

ON-FARM ESTIMATION OF CLOVER CONTENT OF MIXED SWARDS

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Abstract

Estimation of clover content of mixed swards is difficult in practise. We are currently in the process of developing several on-farm methods for clover content estimation. 1. Photos with various clover contents are published in the Internet. 2. Yield samples with known area from several points of the field are separated for clovers and grasses and weighted. 3. The clover content of yield (% in dry matter) can be calculated with formula: $y=23.90\ln(\text{number of clover plants m}^{-2} \text{ in spring}) - 18.759$.

Introduction

Legume-based mixed swards are the most important source of nitrogen in organic farming and of high value in animal nutrition. In Finland, red clover (*Trifolium pratense*) is the most common fodder legume in mixed swards. It is important to know legume content of the mixed sward to optimise harvesting time of silage and feeding of cattle. Legume content gives also an estimation of the amount of biological nitrogen fixation. However, estimation of clover content is difficult or time and work consuming in practise on a field.

Material and methods

An existing field experiment with plots of various clover contents was used to test and develop three different methods for clover content estimation on-farm in 2003. The experiment was established in 2001 with seed mixture of red clover (*Trifolium pratense*), timothy (*Phleum ptatense*) and tall fescue (*Festuca arundinacea*). Sub-plots of size 0.5m x 0.5m were used for the measurements of the method development. Methods under development are: 1. Photos in the Internet, 2. Yield samples of known area and 3. Clover plants of known area

Results

1. Photos in the Internet. Photos with various clover contents have been taken and published in the Internet (Figure 1). Photos are from the first and second cut just before harvest. In Finland it is normal to have two cuts from the legume-based sward for silage. Gustavsson (2001) has also done this in Sweden, but this is a service for Finnish farmers.



Figure 1. Photos of swards of clover content of 33% of dry matter (left) and clover content of 75% of dry matter (right).

2. Yield samples of known area. Yield samples with known area (for example 0.25-0.5 m² each) have been taken from all sub-plots and they are more like reference to other methods. Clovers and grasses are separated, dried in microwave oven and weighed for clover content calculation. This method gives rather good results, but the problem is to know, how many samples you have to take to get an overview of the clover content of the yield of whole field.

3. Clover plants of known area. Clover plants have been counted from known area (for example 0.25-0.5 m² each) of several points of the field in spring. According our very preliminary measurements the clover content of first cut yield (% of dry matter) can be calculated with formula: $y=23.90\ln(x) - 18.759$ ($R^2=0,828$), where x =number of clover plants m⁻² in spring.

Conclusions

These results are very preliminary and need much more testing and calibration in different circumstances. In 2004 so-called rod point –technique (Little and Frensham 1993) will be tested too.

References

- Gustavsson, A.-M. 2001. Homepage: <http://www.njv.slu.se/kloverhalter>. (in Swedish).
Little, D.L. & Frensham, A.B. 1993. A rod-point technique for estimating botanical composition of pastures. Australian Journal of Experimental Agriculture. 33: 871-875.