PRACTICE ABSTRACT NO. 3

SEA2LAND

NIBIO
NORWEGIAN INSTITUTE OF BIOECONOMY RESEARCH

Nitrogen fate following use of biobased fertilisers

Main results / outcomes

In BBFs, nitrogen is partly available to plants. The remainer is bound in organic compounds and may become available to plants with time. During a trial at Apelsvoll research station, Norway, broccolis between 11 and 33 % of the nitrogen applied with BBFs. Soil samples revealed that the BBFs providing the highest broccoli yield and nitrogen uptake also provided a higher amount of plant available soil nitrogen early in the season. After broccoli cultivation, winter wheat were grown without further fertilization to assess the slow release of nitrogen from the BBFs. The protein content were higher in wheat cultivated on previously BBF fertilized land (11.7-11.9 %) than in crops cultivated on unfertilized land (10.9 %).

Practical recommendations

Use of BBFs requires specific knowledge on plant available nitrogen and the release of nitrogen with time. Low nitrogen plant availability in the early growth season may be amended with an addition of the required amount of mineral nitrogen. BBFs gives the benefit of improved soil health due to the organic material and may provide nitrogen also for the coming crops.

Figure 1: Applied BBFs

Figure 2: Broccoli field, Norway 2024

Further information

The results will be available in Deliverable 5.1, published on sea2landproject.eu

About this abstract

Authors: Astrid Solvåg Nesse and Mette Thomsen, NIBIO
Date: May 2025
SEA2LAND project is a collaborative Innovation Action(IA) funded by the EU in the frame of the Horizon 2020 programme. The project aims to provide solutions to help overcome challenges related to food production, climate change and waste reuse. Based on the circular economy model, SEA2LAND promotes the production of large-scale fertilisers in the EU from own raw materials. This solution is expected to reduce the soil nutrient imbalance in Europe. The project is running from January 2021 to June 2025.
Website: www.sea2landproject.eu

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Agronomisk virkning og miljøpåvirkning av organiske gjødselvarer (BBF)

Hovedresultat

I organiske gjødselvarer er nitrogenet kun delvis tilgengelig for plantene som minerals nitrogen. Resten er bundet i organiske forbindelser og kan bli plantetilgjengelig med tid. I et forsøk på Apelsvoll forsøksstasjon, tok brokkoli opp mellom 11 og 33 % av nitrogenet som ble tilført med organiske gjødselvarer. Analyser av jordprøver viste at de gjødselvarene som gav den høyeste avlingen og nitrogenopptaket, også hadde den høyeste mengden mineralsk nitrogen tidlig I vekstsesongen. Etter brokkolidyrkningen ble vinterhvete dyrket uten videre gjødsling. Formålet var å se om det organiske nitrogenet ville omdannes til plantetilgjengelig nitrogen og bidra til plantevekst. Proteininnholdet i hveten var høyere i hvete som var dyrket på areal tidligere tilført organiske gjødselvarer (11.7 – 11.9 %), enn i hvete dyrket på ugjødslet jord (10.9 %).

Praktiske anbefalinger

Bruk av organiske gjødselvarer krever spesifikk kunnskap om plantetilgjengelig nitrogen ved start, og omdanning over tid. Gjødselvarer som tilfører lite plantetilgjengelig nitrogen tidlig i sesongen kan evt. blandes med mineralsk nitrogen for å øke planteveksten. Til forskjell fra mineralgjødsel har organiske gjødselvarer fordelen at de tilfører organiske materiale til jord, og dermed forbedrer jordhelsen, og at produktet kan tilføre plantetilgjengelig nitrogen over lenger tid.

Figure 1: Applied BBFs

Figure 2: Broccoli field, Norway 2024

Mer informasjon

Resultatene blir tilgjengelige i Deliverable 5.1, publisert på sea2landproject.eu

Om sammendraget

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