

## Undergrowth of late summer sowings at the tree strip

### Einsaaten der Baumstreifen im Spätsommer

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#### Abstract

The tree strip strategy of a 'late summer cover crop' is evaluated regarding a number of aims: soil improvement, frost control, weed control, growth regulation and regulation of nitrogen availability. The strategy of late summer cover crops is especially compatible with young orchards with good mechanisation. Most suitable plant species for late summer sowings are fodder radish (*Raphanus sativus* v. *olieferus*,  $\pm 3$  g. seed/m<sup>2</sup>), turnip (*Brassica rapa* v. *rapa*;  $\pm 3$  g. seed/m<sup>2</sup>), Phacelia (*Phacelia tenacetifolia*;  $\pm 1$  g). Risks of undergrowth are: mice, growth reduction, regrowth, grassing, but can be overcome by management. Choice for winter cover or clean strip depends on mice pressure.

#### Keywords

Tree strip, cover crop, weed control, nitrogen availability, *Raphanus sativus* v. *olieferus*, *Brassica rapa* v. *rapa*, Phacelia.

#### Introduction

One of the possible strategies with cover crops at the tree strip is sowing a green manure crop in the late summer. This crop may or may not survive the winter, and the tree strip is clean again during flowering. This strategy combines the advantages of a cover crop in the late summer with the advantages of having a clean tree strip during flowering. The first time a cover crop is sown extra fertiliser is used; thereafter accelerated nutrient cycling takes place and no extra fertiliser is usually required.

The strategy of late summer cover crops is especially compatible with young orchards where the following conditions are met: there is a great deal of light falling on the tree strip, there are facilities for irrigation (overhead irrigation, mini-sprinklers) and good mechanisation is present (rotary weeder with feeler, sowing machine and preferably a mower with feeler).

#### Benefits of the undergrowth

The cover crop generates extra organic matter that is easily broken down and has a positive effect on soil life and soil structure.

Mechanical weed control is easier. The difficult soil tillage in the spring is shifted to a somewhat easier tillage in the late summer. Moreover, the beautiful soil structure that develops makes the tillage simpler and more effective.

The cover crop can retard tree shoot growth due to competition for moisture. This

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growth regulation is based on controlled water stress and takes place only if there is a naturally dry period in August that can be amplified by sowing a cover crop. The leaf analyses show the cover crop transfers the available nitrogen from the late summer to the following spring (June: +0,2 or +0.3%N), resulting in less leaching of nitrate in the winter and possibly a better fruit set in the spring.

### Comparing plant species

The most suitable plant species for late summer sowings are fodder radish (*Raphanus sativus* v. *olieferus*,  $\pm 3$  g. seed/m<sup>2</sup>), turnip (*Brassica rapa* v. *rapa*;  $\pm 3$  g. seed/m<sup>2</sup>), Phacelia (*Phacelia tenacetifolia*;  $\pm 1$  g. seed/m<sup>2</sup>) and possibly winter rye (*Secale cereale*; ca. 10 g. seed/m<sup>2</sup>).

All cruciferous crops requires a great deal of nitrogen (Soil July:  $\geq 40$  kgN<sub>NO<sub>3</sub></sub>/ha<sub>0-30cm</sub>) and provide a great deal of growth control and nitrogen transfer. The advantage of fodder radish above turnip is that the seed is cheaper and does not survive a light frost. Less suitable are mustard (*Sinapis alba*) or summer rape seed (*Brassica napus*). Phacelia is a good choice if less nitrogen is available and if you want the winter open. With phacelia, it is important to time the sowing correctly so the crop goes into the winter at a young stage with a closed canopy.

### Handling the risks

The risks around the use of cover crops can be reduced by good provisions:

- Increased populations of mice.  $\Rightarrow$  Choose a cover crop species that does not survive the winter.
- Poor germination during dry weather or if seedlings are eaten and invasion of grasses.  $\Rightarrow$  With good mechanisation and irrigation, most cover crops do succeed. If necessary, a failed cover crop can be mowed or worked in.
- Strong regrowth if there is rain following a dry period.  $\Rightarrow$  Overhead irrigation or drip irrigation maintains humidity and reduces the risk of regrowth.

### Finally

Late summer sowings of summer crops are certainly not an option for fruit growers with insufficient attention for mechanical weed control or irrigation; it is unrealistic for them to believe that a cover crop will be a 'natural' solution for their orchard!

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