

MULCHING

(Food for thought & your garden)

Written and compiled by: James Vargas

Mulch is described as a layer of some type of material on the surface of the soil. Using locally produced wood chips and leaves are a sustainable activity, keeping a useful product out of the landfill, which is both environmentally and economically beneficial. There are a lot of misconceptions and myths that create controversy. I hope to guide you through an understanding of the dynamic process of mulching. How to properly apply various materials. The do's and don'ts and the why's and why not's. This information is intended to be just FOOD FOR THOUGHT and when properly applied FOOD FOR YOUR GARDEN!

Benefits:

1) Insures a bumper crop - high yield production

- a) Mother Earth's website states vegetable **yields are 50% more productive**
- b) Creates more uniform moisture for the plant roots. This uniformity and other organic processes as a result of mulching, creates a less stressful environment for the plant, allowing it to be more productive.

2) Reduces soil erosion and crusting

- a) The organic matter helps to keep the soil crumbly and easy to work. (OSU Ext Svcs)
- b) Water droplets from rain or irrigation on a mulched surface can't directly hit the soil. The soil particles are able to group together or aggregate more. This process increases soil's air spaces and moisture holding capacity which are necessary to sustain microbial life of fungi and bacteria. This aids in the decomposition process of organic material. Worms further work their magic reducing material and aggregate it even further.
- c) **With soil crusting, oxygen flow into and out of the soil is limited, reducing crop growth.**

3) Moderates soil temperature

- a) The Cornell University study reports that mulched plot's summer **soil temperatures were reduced by 8 to 13 degrees.** This prevents the sun from wreaking havoc on tender vegetation by lowering soil temps.
- b) Protects the plant root system in the winter.

4) Conserves water = Less watering

- a) The same study found the **soil moisture content in mulched plots were two times as high.**

- b) The Oregon State University Extension Svc Master Gardener program states **moisture moves by capillary action to the surface and evaporates, if mulch does not cover the soil.**
- c) Wood chips **supply nutrients slowly to the system; at the same time they absorb significant amounts of water that is slowly released to the soil.** Cite; Linda Chalker-Scott, Ph.D. Master Gardener.

5) Improves Soil nutrients

- a) Mulch breaks down into organic soil, rich with a variety of microbes. A variety of mulched material increases the variety of microbes increasing the variety of plants fed.
- b) Organic mulches condition the soil and furnish food for earthworms, which are valuable in aerating the soil. (Do not use chemicals as this will have an ill effect including death to the microbial community. Use organic fertilizers if you use any at all).
- c) Organic Gardening cited a Washington State University study that found sand turned into rich black soil full of life.
- d) Our own experiments here at Temple Terrace Community Garden has proven this to be true. Our pathways were mulched early on. Originally very sandy. I found the paths to have better soil than the plot itself. I started using that soil once it broke down and then re-mulch the path. Later- after attending a class put on by a local garden - Willow Garden -and researching the process - I started mulching the garden.

6) Less weed growth = less weeding

- a) **More time can be and is spent on trying to control weeds than any other home gardening activity.**
- b) Mulching with oak and other like mulches decreases the likelihood of weed seeds germinating. Be careful – as I will mention later - **some straws and hay must be aged** to rid it of the various seeds that if left in the hay or straw will lead to a marked increase in weeds.
- c) Cornell University study reports that **the time required to remove weeds in a mulched areas was reduced by two-thirds.** In my opinion and experience here, a lot less time is involved than mentioned in the study.
- d) Seeds of **most** grasses, weeds and plants will not germinate where oak mulch meets the soil and about one inch into the soil. A few types will germinate.

MISCONCEPTIONS : The truth of the matter (organic mulch matter)

1) Oak leaves and mulch chips lower the PH and make the soil too acidic.

- i) According to Oregon State Extension Services and Horticulture magazine and other sources – In all but the sandiest soil the **PH is strongly buffered meaning it does not easily fluctuate.**
- ii) This study as well as other sources state - **PH changes very little after applying most mulches.**
- iii) Research over the years **has not demonstrated any detrimental effect of wood chips on established plants.**

- iv) Although **oak leaves have an acid PH (4.5 to 4.7) when they are fresh, the breakdown products are neutral to slightly alkaline.** This holds true for several mulches like pine bark, pine needles and related materials that are considered acidic. According to the [Forest Industry Council of Australia](#), **pin****es do not harm the soil and various studies have found no evidence of soil acidification** in the pine forest.
- v) I have used only oak mulch in my plot for four years or more, layer upon layer, with no seasonal breaks and recently **tested my soil PH at four to six inches of depth. I found my PH to be right at 7.0 - neutral.**

2) **Woody oak mulches, leaves, pine needles, pine bark remove nitrogen from the soil**

a) **This only occurs where the oak and woody materials meet the soil surface. The effect is minimal.** Most seedlings do great just one or two inches below the surface.

(i) **Put a layer of decomposed mulch on top of the soil, then add a layer of fresh non decomposed mulch on top.** This will help alleviate that neutral zone of low nitrogen. The top **fresh** layer will combat germination of the undesirable grasses and weeds. The top layer should be 2-3 inches thick and minimal contact with new seedlings.

(ii) In addition - If you are still concerned, add a layer of high nitrogen fertilizer to the surface soil before mulching such as blood meal if you are planting seeds or small seedlings.

(iii) Planting small plants that are already established – like the ones you purchase from a nursery will be planted well below the surface away from this area.

(iv) Research over the years has not demonstrated any detrimental effect of wood chips on established plants.

a) In a **vegetable garden do not till if you are using these woody mulches and do not use the wood chips below the soil surface.** It will tie up some nitrogen where the plant needs it most, at the roots. Vertical tilling also disrupts the microbial community established in the soil.

b) **over time, nitrogen increases when using woody or oak chips as mulch** states a 1971 Cornell University 15 year research study.

What are my options other than oak chips?

1) **Oak leaves**

- vi) Breaks down to one of the best organic materials to feed your plants.
- vii) When using **oak leaves as mulch it is very important that:**

- (1) The first layer above the soil needs to be moderate size particles of decomposed leaves - non decomposed leaves can be used they just take longer to break down.
- (2) The layer above the decomposed layer can be whole leaves - preferred chopped. Not too thick or water will not reach the soil.
- (3) Oak leaves decompose slower than the mulch oak wood chips.

2) Hay

- i. Breaks down into **excellent nutrients**.
- ii. Great for starting seeds (mulch 5-6 inches thick for seeds).
- iii. Retains moisture : good for seeds that you have planted - **not good in constant rainy conditions - mold, mildew**
- iv. Choose a high quality hay - less seeds. **Some hays may be a weed/seed haven and need to be aged past the seed stage or slightly composted.**
- v. Leaves and hay can be blown off the soil.
- vi. Check your local feed stores for old bales at a substantially lower price.

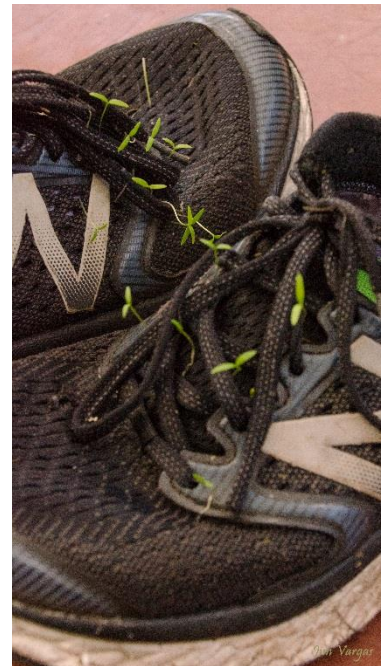
We have a gardener here that used hay to mulch in her garden at the beginning of the season and reports no weed problem at all.

3) Straw

- i. cover only, no nutritional value

Mulches not generally used in vegetable garden

- a. Mulches such as chipped hard and softwoods, cedar, cypress and pine bark aren't used much in vegetable gardens. They will last the longest because they are resistant to decay. Use those mulches around perennials/flower gardens.
- b. Painted /dyed mulches
- c. Rubber mulches
- d. Stones
- e. Sawdust
 - i. If you mix **sawdust** into your soil, nothing will **grow** there for a year or more. Pure wood materials like **sawdust** and wood shavings are super-high in carbon, and their carbon will absorb all of the plant-feeding nitrogen in your soil in its quest to decompose. **Mix with other organic material.**
 - ii. **Prone to compaction**
 - iii. **Where did the saw dust come from.** What wood materials? Pressure treated, hard woods, cedar?



Quick Start mulching

Instructions

1. Amend soil with soil from compost bin (best and free) or store bought ☹️ soil, Or fertilize existing soil with natural fertilizer such as garden tone, rake in/mix soil. This will be the last time you ever till or rake the soil in your garden. Do not mix mulch into soil ever. (See document)
2. You can opt to plant plants now or after mulching.
3. Plant seeds after mulching by clearing mulch away from seed area. Plant seed and apply decomposed smaller mulch over soil. One inch or so.

4. Best to go to bottom of mulch pile and gather decomposed mulch for first layer of mulch across entire garden. The second layer - Add 2-3 inches of regular mulch on top of that layer.
5. Optional method - just add mulch 3 inches to top of soil for the one and only layer. Replenish mulch when you see layer decomposting and becomes thin. Keep mulch 3-4 in thick-best weed reduction.
6. To replant brush mulch aside, amend soil in area of plant, replant and cover.
7. To fertilize during growing season if needed brush asided mulch, fertilize away from roots and slightly mix in. Do not mix in mulch.

