PRACTICE ABSTRACT

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 residual soil moisture from 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.
- A few weeks after cereal harvest the fully-grown ley can be used for cutting or grazing.
- Rather good suppression of annual weeds

Applicability box

Theme
Weed management, soil quality and fertility

Geographical coverage
In areas of cereal cultivation with a continental 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.

Disadvantages

- Presence of perennial weeds, such as docks, is increased due to a lack of stubble cultivation.
- Mechanical weed control is no longer possible.
- It is not possible to restore the soil once it has been compacted by the harvester.
- Uneven establishment of grass-clover leys due to soil compaction from heavy harvesters

Practical recommendation

- The ley is undersown in spring (March/April), between tillering and bolting of the cereal (preferably before a wet period, as 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.

Row spacing of 24cm (or even 36cm) allows passage with an interrow hoe, but also provides more light to allow the grass clover to grow (Photo: Hansueli Dierauer, FiBL).

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Remarks and advice

- The denser and higher the cereal crop, the less likely the undersown ley will succeed (due to shading).
- The success of a ley depends greatly on the choice of cereal variety and the yield expectations: Varieties with a more planophile (horizontal) leaf position are better at suppressing weeds; however, this can suppress ley growth due to light limitations.
- Varieties with erectophile leaf positions are better suited (but they also promote weed growth).
- Long-stem plants create more shade for weeds and but also may suppress the ley compared to middle- or short-stem varieties.
- If weeds that spread by roots or rhizomes such as docks or common couch are present, undersowing is not recommended.
- Sow in early spring

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 to compare.

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 crop and weed density in both plots at different stages. After harvest, a visual assessment of the soil structure (with e.g. the spade test) can bring interesting insights. 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.

Use the comment section on the SolACE discussion forum to share your experiences with other farmers, advisors and scientists! If you have any questions concerning the method, please contact the first author of the practice abstract by e-mail.

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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