

# Resowing grassland under cover crop

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## Summary

- In some regions, it is not allowed to resow grassland in autumn because it is associated with high nutrient losses. In these regions farmers are tied to resow in spring. Resowing in spring is hard, because weeds competes with the new grassplants resulting in slow development of the sod develops slow and loss of productivity.
- We explored if these problems can be solved by using summer barley as cover crops.
- The results are good and the method is applicable on practical farms.

## Background

On the light sandy soil, each 6 or 7 years permanent pasture needs renewing. To limit mineral losses, renewing takes place in spring. The start of newly sown grass is often mediocre in spring. Weed rapidly prevails and the development of the grass sod is restrained, which costs one or two cuts of grass. To solve these problems, KTC De Marke developed an alternative method: in spring, summer barley is sown together with grass and clover. Barley offers shelter for the young grass and clover plants and prevents the weed from prevailing.

## Methods

Resowing with cover crops is applied and tested on farm scale:

- Summer barley is sown together with grass and clover in Mid-March (Figure 1).
- Barley is harvested as complete plant silage or is threshed.
- Immediately after harvesting the barley, animal manure is applied.
- The first cut of grass is mown in an early stage to remove small weeds and remains of straw.

Yields of dry matter and nutrients were recorded for both systems of grass renewal: with and without barley, to evaluate the performance of the systems.

The products are harvested and used in several ways. If barley is threshed, the kernel and the straw are harvested separately. Threshing occurs in the dough stage. After grinding and adding propionic acid, the kernel is ensilaged. This fits in the ration of dairy cattle, which saves concentrates. The straw is used as litter for the calving barn. If barley development is too slow and the kernel yield and quality are insufficient, we mow the crop halftime the dough stage and make complete plant silage. The first cut of grass is ensilaged as feed for yearlings.

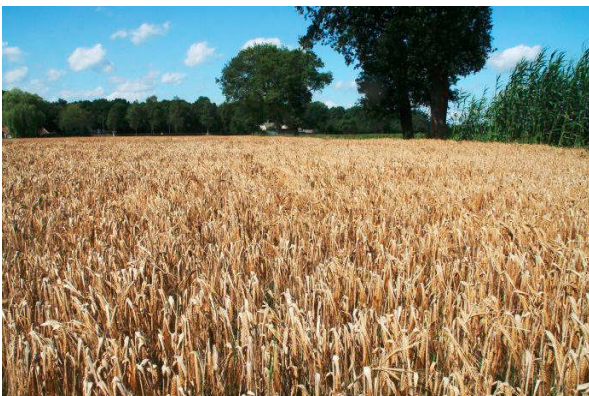


Figure 1: Barley and grass in the same year.

## Results

Table 1, presents the yields for resow in spring and resow in spring with Barley as cover. The reference situation indicates the productivity of permanent grassland that is not renewed. Resow in spring without cover crops, clearly puts pressure on yields. Resow with Barley as cover crop results in a dry matter yield that is almost equal to the reference and an increase in the N efficiency because the same N yield is realized with lower N inputs.

Table 1: Inputs and yields (kg per ha) in permanent grassland that is resown with and without cover crops (Reference stands for no resowing).

Situation	Crops	Nitrogen Input	Yield	
			Dry matter	Nitrogen
Reference	Grass	300	10000	250
Resow in spring	Grass	300	7000	175
Resow in spring	Barley	95	6500	80
Barley as cover	Grass	80	3000	90

We can explain these positive results by the favourable effects of the Barley on the development of the grass sod: weed cannot develop, but grass and clover can sprout easily. The sward is firm and the soil has subsided well, which saves artificial fertiliser. In the fall there is a second cut of good quality and in the year following resowing the grassland is good enough to drive and graze on and immediately realises an adequate yield.

## Practical implications

This method combines a safe start of the pasture (without chemical weed control) with a satisfying feed production in the renewal year. Crucial factors in this system are 1) that the grass and clover seed should take off well in the spring, and 2) the weather conditions after the barley harvest. The products can be utilized well on the farm. Resowing with Barley as cover yields a higher variety of products that can be used for different animal groups on the farm (young stock, dry cows and high yielding milking cows).

It is also possible to grow barley purely as a cover crop instead of a main crop. A small amount of seed is then sufficient and the first cut is light and is mown and ensilaged early together with the barley.

## Conclusions

Resowing under cover crops increases the chance of adequate sward forming, of saving on weed control and realising an adequate utilisation of nitrogen. The experiments on De Marke with resowing permanent pasture under cover crops are promising and will certainly be followed up. Also on practical farms on light sandy soil, this system is applicable and worth trying.