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Effect of Mulching in Crop Productivity

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Introduction

Mulching is the process or practice of covering the soil/ground to make more favourable conditions for plant growth, development and efficient crop production. Mulch technical term means 'covering of soil'.

The process of covering the open surface of the ground by a layer of some external material is called mulching & the material used for covering is called as 'Mulch'. 'Mulching is usually practiced when cultivating commercially important crops, fruit trees, vegetables, flowers, nursery saplings, etc.

Mulches conserve the soil moisture, enhance the nutrients status of soil, control the erosion losses, suppress the weeds in crop plants, and remove the residual effects of pesticides, fertilizers, and heavy metals.

There are two basic kinds of mulch: organic and inorganic: Organic mulches include formerly living material such as chopped leaves, straw, grass clippings, compost, wood chips, shredded bark, sawdust, pine needles and even paper. Inorganic mulches include black plastic and geotextiles (landscape fabrics).

Mulching not only improves the soil properties but also improves the growth and yield of many crops. Mulching improves the moisture status, temperature and nutrient status of the soil that are necessities for the better growth and yield of the crops. Ultimately mulching enhances the yield of many crops.



Optimum nitrogen fertilization with mulching enhanced cotton yield and quality under field conditions. Moreover, mulching reduced the soil temperature, improved the soil moisture conditions during warmer periods of the cotton growing season, which created favorable growing conditions for the cotton crop.

Mulching is a common practice to cover soil surface and it not only conserves moisture but also moderates temperature besides effectively controlling the weeds. It creates congenial conditions for the growth and ameliorates various environmental stresses (Macilwain, 2004). It exerts decisive effects on earliness, yield and quality of the crop. Straw mulching has a major effect on soil water and thermal regimes. The mulch probably acts as an insulator, resulting in smaller fluctuations in soil temperature in mulched treatments as compared to without mulch.

Mulches can be more effective under extreme weather conditions as compared to normal conditions. Mulching is a common practice recommended for tropical small farming holder, due to its ability to conserve soil and moisture and also suppress weeds. Mulching increased soil moisture content, improved the soil structure and decreased the weed growth, and thereby enhanced yield in crops.

Weeds compete for nutrients, water, light and thus reduce the yield of cotton substantially. Weeds are responsible for losses in cotton yield to an extent of 34-61.4%. Although a number of methods and techniques are used for weed control, still cotton yield is reduced significantly by weeds infestation. (Mulching is the practice of covering the soil surface to make favorable conditions for plant growth and development. The main objective of mulching is water saving and weed control. Mulches when spread over the soil surface, minimize the water runoff, increase infiltration, provide shade to the soil (suppress weeds) and act as barrier to reduce water loss in form of vapors (Lamont, 2005). Hand hoeing are the oldest methods of weed control. Although they are labor intensive and often relatively ineffective for the control of perennial weeds, they typically cause minimal environmental impact. The field is subjected to drying to avoid re-establishing of uprooting weeds followed by a copious irrigation. Thought it is costly if a considered useful because it improves soil physical condition in addition to the removal of weeds. By periodical hoeing, difficult weeds can easy remove. Main advantages of hoeing can be quick and easy in the

right conditions (dry) and does not bring up too many dormant seeds deeper down. This kind of weeding is more easily done between rows of crops. However meager information is available on effect of wheat straw application and hand hoeing on seed yield of Bt cotton in South-western part of Punjab. Therefore, there is need to adapt ways and means to manage this particular valuable resource particular wheat straw and hand hoeing in cotton increase in total yield (first and second year crops) was on average about 41% higher with mulched treatments than with the control.

What is mulching and its advantages?

Mulching is generally used to improve the soil around plants, but it also gives your garden a neat, tidy appearance and can reduce the amount of time spent on tasks such as watering and weeding. Mulches help soil retain moisture in summer, prevent weeds from growing and protect the roots of plants in winter.

What is the concept of mulching?

Mulching is a widely practiced gardening technique that is beneficial for plants when done properly. It is the act of covering the soil with mulches, such as bark, wood chips, leaves and other organic material, in order to preserve moisture and improve the condition of the soil.

Limits weed growth by preventing light from reaching the soil surface. Limits water loss from the soil surface, maintaining soil moisture. Decreases soil temperatures and keeps it cooler on hot days and warmer on cold nights. Covers and protects the soil by reducing soil compaction and erosion.

Conclusion

Mulching refers to the covering of bare land with organic or inorganic material for the betterment of soil and plants. Mulching not only improves the soil properties but also improves the growth and yield of many crops. Mulching improves the moisture status, temperature and nutrient status of the soil that are necessities for the better growth and yield of the crops. Ultimately mulching enhances the yield of many crops. This chapter will discuss the importance of mulching in agroecosystems-plants and soils. This chapter will highlight important aspects related to soil characteristics, the role of mulching in soil health



and quality. It also includes important factors affecting the crop yield and impact of mulching for controlling these factors. It will also highlight the importance of mulching for vegetables, orchards and cereal crops relating to their yield characteristics.

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