

Transfer mulch in organic greenhouse crops

Problem

In organic greenhouses, crop rotations are often intense and lack diversity, green fallows are rare, and production relies heavily on external inputs. Consequently, problems such as reduced soil health, nutrient imbalances, and a prevalence of pests and diseases are common.

Solution

Applying fresh mulch in greenhouses is a sustainable alternative to plastic mulches. Mulch material produced locally or on-farm is applied before planting, repressing weed growth, providing nutrients and boosting soil health.

Impact

Mulching helps to maintain humus levels and soil structure, enhancing biodiversity and biological activity in the soil. The mulch layer reduces thermal radiation and evaporation, providing homogeneous soil humidity, lowering irrigation needs, preventing salinisation problems and buffering temperature extremes.

Practical recommendation

- There are various appropriate materials to use as mulch. Materials like grass-clover, pulses, cereal-legume mixtures or silage are suitable as they can be produced on the farm.
- Harvest the green mulch around the flowering stage and cut into approximately 10 cm pieces.
- An initial mulch layer of 10-15 cm thickness (see picture 1) is required to ensure weed suppression until the end of cropping. For fresh mulch material, one can plan to use approximately threefold the amount of mulch in relation to the greenhouse area.
- Do not apply the mulch too early in the season, to ensure the soil has warmed up enough before application. Otherwise, nutrient availability can be limited.
- Fresh mulch material and particularly silage mulch can cause leaf burning due to gas emissions. Therefore, planting should be delayed for 1-2 weeks after mulching and the greenhouse should be well ventilated during this phase (refer to figure 1 for correct timing).
- Install drip irrigation on top of the mulch layer or use sprinkler irrigation (e.g. once a week), this provides more homogeneous soil moisture and mulch decomposition.
- Usually, a single mulch application is enough to ensure weed suppression. If the mulch layer decomposes too fast or weed suppression is insufficient, apply a second mulch layer.
- If the mulch layer has decomposed sufficiently, completely incorporate it into the soil at the end of the season. If too much mulch material remains for mechanical incorporation, dispose of some of the material in your compost.

Applicability box

Theme

Soil health and quality, soil management, weed management, horticulture

Keywords

Weed control, horticulture, greenhouse crops, soil quality, soil management

Geographical coverage

Suitable for summer crops in all regions

Application time

Summer

Required time

Approx. 5-10 fold time of plastic mulch

Period of impact

Summer: for weed, water and temperature management; long term for improving soil health

Equipment

The use of a field chopper and a compost spreader is recommended.



Picture 1 (left): A 10-15 cm thick mulch layer impedes weed growth; Picture 2 (right): Insufficient ventilation after mulch application can lead to leaf burning Source: Hauenstein (FiBL)

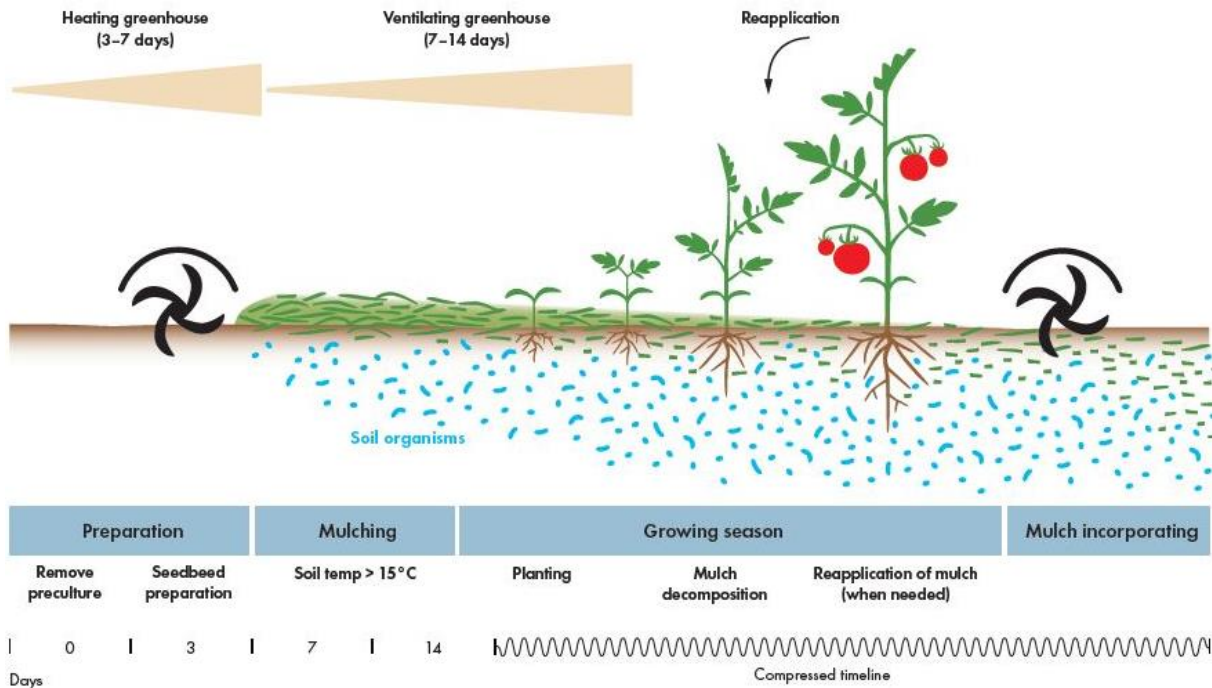


Figure 1: Schematic presentation of the mulching technique. Source: Hauenstein (FiBL)

Further information

Further reading

- Greenresilient technical factsheet: Transfer mulch in organic greenhouses: <https://orgprints.org/39053/>
- Planting vegetable seedlings mechanically in a mulch cover with the Mulchtec-Planter (film): <https://www.youtube.com/watch?v=iGVGGaaUnT4>
- Heckenberger A (2018). Alternative Anbausysteme: Bedeckung mit pflanzlichem Mulch. Gemüse, 9/2018, pp. 44-47.
- Koller M (2019). Was ist im Gras drin. Ökumenischer Gärtnerbrief, 2/2019, pp. 55-57.

Weblinks

- Check the [Organic Farm Knowledge Platform](#) for more practical recommendations.
- Greenresilient web page: www.greenresilient.net

About this practice abstract and Greenresilient

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