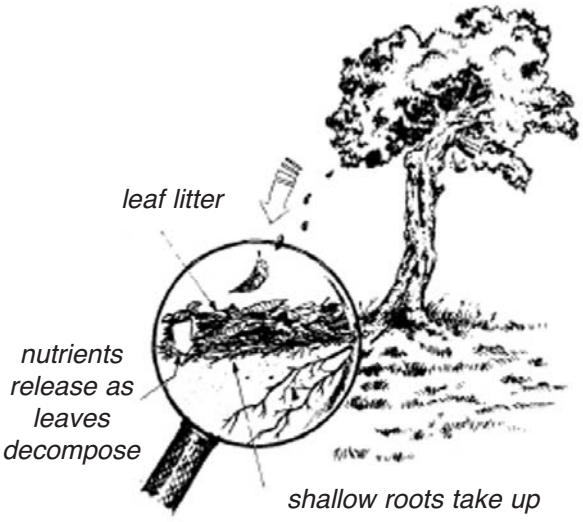
MULCHING

So what is mulching?



Have you ever looked closely at a forest floor? It's covered in leaf litter - a nutrient-rich, moist bed of decaying leaves, twigs and branches feeding a huge variety of fungi, microbes, and insects. These soil creatures break down all the dead organic matter, making the nutrients available to the forest plants again. It's nature's way of recycling nutrients.

Farmers and gardeners imitate nature by covering the soil with a layer of organic matter. This is called mulching, and it can improve the health of your soil and crop plants.

What does mulching do?

Mulching at Toronto Primary School, South Africa (Image: Sarah Watson, PACE)

- **Mulching helps prevent soil erosion**

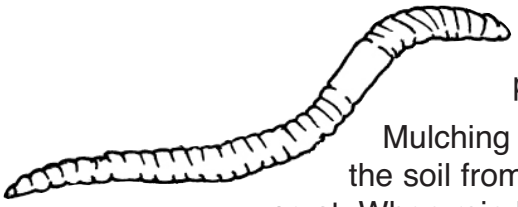
Mulch prevents rain from hitting the soil directly, reducing the impact of the water drops. Water soaks into the soil gradually instead washing the soil away.

- **Mulching adds organic matter to the soil**

Soil that is high in organic matter is very much alive. In just one pinch of soil, there are about a billion individual living organisms, perhaps ten thousand distinct species of microbes. As these microbes decompose organic matter, it supplies nutrients needed by growing plants. The beauty of this natural nutrient cycle is that nutrients are released in harmony with the needs of the plants. When environmental conditions are favorable for rapid plant growth, the same conditions favor a rapid release of nutrients from the organic matter.

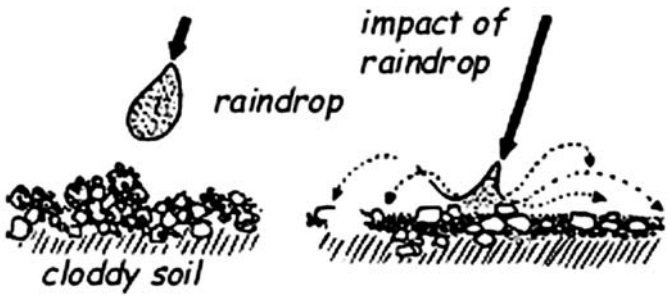
● Mulching feeds soil life and improves soil structure

When a mulch of organic matter is added to the surface of the soil, it decays producing slimes and gums that help to form and stabilize soil structure. The extra organic matter is food for soil creatures. These burrow their way through the soil, mixing the organic matter in and creating passageways within the soil through which air and water can infiltrate. In this way, mulching can help loosen up heavy clay soils, making it easier for the farmer to work, and making it easier for plant roots and shoots to push their way through.



Some people call earthworms “a farmer’s best friends”. As earthworms multiply, the soil becomes looser and more porous - a better place for plant roots to grow.

Mulching also prevents the soil from getting a hard crust. When raindrops hit bare soil in a heavy rainstorm, it breaks into smaller pieces. These pieces stick together and form a hard crust when the soil dries. This crust makes it difficult for water to soak into the ground. It also makes it hard for young plants to push through the soil crust. Mulch is a protective cover for the soil, sheltering the soil from hard-hitting rain.



Soil erosion by rain
(Image: Outreach/TVE)

● Mulching adds nutrients to the soil

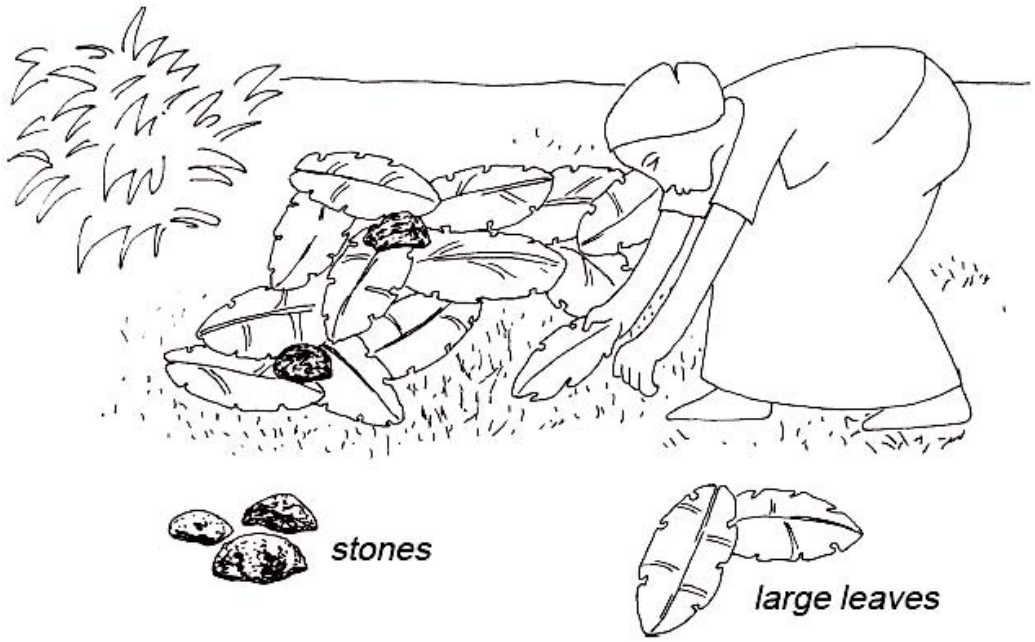
Mulch around crop plants mimics the litter layer of a forest floor. The nutrients in the mulch are gradually released and taken up by the crops. Mulching is cheaper than chemical fertilizers, and because it also improves soil structure, the nutrients will not be washed away or leached from the soil by heavy rain.

● Mulch decreases water loss due to evaporation

Mulch reflects a lot of the sun that otherwise beats down on the soil. This keeps the soil cooler and helps prevent evaporation. This is especially important in hot, dry climates. Also, by slowing down rainwater run-off, mulch increases the amount of water that soaks into the soil. The loose soil structure, created by the soil life fed by the mulch, helps hold water in the soil. And more water in the soil means more water for your crops. With a mulch, it may be possible to grow crops like tomatoes and cucumbers where only drought tolerant crops grew before.

● Mulch works against weeds

When the soil is covered in mulch, weeds do not get the light they need to grow.



Mulching with large leaves to suppress weeds (Image: HDRA)

Are there any problems to look out for when mulching?

There are some potential drawbacks to mulching which people should know about. For one thing, mulches may provide a good environment for pests. For example, slugs sometimes cause serious losses to crops such as beans when mulched. Harmful insects, mice, rats, rabbits and snakes may also find thick mulches an attractive habitat. Also, mulching can sometimes lead to a lack of nitrogen for crop plants. The nitrogen can be locked up in the bacteria that are decomposing the fresh organic matter in the mulch. Nitrogen deficiency may make the crop plants more susceptible to disease.

However, as a long-term strategy for soil improvement, the benefits of mulching far outweigh the potential disadvantages. For many crops, mulching can increase yields, prevent erosion, and ensure that your soil stays fertile for the future.

What materials can be used as a mulch?

You can mulch with whatever organic matter is readily available and transportable.* Common materials include compost, manure, straw (crop stems and stalks), dry grass clippings, sawdust, leaves, and other left-over crop residues. Alternative mulching materials include black plastic sheeting, newspaper or cardboard. However these materials do not add nutrients to the soil or improve its structure.

- It's better not to use plant material from the same type of crops that you are growing. For example, maize residue should not be used as a mulch for maize as it might still be carrying insects or diseases of maize.
- Green vegetation is not normally used as it can take a long time to decompose and can attract pests and fungal diseases.
- Experiment to see which mulches in your area last the longest. The longer the mulch lasts the less often you have to apply it.

* If the farm is supplying certified organic produce to an international market, it is wise to check with national and international organic standards to see which ones are allowed or recommended.

How do you apply a mulch?

(Image: HDRA)

- For large plants spread the mulch between the rows and around each plant
- For small plants or seedlings apply it between the rows, not directly around the plants. In this way you will not encourage disease, but you will still reduce weeds and add organic matter to the soil. Try different thicknesses of mulch to see which works best for your crops
- Always apply mulches to a warm, wet soil. Mulch applied to a dry soil will keep the soil dry

Mulching around tree seedlings

Once tree seedlings have been planted out, spread a layer of mulch 3cm thick on top of the soil but do not let it touch the stem of the tree. Renew your mulch every 6 months.
(From My Nursery by Landcare/Food and Trees for Africa)

How thick should the mulch be?

- If you put mulch on too thickly, it might shade seedlings, so they will grow tall and spindly. Too much mulch can also prevent airflow and encourage disease. This can be an especial problem in areas with a lot of rain
- To allow the germination of planted seeds through the mulch, a layer of less than 10cm should be used
- To clear an area of land of persistent weeds a layer of 10cm or more can be used

Isn't mulching a lot of extra work?

Actually, by improving the soil and helping to fight weeds, mulching can save gardeners time and work in the long run. You will spend less time weeding and because a soil with lots of organic matter is looser, those weeds that do grow are a lot easier to pull out. Digging in a looser soil is also a lot easier. Plus, as mulching prevents water from evaporating from the surface of the soil, less watering is necessary.

However, it's true to say that it would be a lot of work to carry in enough mulching material to cover an entire field. Sometimes farmers simply cut the weeds in their fields, right before planting, to form a mulch for their crops. Other farmers grow cover crops, which they chop up and leave as a mulch just before food crops are planted (See also Action Sheet 39: Green Manure/Cover Crops for Biomass Transfer).

Acknowledgements: This Action Sheet was compiled by Nancy Gladstone, and is based on Outreach TVE Soils Education Pack: Soil Improvement in the Tropics article on Mulching. [Sources: Thurston, H.D. Slash/Mulch Sytems: Sustainable Methods for Tropical Agriculture. IT Publications, 1997; Harman, Harvey. Mulch Increases Yields at Sustenance Farm. Developing Countries Farm Radio Network, October 1994.[Online] Available at dcfrn@web.apc.org March 15th, 2002]; Landcare/Food and Trees for Africa: My Nursery, How to set up and run a community nursery; Henry Doubleday Research Institution Tropical Advisory Service Leaflet on Mulching.

CONTACTS

Food and Trees for Africa – www.trees.org.za
HDRA Tropical Advisory Service – www.gardenorganic.org.uk