



**NIBIO**  
NORWEGIAN INSTITUTE OF  
BIOECONOMY RESEARCH

NIBIO BOOK | VOL. 10 NO 4 2024

# 22<sup>nd</sup> EAPR Triennial conference

Oslo, Norway, July 7-12, 2024

## Book of abstracts

Editors: Arne Hermansen & Erling Fløistad



Main  
sponsors:



3-09

## Inhibition of the development of *Rhizoctonia solani* by plant secondary metabolites – a laboratory study

Maximilian Koch<sup>1</sup>, Marit Almvik<sup>2</sup>, Tatiana Rittl<sup>1</sup>

<sup>1</sup>Norwegian Centre for Organic Agriculture (NORSØK), Tingvoll, Norway

<sup>2</sup>Norwegian Institute of Bioeconomy Research (NIBIO), Department of pesticides and natural products chemistry, Ås, Norway

Black scurf and stem canker on potatoes, caused by the destructive soil-borne pathogen *Rhizoctonia solani* Kühn are a major problem for potato growers worldwide. Biological control agents such as plant leaf extracts can influence the severity of *R. solani* infection and help to reduce the risks to human health and the environment associated with the use of chemical fungicides. In this study, the inhibitory effect of the secondary plant metabolites aucubin, catalpol (iridoid glucosides) and acteoside (phenylethanoid glycoside) from methanolic extracts of *Plantago lanceolata* (Ribwort plantain (en), Smalkjempe (no)), a native plant in the Nordic countries, on the growth of *R. solani* mycelium on potato dextrose agar growth medium will be tested for the first time. Plant extracts will be obtained from plants of different age classes and metabolic profiling will be performed with LC-(HR)MS analyses and the concentrations of identified metabolites will be determined. To analyse whether the inhibitory interactions on

fungal growth originate from the known secondary metabolites or are caused by the bulk plant extract, we will first expose the fungus to different concentrations of extracts, redissolved in aqueous solution and added to the growth medium, and in a further step we will carry out the same approach with the isolated secondary metabolites as pure substances. The fungus will be incubated for 5 days and the mycelium growth radius will be measured every 24 hours during incubation. Thereafter a suppression index will be calculated and compared to the untreated control. The results are pending at the time of submission of the abstract but will provide a good initial understanding to determine whether extracts of *P. lanceolata* can be used as a natural biological control agent as an additional component of a more sustainable strategy to manage the risk of infection of potato with *R. solani* and to reduce the severity of the disease caused by this pathogen.