

Green protein from locally grown crops

Problem

Organic poultry producers are often confronted with high feed costs and a lack of alternative high-quality protein sources for poultry.

Solution

Green protein concentrate can be produced from locally grown crops such as clover-grass (see figure 1) or alfalfa. It can be used in the diets of organic broilers and layers. In a bio-refinery, protein concentrate is obtained by pressing fresh green material (see figure 2), heating/fermenting the juice to precipitate protein and finally putting it in a centrifuge. The concentrated green protein can be dried and added to poultry feed.

Benefits

Concentrate from clover/clover grass and alfalfa has a high protein content and an optimal amino acid profile for poultry, which makes the feed formulation of organic diets more optimal. An increase in locally grown protein sources can improve the sustainability of the farm and make the farmer less dependent upon imported protein, such as soya, from overseas.

Applicability box

Theme

Crop production - Animal husbandry - Feed and nutrition - Feed processing and handling - Arable crops - Forage - Production systems - Poultry - Nutritive values and needs - Ration planning

Geographical coverage

In temperate climates. Middle and Northern Europe.

Application time

The product can be used at any time of the year if the protein paste are dried and stored under optimal conditions.

Required time

Harvest time of green protein during spring, summer and autumn, processing time in a bio-refinery and time to dry it.

Period of impact

Immediate Impact

Equipment

Machinery required for harvest of green material (clover/grass/ alfalfa) and for transportation to a bio-refinery plant or to storage facilities.

Best in

Choice of crop for production of green protein depends on the country, soil type and weather conditions during preferred harvest time. Advantageous in crop rotation.

Practical Recommendations

- Choose an appropriate type of green crop, such as clover-grass or alfalfa, with an expected high protein and amino acid content. Consider soil types and weather patterns to grow a crop with a good and high quality yield.
- Harvest the field at regular intervals in order to achieve good plant growth and to obtain batches with more high quality protein and less fibre.

ICOMMA MAKING

- Harvesting procedures, which minimise soil content in the green material obtained from the field are necessary to obtain good quality green protein and to avoid wear of machinery and technical equipment.
- Cooperation with a bio-refinery plant is a prerequisite in order to concentrate the protein into a green paste that can be dried and used in poultry feed.
- If not dried, the wet green paste can be stored in closed containers/plastic bags in cool conditions for a shorter period.
- Chemical analysis of the green protein concentrate is important in order to replace other protein sources such as soya and to carry out the correct feed formulation. This can be done together with advisors or feed companies.



Figure 1: Harvesting of locally grown clover-grass. Photo: Erik Fog, SEGES



Figure 2: Screw pressing of fresh clover grass into green juice and press cake. Photo: Erik Fog, SEGES

Further information

Video

- Video ["GRASS PROTEIN - a golden chance to improve organic farming"](#) from Seges

Weblinks

- Report on ["Green Biomass – Protein Production Through Bio-refining"](#)
- OrganoFinery: [Organic growth with biorefined organic protein feed, fertilizer and energy](#)
- Check the [Organic Farm Knowledge](#) platform for more practical recommendations.

About this practice abstract and OK-Net EcoFeed

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**OK-Net EcoFeed:**

<https://orgprints.org/view/projects/OKNetEcoFeed.html>

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Project website: <https://ok-net-ecofeed.eu/>

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