21st Symposium of the European Grassland Federation

'Sensing – New Insights into Grassland Science and Practice'

Scientific programme (last updated on 15.05.2021)

Monday, 17.05.2021	
9:00 – 9:30	Opening of the online room and entry of the participants
9:30 – 10:00	**Opening session** Chair: Michael Wachendorf, Universität Kassel, Grassland Science and Renewable Plant Resources, Germany Welcome notes by - *Michael Roth, Minister of State for Europe at the Federal Foreign Office of Germany* - *Reiner Finkeldey, President of Universität Kassel*
10:00 – 11:00	**Introductory session** Chair: Michael Wachendorf, Universität Kassel, Grassland Science and Renewable Plant Resources, Germany
10:00	Towards an informed grassland farming – Shortfalls and perspectives. *Johannes Isselstein, University of Göttingen, Department of Crop Sciences, Grassland Science, Germany*
10:30	Towards an informed grassland farming – Sensors, platforms and algorithms. *Georg Bareth, University of Cologne, Institute of Geography, GIS & RS Group, Germany*
11:00 – 11:30	Coffee break
11:30 – 12:30	**Plenary session of Theme 1: Biomass and quality characteristics** Chair: Manuel K. Schneider, Agroscope, Forage Production & Grassland Systems, Switzerland
11:30	Drone-based remote sensing of sward structure and biomass for precision grazing: state of the art and future challenges. *Jérôme Bindelle, Université de Liège, Precision livestock and nutrition unit, Belgium*
12:00	Remote sensing for grassland quality assessment: Status and Prospects. *Thomas Astor, Universität Kassel, Grassland Science and Renewable Plant Resources, Germany*
12:30 – 13:30	Lunch break
13:30 – 15:00	**Short presentations of Theme 1: Biomass and quality characteristics** Chair: Manuel K. Schneider, Agroscope, Forage Production & Grassland Systems, Switzerland
	Estimating biomass yield and growth response to temperature in red clover using terrestrial laser scanning. *Lukas Kronenberg, ETH Zurich, Department of Environmental Systems Science, Switzerland*
	How can commercial field spectrometers be used to estimate digestibility of grasslands? A case study with the Yara-N sensor. *Julien Morel, SLU, Sweden*

	Evaluation of simple vegetation indices to estimate forage yield and quality of different fertilized grassland. *Andreas Schaumberger, HBLFA Raumberg-Gumpenstein, Grassland Management and Cultural Landscape, Austria*
	Information on yield proportion of grasses slightly improves the estimate of dry matter yield based on LAI. *Giovanni Peratoner, Laimburg Research Centre, Mountain Agriculture, Italy*
	Potential of Sentinel-2 and optimal spectral configuration to assess forage quality in high-diverse Mediterranean permanent grasslands of Dehesas. *Jesús Fernández-Habas, University of Cordoba, Department of Forest Engineering, Spain*
15:00 – 15:30	Coffee break
15:30 – 17:00	**Poster session of Theme 1: Biomass and quality characteristics** Posters of Theme 1
from 19:00	**Evening programme** EGF2021 virtual wine tasting in cooperation with Hochschule Geisenheim University

Tuesday, 18.05.2021	
9:30 – 10:00	Opening of the online room and entry of the participants
10:00 – 11:00	**Plenary session of Theme 2: Biodiversity and other ecosystem services** Chair: Anne Schucknecht, Karlsruhe Institute of Technology (KIT), Germany
10:00	Remotely sensed insights into grassland biodiversity. *Duccio Rocchini, Alma Mater Studiorum University of Bologna, Italy*
10:30	Grassland vegetation monitoring: scale is important. *Adriana Marcinkowska-Ochtyra, University of Warsaw, Chair of Geomatics and Information Systems, Poland*
11:00 – 11:30	Coffee break
11:30 – 14:00	**Short presentations of Theme 2: Biodiversity and other ecosystem services** Chair: Anne Schucknecht, Karlsruhe Institute of Technology (KIT), Germany
	Detection of Mowing Events from combined Sentinel-1, Sentinel-2, and Landsat 8 Time Series with Machine Learning. *Felix Lobert, Thünen Institute of Farm Economics, Germany*
	Using yellowness in drone-based RGB images to map buttercup cover in an upland pasture. *Manuel K. Schneider, Agroscope, Forage Production & Grassland Systems, Switzerland*
	Mapping invasive Lupinus polyphyllus Lindl. in grasslands from UAV-borne remote sensing images. *Jayan Wijesingha, Universität Kassel, Grassland Science and Renewable Plant Resources, Germany*
	Lunch break (ca. 1 hour)
	Using image analysis and machine learning to estimate sward clover content. *Deirdre Hennessy, Teagasc, Animal and Grassland Research and Innovation Centre, Ireland*
	First results of applying UAV Laser scanning to a cattle grazing experiment. *Christoph Hütt, Universität zu Köln, Institute of Geography, Germany*
14:00 – 15:30	**Poster session of Theme 2: Biodiversity and other ecosystem services** Posters of Theme 2

from 19:00	Evening programme
	Informal networking (online) including the live performance of the storyteller and musician Nick Hennessey

Wednesday, 19.05.2021	
9:30 – 10:00	Opening of the online room and entry of the participants
10:00 – 10:30	Plenary session of Theme 3: Management and Decision Support Chair: David Parsons, SLU, Sweden
10:00	The role of remote sensing in practical grassland farming. *Stuart Green, Teagasc, Ashtown Food Research Centre, Spatial Analysis, Dublin, Ireland*
10:30 – 12:30	Short presentations of Theme 3: Management and Decision Support Chair: David Parsons, SLU, Sweden
10:30	A novel dynamic model for estimating nitrogen availability and demand in grass crops harvested for silage production. *Anne-Grete Roer Hjelkrem, Norwegian Institute of Bioeconomy Research, Norway*
10:45	Movement behaviour of cattle analysed with GPS data as affected by three different grazing intensities. *Dina Hamidi, University of Göttingen, Department of Crop Sciences, Grassland Science, Germany*
11:00	Detection of Senecio jacobaea in drone images, using a machine-learning approach. *Lukas Petrich, Ulm University, Institute of Stochastics, Germany*
11:15	The effect of virtual fencing technology on grazing behavior: differences in herbage consumption and grazing patterns. *Natascha Alexandria Grinnell, University of Göttingen, Department of Crop Sciences, Grassland Science, Germany*
11:30	Monitoring of water content in legume seed propagation after crop desiccation using multispectral UAV images. *Lukas Gaier, Agricultural research and education centre Raumberg – Gumpenstein, Austria*
12:30 – 13:30	Lunch break
13:30 – 15:00	Poster session of Theme 3: Management and Decision Support Posters of Theme 3
15:00 – 16:00	Closing session Chair: Michael Wachendorf, Universität Kassel, Grassland Science and Renewable Plant Resources, Germany - Next EGF meeting - *Jean-Louis Peyraud, President of the European Grassland Federation* - IGC news - *S. Ray Smith, Chair of the International Grassland Congress Continuing Committee* - EGF2021 poster award ceremony
16:00	End of the symposium

Posters of Theme 1

Remote sensing-based estimation of nitrogen fixation in organically managed legume-grass mixtures
Astor T., Grüner E. and Wachendorf M.

Monitoring rangeland biomass during wet and dry seasons from a video obtained with a simple digital camera
Diedhiou A., Diatta O., Ndiaye O., Bossoukpe M., Ngom D., Julien L., Toure I., Diouf A. A., Bayet T., Cambier C., Faye E. and Taugourdeau S.

Detection of grassland mowing events with optical satellite time series data
Reinermann S., Asam S., Gessner U., Schucknecht A. and Kuenzer C.

Generalizability of multi- versus single-target regression for herbage mass and quality prediction from multispectral imagery
Simmler M., Hart L. and Liebisch F.

From the field to the region – monitoring pre-Alpine grassland characteristics at different spatial scales
Schucknecht A., Seo B., Reinermann S., Krämer A., Asam S., Atzberger C. and Kiese R.

UAV to measure canopy height and plot biomass in a lucerne variety trial
Surault F., Roy E., Mahieu S., Combes D., Ghesquière M. and Julier B.

Using UAV-borne imagery for plant height measurements of perennial forage species by photogrammetry
Roy E., Mahieu S., Surault F., Combes D., Louarn G., Frak E. and Ghesquière M.

Estimating grassland biomass using multispectral UAV imagery, DTM and a random forest algorithm
Sutter M., Aebischer P. and Reidy B.

Remote sensing data fusion and feature selection for biomass prediction in extensive grasslands invaded by *Lupinus polyphyllus*
Schulze-Brüninghoff D., Astor T. and Wachendorf M.

Using polygon grids to upscale ultra-high resolution UAV data for monitoring pastures
Bareth G. and Hütt C.

Use of Sentinel-2 images for biomass assessment in extensive pastures in the Apennines (Central Italy)
Bellini E., Argenti G., Moriondo M., Staglianò N., Pugliese C., Confessore A., Aquilani C., Nannucci L., Bozzi R. and Dibari C.

A tool to select the best parental genotypes by combining lab and field tests
Statkevičiūtė G., Kemešytė V., Aleliūnas A. and Jaškūnė K.

Estimating standing biomass of sown biodiverse pastures using a combination of remote sensing and machine learning
Morais T.G., Jongen M., Rodrigues N.R., Gama I., Domingos T. and Teixeira R.F.M.

Predicting herbage yield in perennial ryegrass breeding trials using UAV derived data and machine learning
Pranga J., Borra-Serrano I., Aper J., Ghesquiere A., Roldán-Ruiz I., Janssens I., Ruysschaert G. and Lootens P.

Evaluation of a grassland drought index based on LAI from remote sensing and meteorological data
Peratoner G., Greifeneder F., Castelli M., Crespi A., Zellner P.J., Vianello A., Morlacchi M., Pasolli L., Bartkowiak P., Notarnicola C., Monsorno R. and Zebisch M.

Validation of a workflow based on Sentinel-2, Sentinel-1 and meteorological data predicting biomass on pastures
Nickmilder C., Tedde A., Dufrasne I., Lessire F., Tychon B., Curnel Y., Bindelle J. and Soyeurt H.

Case study on monitoring sward height and available biomass with a rising plate meter on pastures of dairy farms in Southwest Germany
Werner J., Stumpe C., Höhn D., Bateki C. and Dickhöfer U.

Influence of microplastics on the leaf temperatures of ryegrass
Cornelsen H. and Wrage-Mönnig N.

The potential of unmanned aerial vehicle (UAV)-based multispectral data to estimate fresh grass allowance
Klootwijk C. W., de Boer I. J. M., van den Pol-van Dasselaar A., Holshof G., Fraval S. and van Middelaar C. E.

Grass quality measurement with a handheld NIR sensor
Bussink D.W., Sarjant S., Thijssen D. and Luleva M.

Posters of Theme 2

Assessment of rangeland condition in a dryland system using UAV-based multispectral imagery
Amputu V., Tielbörger K. and Knox N.

Permanent grassland established on eroded soils: floristic composition of different sections of a hillside after 27 years of sward naturalization following sowing
Matyziute V. and Skuodiene R.

Initial evaluation of PlanetScope nanosatellite images applicability for identification of grazed plant communities
Radkowski A., Radkowska I., Drzewiecki W., Pirowski T. and Szewczyk W.

Wide-area monitoring of soil moisture in peatlands using Sentinel-1 images
Yang C-H., Mader S., Müller S., Haub C., Müterthies A. and Herrmann A.

European Monitoring of Biodiversity in Agricultural Landscapes (EMBAL)
Lindemann D., Oppermann R., Sutcliffe L., Moser D. and Haub C.

Lifting the secrets of pastures: Overview of animal-borne sensors to uncover processes unobserved by classical grassland research
Pauler C. M. and Schneider M. K.

Springtime grazing for meadowbird conservation
Hoekstra N.J., de Wit J. and van Eekeren N.

Effects of innovative management options on perennial grassland in the mountain area of Switzerland
Mack G., El Benni N., Tindale S., Hunter E., Newell Price P. and Frewer L.

Mapping grassland management and habitats with satellite and ground level imagery through machine learning
O'Hara R., Saad M., Zimmermann J., Green S., Finn J., MacNamee B., McGuinness K. and O'Connor N.

Posters of Theme 3

Training cattle with virtual fences on permanent pastures
Hamidi D., Grinnell N. A., Horn J., Riesch F., Komainda M., Ammer S., Traulsen I. and Isselstein J.

Assessing feed efficiency in grazing dairy cows through infrared thermography and behaviour sensors
Haak T., Münger A., Südekum K.-H. and Schori F.

Automated detection of grazing behaviour with a collar-based monitoring system
Schmeling L., Thurner S., Nicklas D., Erhard M. and Rauch E.

Using LiDAR derived Digital Terrain Models and field data to quantify riverbank erosion and nutrient loading rates
Hayes E., Higgins S., Geris J. and Mullan D.

Using GPS sensors to estimate automatically the time dairy cows spend on pasture
Fischer A., Charpentier C., Lonis W., Philibert A., Allain C. and Lebreton A.

Use of drones with infrared cameras to search for fawns before mowing – experiences from practice
Mačuhová J., Wiesel T. and Thurner S.

Testing the validity of a precision dairy ear sensor technology in recording grazing time
Grinnell N. A., Hamidi D., Riesch F., Horn J., Komainda M., Ammer S., Traulsen I. and Isselstein J.

Identifying areas of homogeneous grassland management based on iterative segmentation of Sentinel-1 and Sentinel-2 data
Wesemeyer M., Schwieder M., Pickert J. and Hostert P.

Estimating grassland biomass from Sentinel 2 – a study on model transferability
Buddeberg M., Schwieder M., Orthofer A., Kowalski K., Pfoch K., Hostert P. and Bach H.

Tools for information to farmers on grasslands yields under stressed conditions to support management practices – the GrasSAT project
Dąbrowska-Zielińska K., Goliński P., Jørgensen M., Davids C. and Persson T.

Accuracy improvement of Rising Plate Meter measurements to support management decisions in the Black Forest region
Stumpe C., Werner J. and Böttinger S.

Botanical composition and progress of the growing season affect assessments of herbage yield based on compressed sward height
Peratoner G., Mittermair P. and Mairhofer F.

Development of a digital tool adapted to pasture management in South-West Germany
Krug P., Weber J. F. and Elsäßer M.