

Mulching Effect on Soil and Water Conservation

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SUMMARY

The need to increase food production and improve the quality of our environment has prompted a search for materials to control soil and water erosion. Mulching has become an important practice in modern field production. Mulch paper reduces the application of chemical fertilizer and herbicide, weed control and maintains the land temperature. This article on mulches discusses the opportunities that they solve the problem in agriculture.

INTRODUCTION

India has made tremendous improvement in agriculture and food security. It began with the choice to adopt most advantageous yielding, disease resistant wheat varieties in aggregate with higher farming know-how to enhance productivity. Development of irrigation schemes, copious use of fertilizers and pesticides, use of high yielding sorts made the green revolution possible. The word mulch has been probably derived from the German word "molsch" means soft to decay, which apparently referred to the use of straw and leaves by gardeners as a spread over the ground as mulch (Jacks et al. 1955). It is a shielding covering, normally of organic count number such as leaves, straw, or peat, placed around plant life to prevent the evaporation of moisture, and growth of weeds. Mulches are used for a variety of reasons in agriculture but water conservation and erosion manipulation are the most essential target in particular in arid and semi-arid regions. Mulching reduced the deterioration of soil through way of stopping the runoff and soil loss, minimizes the weed infestation and reduces the water evaporation. Thus, it allows for more retention of soil moisture and helps in control of temperature fluctuations, improves physical, chemical and organic residences of soil, as it provides nutrients to the soil and subsequently enhances the progress and yield of crops. Further, pronounced that mulching boosts the yield by means of 50-60 per cent over no mulching beneath rainfed situations.

Types of Mulches:

Organic Mulch Materials:

An organic mulch is made up of herbal substance such as bark, timber chips, pine needles, dry leaves, sawdust, grass clipping, etc. But natural mulch attracts insects, slugs and the cutworms that devour them. They get decomposed easily and need widely wide spread replacements.

Following Materials Come Under the Organic Mulch Group:

Grass Clipping:

It gives nitrogen to the soil, if integrated fresh. However, apply of green grass in rainy season might also result into the development of its personal root machine which will be unsafe to plant growth. Therefore, use of dry grass as mulch cloth is suggested.

Straw:

Paddy and wheat straw are the commonest mulching materials used for fruit and vegetable production. Though straw is low in nutrient value however after decomposition, it makes soil extra fertile. Among organic mulching materials, straw has long a long existence in assessment to other mulches (grasses, leaves and leaf mould)

Dry leaves:

Leaves, an effortlessly reachable material, are right for mulching. Though leaves are accurate for defending dormant plants in the course of iciness by keeping them heat and dry however due to light-weight they

can also be blown away even by using light wind. To counter this problem, it requires anchoring which can be carried out with stones, chipped bark and masking with net or stone form of sheet.

Bark Clipping:

These are excellent mulch substance as they are long lasting and enable suitable aeration to the soil underneath. Hardwood bark clipping incorporate extra nutrients than softwood.

Sawdust:

Sawdust, obtained at some point of finishing operation of wood is very low in nutritive price as it consists of sole half of the nutrients of straw. It decomposed slowly. Being acidic in nature, it must not be used in acidic soils.

Compost:

The compost is one of the first-rate mulch materials. It will increase microbial population, improves the soil shape and gives nutrients. It is the remarkable fabric for enhancing the fitness of soil.

Inorganic Mulch Materials:

Gravel, Pebbles and Crushed stones: These substances are used for perennial crops. Small rock Layer of 3-4 cm gives proper weed control. But they replicate solar radiation and can create a very hot soil environment all through summer.

Following Materials Comes Under the Inorganic Mulch Group:**Plastic Mulch**

Both, black and transparent film are commonly used for mulching. Advancement in plastic chemistry has resulted in improvement of film with optical residences that are ideal for a specific crop in a given location. Horticulturists need to apprehend the greatest above and underground environment of a precise crop before the use of plastic mulch. These are two types:

Photo- Degradable Plastic Mulch:

This kind of plastic mulch film gets destroyed by using sun mild in a shorter period.

Bio – Degradable Plastic Mulch:

This type of plastic mulch film is effortlessly degraded in the soil over a period of time.

Colour of Film:

Soil environment can be managed precisely via a applicable choice of plastic mulch composition, shade and thickness.

Films are available in variety of colours which include black, transparent, white, silver, blue-red, etc. But the determination of the shade of plastic mulch film depends on specific targets. Generally, the following types of plastic mulch films are used in horticultural crops.

Black Plastic Mulch:

It helps in conserving moisture, controlling weed and lowering outgoing radiation.

Reflective Silver Film:

It generally maintains the root-zone temperature cooler.

Transparent Film:

It increases the soil temperature and preferably used for solarization.

Mulching Advantages and Disadvantages:

The effect of one of a kind of mulch on crop yield would possibly be tremendous or negative, related to their weed suppression effect. Many researchers proved fantastic results of mulching on crop increase and they got yield quantities and traits. Regardless the colour, non-biodegradable PP and PE films mulches proved to be the most efficient in preventing of germination of seed of the most weeds and their further growth, although they are additionally useful in preventing loss of the moisture from the soil and in balancing of its temperature their application often carries about many different benefits, such as reduction of the run-offs, amplify in rain water penetration, manager of erosion, correction of the chemical stability of the soil and reduction of pest and disease damages. However, they additionally have some environmental disadvantages associated to the elimination and managing of their waste.

CONCLUSION

In the current state of affairs of globalization and fitness reorganization demand for horticulture crops has expanded world over. Under plastic mulch, soil properties like soil temperature, moisture content, bulk density, aggregate stability and nutrient availability improved. Plant increase and yield are additionally positively influenced by the plastic mulch due to the amendment of soil microclimate. Even though it has many advantages high preliminary cost, elimination and disposal of plastic substances are some of the limitations skilled by way of the farmers. To overcome these limitations photo and biodegradable plastic mulches can be successfully used two for sustaining the productivity as properly as controlling environmental pollution due to the use of plastic.

REFERENCES

Briassoulis D. (2006): Mechanical behavior of biodegradable agricultural films under real field conditions. *Polymer Degradation and Stability*,91:1256-1272.s