

Technical efficiency



Environment



**Background**

Red clover (*Trifolium pratense*) has many benefits, such as the ability to fix nitrogen thanks to the symbiotic Rhizobium bacteria in its root nodules, it improves biodiversity, and it has favourable characteristics as a feed component in ruminant diets. However, the persistency of red clover is poor in Boreal swards and the leys seldom last longer than two years.

**How does the strategy work?**

In Northern Europe, red clover is typically grown in mixtures with temperate grasses such as timothy (*Phleum pratense*), but differences in N fertilisation requirements and optimal harvest timing of plant species result in suboptimal management practices of such mixed swards. This could be overcome by cultivating the different plant species as pure stands and mixing them in the preparation phase of total mixed rations for animals.

When silages with different characteristics are preserved in separate silos, balancing the diet is easier. Red clover is very high in calcium, which is harmful for dry cows as it predisposes them to milk fever. High yielding fresh cows on the other hand benefit from red clover in their diet and it may increase voluntary feed intake. Red clover typically has a high crude protein content. When feed batches with different characteristics are available for ration formulation, the diet can be planned so that nutrient overfeeding and subsequently losses to the environment are minimized. On the other hand, if there is lack of rumen degradable nitrogen, red clover can serve in that purpose.

- Factors improving the survival of red clover in pure stand:**
- Optimized N fertilisation: No nitrogen for red clover
  - Later cutting time for red clover than grasses in first cut due to the slow development of red clover in the spring
  - Less cuts per summer for red clover than for grasses to increase the viability of red clover
  - When clover is not included in all swards, a proper crop rotation can be applied which diminishes the pests and plant diseases

- Be careful when ensiling pure red clover stands**
- Red clover has typically lower dry matter and sugar content and higher buffering capacity than grasses – all these mean more acids needed to lower the pH of silage sufficiently
  - Formic acid-based additives ensure good fermentation quality even when conditions are poor, and the biomass has low dry matter concentration

**Do not lose the nutrients in the wrong place!**

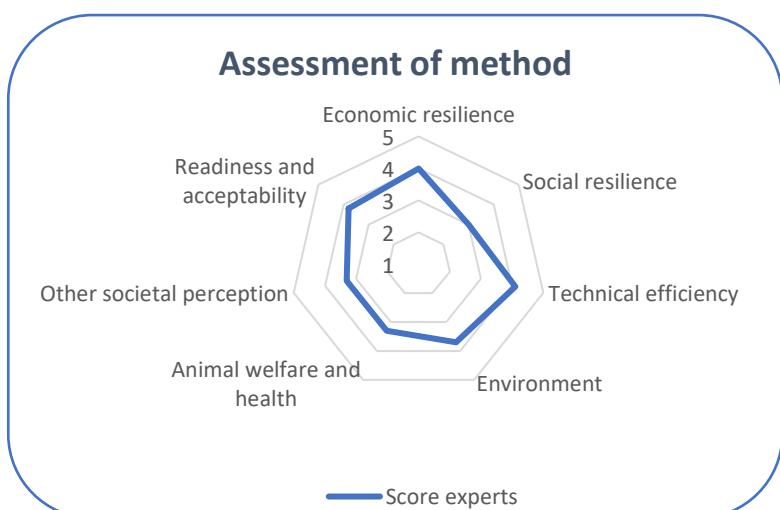
Wilting of red clover requires some care. The leaves dry much quicker than the stems, and if dried too much, the leaves become fragile and shred into ground. The leaves are the most nutritious part of the crop that you want to save for the animals!

In humid weather conditions, the dry matter of pure red clover can be very low and when ensiled, may yield substantial amounts of effluent. Be prepared to collect the effluent and dispose it correctly (e.g., spray on field) to avoid environmental pollution. Effluent is very harmful in water bodies due to its high biological oxygen consumption and can cause death of fish.



**Quote of the farmer:**

*“Red clover is tricky to make thrive, so I use grasses in the mixture to have at least something when red clover disappears – but is it actually because of the mismatch with companion grass that red clover disappears?!?”*



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