

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, until now, large quantities of feed and especially soy cake, have been imported from countries outside Europe and over great distances. In Denmark, there was a strong desire to be self-sufficient in protein for livestock and to avoid imports. Green protein can be used as an alternative to soy, since it has an acid composition that makes it particularly suitable for monogastric animals.

Innovation within green protein in Denmark began in 2009. Several partners were involved: Aalborg University, Copenhagen University and two private knowledge enterprises investigated the possibilities to make the production of green protein profitable. In 2012, Aarhus University and SEGES Organic (and from 2021 Innovation Centre for Organic Farming) joined this innovation process. In 2014 Vestjylland's Andel, Denmark's largest producer of organic pig feed, was involved. In 2020 they collaborated with the farm "Ausumgaard", a 700 ha organic farm with plant production, owned by a family who has been enthusiastic about improving the sustainability and biodiversity on the farm, to build the first full-scale commercial plant for green protein production in Denmark. A biogas plant was already established on the farm. The biogas plant produces energy and organic fertilizer based on manure and residues from green grass protein production as input. The energy from refinery residues is also used to feed biomethane to the grid.

In 2021 and 2022, several adjustments have been made to the plant to increase productivity, but from 2023, it will be possible to implement the model by others who want to establish a plant.

From 2023, the Danish state will run a support scheme to promote the establishment of more biorefineries.



Photo: Erik Fog, Innovation Centre for Organic Farming

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 \(icoel.dk\)](http://Græsprotein - fra vision til foderproduktion (icoel.dk))

About this abstract

Authors: Vasiliki Kanaki/Agricultural University of Athens, Arne Grønkjær Hansen and Linda Rosager Duve, Innovation Centre for Organic Farming

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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 selvforsyndende, 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.



Foto: Erik Fog, Innovationscenter for Økologisk Landbrug

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

Further information

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