



Topic	Topic
Technical efficiency	Environment
	



Background

Ruminants are able to transform non-human-edible forages to high quality protein such as milk and meat. In the discussion of the future role of ruminants in global food production, there are strong arguments that the **decreasing area of arable land** mainly should be used for human nutrition and ruminant nutrition should mainly be based on grasslands and by-products from food production. **Cover crops** (=catch crops or intermediate crops) are usually grown between successive cash crops and are grown as green manure and ploughed in before establishment of the succeeding crop. **Short lived forage species** like Westerwold or Italian ryegrass, forage rape, fodder kale and vetches allow, besides all beneficial ecosystem services of traditional catch crops, additional harvesting of forage. The forage quality of catch crops is often underestimated. Many farmers in northwestern Europe have rediscovered the role of growing catch crops as strategy to make their farms more sustainable and resilient.

- Advantages**
- Cover crops:
 - **minimise soil erosion**
 - **reduce nitrate leaching** to the ground water (in some EU-regions compulsory to grow catch crops).
 - Short living forage crops:
 - produce **additional forage** without occupying additional land (→ sustainable intensification).
 - After drought periods: **forage reserve**.
 - Intercrops utilised as forages offer the same ecosystem services as traditional catch crops.
 - By using legumes like vetches or crimson clover an **additional nitrogen-(N)-input** can be realised.
 - Intercrops are **highly digestible and rich in protein**.
 - Intermediate crops can **utilise residual N** from preceding crops to improve ground water quality.

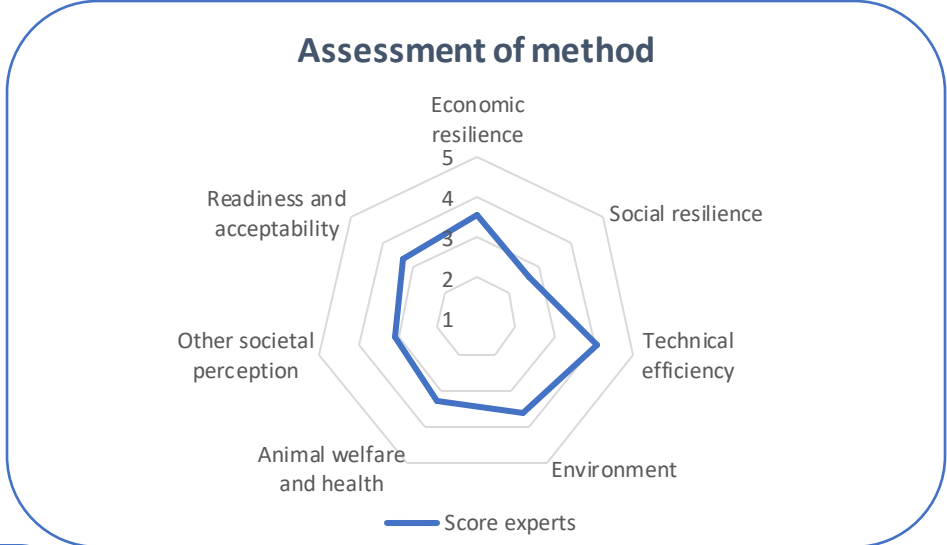
- Alternative strategies are possible!**
- Traditionally cover crops are established after whole crop or combine harvest of cereal crops.
 - After a shallow cultivation in the autumn, fast growing species like forage rape, Westerwold ryegrass, common vetch or forage peas are established.
 - When there is focus on using **early spring growth**, when a late main crop such as maize is planned, winter hardy species like kale, winter forage rape, forage rye, Italian ryegrass, crimson clover and hairy vetch should be chosen.
 - Perennial ryegrass undersown with white and red clover in cereal crops in early May is a proven alternative to increase production of **additional forage in autumn**. Three weeks after harvesting the cereal crop these short-term leys can be grazed several times. Alternatively, they allow for one silage cut in autumn and another in early spring.

- Challenges:**
- **Challenging feed** due to very easily digestible protein and too little structure
 - **Ensiling** cover crops in late autumn is challenging
 - Undersowing can reduce the **cereal yield**
 - **Greater water consumption** in spring may challenge the yield or establishment of the following crop.

- Opportunities**
- Grazing short term grass clover leys is a **cheap forage**, also for dairy cows
 - Other species can be **grazed** by less demanding stock
 - Fresh feeding (zero-grazing) in combination with a balanced diet **reduces forage costs**.

Quote of the farmer:

“In years with a cold and wet spring or after early summer drought, intermediate cover crops are my backup in forage production. The earlier established, the better. There is an old saying: A day in July is a week in August and worth the same as the whole of September.



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