

Organic apple orchard fertilisation: row and inter-row management with legume intercrops

Problem

Using external nutrient sources (i.e., fertilisers) presents some contentious issues (e.g., contaminants obtained from conventional farming) and must be reduced on organic farms.

Solution

Intercrops with legumes can be a source of nitrogen and other nutrient elements, reducing the need for external inputs.

Benefits

Soil fertility and orchard biodiversity (including soil biodiversity) increase, and nutrients are better balanced.

Practical recommendation

The efficiency of the intercrops is strongly dependent on the appropriate selection and management of the leguminous species.

- The best results were obtained with perennial legumes, such as white clover (*Trifolium repens*, better the micro- or nano- ecotypes, Picture 1) in combination with sheep fescue (*Festuca ovina* - Picture 2), or mixtures of leguminous species (e.g., micro white clover + *Medicago lupulina* + *Lotus corniculatus* + *T. incarnatum*).
- Key factors for good establishment of the intercrop are:
 - a) correct sowing time
 - b) minimising soil disturbance until the intercrop is fully established
 - c) sufficient water availability during germination and establishment
 - d) use of high seed density (up to 2 g/m²) to avoid initial competition by weeds
- The legumes (including peas) can also be sown on the tree row to produce green manure for early-season incorporation into the soil.
- When enough biomass is produced, the legume(s) must be incorporated into the soil, at the latest in July (depending on the specific site), to match nitrogen mineralisation with the trees' demands.

Applicability box

Theme

Crop nutrition, Farm management

Keywords

Soil fertility, Nutrient management, Horticulture

Context

All Europe

Application time

Growing season

Period of impact

Several years

Equipment

Seed sowing machine, soil tillage machines

Best in

Any orchard



Picture 1: Micro clover in the interrow. (Photo: E. Malusà, Inhort).



Picture 2: Mixture of micro clover and sheep fescue (Photo: E. Malusà, Inhort).

Further information

Further reading

- Brochure [“Effective Options on Integrated Soil Management”](#) – Deliverable 2.15 of the Core Organic Cofund project DOMINO

Weblinks

- Check the [Organic Farm Knowledge](#) platform for more practical recommendations.
- [DOMINO: Dynamic sod mulching and use of recycled amendments to increase biodiversity, resilience and sustainability of intensive organic fruit orchards and vineyards](#)

About this practice abstract

Publisher: National Institute of Horticultural Research (IO-PIB)
ul. Konstytucji 3 Maja 1/3
96-100 Skierniewice, Poland
www.inhort.pl

Authors: Eligio Malusà and Małgorzata Tartanus

Contact: eligio.malusa@inhort.pl



Review: Ambra De Simone (IFOAM Organics Europe), Lauren Dietemann (FiBL)

Permalink: [Organic-farmknowledge.org/tool/44724](https://organic-farmknowledge.org/tool/44724)

Project name: BIOFRUITNET- Boosting Innovation in ORGANIC FRUIT production through stronger networks

Project website: <https://biofruitnet.eu>

© 2022

