

Mulching in Vegetable Crops

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SUMMARY

Mulching in vegetable crops involves covering the soil with a protective layer of organic or synthetic materials. This practice offers various benefits, such as conserving soil moisture, suppressing weed growth, and regulating soil temperature. Mulching also enhances nutrient retention, reduces erosion, and promotes a healthier crop environment. Overall, mulching proves to be a sustainable and effective technique to optimize vegetable crop yields while minimizing the need for excessive water and weed control measures.

INTRODUCTION

Any material applied on the soil surface or covering the top of the soil with extraneous matter is known as mulching. Mulches are used for various reasons but water conservation and erosion control are most important for agriculture. It is of two types first one is organic mulch and second one is inorganic mulch. Organic mulch includes straw, crop stump, compost, manure, sawdust, leaf litter, wooden pieces and inorganic mulch involves plastic film, metal oil, sand gravel, stone.

Organic mulches:

The organic materials such as crop residues, farm yard manure and by-products of timber industry when used for mulching are known as organic mulches. They do not suppress weeds, reduce crusting and preserve but their gradual decomposition adds organic matter to the soil. Organic mulches help nutrients reach plant roots and also nurture beneficial bacteria, fungi, insects and worms.

Soil mulch or dust mulch: If the soil surface is loosened, it acts as mulch for reducing evaporation. It is also called soil mulch or dust mulch. Inter-cultivation creates soil mulch in growing crops.

Saw must: Saw dust is smaller granular chip wood that is obtained as the finished product in the sawmills. It has high C:N ratio. It requires nitrogen from the soil for decomposition. However, it retains the moisture for longer periods.

Compost: decomposed manure is used as a mulching. It is mainly used for small plantlets. **Stubble mulch:** Crop residues like wheat straw, paddy straw, cotton stalks etc. are left on the soil surface as a stubble mulch. It has the unique property of not observing water, so water is easily available to plants. It has the longest life span among all the organic mulches.

Vertical mulching: subsoiling is probably the most effective method of breaking hardpans to improve penetration, aeration and water percolation. To prolong the beneficial effect of subsoiling a method called vertical mulching has been developed. The object of vertical mulching is to fill slots with O.M. and keep them open and functional for a longer period black soils to improve infiltration and storage of rain water, vertical mulches are formed.

Inorganic mulches:

Inorganic materials such as plastic films when used for mulching are known as synthetic mulches. Natural degradation of organic mulches necessitates the application of synthetic mulches so they are also known as non-degradable mulches. Synthetic mulches are available in different colors as well as in different thicknesses. They should be removed and disposed of at the end of the growing season.

White plastic mulch: It reflects more light on the plant as compared to black mulch. It is good for establishing crops under hot summer conditions. It has little effect on soil temperature it keeps soil temperature down. Most importantly it repels some insects

Black plastic mulch: Black plastic mulch is the most predominating colored mulch used in plant production and it acts as an opaque black body absorber and radiator. It absorbs most UV, visible and infrared wavelengths of

incoming solar radiation. It does not allow sunlight to pass through on to the soil. It retards weed growth. It warms soil during the winter season and encourages plant growth.

Transparent plastic mulch: Transparent plastic mulch absorbs little solar radiation but transmits only 85% to 95% of incoming solar radiation. It drastically raises the soil temperature and affects plant growth adversely so it is often referred to as Mini Greenhouse Effect. It is known as Clear Plastic Mulch also.

Degradable mulch: Degradable mulch has the ability to degrade after receiving a critical amount of sunlight. When the film receives sufficient sunlight it becomes brittle and develops cracks and holes. The mulch may be bio-degradable or Photo-degradable.

Mulch material thickening:

S.No.	Mulch material	Thickness of mulching
1.	Compost	3-4 inches
2.	Green leaves	3-4 inches
3.	Bark	2-4 inches
4.	Newspaper	¼ inches
5.	Onion/ Garlic scale	2-3 inches

Laying of mulch film in vegetable crops:

- A thin film of 20 to 25 microns is used for mulching vegetables.
- The required length of film for one row of crop is taken and folded at a required spacing of the crop.
- Round holes are made at the center of the film using a pipe and a hammer.

Fixing of film on beds for planting

- Till the soil well and apply the required quantity of FYM and fertilizer before mulching.
- One end of the mulch film is anchored in the soil and the film is unrolled along the row of planting
- Mulch film is then inserted into the soil on all sides to keep it intact.
- Seeds are sown directly through the holes made in the mulch film.

Fixing of film for transplantation

- The seedlings could be planted directly into the hole.
- The transplanted plants are not erect and steady. Care should be taken to see that the seedlings do not fall on mulch film.
- It is advisable to mulch after the establishment of the plants.

Fixing of film for established seedlings:

- One end of the film along the width is buried in the soil and the mulch film is then unrolled over saplings.
- During the process of unrolling the saplings are held in the hand and inserted into the holes from the bottom side so that it could spread on the top side.

Effects of mulching:

- Mulching control the runoff, increase infiltration and decrease evaporation.
- Mulching affects the soil temperature by radiation shielding, heat conduction and evaporating cooling.
- Mulching helps in adding organic matter to soil, improving the nutrient solubility in the soil
- Mulching helps to control weeds.
- Mulching improves the soil structure.
- Mulching affects the soil biological regime by increasing fauna, microbial population and plant root distribution.

CONCLUSION

Mulching stands as a vital practice in cultivating vegetable crops, offering multifaceted benefits for both plants and soil. By creating a protective layer, mulching conserves soil moisture, regulates temperature, and suppresses weed growth, fostering an environment conducive to optimal plant development. Additionally, the decomposition of organic mulches enhances soil fertility, promoting nutrient availability for vegetables. The

reduction of soil erosion and improved microbial activity further contribute to sustainable agriculture. Embracing mulching techniques not only augments yield but also aligns with environmentally friendly and resource-efficient agricultural practices, showcasing its indispensable role in modern vegetable crop management.

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