

Minutes of 3rd amoA project meeting



30th- 31st of January, Hotel Nyborg Strand, Østergade 2, 5800 Nyborg, Denmark

Participants: Carsten Suhr Jacobsen (CSJ), Lea Ellegaard-Jensen (LEJ), Lucas Horstmann (LH), Erkin Gozdereliler (EG), Pedro Carvalho (PC), Søren O. Petersen (SOP), Christian Nyrop Albers (CAL), Ulla Bollmann (UB), Trine Henriksen (TH), Anders Priemé (AP), Jonathan Donhauser (JD), Cecilie Skov Nielsen (CSN), Nanna Baggesen (NB), Thorkild Frandsen (TF), Gustaf Bock (GB), Marie Dam (MD), Ole Hertel (OH), Susanne Jacobsen (SJ), Signe Rasmussen (SR)

Cancellation: Louise Feld (LF)

January 30th

Welcome by the project leader by CSJ. Presentation round of the participants and the program of the day by CSJ.

Environmental fate of NIs – gaps in current knowledge by EG. EG gave a presentation about knowledge on degradation, sorption and leaching of the NIs from the literature review. SOP mentioned a project that is making a large NI report. SOP will find out if he can share the poster and report of that group¹. SJ (Corteva) mentioned that Corteva is also preparing a literature review of their product focussing on human health and environmental fate. She will find out if this can be shared with the amoA project group.

Results of NI sorption and degradation experiment by UB, GEUS. UB presented WP1 progress. First task (1.1) is done. Task 1.2 Analytical methods; LC-MS/MS is done, and GC-MS method development is ongoing in collaboration with AU-Risø group. PC and EG informed that the GC method is working well and the final test results are on the way. Task 1.3 Degradation studies; DMPP degradation results were presented: topsoil showed some abiotic degradation, but the biotic treatments have faster degradation (similar patterns in both soils). At least 10% is still left in the soils after 150 days. DT50 shorter in field 1 compared to field 3. Nitrpyrin degradation results are on the way (GC method), but results on degradation product results were presented. Difference between the treatments with formulated product and the pure standard chemical compound – maybe because of the encapsulation in the commercial formulation. Screening for other ‘unknown’ transformation product is on hold because of lab renovation at GEUS. Task 1.4 Sorption study is awaiting the identification of transformation products. Some deliverables and milestones have to be delayed due to the lab renovation at GEUS and the delay of the GC-method development. SOP remarked that the manure will create some anaerobic conditions, and this might need to be further considered in the final risk assessment of the degradation time. CAL and CSJ

¹ Postscriptum (UB): “Site-differentiated assessment and efficacy of nitrification inhibitors as a climate mitigation measure in crop production”: [NitriKlim](#)

remarked on that there would also be anaerobic patches in the soil degradation treatments added manure in the current experiment.

Status of NI leaching experiment by CAL. CAL showed the final and full setup of the column experiment currently running at GEUS. GEUS analytical labs are currently closed, so no results were presented on the NI leaching. Tracer and nitrate results were shown; less nitrate is leaching from one of the NI treatments. Column experiments are on track but might not be finalized before the NI analysis results are available. CAL mentioned the possibility to do suction cups in the 2025 field experiment. Cost around 250.000kr that has been applied for, and the reply from this is coming next week². SR (MST) asked whether there could be the possibility to do this test of NIs at PLAP fields.

Target and non-target effects of NIs – gaps in current knowledge by LH. LH presented what is known from the literature on Mode of action of NIs and non-target effects on the soil microbial community and functions. LEJ asked CSN and NB if it could be possible to measure CH₄ with their setup in the field. They replied that they already do that, and they have the data from the 2024 field experiment. They will provide this CH₄ data as soon as it has been processed and share it with the AU group.

N₂O measurement method and results from field study by CSN & NB. CSN presented the 2024 field trial. Weather and soil conditions were measured continuously by sensors. NB presented the methods / field measurements e.g. of gases and data analysis. CSN presented the N₂O results of the 2024 field trials. LEJ asked for CSN/NB to share the measured metadata, methane and yield data with the other partners of the field trials. CSN said that they can definitely share this with the group.

Nitrogen cycling genes in field study by JD. JD presented the WP4 work; The N related genes and the sampling protocol. CSJ suggested to include the methane oxidation genes as well. AP and JD said that they think that could be possible and interesting.

Project outlook incl. impact evaluation framework of NIs by SR, TQF & CSJ. CSJ, TQF and SR each gave a 3-minutes 'pitch' on their perspective on NI evaluation and regulation. CSJ; our risk assessment could be used for other products after this project. SR; NI could be assessed in a pesticide program, this would also include human and ecotoxicological effect, and using e.g. DT50 of the NIs found in amoA in the pesticide models. TQF; we create a science-based risk evaluation of Vizura and Instinct, but also for future NI products. – Hope that the authorities will stand behind this (and not 'just' an industrial standard), also on an international scale. Time is important for the climate issue, and cost is also important. How much risk do we accept? Arla and DC are so 'big' that what they recommend could potentially have a big effect (both positively and negatively). The group discussed these issues and also the effectiveness of NIs to reduce N₂O emissions. LEJ said that the effectiveness of the NIs must be weight against the risk e.g., NI works app. 50% of the time on maize and sandy soil, but maybe not on clay soils. CSN said that they have a new project to gather all the information on the effectiveness on the NIs on N₂O emission reductions broadly; where and when does the NIs work (e.g. soil and crop type)?

² Postscriptum (CAL): the funds were granted through this application.

CSJ; NIs could also be added into the early warning system for pesticides – perhaps MST might take this up.

Milestone and deliverable overview for WP 1-6 and discussion by LEJ & WP leads. The project is generally on track. Lab renovation at GEUS (currently) and at AU (upcoming) gives some delay in Milestone and Deliverable. Generally, the project partners collaborate to overcome obstacles e.g. on GC method and RNA extraction QC. The close proximity of GEUS and KU to AU (Roskilde) facilitates visiting and utilizing lab facilities across the project.

Milestone/ Deliverable	Status	New deadline	Reason
D1.1	Delivered		
M1.1	Moved	March 2025	3 out of 4 methods delivered; GC method validation for soil samples missing
M1.2	Moved	June 2025	Lab renovation at GEUS
M1.3	Moved	June 2025	Experiment completed. DT50 will be calculated once the last method is there
M1.4	Moved	Dec. 2025	Sorption exp. awaits final method
M1.5	Moved	Dec. 2025	TP identification awaits M1.2
D1.2	Moved	Dec. 2025	Awaiting the above
D1.3	Moved	Dec. 2025	Awaiting the above
M2.1	Delivered	October 2025	Project delayed start
The other Milestones/ Deliverables of WP2 are expected on time			
D3.1	Delivered		
M3.1	Moved	August 2025	Samples have been hold back in case the right RNA extraction method needed more soil
M3.2, D3.2	Delivered	Sep. 2024	
The other Milestones/ Deliverables of WP3 are expected on time			
M4.1	Moved	March 2025	Broken arms + difficult RNA extraction
D4.1	Delivered		
M4.3	Moved	June 2025	Protocols have been checked on DNA but not yet on cDNA from the fields due to problems with RNA isolation protocol. Also, <i>nosZII</i> is very diverse and no current primer sets cover this diversity. Custom-made primers for <i>nosZII</i> will be made based on the total RNA analyses.
The other Milestones/ Deliverables of WP4 are expected on time			
D5.1	Moved	June 2025	Awaiting RNA from M4.1
D5.2	Delivered		
The other Milestones/ Deliverables of WP5 are expected on time			
D7.2	Moved	Jan 2026	

January 31st

Reflections from day 1 and program for today by CSJ. CSJ shared his reflection from day 1. TQF shared his thoughts on the soil types used in the experiment. This was discussed, because we don't have a clay soil in the project. CSJ mentioned that the NIs could in future be tested on the PLAP fields. TQF asked whether it was still feasible that the project will be finalized within the current timeframe of the project. The group discussed this, and if no further obstacles is faced it should be OK.

Innovation transfer and outreach by TQF. Task 7.1; CSJ and TQF shared the plans of this. Task 7.2; Outreach at Plantekongress in January 2026 (7.-8. January); D7.2 moved to January 2026 and TQF and CSN are working on this. Task 7.3 Industrial interest network; TQF presented his work on this in different initiatives. MD mentioned the Soil Mission week. MD will be involved in this.

Group work / knowledge exchange 'speed dating' = WP collaborations. No notes taken.

Practical project coordination of field site sampling by AP, CSN, CAL and LEJ. CSN presented the trial design for the 2025 field trial.

- App. 18. March 2025; manure treatment earliest approximated date, if conditions allow it.
- Agerbæk field – same field – but different place on the field.
- Application of manure and NI followed by deep-harrowing³.
- Setup; 4 led with 4 replicates each = 16 plots in total.

It was discussed how the costs of installing and sampling from suction cups can be distributed (if this is not funded by the other foundation); it is agreed that we do the cups in any event. The cost is partly covered by the reduction of field experiment from two fields to one field. 100.000kr GEUS, 100.000kr AU (covering GC analysis and e.g. invoice to Ytteborg), and 50.000kr KU. To be approved by steering committee⁴.

CSN will call CAL and Kresten (Ytteborg) for a meeting about the suction cups. AP will send a sampling plan with approximate dates to CSN. CSN will make sure that a person from Ytteborg is there at T1 to show the parcels and give input on where to sample to 'get' the right place where the manure is in the ploughed soil⁵. AP also said that we could dig to investigate if we can see the manure lines.⁶

Thank you all for a nice meeting 😊

³ Correction from 'ploughing' to 'deep-harrowed' as CSN informed that she checked this and deep-harrowing was done in 2024 and will then also be done in 2025.

⁴ Postscriptum (CAL): After the meeting, 240.000 kr. was funded for this add-on by Foreningen PlanDanmark, hence funding from within the AmoA project should not be needed.

⁵ Postscriptum (CSN): have informed Ytteborg that we would like them to be either present or available on the phone. The sampling team should coordinate this with Ytteborg themselves by letting them know the exact sampling date a few days in advance.

⁶ Postscriptum (UB): take all sieved soil back to KU/AU (in a cooling box) and store in the freezer for the chemical analysis, so that we don't need to use the N₂-frozen sample for that.