PRACTICE ABSTRACT

# No more hoeing in organic oilseed rape

## Problem

Oilseed rape sown in summer only forms a dense canopy in the following spring. In autumn and winter, the stands can become infested with weeds, and in vulnerable areas, soil erosion can occur.

## Solution

Undersowing helps to increase soil cover. In oilseed rape, frost-sensitive legumes are best suited for undersowing. They fix some N and thus contribute to the large nitrogen requirement of oilseed rape plant through mineralization. After dieback they form a layer of mulch on the field.

## Benefits

- Suppression of seed weeds
- Reduction of soil erosion
- Reduction of nutrient leaching
- Nitrogen is fixed and utilised by the oilseed rape.
- Weed control is usually not required, which helps to reduce variable costs.
- Carbon is stored and released less from soil

## Applicability box

**Theme**
Weed management, soil quality and fertility

**Geographical coverage**
In areas of oilseed rape cultivation with a moderate climate north of the Alps (Central Europe). The method may need to be adapted to local conditions.

**Application time**
Sowing of the undersown crop at the same time as the oilseed rape.

**Required time**
Time saving, as hoeing is not necessary

**Period of impact**
Current crop (replenishment of nitrogen, weed suppression)

**Equipment**
Suitable seed drill

**Best in**
Oilseed rape

## Disadvantages

- Significant competition with the oilseed rape crop is possible (depending on the undersown crop and the date of dieback).
- No mechanical weed control possible in autumn
- Additional costs for undersown crop seed

## Practical recommendations

- Sowing should occur between 25 August and 10 September (in central Europe), if possible before a longer period of precipitation; otherwise, weeds may develop first.
- Fertilization: 20-30 t composted manure in autumn, 30-50 $m^3$ of slurry in early spring (as soon as vegetation restarts and the soil is dry enough), if organic commercial fertilizer is used, apply in February
- Either mix legume and oilseed rape seeds and sow them at the same time, or sow the legumes at the last tillage and a few days later sow the oilseed rape with precision seeding.

**If the undersown crop develops optimally, no mechanical weed control is required. (Photos: Amélie Fietier, Fondation Rurale Interjurassienne, and Maurice Clerc, FiBL)**

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# Practice abstract

## Recommended species and mixtures

- Only mixtures of frost-sensitive species are suitable for undersowing. Based on previous experience, a mixture of fenugreek (*Trigonella foenum-graecum*), peavines (*Lathyrus sativus*) and lentils (8 kg/ha each) or vetch, clover (*Trifolium alexandrina*), phacelia and guizotia are recommended (choose varieties that are as frost-sensitive as possible).
- In dry conditions, the addition of some flax can be interesting. Flax also has an inhibiting effect on germination of weeds.
- In case of increased weed pressure, the addition of 20 to 50 kg per hectare of a frost-sensitive faba bean can improve weed suppression. In autumn, faba beans can also have a positive effect against flea beetles (Psylliodes) and other pests. If the legumes and oilseed crop are sown the same day, sow the faba bean first at a sowing depth of 5-8 cm and then the rape in only 1-2 cm.

## Advice

- The weed pressure in the seedbed should not be too high; if necessary perform a weed treatment before sowing (better after barley than wheat).
- After cereals, it is essential to germinate volunteer grains in advance with a stubble cultivation.
- Undersowing is not recommended if root weeds such as docks (*Rumex obtusifolius*) and couch grass (Agropyron repens) are present, as these weeds cannot be hoed due to the undersown crop.

## 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 oilseed rape, 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 oilseed rape crop. Nonetheless, it might be interesting to compare the size and development of the oilseed rape crop 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**: A frost-sensitive undersown crop can have a positive effect on the oilseed rape yield.

## Further information

### Links

- In the Organic Farm Knowledge 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 DiverIMPACTS

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**Permalink:** zenodo.org/record/3234430

This practice abstract was elaborated in the DiverIMPACTS project, based on the EIP AGRI practice abstract format.

DiverIMPACTS: The project is running from June 2017 to May 2022. The overall goal of DiverIMPACTS - Diversification through Rotation, Intercropping, Multiple Cropping, Promoted with Actors and value-Chains towards Sustainability - is to achieve the full potential of diversification of cropping systems for improved productivity, delivery of ecosystem services and resource-efficient and sustainable value chains.

**Project website:** www.diverimpacts.net



The project DiverIMPACTS - "Diversification through Rotation, Intercropping, Multiple Cropping, Promoted with Actors and value-Chains towards Sustainability" is supported by the European Union's HORIZON 2020 research and innovation programme under Grant Agreement no 727482 and by the Swiss State Secretariat for Education, Research and Innovation (SERI) under contract number 17.00092. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the EC and the Swiss government. Neither the European Commission/SERI nor any person acting behalf of the Commission/SERI is responsible for the use which might be made of the information provided in this practice abstract.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727482 (DiverIMPACTS)

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