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Vertical Mulching's Impact On Soil and Water Conservation

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Vertical mulching is premised on the idea that surface runoff descending the slope falls into ditches, where it then infiltrates into the surrounding soil. While vertical mulching does not prevent surface runoff from forming in the regions between the ditches, it significantly decreases the quantity of runoff that exits a field, sometimes to nil, by collecting most or all of it in the ditches. At the sametime, soil erosion is reduced. Muchor all of the eroded material is trapped in the ditches as long as there is still any erosion, preventing it from becoming a problem downstream. Infiltration from the ditches also boosts the water supply for plants andrecharges the groundwater.

Introduction

Spain and McCune (1956) developed a new form of mulching technique called "vertical mulching" to minimize runoff by boosting infiltration for a longer period. It involves vertically inserting stuffedplant residues into sub-soiler markings to maintain the slots open and functional for a longer period. Surface water travels downward into the subsoil, as well as from the ground surface, following the things introduced into the tillage mark. Depending on the number of crop wastes applied, a network of open slots develops on the ground surface throughout this procedure. It's also important to keepin mind that the slots should not be covered by the soil during ploughing. It is a soil treatment that is performed near a tree's root system to enhance the root function and health of the treeby venting the compacted soil, improving the soil's water retention power, advancing the soil's infiltration capacity, and providing nutrients to the soil. It is done by digging 30 cm deep and 15 cm broadtrenches over the hill at 2 to 4 mintervals and filling them with organic materials such as grasses, straws, and stubbles.

Significance of Vertical mulching

Soil structure deterioration, soilcompaction below the arable layer, and reduced micro porosity have all resulted from intensive soil mobilization in the traditional tillage regime. Reduced soil water

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infiltration resulted in increased runoff, soil erosion, and sedimentation in rivers and reservoirs as a result of these changes. Water erosion from the soil surface is virtually managed under the no-tillage method, and farmers have eliminated terraces. Despite this, the surface flow is greater than in a traditional tillage system.

One of the major issues in hydrology is the limited infiltration of water into the soil in regions where intensive agriculture is practiced. It reduces the amount of water in the soil profile and increases surface runoff, both of which are linked to soil erosion. To promote water infiltration, vertical mulching can be used in conjunction with a no-tillage system. When done on contour, vertical mulching has a significant impact on runoff management, according to field experience. This approach has also been used as a drainage tool for removing surface water from low-lying regions, and it has been shown to have a superior reaction.

Conclusion

Surface runoff from agricultural land is a serious problem worldwide because it leads to soil erosion. Many researchers from their experiments showed that vertical mulching can be very effective in reducing surface runoff from a field.



