

Role of mulch in vegetables production

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Introduction:

Mulch is a general term for a protective ground cover that can include manure, wood chips, seaweed, leaves, straw, grasses, sands, stones (boulders), synthetic plastics, and other natural products. While the term mulching may be defined as a practice of covering the surface of soil to retain soil moisture, prevent weed growth, minimize evaporation, moderate significant variations in soil temperatures and reduce salinity. It is useful for agriculture and horticulture crops not only for increasing the growth and yield but also act as a method to conserve soil and water. Other reason for heavy mulching includes modifying soil temperature, conservation soil, adding nutrient, enhancing soil structure, control weeds and crop quality. Mulching reduces the deterioration of soil by way of preventing the runoff and soil loss, minimizes the weed infestation and checks the water evaporation. Production of vegetable crops is a costly enterprise and needs heavy inputs like irrigation water, fertilizers, insecticides-pesticides, weeding and other cultural operations.

Additionally, it takes a lot of work to grow seedlings in agricultural filed in water-strapped areas because water is a finite natural resource. Considering the advantages of mulching in particular the ability of soil to serve as temperature buffer and the ability to preserve soil moisture.

Purpose of mulching

1. To improve the fertility of soil.
2. To protect the soil from water and wind erosion.
3. To preserves the soil moisture.
4. To accent landscape plantings.
5. To provide a “finished” look to the garden.
6. To help in production of clean and quality products.
7. To protect the plant and their produce from attack of insect-pest and diseases.
8. To moderate the soil thermal regime throughout the cropping season.
9. To prevent weed growth.
10. Increasing overall crop production
11. Selection of organic mulch

Types of mulches: There are two types of mulches:

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1. **Live mulch:** It is a method which gives useful effect on soil, environment and plant canopy of vegetable crops. Living cover is used as a mulch to put over the crop in this method. Mostly Legume crops are used as a live crop.

2. **Dead mulch: These are 2 types:**

Selection of organic mulch

Material	Depth to apply	Comments
Composed leaves	2-3inches	Break down rapidly add humus and food
Grass clippings	2 inches	Excellent mulch, break down rapidly in soil
Peat	2 inches	Soak well before using as may scatters easily
Saw dust	2 inches	Use weathered sawdust if mixing with soil.
Peanut Hulls	2-3 inches	Supplies plant nutrient and improve soil structure
Straw	6 inches	Same as grass, but lower in nutrients
Bark	1-2 inches	Ground and packaged commercially

(ii) Soil should be periodically tested for pH and

(iii) Slimy mould responsible for fungal attacks should not be allowed to develop.

Precautions for Plastic Mulch Laying:

(i) Do not stretch the film very tightly. It should be loose enough to overcome the

a) **Organic mulches:** Organic mulches are obtained from decomposed parts of plant and animals. Organic mulch can perform all the function which is done by other mulches also except early season soil warming.

b) **Inorganic mulches:** These are mostly used create barrier from weeds to main crop grown in an area. It does not add nutrients benefits to soil like organic mulches. These are usually man made materials like plastic films, stone etc.

Precautions while laying organic mulch:

(i) Weeds should be removed before spreading mulch.

Response of plastic much on the yield of vegetables

Crop	Yield (t/ha)		Increase in yield (%)
	Mulche d	Unmulched	
Brinjal	47.06	36.73	28.12
Broccoli	25.14	15.64	60.74
Bitter Gourd	25.63	20.12	27.39
Cabbage	19.9	14.3	39.16
Cauliflower	25.02	18.58	34.66
Chilli	19.71	16.79	17.39
Okra	8.56	6.91	23.88
Tomato	94.85	69.10	37.26

Source: NCPAH, New Delhi

expansion and shrinkage condition caused by solar temperature and the impacts of cultural operations.

- (ii) The slackness for black film should be more as the expansion and shrinkage phenomenon is maximum in this colour.
- (iii) The film should not be laid on the hottest time of the day, when the film will be in expanded condition.

Disadvantages or Limitations:-

1. Disease infection to the crops is risky.
2. In excess rainfall years mulch may not be effective.
3. Residue production in dry land is inadequate to result in sustainable water conservation.
4. Unwanted crops germination must be higher.
5. In case of sawdust or straw mulch, nitrogen starvation sometimes occurs.
6. The cost of some materials can be a drawback to large-scale mulching.

Conclusions:

Our review of recent progress in the understanding of mulch use in vegetable productions provides two important lessons for the intensification of mulching practices especially in arid and semi-arid areas. Firstly, selection of a particular type of mulch material whether it is organic or non-organic, keeping in view of their (including merits and demerits) durability, suitability/compatibility, desired above and below ground effects and efficacy with the ambient environment as well as the crop type. In case of use of inorganic

mulches, the plastic mulches are the most preferred mulches especially in the production of cash crops. Secondly, in case of use of organic mulches, care must be taken that it should be endowed with some important characteristics viz., easily decomposable, capable of adding substantial amount of organic matter to the soil and should not release allelochemicals.

