



Biorefining forage legumes for cows, poultry and pigs in organic farming

Aim and added value

The aim of the research project is to gain new knowledge about local production of protein feed for monogastric animals in organic farming, deriving from forage legumes.

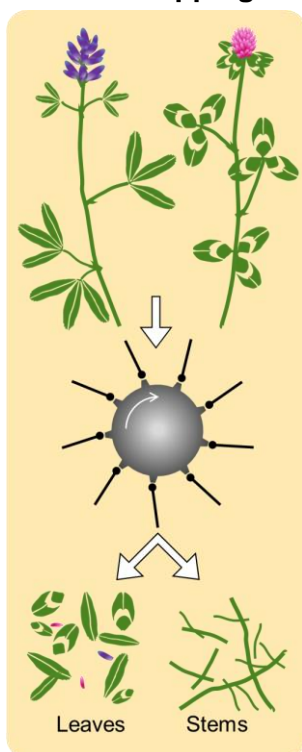
New knowledge will contribute to strengthen the agricultural sector in Europe as a whole, by improved utilisation of biological resources and competency on local food systems.

Mechanical fractionation

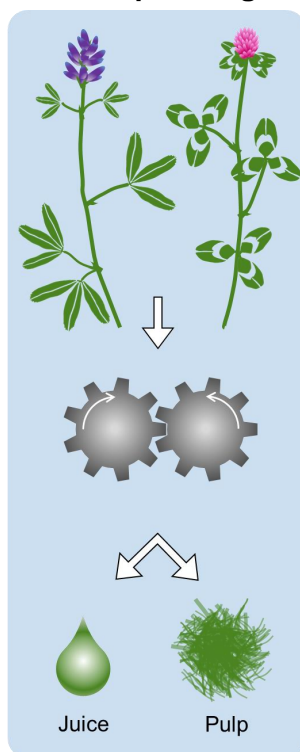
Two different techniques will be used to separate protein-rich from fibre-rich material. A leaf stripper has a rotating tool that picks off the leaves before the stems are mowed. A double twin-gear

screw press squeezes plant juice out of the fresh crop and separates it from the pulp. Adequate preservation methods must be developed to conserve the nutritional value.

Leaf stripping



Juice pressing



Leaf stripper harvesting lucerne



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Transnational project

ProRefine has a transnational and multidisciplinary approach and involves actors experienced in organic farming research.

- Testing of new technology is an integrated part of the work
- Field experiments in different countries
- Mathematical models to predict protein supply from forage legumes
- Evaluation of the nutritional value in animal feeding experiments
- Developing concepts of production systems based on local feed
- Focus on adaptation to regional characteristics
- Sustainability assessment by considering social, economic and environmental aspects
- Interviews with regional stakeholder groups and organic farmers

Work packages

- WP1** Project management (NIBIO)
- WP2** Dissemination and industry engagement (SLU)
- WP3** Prediction of protein supply from forage legumes (SLU)
- WP4** Upgrading forage legume crops (AU)
- WP5** Feed evaluation and animal feeding (UCSC)
- WP6** Sustainability assessment of local food systems and farmer attitudes towards self-sufficiency (NIBIO)

Read more about ProRefine:



Forage legume fractions

Leaves and pressed juice from lucerne (*Medicago sativa* L.) and red clover (*Trifolium pratense* L.) can be a protein source for monogastric animals such as

pigs and poultry. Fibre-rich pulp and stems can be utilised by ruminants. The mechanical processing of the plant fibres may enhance its digestibility.

Refined forage legumes as local sources of protein feed for monogastrics and high quality fibre feed for ruminants in organic production

Duration: 2018-2021
 Total budget: 1.78 mill. €
 Six countries, seven institutes and one industry partner
 Coordination: NIBIO, Norway
 Financial support for this project is provided by funding bodies within the H2020 ERA-net project, CORE Organic Cofund, and with cofunds from the European Commission.
 Further information can be obtained from the project coordinator Steffen Adler (NIBIO), steffen.adler@nibio.no



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 Institut National de la Recherche Agronomique, France

TRUST'ING
 France

UCSC
 Università Cattolica del Sacro Cuore, Italy

AU
 Aarhus University, Denmark

Ruralis
 Institute for Rural and Regional Research, Norway

NIBIO
 Norwegian Institute of Bioeconomy Research

SLU
 Swedish University of Agricultural Sciences

IARTC
 International Agricultural Research and Training Center, Turkey

