

Development of green protein refinery from clover grass to replace soya in feed to monogastric animals in Denmark

Main results / outcomes

Production of a high value protein extracted from clover grass by biorefining, as an alternative to soy, to be used in feed for monogastric animals, like poultry and pigs.

Practical recommendations

- In Europe, there has been a heavy reliance on imported feed, particularly soy cake, from non-European countries. Denmark aimed to achieve self-sufficiency in livestock protein and reduce imports.
- Green protein emerged as a viable alternative to soy due to its amino acid composition, which is well-suited for monogastric animals.
- The innovation journey for green protein in Denmark began in 2009, involving multiple partners such as Aalborg University, Copenhagen University, private knowledge enterprises, Aarhus University, SEGES Organic, and Vestjylland's Andel.
- In 2020, collaboration was established with Ausumgaard, a 700 ha organic farm committed to enhancing sustainability and biodiversity, to build Denmark's first full-scale commercial plant for green protein production. The farm already hosted a biogas plant that utilized manure and green grass protein residues to produce energy and organic fertilizer.
- Continuous adjustments were made to the plant in 2021 and 2022 to enhance productivity, with plans to implement the model by others interested in establishing similar plants starting from 2023.
- From 2023, the Danish government will introduce a support scheme to encourage the establishment of more biorefineries.



Figure 1: Pig feed with different proportions of grass protein. The darker the feed, the more grass protein.

Further information

<https://www.youtube.com/watch?v=8UBzvuSFIBI>
Græsprotein - fra vision til foderproduktion (icoel.dk)

About this abstract

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AgroFossilFree is a H2020 multi-actor project that will evaluate the current status in EU agriculture regarding energy use and assess existing needs, allowing farmers to optimize agricultural production through more efficient energy use and reduced GHG emissions, resulting in economic, agronomic and environmental benefits. AgroFossilFree will create a framework under which critical stakeholders will cooperate to evaluate and promote the currently available Fossil-Energy-Free Technologies and Strategies (FEFTS) in EU agriculture. The project is running from October 2020 to September 2023.

Website: www.agrofossilfree.eu



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Udvinding af grønt protein fra kløvergræs som erstatning for sojafoder til enmavede husdyr i Danmark

Main results / outcomes

Produktion af et højværdi protein fra kløvergræs via bioraffinering, som kan bruges som et alternativ til soja, ved fodring af enmavede dyr, som grise og fjerkræ.

Practical recommendations

I Europa, har man indtil nu, importeret store mængder foder, især soja, fra lande udenfor Europa og over store afstande. I Danmark var der et stærkt ønske om at være selvforsynende, og for at finde et bæredygtigt alternativ til det importerede foder. Grønt protein kan bruges som en erstatning for soja, fordi det har en aminosyre sammensætning, der er særligt velegnet til de enmavede dyr.

I Danmark begyndte innovationen indenfor grønt protein i 2009. Mange partnere var involveret: Aalborg Universitet, København Universitet og 2 private virksomheder undersøgte mulighederne for at gøre grønt protein profitabelt. Fra 2012 deltog Aarhus Universitet og SEGES Økologi (nu Innovationscenter for Økologisk Landbrug) i innovationsprocessen. Fra 2014 blev Vestjylland's Andel, Danmarks største producent af øko-grisefoder, også involveret. Fra 2020 deltog også Ausumgaard, som driver 700 ha økologisk planteavl, i arbejdet med at bygge det første kommercielle anlæg til grønt protein udvinding i Danmark. Ausumgaard er ejet af en familie, som er meget entusiastiske omkring at øge bæredygtigheden på bedriften, og de havde allerede etableret et biogasanlæg. Biogasanlægget producerer energi og økologisk gødning baseret på restprodukterne fra grønt proteinproduktionen. I 2021 og 2022 blev der gennemført flere justeringer for at øge produktiviteten af grønne proteinanlæg, men fra 2023, vil det være muligt for andre, der ønsker at etablere et anlæg, at implementere modellen. Fra 2023 er det muligt at søge støtte hos den danske stat til etablering af flere bioraffineringsanlæg.



Figur 1: Grisefoder med forskellige andele af græsprotein. Jo mørkere foder, jo mere græsprotein.

Further information

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