

Synthesis of the Joint EGF-EUCARPIA Symposium 2019

A most interesting conference is coming to an end and it is an honourable duty for us to provide a brief synthesis of this very first joint EGF-EUCARPIA-symposium that has been held at this famous and dignified research institution, the ETH Zürich.

Scientific programme

Firstly, we are going to talk about the science. That is what conferences are all about. Science aims at understanding the world – why are the things as they are? Therefore scientists – and this is the very same of course with grassland scientists and plant breeders – always like to ask questions and they feel excited about the process to find answers to these questions or reliable solutions for occurring problems and challenges in practice. Grassland science is exciting, fascinating and even more than that. However, good science in our disciplines should also be relevant for all of us and it should be in constant touch with practice, advisory services and other stakeholders involved.

Scientific conferences such as this symposium are a major and essential part of grassland science in Europe. They provide a perfect platform for scientific discussion on grassland issues and enable furthermore:

- to exchange knowledge and recent results,
- to bridge and inspire grassland scientists from different countries in and outside of Europe
- to develop visions for the future of research and practice,
- and finally, to support a common understanding of current and future needs and challenges for grassland and grassland management

We fully support EGF Past President Frank O'Mara's comment during the opening session that face-to-face meetings are essential to scientific progress – as much exchange of ideas and development of new research happens in the hallway as in the sessions themselves.

The question now is how the Zürich-symposium 2019 got on with all these duties and expectations. First of all, we must say that we found the overall scientific quality very high. Colleagues from 19 out of 33 participating countries were giving talks and there was a very good balance concerning gender. The issues were highly topical, the speakers were very well chosen, and the contributions had a high standard throughout, good contents and were well presented. In particular, the young scientists were enthusiastic and excited about their science and one could feel that quite well.

Another question that occurs when synthesising a conference is, whether the subject and the chosen themes were relevant? 'Improving sown grasslands through breeding and management' was indeed a well-chosen and timely subject and this fortunately bridged people from the world of plant breeding and from the grassland production world.

This joint meeting of the EGF and EUCARPIA Fodder Crops and Amenity Grasses Section truly covered gene to landscape. If we are to successfully address climate change, environmental issues, and crop productivity, we all must be aware of this entire continuum and how our work fits with others at different hierarchical levels. Thus, holding this joint conference was an excellent opportunity for grassland ecologists and managers to hear about breeding and genetics advances and vice versa!

Opening Session

Right after an excellent introductory lecture, given by the conference secretaries Andreas Lüscher and Roland Kölliker, we heard four fantastic and very clear plenary presentations on efficient and multifunctional forage production on sown grasslands covering both aspects of grassland management and breeding as well. The first parallel sessions provided an interesting insight into

aspects of biodiversity of intensively managed grasslands and grass-clover mixtures on the one hand and put a strong emphasis on molecular genetics and genomics for improved breeding of forages, geographically ranging from Norway to New Zealand.

Sown grasslands

In the session about improving sown grasslands and their management for future challenges we heard and learned a lot about fertilization, trampling resistance, overyielding and the economy value of grass-clover-mixtures. Some presentations in this theme also covered the effects of water stress and drought on sown and permanent grassland. We were introduced to the benefits of genome tools for plant breeding and grassland production as well. Strong emphasis was also placed on the quite complex plant-soil-microbe interactions in multi-species swards, where we got a highly interesting insight in the – at least for most of us – hidden grassland underground.

Breeding and genetics

The breeding and genetics sessions covered cultivar development, seed production, and commercialization at one end and basic genetics, such as understanding the genes controlling self-compatibility, at the other. The genomes of Italian and perennial ryegrass are being sequenced, with significant progress toward a pan-*Lolium-Festuca* genome project underway. The stability of genomes in hybrids was discussed, of great importance for *Festuloliums*, which will have an increasing role in a changing climate. A major theme of the congress across the two organizations was the interactions among species on grassland performance. From the breeding side, we heard excellent talks about harnessing the power of endophytes to improve grasses and about understanding legume symbioses. We had some discussion on breeding forages for performance in mixtures, long an interest of many breeders, but often hindered by methodological complexities. Perhaps this congress will help each side think more deeply about breeding objectives and methods regarding multispecies mixtures so that cultivar development will dovetail with the expectations for multifunctional grasslands more fully.

Genomic prediction and high throughput phenotyping

Probably the two main issues in breeding today are around genomic prediction and high throughput phenotyping. The general feeling is that genomic selection/prediction will work in various crops and for different traits, although the exact way these tools are applied to programs is still being worked out. Sensor-based phenotyping has advanced significantly in a few years, and we are seeing very promising results suggesting that complex traits like yield and perhaps quality can be predicted using various sensing techniques, especially when coupled with artificial intelligence/machine learning data analytics.

New methods

Finally, new, promising methods and technologies were presented to assess plant traits, swards and forages. We could see here that an increasing number of countries and institutions are dealing with this topic that opens new prospects. The last session focussed on the collaboration between practice and research, which is essential for several good reasons and should be built up and strengthened but should never got lost.

Workshops

There were also workshops offered, one on *Festulolium* that might be of increasing interest in terms of climate change and another one on the collaboration between practice and research that is of great importance. Not to forget of course the most interesting workshop on Sunday afternoon, dealing with DeltaGen – the one-stop-shop for plant breeders.

Scientific contributions

In addition to the keynotes, invited papers and oral presentations, 145 posters allocated to 7 different themes were prepared and introduced and they all competed for one of the highly desired awards.

Mid-conference tours

Four very well-organized mid-conference excursions brought us to most interesting places in the surrounding of Zürich and offered a wide range of scientific topics and research activities as well. The weather conditions during the excursions were quite demanding and one could presume that we became part of a well-designed drought experiment that probably will end up with the analysis of some legacy effects at the next conference.

Social events

Let us now switch to the social part of the conference that is also of great relevance. We were perfectly hosted by our Swiss friends and we received most delicious culinary specialities during the entire conference – we just want to remind you on the fantastic cheese selection we could enjoy at the welcome reception on Monday evening that was accompanied with the impressive chorus coming from the Appenzell region. Another social highlight of course was the conference dinner at an absolutely inviting place right next to the Lake Zürich. Here we not only received an excellent dinner but there were also addressed some wishes and requests to grassland science by the representative of the Swiss farmers association and we learned another lesson – Switzerland not only has the best cheese but also the best chocolate!

We also like to mention the very exciting programme for associate delegates with numerous highlights in and around Zürich and accompanied by well experienced and highly motivated guides. And we must also not forget the two day post-conference tour that will start shortly and will cover highly attracting destinations and landmarks from Zürich to Grangeneuve and Posieux.

Thanks to the organisers

One can easily imagine that there is a lot of work behind such a conference including all different aspects mentioned before. So therefore, we would like to thank all people who were involved in the organisation of this joint meeting. Special thanks go to the general secretaries Roland Kölliker and Andi Lüscher but also to the entire multitasking team (Beat Boller, Paolo Demaria, Christoph Grieder, Olivier Huguenin-Elie, Jürg Jordi, Willy Kessler, Beat Reidy, Manuel Schneider, Franz Schubiger, Bruno Studer, Daniel Suter and Mathias Suter), who were so busy, present and helpful all the time.

Science is done by people and the performance of the people depends on whether they feel good in a friendly atmosphere. You – dear Swiss colleagues and friends – provided this atmosphere and good environment for all participants and made our stay more than comfortable.

Simply spoken, this joint EGF-EUCARPIA 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, we would suggest 10 points out of 10 possible points.

Putting this long story in short

- EGF-EUCARPIA 2019 addressed the relevant questions
- It brought together scientists from both fields and thus enabled fruitful discussions and interactions (was a specific aim of this conference)
- It provided new scientific insights and scientific methodology
- New scientific challenges and questions came up
- The organisers created a fantastic environment

Thank you again for your great hospitality and congrats to this most successful joint conference!

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