

Integration of different agronomical practices for inter-row soil management in organic orchards

Problem

Inter-row soil management in organic orchards should aim at reducing soil compaction and erosion, increasing soil fertility and biodiversity without interfering with other practices.

Solution

To adapt strategies that besides increasing the orchard biodiversity, will also function as an internal source of nitrogen, increase soil fertility and keep the soil covered.

Benefits

Mixtures of leguminous plants and grasses grown as cover crops can protect the soil against compaction and erosion while increasing soil fertility, microbial biodiversity and activity.

Practical recommendations

Alternatives to manage the inter-row can include:

- Use of white clover (*Trifolium repens*) or micro-clover or dwarf alfa-alfa (Picture 1). The micro/dwarf ecotypes produce less biomass than normal types but compete less for water and nutrients. They form a “carpet-like” cover in the inter-row.
- Use of mixtures of a leguminous and a grass (e.g., white clover and sheep fescue) (Picture 2) or mixture of more species (Picture 3). The grass develops first, followed by the legume, as it normally occurs in meadows, reducing weed competition during the establishment phase.

Applicability box

Theme

Crop production, Farm management

Keywords

Crop management, cover plants, temperate fruits, nutrient cycling in ecosystems

Context

Any farm

Application time

Growing season

Required time

Similar to other soil management practices

Period of impact

In the year of application and also following seasons

Equipment

Seed sowing machinery and other standard tillage machines



Picture 1. White clover developed in the inter-row (Photo: M. Tartanus, Inhort).



Picture 2. Micro-clover and sheep fescue mixture in the interrow. (Photo: E. Malusà, Inhort).

- For both cases, a seed quantity of 2 g/m² provides a good density and establishment. However, particularly in the case of micro-clover, water availability (or some irrigation) and full light during the germination phase are needed to ensure good development. The initial development after sowing can be slow in case only legumes are used, but they are resistant to soil compaction by machines (Picture 4).
- Cuts from the inter-row in May-June used as row mulch, can provide up to 50-60 kg N, 10 kg P and 70-80 kg K per ha.



Picture 3. A mixture of several grasses and leguminous species established in the inter-row (Photo: E. Malusà, Inhort).



Picture 4. The different resistance to soil pounding by machines of a grass/legume mixture (left) compared to natural cover (right) (Photo: E. Malusà, Inhort).

Further information

Further reading

- [Guidelines for strategies to improve fertilization in intensive organic apple orchards](#). Organic Eprints.
- [Final Report on new fertilization management to improve soil fertility and health in intensive organic orchards](#). Organic Eprints.

Weblinks

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

About this practice abstract

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