programme:

- 1) Description, classification and analysis of the resource,
- 2) Drivers of change and the threats to the resource,
- 3) Development of land use and production systems that integrate the multifunction of mountain grasslands.

For my evaluation I will distinguish between results/findings of the research on the one hand and innovation of the methodology of research on the other.

ad 1) Description, classification and analysis of the resource

There was a considerable range of contributions dealing with the description and analysis of mountain grasslands as a resource. Keynote lectures by Hopkins, Buchgraber, Steinwidder or Leitingner demonstrated the size, the importance as well as the variability of the many attributes of this resource throughout Europe. We saw examples of the huge biodiversity of the semi natural grasslands of various countries, e.g. posters by *Rotar* from Romania, *Köster* from Estonia, *Mayer* from Germany and many others. Other function than biodiversity were also tackled, like feeding value and animal performance by posters from *Evangelou* from Greece, *Leisen* from Germany, *Bassignana* from Italy or *Chodkiewicz* from Poland, or energy production by posters from *Richter* and *Claus* from Germany. There were also interesting methodological approaches being presented. *Burrascano* from Italy, *Orth* from France or *Gisela Lüscher* from Switzerland demonstrated nice pieces of top-down research looking at landscape or system effects on target variables of ecosystem functioning. Another example being from *Plantureux* and colleagues from France who developed a system by which they could classify French managed grasslands on a quantitative basis with regard to its many functions. System approaches were also presented by *Hovstad* from Norway or *Veysset* from France. Finally today, *Schellberg* showed new ways to approach the relationship between vegetation cover, resource availability and ecosystem functioning by using plant functional traits rather species composition or identity. This new methodology stems from botany and vegetation ecology but, in general, agronomists and grassland scientist have used such functional approaches since ages, albeit termed differently, when they selected species for their particular properties for farming. These examples could show that such measurements and the appropriate methodology are urgently needed to direct future research as well as political actions.

ad 2) Drivers of change and the threats to the resource

Along with the description and analysis of the resource, emphasis was placed on threats to the resource and the drivers of change. Accordingly, we again saw many examples of the threats and challenges to mountain grasslands and farming. First of all we heard of the socio economic pressure on the farms to maintain their business. There is no way, if farmers were not able to survive in economic terms, all the valuable functions of grasslands would be at risk. However, there were quite a few examples on how farmers threaten the functions of mountain grasslands themselves. In order to maintain phyto-diversity, there is almost no compromise with moderate or heavy fertilisation, as was shown e.g. by *Garcia* from Spain. Only light fertilisation with little amount of nitrogen has some potential for increasing yield without harming phyto-diversity as was shown by *Pacurar* from Romania or *Tonn* from Germany. Abandonment of regular utilisation is also a threat to grassland diversity as was shown by *Gaisler* and *Pavlu* from the Czech Republic, *Pornaro* from Italy or *Bohner* from Austria. Another example of threat are invasive plant species for which examples were given for various species and countries.

A large driver of change is the climate. We saw an interesting methodological approach by *Trnka* from the Czech Republic in his keynote lecture where he was trying to link regionalised climate change models with results of a cluster analysis of environmental zones. This could be a starting point for in-depth research in regionalised impact analysis of other drivers of change such as the socio-economic framework and farmers adaptations to it. In conclusion of this topic we learned that mountain grassland systems are highly vulnerable and that at best only a fragile balance between the various functions will be achieved.

ad 3) Development of land use systems, of production systems that integrate the multifunction of mountain grasslands

The highest number of contributions could be allocated to this topic. I will not be able to cover the full range of items rather I will focus again on some methodological aspects.

Mountain grasslands are a huge resource of genetic diversity. This is already widely used today but is likely to be an insurance for future challenges. Quite a few examples for this were presented. Native species and traits are considered for particular purposes of farming. Species are being selected as a feed source such as legumes in Serbia or Italy (examples were given by *Mihailovic* or *Porqueddu*), or forage and even edible species for man (being investigated by *Kyriazopoulos* from Greece).

Krautzer in his keynote lecture highlighted the importance of semi-natural grasslands as a genetic source for the restoration of grasslands. Many contributions were dealing with nutritional attributes of milk and meat from grasslands. This is obviously a rising topic as it offers the opportunity for premium prices for grassland products.

It was said that mountain grasslands are limited by their low feeding value. We saw several examples which demonstrated the potential of grasslands for feeding livestock and that at the feeding value level as well as at the animal system level there is room for improvement. I refer to the work from *Lunnan* in Norway, who showed a high nutritive value of secondary species or to the keynote lecture by *Thomet* with a grazing approach to improve the agronomic output of grasslands.

In summarising this topic I got the strong impression that much research is being undertaken but that there is a strong need to develop system approaches. A start in this respect has been made on this conference but it is also quite obviously a methodological challenge. It is however needed if the various functions of mountain grasslands are to be integrated into sustainable systems.

I am now coming back to EGF constitution. A major aim is to promote the interchange between scientists. This does not only require a media for exchange such as internet, paper journal or a lecture room. Science is done by people and the performance of the people depends on whether they feel good in a friendly atmosphere. So, a successful conference provides such an atmosphere. I am pretty sure that all of us would agree that Gumpenstein provided such an excellent environment in this respect. It is not only the landscape, the mountains and what we saw outside during our days here, it is in particular the overwhelming hospitality of our Austrian colleagues. Simply spoken, the conference was excellently organised, everything went smooth and throughout all delegates seemed to be in a good mood. Putting this performance in a scoring system I would suggest 21 points out of 21 possible points.

Coming to an end now and putting my long story in short:

- EGF2011 addressed the relevant questions
- It provided new scientific insights and scientific methodology
- New scientific challenges and questions arose
- The organisers created a fantastic environment for a successful conference

Thank you for your attention!!