

THIS ISSUE

- **LegumeLegacy** training event in Wageningen, the Netherlands: Results & Highlights
- **European Grassland Federation (EGF)** General Meeting, 13-16 April 2026, Évora, Portugal: Poster presentations from Ellen, Julian, Prasanth and Meret



Final project meeting as closing conference

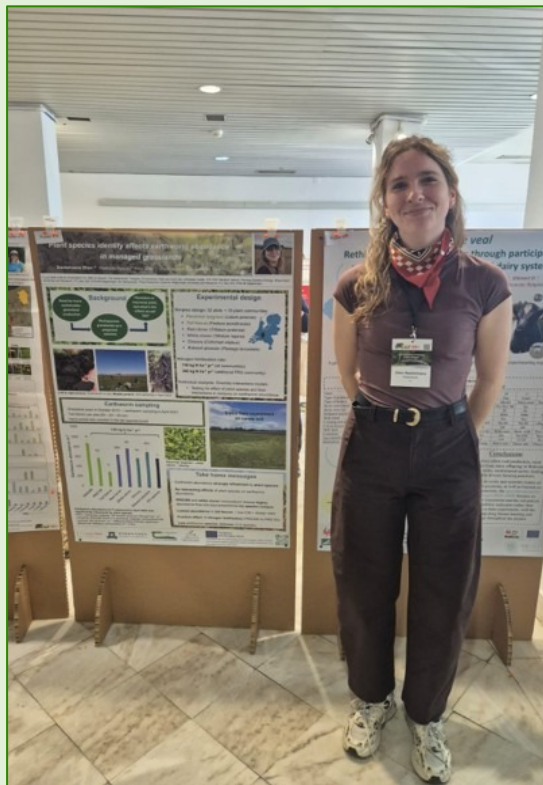
Although it feels like yesterday that LegumeLegacy began in 2023, we have now gathered in Wageningen, the Netherlands for our last in-person meeting as a full consortium, marking the end of this journey for some of us. The programme included three field visits, giving insights from a local farmer growing multispecies swards for his dairy herd, a plant breeding field trial testing multispecies mixtures and a demonstration of different insect traps to record insect abundance. Doctoral Researchers Die Hu, Rouven Lattner and Emery Wang taught a statistics session about mixed models.

Finally, all DRs presented their results of the past three years' work. It was truly enlightening to see and hear all the DRs present their work and results that have - as Jørgen Eriksen quite fittingly put it - already advanced our understanding of multispecies swards immensely. Although many results are still preliminary and not published in scientific journals yet, we can provide a preview into some highlights: We found clear evidence of weed suppression in functionally diverse mixtures across a wide range of environments, as well as yield gains driven by interactions between different functional groups. While legumes play a key role, non-leguminous forbs bring additional benefits, both in the grassland stage and for the follow-on crop. We found evidence for complementarity mechanisms above- and belowground, enhanced diversity effects under abiotic stress, differences depending on soil types, species changes depending on their competitive environment, impacts on soil microbes, possibilities of determining the species composition genetically or with machine learning. Last but not least, we found legacy effects from the grassland mixtures on the follow-on crop, with trade-offs between maximising benefits in the grassland and the follow-on crop stage. Keep an eye on this space for results demonstrating the multifunctionality of multispecies mixtures and the benefits of high diversity.

Meret Kaspereit

DR Poster Presentations at EGF Conference in Portugal

European Grassland Federation (EGF) General Meeting,
13-16 April 2026, Évora, Portugal



White clover and nitrogen boost earthworm abundance

At this year's EGF conference in Évora (Portugal), Ellen Baekelmans had the opportunity to present her work on the effects of plant species composition on earthworm abundance in managed grasslands. In a three-year field experiment on sandy soil, she found that earthworm abundance was highest in white clover monocultures, and lowest for tall fescue. Combining different plant species in mixtures did not lead to extra positive or negative effects. She also found that there was a positive effect of nitrogen fertiliser on the earthworm abundance in perennial ryegrass monocultures.

During the poster presentations, she had some insightful discussions on why these differences occur. This highlights that participating in and presenting at (inter)national conferences, that gather experts together, is of invaluable importance to improve research skills, understanding of the topic and for early career researchers as it allows them to build an international network and interact with experts.

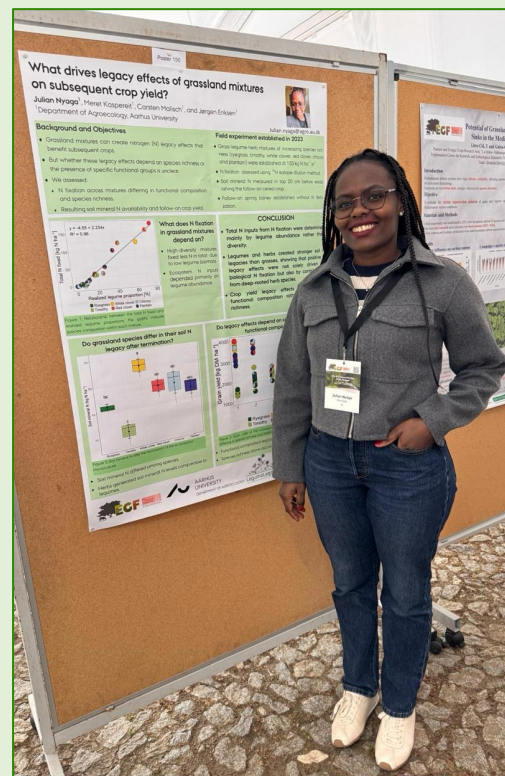
Ellen Baekelmans

Nitrogen legacy effects from grassland mixtures

At the EGF conference, Julian presented findings on how grassland mixtures influence nitrogen fixation during the grassland phase and the performance of crops grown after grassland termination. The study compared mixtures of grasses, legumes, and herbs. During the grassland phase, nitrogen inputs from fixation depended mainly on the abundance of legumes in the mixture. As a result, nitrogen inputs in more diverse mixtures were significantly lower because of the reduced proportion of legumes.

Following grassland termination, soil mineral nitrogen and grain yields of spring barley were highest where legumes and herbs had previously been grown, either as monocultures or in mixtures, and lowest where grasses were present. These results suggest that the benefits of grassland mixtures for subsequent crops (legacy effects) are driven not only by nitrogen fixation by legumes but also by traits associated with herbs, such as deeper rooting. By accessing nitrogen from deeper soil layers and redistributing it closer to the surface, herbs may help increase nitrogen availability for subsequent crops.

Julian Nyaga



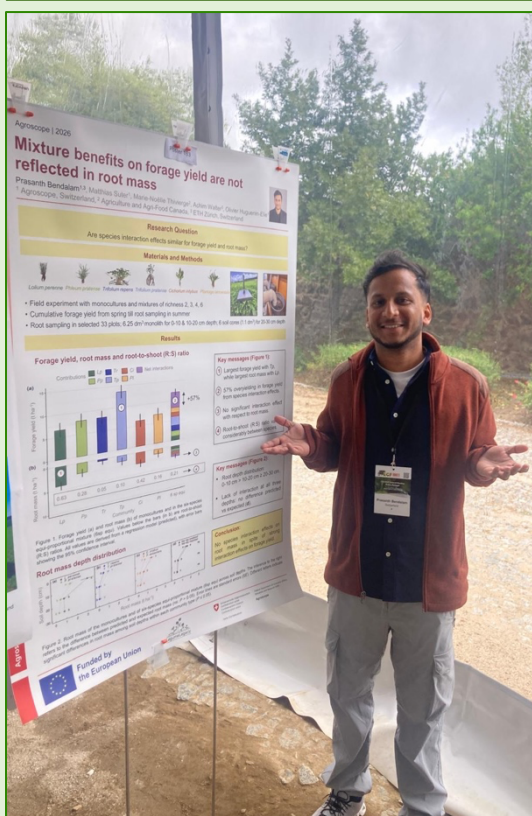
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Yield gains in multispecies are not reflected in the total root biomass

Prasanth Bendalam and Meret Kaspereit both investigated root growth in multispecies mixtures, aiming to find underlying mechanisms of yield gains and ecosystem functions in diverse mixtures. Although both found aboveground yield gains in mixtures, these were not linked to total root biomass neither in Switzerland nor Denmark. Prasanth found different root:shoot investments when comparing the species, and Meret found more roots in deeper soil layers and a more even root depth distribution in multispecies mixtures.

Meret Kaspereit



Higher mixture yields are not reflected in root biomass

Prasanth presented a poster at the general meeting sharing compelling results from the grassland phase of his field experiment in Switzerland. His poster highlighted how species mixtures affected both aboveground (forage) and belowground (root) biomass (0 - 30 cm depth), and especially their relation (root-to-shoot ratio). Red clover produced the highest aboveground forage yield, while perennial ryegrass had the greatest root mass. This suggests that perennial ryegrass invests more heavily belowground to acquire essential nutrients, especially nitrogen. Furthermore, while positive species interactions within the six-species equi-proportional mixture successfully enhanced total forage yield, interestingly, no such interaction effects were observed on root mass. In short, although the aboveground biomass was significantly higher in the mixtures than expected from the biomass of the monocultures, this did not result in higher-than-expected root mass in the mixtures. The poster attracted a great deal of interest from participants, enabling Prasanth to engage in several fruitful discussions with other scientists conducting research on the root systems of forage plants.

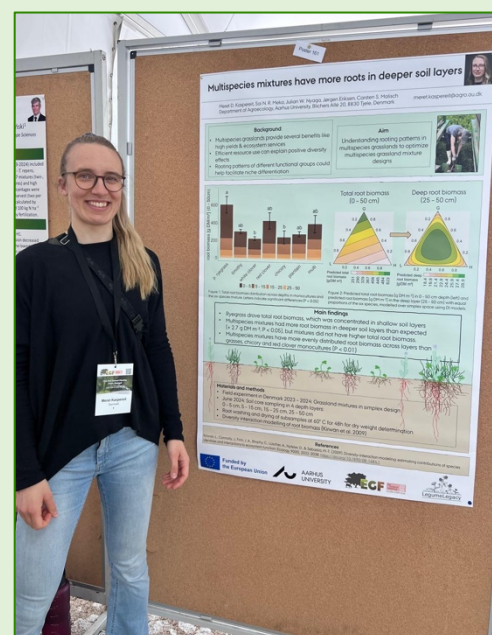
Prasanth Bendalam

Multispecies swards had more roots in deeper soil layers

Finally, Meret also had the chance to give a poster presentation about her work in Denmark. She investigated root growth patterns in multispecies grasslands at 0 - 50 cm depth, aiming to disentangle belowground mechanisms that could explain ecosystem functions.

Mixtures of grasses, legumes and herbs at varying species proportions were investigated in a field experiment in Denmark 2024. While no increases of total root biomass were found in mixtures, in line with findings of Prasanth, the results showed more root biomass in deeper soil layers (25 - 50 cm) and a more even root biomass distribution across depth layers in diverse mixtures, highlighting a better spatial niche utilisation and deeper soil exploration. This could explain yield gains, particularly in grass-herb mixtures, and have positive implications on soil health and functioning.

Meret Kaspereit





LegumeLegacy is an MSCA Doctoral Network

<https://legumelegacy.scss.tcd.ie/>

This newsletter was edited by Doctoral Researchers Meret Kaspereit
and Julian Nyaga



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