

Design And Fabrication Of Semi – Automatic Mulching Sheet And Sapling Laying Machine - Review Paper

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Abstract: In order to improve growing condition of crops there are various methods that improves productivity, reduces water require growing up the crops. But mulching paper which is also known as agriculture film is one of the best methods to cover the soil and maintain require atmosphere around the crop. To meet the growing needs of the farmers who wish continuously to improve the profitability of their farming by using more efficient materials and machineries. The use of mulching paper in agriculture is increasing day by day to growing the importance in increasing the crop yield. It is also one of the best methods to cover the soil and maintain required atmosphere around the crop. The working and parameters of mulch paper laying machine for minimizing the human efforts and increasing productivity of crops. So we have decided to work on semi- automatic mulching paper laying machine which also have attachment for laying saplings.

INTRODUCTION

Mulching (Agriculture Film) is the practice of covering the soil around plants to improve the growing conditions for the crop. It helps in reducing evaporation, suppressing weed growth, reducing soil erosion, retaining moisture and providing plant nutrients as the material decomposes. The main purpose of the machine is to lay the mulching paper on the beds of the soil as well as punching hole for planting the saplings in single pass. There by reducing the capital cost and time of laying the mulching paper using the most convenient method. Here the machine is automated to punch the hole and plant the saplings at a pre-defined distance which the operator initiates. Mulch film is widely used on high value crops such as Tomatoes, Melons, Cucumbers, Squash, Peppers and Strawberries increasingly on lower value crops such as Corn and Ginger. For arable soils, the most effective conservation practices for reducing water loss through surface evaporation are those that provide some degree of surface cover for the soil. A cover can be best provided by mulches or by tillage practices that leave plant residues on the soil surface. Mulch is any material placed on a soil surface for the purpose of reducing evaporation, retaining moisture, reducing soil erosion, suppressing weed growth and providing plant nutrients as the material decomposes. Mulches act as barriers to movement of moisture out of the soil. They can be either organic (e.g. straw, wood chips, peat) or man-made (e.g. transparent or opaque plastic). Besides keeping the moisture in the soil, mulches can also enhance soil temperature; reduce the spread of soil borne diseases; reduce weed growth; reduce soil erosion); and provide nutrients and organic matter. Moreover, mulches support infiltration of runoff and irrigation water as the mulches protect the soil surface from the impact of raindrops preventing soil crusting.

LITERATURE REVIEW

- 1. Mr. Hivrekar et al** discussed that, they have designed a “Advance Mulching Paper Laying Machine” application which is in a Agriculture, which is going to Laying a paper with reducing human effort and also cost required for employee for laying Mulch Paper on Bed. This system does not need more human labour, Mulch paper avoid the waste water, and Stop the growth of grass. Also in this method we use some Mechanical Mean so the working time is less as compared to the conventional method.
- 2. Bhargava Reddy.A et al** revealed in this paper that they have designed, developed and technologically updated range of mulching machine that is available to clients that offer great relief to farmers in best possible and effective manner. The mulching machine meets growing needs of farmers who wish to continuously improve the profitability of their farming by using this machine.
- 3. Kapilraj R. Nangare et al** disclosed that, the machine thus designed can successfully lay mulching paper, lay drip line and punch hole simultaneously and efficiently. Time required to laying the mulch paper is 2.5 hours per acre for our machine. Hence, we are reduced time required to lay the mulch paper by 80% and 72% as compared to conventional method and tractor attachment respectively. Operational cost of our machine is Rs 350 per acre and hence we reduce operational cost required to lay the mulch paper 93% and 87% as compared to manual method and tractor attachment respectively. From this time method actual time is reduced.

4. **Prof. AmayTipayale et al** unveiled that avoiding growth of the weed on farm is very costly and time consuming task. Mulching the plastic paper film near the root area of plants is for eliminating the rise of weeds also to retaining water and avoid de-moisturizing the soil but this process requires lots of capital and time. So 'Drip irrigation pipe and Mulching paper laying machine' will reduce the labour cost and time, it will do both the jobs i.e. laying irrigation pipe and mulching paper on the ground at a time. By using various mechanisms, this machine will lay the irrigation pipe and mulching paper at the same time it will make the holes on the paper to provide plantation area after laying the drip irrigation pipe and mulching paper.

5. **Abhishek Navghare et al** discussed that, this paper presents associate analysis of a system that verifies a pair of methodology at a similar time. For each analysis procedures, the coordinates of the centre of the follower are required at very little increments of the cam angle. Every procedure is easily programmed and rely solely on the follower coordinates and not the follower sort. once compared to different mulches plastic mulches or utterly impermeable to water; it so prevents direct evaporation of wet from the soil then limits the water losses and sporting over the surface.

6. **Leslie.E.Bailey et al** uncovered that, In This mulching paper was laid by simply unrolling the wounded paper roll through manual labour. So the author invented improvements in machines for laying mulch paper upon ground for protecting plants and various growths.

7. **Prof. Chitra Madhu Sudhan Gowd et al** indicated that, here they have developed a machine which lays plastic mulch at the exact position on the prepared plantation bed and secure it with the soil. The laying of plastic mulch and hole punching will be done in one pass. So he designed advanced mulch paper laying machine, which can lay the mulching paper on the beds of the soil.

CONCLUSION

The designed, developed and technologically updated range of mulching machine would be available to clients that offer great relief to farmers in best possible and effective manner. The machine thus developed is user friendly with fine finish and easy to operate. Thus time reduction is possible by implementing various new techniques and adoption of new innovations in agricultural field. So from this we get a detailed review on mulching mechanism works and what are steps taken towards minimizing the cost and especially time. This system might not need more human labour, mulch paper avoid the waste water, and Stop the growth of weeds. Also in this method we use some Mechanical Mean so the working time is less as compared to the conventional method. Our new machine thus designed can lay mulching paper and punch hole simultaneously and efficiently.

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