ProRefine – Practice Abstract

Ensiling legume forage stems

Problem

Field fractionation of forages can separate the leaves and some top stems, rich in protein and low in fibre, that can enter in the diets of monogastrics. The residual stems, still represent a valuable but wet feedstuff for ruminants that needs to be preserved. With haymaking, most of the still attached leaves are lost.

Solution

Ensiling is the best option, but stems have a high moisture content that can lead to high seepage and unfavourable fermentation. Wilting to 30 - 40 % dry matter avoids seepage. Addition of soluble sugars as molasses at 50 kg / ton of fresh forage directs the process towards lactic fermentation and improves silage quality. Mixing wet stems with dry beet pulp or cereal meals at 100 – 200 kg/ ton of fresh stems enables ensiling unwilted stems and improves the fermentative and nutritional value of the final silage.

Applicability box

Theme

Feed production

Keywords

Animal production, biorefinery, forage fractionation, sustainability, self-sufficiency

Geographical coverage

Countries relying on imported feed protein

Required time

Can be applied immediately, but method is continuing to develop

Period of impact

Continuous

Equipment

Plant fractionation, leaf stripping, stems, silage.

Impact

The knowledge obtained in ProRefine will support the implementation of biorefined forage legumes as high-quality protein sources in the European organic sector, while also giving value to the fibrous co-products. This will contribute to a strengthening of the agricultural sector in Europe improving the integrated utilisation of local resources.

Practical recommendation

- **Harvest the forage legume before flowering.**
- **Fractionate the plant into leaves and stems.**
- **Wilt the stems in the field to 30 – 40% dry matter and chop them to less than 10 cm.**
- **Add molasses at 50 kg/ton of wilted stems or, if your stems contain less than 30% dry matter, mix with dry beet pulps or a cereal meal at ensiling (100 – 200 kg/ton).**
- **Follow the general rules for ensiling.**
- **Wait at least 40 days before opening the silo.**

Photos: Experimental leaf stripping on alfalfa (left) and stripped stems (right)

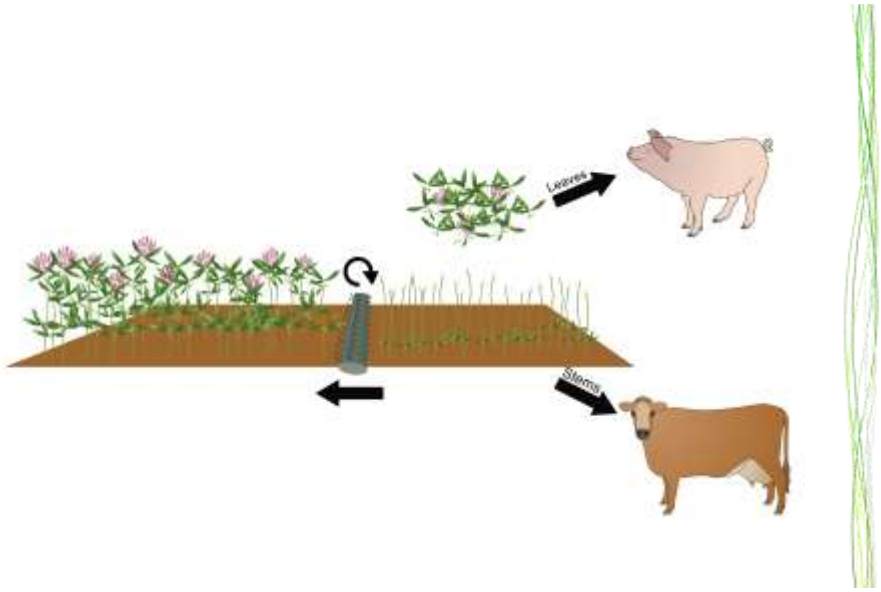

Illustration: Silage made from defoliated lucerne stems is well accepted by bovines, sheep, and goats and, when included in well balanced diets, supports milk yield and growing performance.

Leaves obtained from legume forage fractionation are rich in protein and low in fibre and can represent a valuable feed in pig production. The stems are rich in fibre and with a still good protein content and represent a valuable feed for ruminants (© Brooke Micke, SLU).

Further information

Weblinks

https://organic-farmknowledge.org/

About this practice abstract and ProRefine

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Project website: http://projects.au.dk/coreorganiccofund/research-projects/prorefine/

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