



MULCHING IN VEGETABLE CROPS

[PUBLISHED UNDER NICRA PROGRAMME]



**Krishi Vigyan Kendra-Sylvan
Hengbung, Senapati District,
Manipur-795129**

www.kvksenapati.org

[Email: Sylvankvk@rediffmail.com](mailto:Sylvankvk@rediffmail.com)

Mulching of crop:

Any material used (spread) at surface or vertically in soil to assist soil and water conservation and soil productivity is called mulch. To achieve optimum advantage from the mulch the mulch should be applied immediately after germination of crop @5 ton/ ha (organic mulch). The practice of applying mulches to soil is possibly as old as agriculture itself. Mulches are used for various reasons but water conservation and erosion control are the most important objects in agriculture in dry regions. Mulches when properly managed definitely aid wind and water soil erosion. Other reason for high mulching is followed includes soil temperature modification, soil conservation, nutrient addition, improvement in soil structure, weeds control and crop quality control. Mulching reduces the deterioration of soil by way of preventing the runoff and soil loss, minimizes the weed infestation and checks the water evaporation. Thus, it facilitates for more retention of soil moisture and helps in control of temperature fluctuations, improves physical, chemical and biological properties of soil, as it adds nutrients to the soil and ultimately enhances the growth and yield of crops.

Types of mulches: Materials used for mulches are crop residues, levees clippings, bark manure, paper, plastic films, petroleum products, gravels etc.

1. Plastic films: Plastic films are more widely used as mulch. They help in maintaining higher water content in soil resulted from reduced evaporation, induced infiltration, reduced transpiration from weeds or combination of all these factors. They are relatively expensive and difficult to manage under large scale field conditions for low value crops. (Polythene, polyvinyl).

2. Petroleum products: These are less expensive than plastic films and more readily applicable materials e.g. petroleum and asphalt sprays, resins etc.

3. Crop residues or stubble mulch: - Crop residues and other plant waste products (Straw, cloves, leaves, corn, and sawdust) are widely used as mulch. These materials are cheap and often readily available. They permit water to enter in the soil easily, when maintain at adequate level. These materials result in increased water content and reduced evaporation. Use of mulch @ 5 tons / ha is found to be most effective in dry farming area. The mulch should be applied immediately after crop emergence to get optimum advantage. When these mulches are used the other crop operations like

interculturing are not possible hence saving in cost of cultivation.

4. Vertical mulch: - Rainfall in dry farming area is with high intensity; due to moderately slow rate of infiltration the runoff is heavy. The water thus running as runoff could be stored in profile itself. Vertical mulch is a technique which consists of digging suitable trenches across the slope and thus making more surface area available for water absorption. The open trenches are likely to get silted in short period. This however can be prevented by inserting organic farm waste material like straw stubbles or stalks which is called filter. The filter should be resistant to decomposition and provide service for 3 - 4 years. Such trenches at suitable intervals provide portion of low density which helps to intake water at higher rates. Water thus percolates in a trench and gets distributed in the profile. The width of trench should be adjusted in such a fashion that least area remains uncultivable. If trench could be accommodated between crop rows, there is practically no area wasted for trenches. Width of 20 cm is ideally suited for these purposes. Depth of trench in black clay soil should be up to 10 cm level and distances between two trenches may be about 4 m.

5. Soil or Dust mulch: If the surface of the soil is loosened, it acts as mulch for reducing evaporation. This loose surface of soil is called soil mulch or dust mulch. Interculturing

creates soil mulch in growing crops and helps in closing deep cracks in Vertisols.

Effect of mulches on soil and plants:-

1. Soil water: - When soil surface is covered with mulch helps to prevent weeds growth, reduces evaporation and increase infiltration of rain water during growing season. The water infiltrated in soil can be utilized by crops there by crop yields are increased. Mulches obstruct the solar radiation reaching to soil.

2. Soil structure: - Crop residues when applied at adequate level increased infiltration rate. Decomposition of these residues results in improving soil aggregation and suitability. Mulch slows (reduce) velocity of runoff.

3. Soil erosion: - Soils from dry region are highly susceptible to water erosion and wind erosion because rainfall occurrence is frequent during intense storms and surface is adequately protected by vegetation effectively retard runoff. Therefore to reduce erosions by wind and water is an important reason for using mulches in dry regions.

4. Soil temperature: - Mulches results in greater water content and lower the evaporation. However effects on soil temperature are highly variable. While mulches decrease soil temperature but clear plastic mulches increase soil temperature.

5. Crop plants: - The effects of mulches on plants are operative through the effects of mulches on soil water, soil temperature structure and erosion. Reduced evaporation is major reason for the growth of the plants and there by high crop production due to mulch.

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.

Prepared by:

**David Kamei –SMS (Plant protection)
Athokpam Haribhushan- SMS (soil Sc) and
Yanglem Kenedy Singh –SRF (NICRA)**

Published by:

**Dr. Shabir H. Wani, PC cum PI, NICRA
KVK-Sylvan, Senapati District.
Manipur-795129**