International Conference on Research on Food Security, Natural Resource Management and Rural Development

Tropentag 2026

Towards multi-functional agro-ecosystems promoting climate-resilient futures









Book of Abstracts

Wednesday - Friday, September 16 - 18 2026

University of Göttingen -
Campus Centre of Biodiversity and Sustainable Land Use &
University of Kassel - Center for International Rural Development

www.tropentag.de

Organised by:

ATSAF

UNIKASSEL VERSITÄT

GA

Tropentag 2026

International Research on Food Security, Natural Resource Management and Rural Development

Towards multi-functional agro-ecosystems promoting climate-resilient futures

Book of abstracts

Editor: Eric Tielkes

Reviewers/scientific committee: Christian Bateki Adjogo, Tina Beuchelt, Andreas Buerkert, Liesbeth Colen, Kira Fastner, Oliver Gailing, Christoph Gornott, Claudia Heindorf, Christian Hülsebusch, Gudrun B. Keding, Christoph Kleinn, Eike Luedeling, Daniel Mörlein, Chikonkolo Mwewa Mwape, Simone Pfeiffer, Tobias Plieninger, Maria Jose Restrepo Rodriguez, Regina Rößler, Reimund P. Rötter, Lilly Scheiterle, Eva Schlecht, Samar Sheat, João Vasco Silva, Heidi Webber, Martin Wiehle, Meike Wollni

Impressum

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detailierte bibliografische Daten sind im Internet über https://portal.dnb.de/ abrufbar.

Tropentag 2026: Towards multi-functional agro-ecosystems promoting climate-resilient futures
Tielkes, E. (ed.) - Witzenhausen, DITSL

© Deutsche Institut für Tropische und Subtropische Landwirtschaft (DITSL)
Steinstrasse 19, 37213 Witzenhausen
Telefon: 05542-6070
https://www.ditsl.org

Alle Rechte vorbehalten. Dieses Werk ist urheberrechtlich geschützt. Die dadurch begründeten Rechte, insbesondere die der Übersetzung, des Nachdrucks, der Funksendung, der Mikroverfilmung oder der Vervielfältigung auf anderen Wegen sowie der Speicherung in Datenverarbeitungsanlagen, sind ohne Genehmigung der Urheberrechtsinhaber nicht gestattet.

The authors of the articles are solely responsible for the content of their contribution. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without prior permission of the copyright owners.

Online-Versionen: https://www.tropentag.de/
https://cuvillier.de/de/shop/publications/9440-tropentag-2026

© CUVILLIER VERLAG, Göttingen 2026
Nonnenstieg 8, 37075 Göttingen
Telefon: 0551-54724-0
www.cuvillier.de
ISBN: 978-3-68952-613-9
eISBN: 978-3-68952-614-6
ISNI: 0000000045248457

Exploring the productivity of underutilised grassland forage C3 species under temperate and sub-tropical climatic conditions

Sevgi Karaman[1,2], Cornelius Ebert[2], Johannes Isselstein[2], André F. Sbrissia[3], Igor Rodrigues Waltrick[3], Martin Komainda[4]

[1]*Selçuk University, Dept. of Fields Crops, Türkiye*
[2]*University of Göttingen, Dept. of Crop Sciences, Grassland Science, Germany*
[3]*Santa Catarina State University, Dept. of Animal Production and Food Sci., Brazil*
[4]*University of Kiel, Germany*

Temporary grasslands are not only a source of forage but also play a role in soil health, environmental protection, and sustainable agriculture. However, climate change is threatening the productivity and resilience of grasslands. Increasing interspecific and intraspecific diversity is suggested to counteract this development. In order to achieve this, the yield potential of species and accessions, including so far underutilized ones, under different climatic conditions has to be explored in order to find locally adapted functioning species. A field experiment was conducted in Germany and Brazil using a randomized block design, evaluating six forage species grown in pure stands differing in intraspecific diversity, i. e., one vs. two to three accessions. The selected species – two grasses (*Dactylis glomerata* and *Festuca arundinacea*), two legumes (*Onobrychis viciifolia* and *Lotus corniculatus*), and two non-leguminous dicotyledonous forage herbs (*Achillea millefolium* and *Plantago lanceolata*) – are representative of multispecies grasslands. Mineral fertiliser (CAN, 27% N) was applied at a rate of 120 kg N ha^{-1} yr^{-1} to non-legume plots in Germany and across all plots in Brazil. For Germany, the mean yield across two main production years, whereas for Brazil annual yield was derived from one experimental year. The data was analysed using linear mixed-effects models, with Tukey's HSD tests employed for pairwise comparisons of means. Species significantly affected productivity, with responses varying between sites ($p \leq 0.001$). In Brazil, *O. viciifolia* showed significantly lower productivity than all other species likely due to poor establishment. In contrast, in Gemany, *O. viciifolia* showed the highest production and *P. lanceolata* the lowest. While accessions had no main effect, its influence depended on the specific species-site combination, as indicated by the significant three-way interaction ($p < 0.05$). More accessions significantly increased productivity of *Festuca arundinacea* at both sites and of *L. corniculatus* and *P. lanceolata* in Germany. In contrast, there was no significant difference among accessions in Brazil. This pattern may reflect local adaptation and environmental filtering, with less-adapted accessions diluting the performance of an otherwise superior accession and reducing productivity in mixtures with more accessions. These findings show accession diversity benefits depend on context, emphasizing region-specific selection and breeding for sustainable grasslands.

Keywords: Accessions, grasses, herbs, legumes, productivity

Contact Address: Sevgi Karaman, University of Göttingen, Dept. of Crop Sciences, Grassland Science, Von-Siebold.str 8, Göttingen, Germany, e-mail: sevgi.karaman@uni-goettingen.de