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**Meeting on 22 September 2022; 09:00 – 10:30**

**M4/Teams**

**Section meeting**

**Minutes**

**Present:** Climate and Water section, Torsten Rødel Berg

**Agenda:**

1. Approval of agenda
2. Staff news
  - a. Welcome to
    - i. PhD student Marvin Garcia
    - ii. MSc student Nadja Fuglkjær Bloch
    - iii. MSc student August Kau Lægsgaard Madsen
  - b. In pipeline:
    - i. 1 October: Daniel Pasqual, guest PhD, host Davide Cammarano
    - ii. 15 October: Jingru Yin, enrolled PhD student, supervisor Davide Cammarano
3. News from committees
4. Applications overview
5. Messages
  - a. Policy support tasks 2023
  - b. Other messages
6. AOB
7. Publications:
  - Abalos, D., Rittl, T. F., Recous, S., Thiébeau, P., Topp, C. F. E., van Groenigen, K. J., Butterbach-Bahl, K., Thorman, R. E., Smith, K. E., Ahuja, I., Olesen, J. E., Bleken, M. A., Rees, R. M., & Hansen, S. (2022). Predicting field N<sub>2</sub>O emissions from crop residues based on their biochemical composition: A meta-analytical approach. *The Science of the Total Environment*, 812, [152532].
  - Abalos, D., Recous, S., Butterbach-Bahl, K., De Notaris, C., Rittl, T. F., Topp, C. F. E., Petersen, S. O., Hansen, S., Bleken, M. A., Rees, R. M., & Olesen, J. E. (2022). A review and meta-analysis of mitigation measures for nitrous oxide emissions from crop residues. *The Science of the Total Environment*, 828, [154388].
  - Chen, J., Lærke, P. E., & Jørgensen, U. (2022). Land conversion from annual to perennial crops: A win-win strategy for biomass yield and soil organic carbon and total nitrogen sequestration. *Agriculture, Ecosystems and Environment*, 330, [107907].

Jytte Christensen

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- Chen, J., Manevski, K., Lærke, P. E., & Jørgensen, U. (2022). Biomass yield, yield stability and soil carbon and nitrogen content under cropping systems destined for biorefineries. *Soil and Tillage Research*, 221, [105397].

### **Ad 1: Approval of agenda**

The agenda was approved

### **Ad 2: Staff news**

- PhD student Marvin Garcia presented himself. His supervisor is Diego Abalos.
- MSc student Nadja Fuglkjær Bloch is supervised by Jim and Kirsten E.
- MSc student August Kau Lægsgaard Madsen is supervised by Diego and Jim.
  
- Guest PhD student Daniel Pasquel from France is expected from 1 October. His host is Davide and Daniel will stay for three months.
- Jingru Yin will start her PhD study here by 15 October. Her supervisor is Davide.

Remember to inform Jytte early in the process when you invite guests and hire in staff. It is important to follow the timelines and instruction on the intranet <https://agro.medarbejdere.au.dk/en/personnel-and-hiring>

### **Ad 3: News from committees**

Jeroen informed from AGRO Department Forum: Currently AGRO have 12 vacant positions and the vice-dean has approved to continue the hiring process despite the announced stop for recruitment.

It has been discussed how to improve the diversity (e.g. gender balance, European/Non-European) among applicants e.g. for Tenure Track positions.

Jeroen asked for input on how to improve on this.

The procedure of setting up internal search committees needs to be improved. Information from HR is lacking on what to do and when to start.

### **Other messages:**

Esben has volunteered to enroll in the PhD committee as our PhD representative from next year.

### **Ad 4: Application overview**

An output from ReAp was distributed prior to the meeting. If you have any updates, it is important to inform Jytte.

Torsten informed about the HEU topics and the call expected in spring 2023. Torsten will setup a coordination process together with Jørgen. If you are contacted by potential partners, Torsten is interested to know.

Finn mentioned that Kiril and he are looking into the 'Water for all'-call (Cluster 6).

Mathias encouraged all to take a look at the HEU calls. Torsten has shortlisted the topics that are interesting for AGRO. See them here <https://agro.medarbejdere.au.dk/projektstyring/ekstern-finansiering>

#### **Ad 5: Messages:**

##### **Policy support tasks for 2023:**

Mathias is the overall coordinator for the program called 'Climate-Smart Production Systems'. He went through the program task list suggested by the ministry. Currently we have received 8 questions/tasks for 2023. These will be discussed with representatives from the ministry on Monday when they visit Foulum. Beyond these questions/tasks from the gross list, we also receive ad hoc questions from the ministry and these can be posed any time and often with short notice and response time.

Mathias will appoint a coordinator/project manager within each question/task.

A pre-allocation of time is done, but the final budgeting of man months is not done before we receive the exact order from the ministry. This is a problem especially when relevant experts are (more than) fully booked already.

Reporting to the ministry has always been in Danish, but it is up to negotiations to change the language to English.

##### **Other messages:**

A new HR system is implemented from 1 January 2023. This means that the HR system is closed in January 2023. Therefore it is very important to be as much ahead as possible before January. If you expect new staff/guests etc. it is important to inform Karina as early as possible and preferable before 1 December.

Jytte will approach those that, according to her knowledge, needs to do something before December.

It is important to follow the guidelines and deadlines on staffing ect.

<https://agro.medarbejdere.au.dk/en/personnel-and-hiring>

Furthermore, ProMark is closed completely by end of this year. A new system 'mitHR' will be implemented from 2023. You will all get more information in due time.

##### **Ad 6: AOB**

Nothing

##### **Ad 7: Publications:**

See enclosed presentations.

# **Biomass yield, yield stability and soil carbon and nitrogen content under cropping systems destined for biorefineries.**

*Soil and Tillage Research, 2022.*

Ji Chen, Kiril Manevski, Poul E. Lærke, Uffe Jørgensen.



**Increased biomass yield and yield stability**



Ten different cropping systems are compared

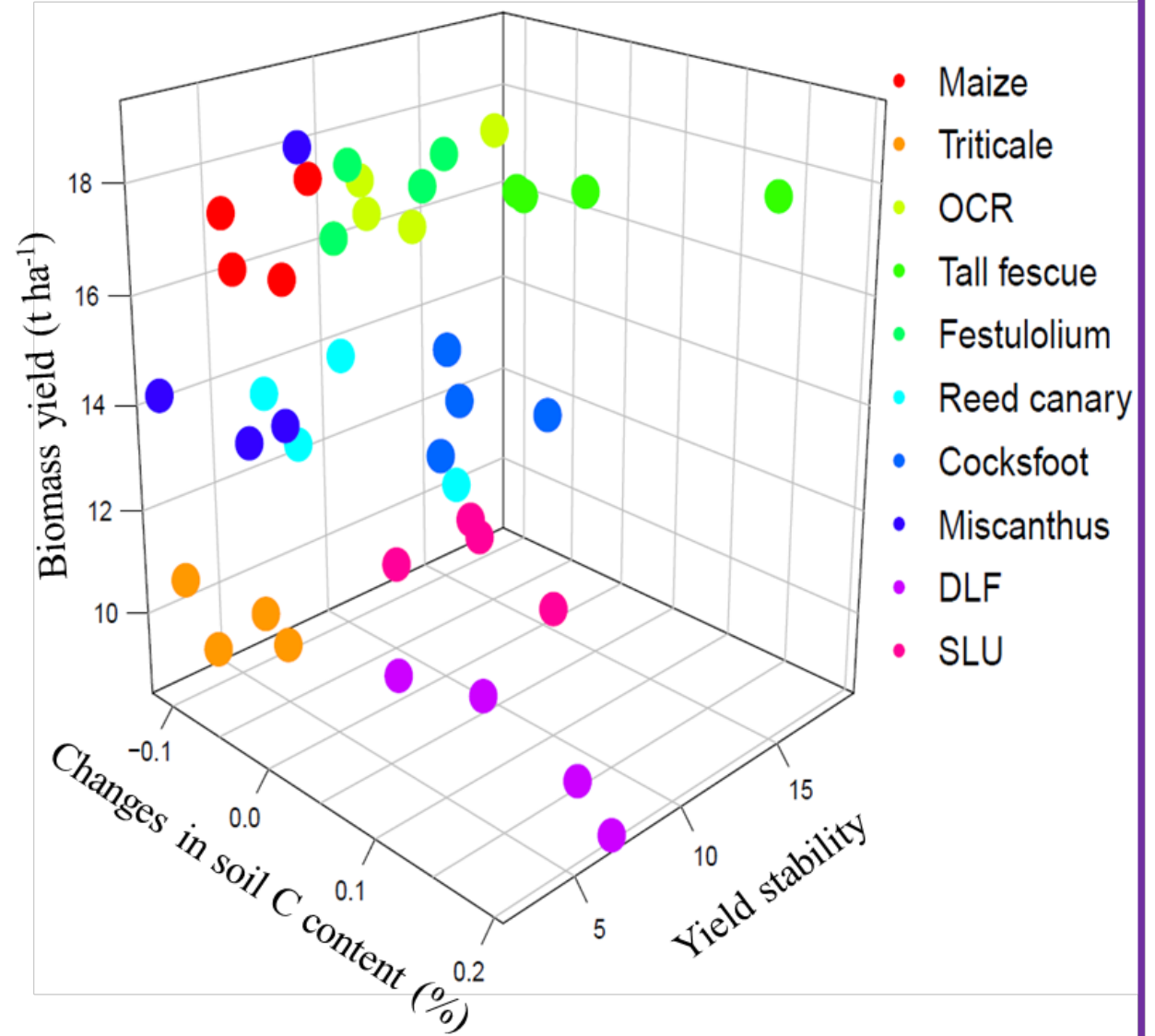


**Protecting soil C and N content**

- Two continuous monocultures
- Optimized crop rotations
- Five intensively fertilized perennial grasses
- Two grass-legume mixtures

**Sustainable agriculture for green transition**

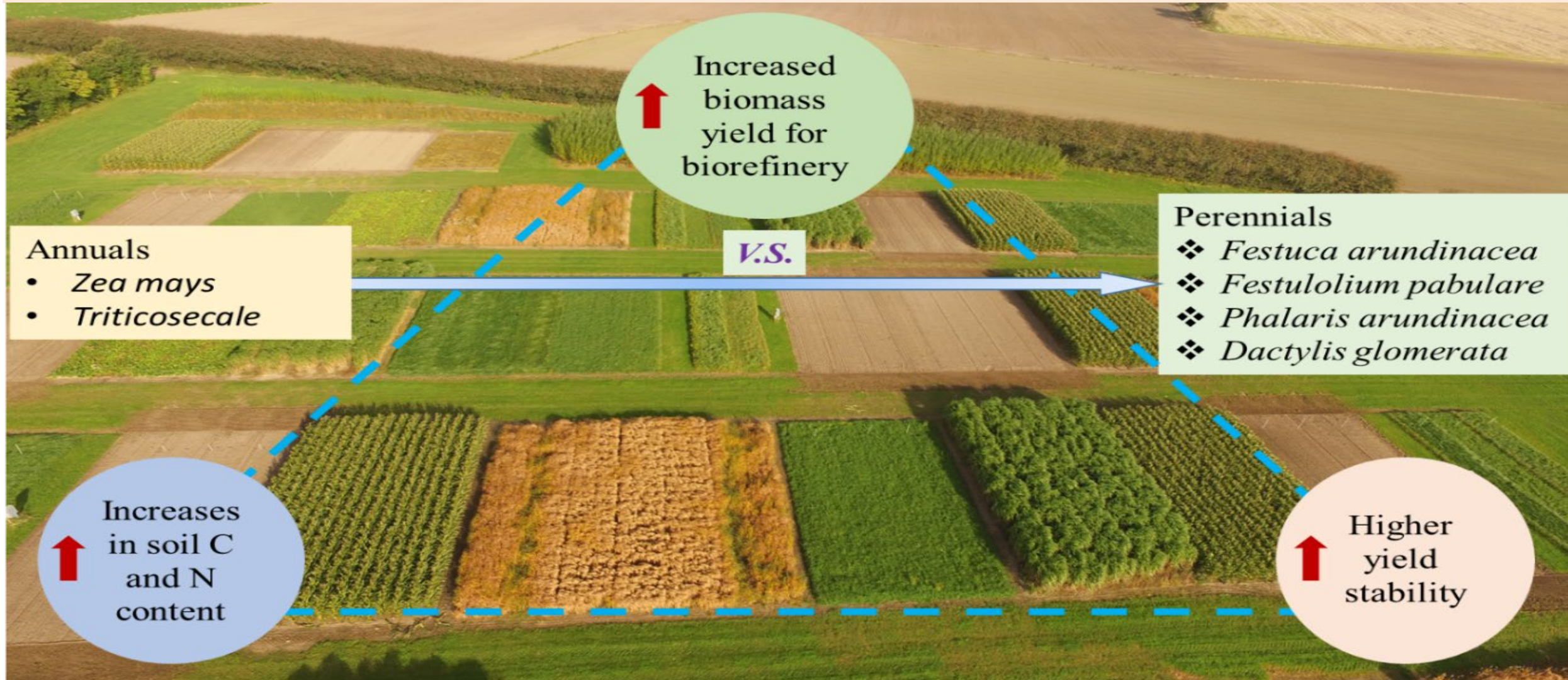
**No significant relationship among biomass yield, yield stability, and changes in soil C content**



# Land conversion from annual to perennial crops: A **win-win** strategy for biomass yield and soil organic carbon and total nitrogen sequestration

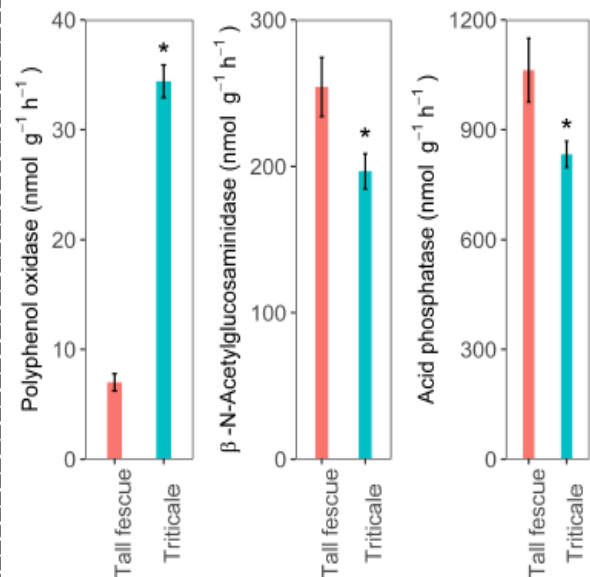
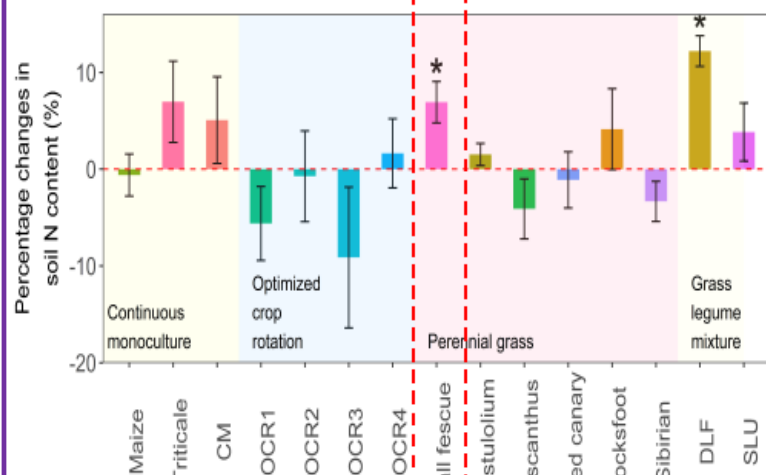
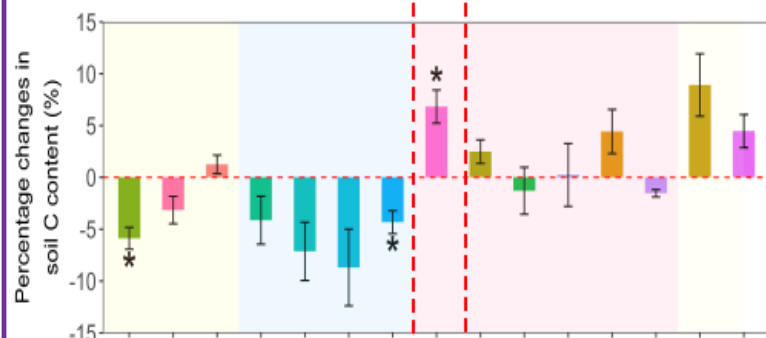
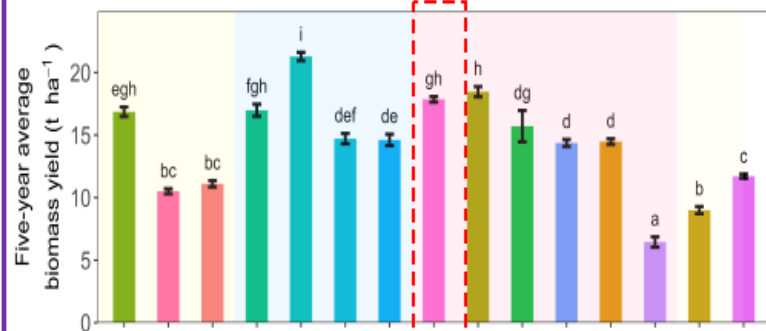
*Agriculture, Ecosystems & Environment, 2022.*

Ji Chen, Poul E. Lærke, Uffe Jørgensen.



# Ongoing research

## Results & Discussion



## Main conclusions

- Tall fescue significantly increased soil C and N content, while sustaining relative high biomass yield compared to other annual crops.
- Tall fescue significantly repressed polyphenol oxidase activity by 79% compared to Triticale, which were in line with our long-term observations on soil carbon accumulation with tall fescue.
- Tall fescue significantly increased extracellular enzyme activity targeting soil N cycling by 28% and P cycling by 29% compared to Triticale, supporting the emerging findings that tall fescue can be more resource efficient.

## Acknowledgements

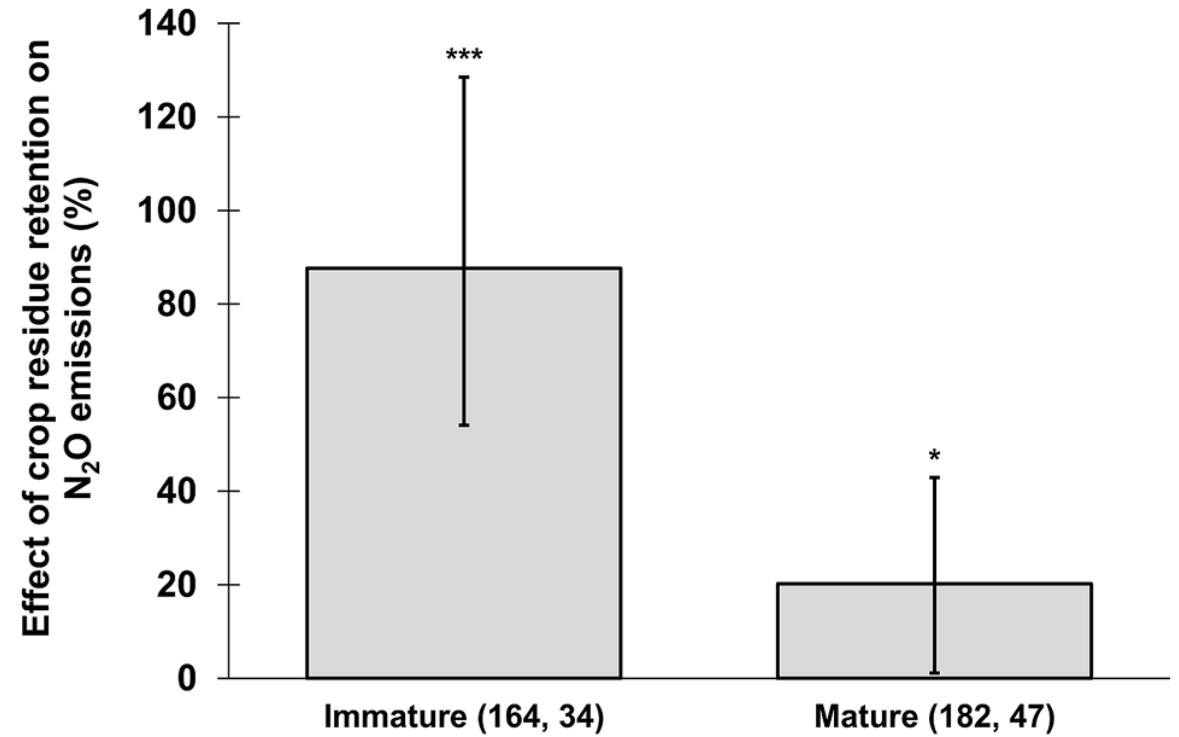
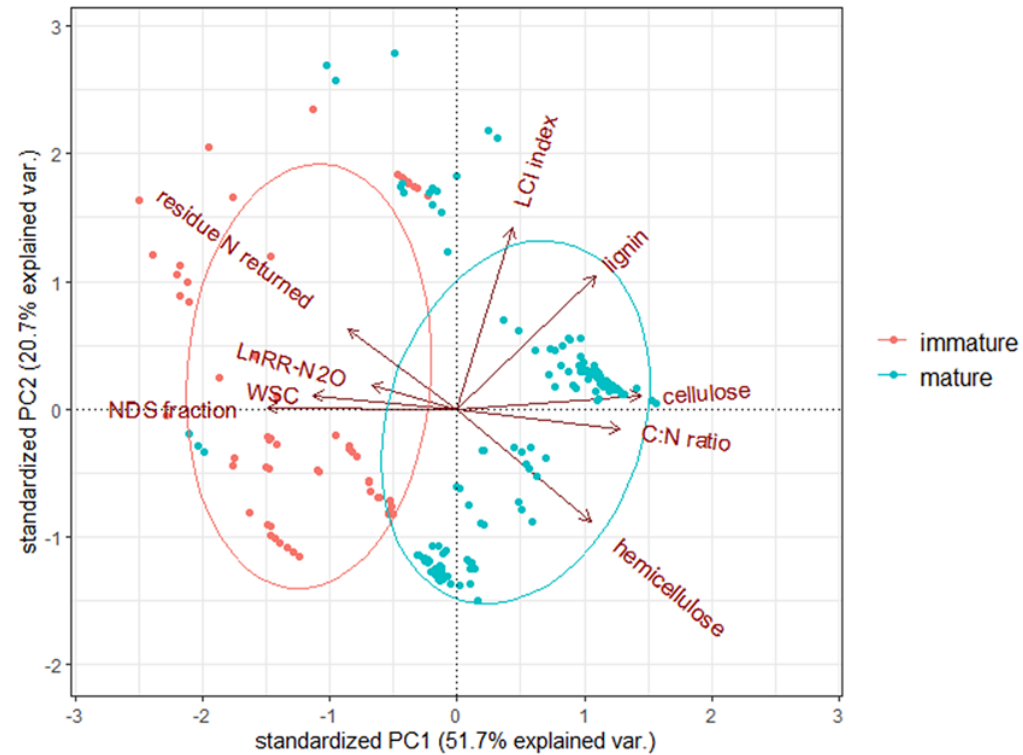
Ji Chen is granted by H2020 Marie Skłodowska-Curie Actions (No. 839806), Aarhus University Research Foundation (AUFF-E-2019-7-1), Danish Independent Research Foundation (1127-00015B) and Nordic Committee of Agriculture and Food Research.



Chen et al., In preparation

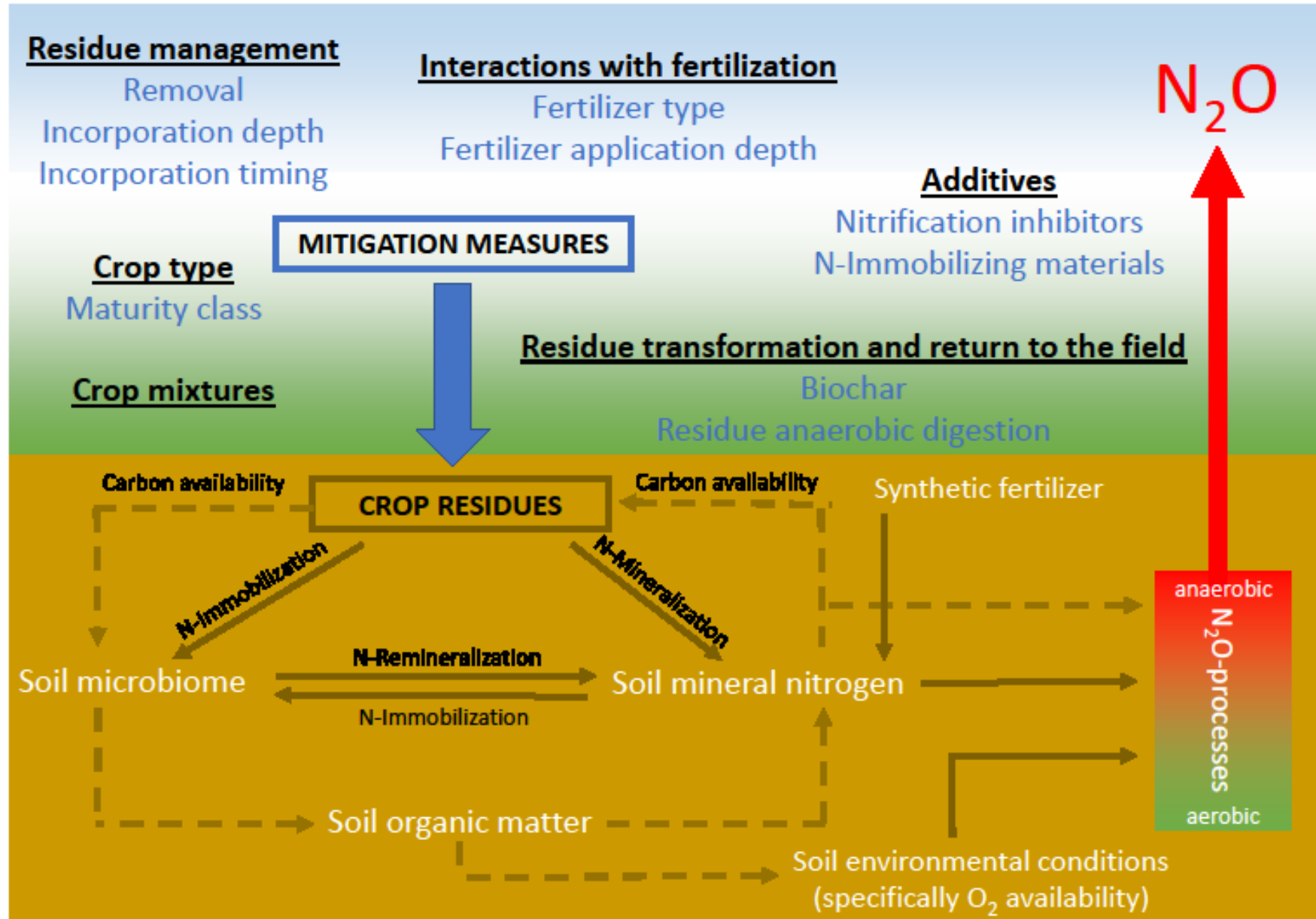
Chen *et al.*, 2022, PNAS;  
Chen *et al.*, 2022, STR;  
Chen *et al.*, 2022, AGEE;  
Chen *et al.*, 2021, EI

# Predicting field N<sub>2</sub>O emissions from crop residues based on their biochemical composition: A meta-analytical approach. STOTEN, 812, 152532.





A review and meta-analysis of mitigation measures for nitrous oxide emissions from crop residues. STOTEN, 828, 154388



Applicant	Grant Source	Project Title	Applicationdate	Applied am	Applied am	WZ number
Davide Cammarano	Novo Nordisk Fonden - Young Investigator	Integration of Biotechnology, Crop Science, and Natural Product Chemistry for Designing Novel and Environmentally Sustainable Cropping Systems	19-01-22	24.716.895	24.716.895	2022-0331122
Davide Cammarano	Tematisk Forskning	SOLUTION - Spatial Soil Health Quantification with Sensing and Modeling for Improved Nitrogen Fertilization	01-06-22	2.615.815	2.615.815	2022-0370481
Davide Cammarano	GUDP	INTERSECT - Intercropping for increasing Soil Health and Climate Resilience	20-06-22	9.652.500	3.097.500	2022-0370479
Davide Cammarano	Villum Kann Rasmussen Fonden	Integration of Biotechnology and Crop Science for Novel and Environmentally Sustainable Cropping Systems	26-08-22	21.726.600	21.726.600	2022-0411473
Finn Plauborg	Landbrugs- og Fiskeristyrelsen	Inviteret til fase 2 - KortDrænN2O Kortlægning af lattergas emission fra dårligt dræned mineraljorde	24-08-22	14.875.335	5.071.670	2022-0362394
Finn Plauborg	Tematisk Forskning	BioMetalAP - Phosphate adsorption obtained in a novel bioreactor test center with metal impregnated biochar mixed with woodchips under different water flow rates	01-06-22	2.873.722	2.873.722	2022-0376287
Jens Grønbech Hansen	Horizon Europe Other	PREPARE - Phase 1	24-02-22	52.500.000	4.000.000	2022-0333688. beløb til AGRO ca. 4 mill.
Jens Grønbech Hansen	GUDP	SROPP - Sustainability and resilience in organic potato production	03-05-22	7.865.970	5.000.054	2022-0365065
Jens Grønbech Hansen	Kartoffelafgiftsfonden	IPM bekæmpelse af kartoffelskimmel III 2023	26-08-22	265.000	0	2021-0281750
Ji Chen	Villum Experiment	Home Field Advantage (HFA)	16-03-22	1.999.620	1.999.620	2022-0340494
Ji Chen	Sapere Aude	NovEnz - Soil carbon cycling under organic farming: A Novel angle from soil Enzymes	23-03-22	6.191.856	6.191.856	2022-0340488
Jim Rasmussen	GUDP	LEGACY - Decoding phytosanitary controls in diversified legume based cover- and inter-cropping systems	22-06-22	14.795.000	2.793.750	2022-0386155
Jim Rasmussen	GUDP	FoodCropSystems	31-08-22	14.953.578	12.997.426	2022-0420390
Uffe Jørgensen	Horizon Europe Other	På reserveliste - Stairs2Pro, HORIZON-CL6-2021-FARM2FORK-01-02	11-10-21	67.048.000	1.064.000	2021-0278750. Total budget AU er 428.250 Euro. ANIS og BCE er med og vi har ca. 1/3 af AU's budget hver. Ansøgning er på reserveliste (mail 7/2)
Uffe Jørgensen	GUDP	PROMISE - products of organic miscanthus	03-05-22	7.999.800	1.549.253	2022-0370488
Uffe Jørgensen	Realdania	Fra marken til byggeriet - Evaluering af biogene materialers betydning for byggeriets planetære grænser	20-09-2022	1.099.000	276.000	2022-0442130