

Undersowing leys in cereals

Problem

Dry periods after harvesting cereals increase the difficulty of sowing a new ley. The tradition of sowing in July/August can therefore be risky.

Solution

Sowing a grass-clover ley into the cereal crop in March/April uses the soil moisture of winter for the establishment of the ley. In most cases, the sowing is successful. Under the shade of the cereal crop, the ley develops without becoming a competitor or interfering with the harvest. After removing the straw, the undersown ley quickly develops, forming a dense sward.

Advantages

- Higher yields in grass-clover leys due to earlier development
- Better establishment in dry summers
- Seamless transition from cereals to grass-clover ley without ploughing or other soil tillage.
- After a few weeks, the fully-grown ley can be used for cutting or grazing.
- Rather well suppressing of annual weeds

Disadvantages

- The presence of root weeds, such as docks, is increased due to a lack of stubble cultivation.
- In cereal stubbles, weed treatment is not possible.
- Harvester damage cannot be rectified.
- Irregular grass-clover leys due to soil compaction from heavy harvesters

Practical recommendation

- In spring (March/April), between tillering and bolting of the cereal, the ley is undersown (preferable before a wet period, since the crop cannot be rolled.).
- The ley is best sown with a seeder for grass-clover, in combination with a harrow passage.
- Several clover mixtures are possible; farms without livestock may also use only white or red clover.



If high yields are expected, the row spacing can be increased to 24 cm (or maybe 36 cm) and a hoe passage can be performed in addition to the harrowing to control annual grasses, such as twitch grass. (Photo: Hansueli Dierauer, FiBL)

Applicability box

Theme

Weed management, soil quality and fertility

Geographical coverage

In areas of cereal cultivation with a moderate climate (Central Europe)

Application time

Between tillering and bolting of the cereal crop

Required time

No additional work required if the sowing is combined with harrowing

Period of impact

Current crop and succeeding crop

Equipment

Grass-clover seeder on a harrow

Best in

Generally in all cereal varieties except oats (allelopathic effect on the catch crop). Varieties with medium height and average yield expectations.

Advice

- The denser and higher the regular crop, the less likely the undersown ley will succeed (due to shading).
- The success of a ley depends greatly on the choice of variety and the yield expectations: Varieties with a planophile leaf positions are better at suppressing weeds; however, the ley receives little light for germination.
- Varieties with erectophile leaf positions are generally better suited, but they also promote weed growth.
- Long-stem plants creates more shade for weeds and thus the ley than middle- or short-stem varieties.
- If root weeds such as docks or common couch are present, undersowing is not recommended.

Practical testing

If this method seems to be suitable for your farm, we recommend that you test it under your own farm conditions as follows:

1. When sowing the cereal, delimit a part of the field for testing.
2. Apply the new method on one of the two plots. The other plot can be cultivated as usual.

Evaluation

Visual evaluation: Under favourable conditions, undersowing has hardly any effects on the growth of the cereal crop. Nonetheless, it might be interesting to compare the development of the cereal crops and weed density in both plots at different stages. After the harvest, a visual assessment of the soil structure (with e.g. the spade test) can bring interesting findings. Photographs of the trial plots document possible differences and facilitate the analysis at a later time.

Quantitative evaluation: Optimally, the yield of the cereal crop should not be decreased. The temporary grassland can be used earlier than after reseeding and a stubble cultivation.

Further information

Weblinks

- In the [OK-Net Arable tool database](#), further practical information on soil covering techniques in general is available.
- On [bioaktuell.ch](#), you will find information on the undersowing technique as well as other possibilities for soil covers (German/French).
- General information on undersowing on [oekolandbau.de](#) (German).

About this practice abstract and SolACE

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