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# Module-4

## Mulching



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## Why Using Mulch?

- Protecting the soil from wind and water erosion: soil particles cannot be washed or blown away.
- Improving the infiltration of rain and irrigation water by maintaining a good soil structure: no crust is formed, the pores are kept open.
- Keeping the soil moist by reducing evaporation: plants need less irrigation or can use the available rain more efficiently in dry areas or seasons.
- Feeding and protecting soil organisms: organic mulch material is an excellent food for soil organisms and provides suitable conditions for their growth.



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- Suppressing weed growth: with a sufficient mulch layer, weeds will find it difficult to grow through it.
- Preventing the soil from heating up too much: mulch provides shade to the soil and the retained moisture keeps it cool.
- Providing nutrients to the crops: while decomposing, organic mulch material continuously releases its nutrients, thus fertilizing the soil.
- Increasing the content of soil organic matter: part of the mulch material will be transformed to humus.



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## Selection of Mulch Material

The kind of material used for mulching will greatly influence its effect. Material which easily decomposes will protect the soil only for a rather short time but will provide nutrients to the crops while decomposing. Hardy materials will decompose more slowly and therefore cover the soil for a longer time.



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- If the decomposition of the mulch material should be accelerated, organic manures such as animal dung may be spread on top of the mulch, thus increasing the nitrogen content.
- Where soil erosion is a problem, slowly decomposing mulch material (low nitrogen content, high C/N) will provide a long-term protection compared to quickly decomposing material.



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Sources of Mulching Material can be the following

- Weeds or cover crops.
- Crop residues.
- Grass
- Pruning material from trees
- Cuttings from hedges
- Wastes from agricultural processing or from forestry



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## Reccomendation while using mulches

- Some organisms can proliferate too much in the moist and protected conditions of the mulch layer. Slugs and snails can multiply very quickly under a mulch layer.
- Ants or termites which may cause damage to the crops also may find ideal conditions for living.
- When carbon rich materials such as straw or stalks are used for mulching, nitrogen from the soil may be used by microorganisms for decomposing the material. Thus, nitrogen may be temporary not available for plant growth.
- The major constraint for mulching usually is the availability of organic material.
- Its production or collection usually involves labour and may compete with the production of crops.



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## Application of Mulch

- If possible, the mulch should be applied before or at the onset of the rainy season, as then the soil is most vulnerable.
- If the layer of mulch is not too thick, seeds or seedlings can be directly sown or planted in between the mulching material.
- On vegetable plots it is best to apply mulch only after the young plants have become somewhat hardier, as they may be harmed by the products of decomposition from fresh mulch material.



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- If mulch is applied prior to sowing or planting, the mulch layer should not be too thick in order to allow seedlings to penetrate it.
- Mulch can also be applied in established crops, best directly after digging the soil.
- It can be applied between the rows, directly around single plants (especially for tree crops) or evenly spread on the field.



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## A practical example: The Fukuoka system of Mulching Rice Fields

- The Japanese organic pioneer Fukuoka developed a system of growing rice which is based on mulching.
- White clover is sown among the rice one month before harvesting.
- Shortly thereafter, a winter crop of rye is sown.
- After threshing the harvested rice, the rice straw is brought back to the field where it is used as a loose mulch layer.
- Both the rye and the white clover spring up through the mulch which remains until the rye is harvested.
- If the straw decomposes too slowly, chicken manure is sprinkled over the mulch.
- This cropping system does not require any tillage of the soil, but achieves satisfying yields.