BIOFRUITNET
Boosting Innovation in ORGANIC FRUIT production through stronger networks

Versuchszentrum
Centro di Sperimentazione
Research Centre
LAIMBURG

PRACTICE ABSTRACT

# How to control weeds in organic pome fruit

## Problem

Rapidly spreading weeds use nutrients, water, space, and light meant for productive plants and trees. In the field, their aggressiveness and adaptability contribute to their spread.

## Solution

Control strategies are implemented by integrating preventive and agronomic measures that enhance pest management.

## Benefits

Using mechanical tillage allows for proper weed management under the row.

## Practical recommendation

Potential alternatives for weed management under the tree row:

- Mulching is a technique that involves the use of organic material (e.g., bark, straw, chopped wood) (picture A) and inorganic material (e.g., maize starch film or polyethylene) (picture B) to cover the soil under the tree row. Mice can build nests inside the covers, which is a major disadvantage of this practice.
- Flame weeding is an agronomic practice that uses fire to physically control weeds (picture C). A major advantage of this technique is that it does not damage the soil structure or tree roots. Disadvantages include high energy consumption, high fire risks, and possible damage to leaves, fruit, and microfauna.
- With mechanical tillage, weeds are eliminated and contained using different equipment. Grassing and weed suppression are the main objectives of this technique. Following are some possible machines that can be used:

| Practice | Advantages | Disadvantages |
|---|---|---|
| Disc harrow<br>(Picture D)<br>Rotary harrow<br>(Picture E) | - Aerates the soil<br>- Encourages mineralisation<br>- Increases fertilisation<br>- Keeps mice away from plants<br>- High effectiveness | - Relatively limited forward speed<br>- Damage to roots<br>- Intensive maintenance<br>- Problems in stony soils and on slopes<br>- High costs depending on model |
| Brushing machine<br>(Pictures F-G) | - Better in difficult and sloping soils<br>- High forward speed<br>- Better working quality around the tree trunk<br>- Less demanding maintenance<br>- Less expensive | - No tillage<br>- No incorporation of fertilisers in soil |
| Disc plow<br>(Picture H) | - The degree of soil loosening is such that no additional tillage is required<br>- Excellent control of annual weeds | - High power requirements<br>- More risk of degradation of soil structure<br>- Difficulties in controlling perennial weeds |

- For a correct control strategy, it is advisable to carry out tamping with a disc plough or power harrow in spring and then carry out several brushing operations during the summer period.
- As part of the DOMINO project, alternatives to weed control through controlled seeding of weed species were investigated. Factors to be considered are height (up to 45 cm), low light and nutrient requirements, high competitiveness against weeds, high attractiveness for beneficial insects, high dissemination capacity

## Applicability box

**Theme**

Crop production, temperate fruits

**Keywords**

Weed control, preventative measures, mechanical weeding, mulching, flame weeding

**Context**

Northern and Central Europe

**Application time**

Spring/summer: mechanical weeding, mulching, flame weeding

Summer: mechanical weeding/physical covers

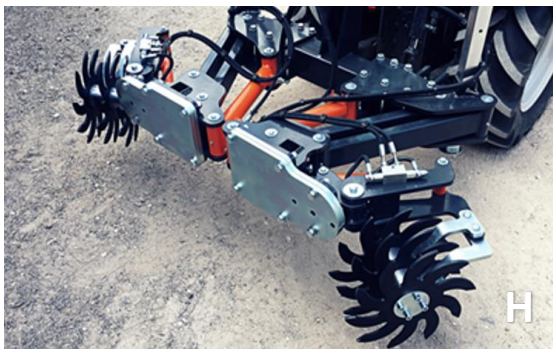
**Period of impact**

From spring to summer, where a strong vegetative upswing and growth are observed.

**Equipment**

Mowing machines and rotary harrows

(stoloniferous plants) and persistence (perennial plants). Some examples of herbaceous plants that have fulfilled these factors in Northern Italy: *Gallium mollugo, Trifolium repens, T. resupinatum, T. repens, Achillea millefolium*.




**Picture A: mulching with bark, Picture B: mulching with maize starch film, Picture C: machine used for flame weeding, Picture D: two-sided disc harrow, picture E: rotary disc harrow, Picture F-G: brushing machine, Picture H: disc plough or tamping machine. Pictures A-H: Ewald Lardschneider, Research Centre Laimburg.**

## Further information

### Further reading

- Kelderer, M., Lardschneider, E., Giacomuzzi, V. 2014. Die Pflege des Baumstreifens - Alternativen zum Herbizid (Mechanical devices in alternative to herbicides). (DE)
- DOMINO project. Dynamic sod mulching and use of recycled amendments to increase biodiversity, resilience and sustainability of intensive organic fruit orchards and vineyards. CORE organic. Horizon 2020.
- Check the Organic Farm Knowledge platform for more practical recommendations.

## About this practice abstract

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