

# Impact Of Straw And Polyethylene Sheet Mulching On The Growth And Yield Of Okra - A Review

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**Abstract:** *This experiment was conducted on the cultivation of okra with varied treatments during a plot size of 150m<sup>2</sup>, that was assigned by Lovely Professional University at village maheru, Phagwara, Punjab. This study was undertaken with okra crop. It's a perennial crop that was mature to visualize the impact of straw and polyethylene sheet mulch on its growth and yield. Mulches always helpful to control weeds and making reduction in weed seed germination and helps to improves soil moisture conservation with maintaining soil temperature. The black polythene mulch provides good soil temperature to avoid seed germination where the seedlings are transplanted. With the use of polythene mulches there is organic mulches are also important to control the weeds and provide organic matter to soil. The soil fertility is increased by the straw mulch.*

## 1. INTRODUCTION

Okra was originated in tropical and semitropical areas of continent. Existence of the many connected species with wide variability and dominant characters counsel doable role of Asian nation as a secondary centre of origin. Asian nation is that the largest producer of okra within the world. It's additionally used as a vegetable in Brazil, geographical region and lots of alternative countries(Sharma (2020); ChitraMani & Kumar, P. (2020); Sharma, M., & Kumar, P. (2020); Chand, J., & Kumar, P. (2020); Naik, M., & Kumar, P. (2020); Kumar, P., & Naik, M. (2020); Kumar, P., & Dwivedi, P. (2020); Yaman, (2020); Yaman and Kumar, (2020); Devi, P., & Kumar, P. (2020); Kumari, P., & Kumar, P. (2020); Kaur, S., & Kumar, P. (2020); Devi, P., & Kumar, P. (2020); Sharma, K., & Kumar, P. (2020); Kumar, S. B. P. (2020); Devi, P., & Kumar, P. (2020); Chand, J., & Kumar, P. (2020). In India, major okra growing states **square measure state, province and state**. It occupies fifth position, next to tomato, in space below vegetables within the country with a production of **thirty-three**. 24 hundred thousand metric tons from a neighbourhood of 347 hundred thousand hectares. The crop is cultivated for its young tender fruits. The nutritional worth is Okra could be an inexperienced, finger-shaped vegetables with a characteristics viscous juice. Okra is useful for heart patients and used for cancer treatment. Okra is additionally a supply of antioxidants. The used selection was geographical area Suhavni, there square measure many factors that square measure accountable for poor growth and yield of okra crop. The issue that is accountable for poor yield of crop square measure plants don't properly develop, soil isn't heat enough for germination, weather too hot or temperature unsteady emergence of diseases like mildew caused by flora spores, growth of weeds could be a major downside seen in okra.

By mistreatment totally different mulching varieties weeds is suppressor soil is preserved close to the foundation of the crop but, the mulches, changes the plants surroundings looking on the properties of the mulches and also the level of the mulches, changes the

S.no.	Amount per 100 grams	daily value
1	Total fat 0.2 g	0 %
2	Cholesterol 0 mg	0 %
3	Carbohydrates 7g	2 %
4	Sodium 7 mg	0 %
5	Potassium 299 mg	8 %
6	Protein 1.9 g	3 %
7	Vitamin A	14 %
8	Vitamin C	38 %
9	Vitamin D	0 %
10	Vitamin B-6	10 %
11	Vitamin B-12	0 %
12	Calcium	8 %
13	Iron	3 %
14	Magnesium	14 %
15	Calories	33%

plants surroundings looking on the properties of the mulches and also the level of the physical contact between the mulches materials and also the soil.

Sources: USDA

The employment of polyethylene, straw mulches for season vegetables production within the analysis farm, will increase the soil temperatures, conserves soil wet. During this manner it plays a positive role within the conservation. The target of the analysis work is to work out the results of various mulching materials on the expansion of okra. alternative objectives square measure to be illustrious that mulching material can have the very best growth performance.

**1. Polyethylene sheet mulching or plastic mulch:** Polythene mulch is also known as plastic mulch to reduce weed infestation in dry land agriculture where the wate is too limited there these types of mulches will be helpful. Crops grow through slits or holes in skinny plastic fabric. There square measure such a lot of edges as follows:

**a.) The employment of plastic mulch alters soil temperature:** Dark mulches and clear mulches applied to the soil intercept daylight warming the soil permitting earlier planting yet as encouraging quicker growth early within the season.

**b.) Soil wet retention:** Plastic mulches scale back the number of waters lost from the soil because of evaporation. this implies less water are required for irrigation. Plastic mulches additionally aid in equally distributing wet to the soil that reduces plant stress.

**c.) Weed management:** Plastic mulches helps to change the temperature conditions of the soil that ultimately results in suppression of weed seeds, that ultimately results in suppression of weed seeds, that thereby inhibit most annual and perennial weeds. Reduction within the leach of fertilizer: the employment of drip irrigation in conjunction with plastic mulch permits one to scale back leach of fertilizers. victimisation drip irrigation eliminates the employment of flood and furrow irrigation that applies giant quantities of water to the

soil that successively tends to leach gas and different nutrients to depths below the basis zone. Drip irrigation applies lower amounts of water with fertilizers injected and so these fertilizers required for adequate plant growth in comparison to broadcast fertilization(Kumar, P. (2019); Kumar, D., Rameshwar, S. D., & Kumar, P. (2019); Dey, S. R., & Kumar, P. (2019); Kumar et al. (2019); Dey, S. R., & Kumar, P. (2019); Kumar, P., & Pathak, S. (2018); Kumar, P., & Dwivedi, P. (2018); Kumar, P., & Pathak, S. (2018); Kumar et al.,2018; Kumar, P., & Hemantaranjan, A. (2017); Dwivedi, P., & Prasann, K. (2016). Kumar, P. (2014); Kumar, P. (2013); Kumar et al. (2013); Prasann, K. (2012); Kumar et al. (2011); Kumar et al. (2014).

**d.) Improved crop quality:** Plastic mulches keep ripening fruits off the soil. This reduced contact with the soil decreases fruit rot similarly as keeps the fruit and vegetables clean.

**2. Straw mulching:** putting the same layer of straw on the surface of soil. Straw mulch is often made of the stems of grains. once the heads of oats, wheat, barley or rye are aloof from the stalks, the stalks are dried and used as straw. There are such a big amount of advantages as follows:

**a.) Straw is organic:** Straw comes from harvested crops and fields and may be a present substance. It doesn't have to be compelled to be factory-made. Its sometimes obtainable in abundance and it replenishes itself too. Straw mulch is really a inexperienced, organic mulch to settle on for your garden.

**b.) Straw prevents weeds:** A layer of straw mulch inhibits weed growth.

**c.) Straw prevents erosion:** Straw mulch can shield field from attainable erosion caused by rain. Mulching with straw additionally keeps your garden soil cool, that seriously cuts down on you would like for frequent summer watering.

**d.) Straw is convenient:** Straw mulching may be a nice different to regular soil cultivation with a turn tiller. Tillers will be significant, troublesome to regulate and time overwhelming to use. Once you apply this organic mulch, you're most likely in serious trouble the season. In most cases, you won't have to be compelled to reapply straw a lot of unless winds scattered a lot of it before long once it had been unfolding. Straw mulch is extraordinarily straightforward to figure with.

## Review of Literature

- Albregts and Howard (1973) reported that marketable yields of okra with plastic mulch is bigger with a totally mulched bed than with associate un-mulched or strip mulched bed. Where the plastic mulch was used there is no weed competition and conserved soil moisture.
- Producers of gardening crops usually use plastic mulches to heat the soil, inhibit weeds or conserve wet close to the roots of the crops. Weeds are unable to grow properly when there is excess amount heat present. (Grundy *et al.*, 2007).
- The result on okra cultivated with or while not plastic mulch was evaluated. The crop was direct seeded on April one and April five, 1996 and a clear polythene film of fifty microns was applied for mulching. the very best yields were obtained with the primary sowing date. Mulching conjointly influenced each crop timing and the final yield as pod production was higher with mulch than while not mulch (35 t/ha and twenty-four t/ha respectively). (Incalcaterra, G. and Vetrano, F 2000).
- Mulches are used to cover the surface of the soil nearby crop plants to develop ecofriendly and favorable conditions for crop growth and development. (Bhutia *et al.*, 2017).

- Mulches affect the micro-environment, modifying the energy balance of the plant environment and decreasing the soil water loss. (Gordon *et al.*, 2006).
- The better growth with black plastic mulch may be attributed to reduced weed population resulting in less competition of weeds with plants making more availability of nutrients to the plant for growth. Weeds have more adaptability and they are aggressive in nature to take more and more nutrients as much possible. If the less amount of fertilizer is present in the soil, then weed will compete more and able to produce seeds quickly. (Awodoyin *et al.*, 2007).
- The improvement in growth characters as a results of mistreatment mulches may well be thanks to the sweetening in chemical change and alternative metabolic activities. Mulches continually enhancing plant growth by reducing weed competition (Intra competition) by not proving enough area to weeds for correct growth. For any reasonably plant growth, they have a medium for correct growth. (Mahadeen *et al.*, 2014).
- Mulches profit the plant growth by preserving soil structure and acting as a barrier to the downfall that causes soil compaction and eroding. Less- compacted soil provides a much better atmosphere for seed plant emergence and root growth. Mulches are useful for conserve soil from erosion thanks to the downfall. as a result of there's no direct contact of raindrops with the soil and having terribly less likelihood of eroding. The upmost soil is far fertile as a comparison to lower soil. Mulches are useful to cut back leach the nutrients thanks to downfall water. (Kumara and Dey, 2011).
- The better root growth is additionally as a result of plastic mulch creates a salt-free zone round the plant root age, encouraging higher growth. The groundwater can evaporate because of hot temperature. All the nutrients are water soluble and having salt content conjointly. whenever there's high evaporation magnitude relation that salt is going to be lift on the surface of soil as a result of water are going to be regenerate into vapour kind however the salt can ne'er be regenerate into vapour kind. So, mulch can keep safe to the soil from saltation. (Talathi and Mandavkar 2013).
- Reported that the mulched plots had higher soil wet content than non-mulched plots, that has absolutely mirrored on vegetative and yield parameters. there's no direct contact of soil with daylight, within the dryland areas wherever water is simply too abundant vital for the crops. Mulches are operating as a medium of non-transferred rays and proving protection. There's an on the spot comparison between the mulched and non-mulched areas. (Gao *et al.*, 2019).
- The increase in yield due to plastic mulch may be attributed due to the retention of high temperature, soil moisture and enhanced soil microorganism activity resulting in more availability of nutrients. All the nutrients are water-soluble and able to present in the soil for a long time, due to the high temperature more water will evaporate in one day. Mulch will save water and gives proper growth to plants. (Rahman *et al.*, 2001).
- The cost of polythene is comparatively high resulting in higher cost of cultivation but its efficiency in increasing yield has compensated the cost. The cost of input is increased by using a polythene sheet as per the requirement. It will consider as an item of additional expenditure on the cropping period. but the output will also more due to more yield and less infestation of weeds. If weeds are very less in the field, it means the weedicide or herbicides will not use to kill them. (Mahadeen *et al.*, 2014).
- Mulching is one among the only and most helpful preserving practices that may use as a protecting layer of a cloth that's unfold on prime of the soil. Mulches will either be organic like vermicompost, grass clippings, straw, saw dirt and similar materials or inorganic plastic. Organic mulches conjointly improve the physico-chemical condition of the soil. (Singh *et al.*, 2018).

- As these mulches slowly decompose, they provide organic matter which helps greater organic carbon, source of plant nutrients and thereby improves plant growth and yield. Mostly the organic mulches are straw mulch means the residue part of the crops are always preferred by the farmers for mulch and after proper decomposition, they will release nutrients in the soil and enhance the yield capacity and also increase soil fertility and productivity. (Muhammed *et al.*, 2015).
- Organic mulching has the best and pronounced effect throughout the growth periods as compared to that of the other mulching materials in conserving the soil moisture due to the fact that the sawdust mulch can retain much more moisture as compared to the other soil mulching agent. (Panigrahi *et al.*, 2007).
- Organic mulching can, in turn, enhance a higher nutrient availability to the plants. The figure depicts the wood mulch performs higher results compare to alternative treatments (Pakdel *et al.*, 2011).
- The interactions between the mulches and element were important for crop yield attributes and crop yield apart from the fruit girth. Among the varied treatment combination, black plastic mulch + 100% N was found to be important superior over different treatment combos. (Tan *et al.*, 2009).
- Mulch will facilitate plant food placement and cut back the loss of plant nutrient through hatching. Mulching will offer a barrier to soil pathogens. (Olasotan *et al.*, 2001).

## 2. CONCLUSION

The mulch in okra crop is so much effective due to having more spacing between plant to plant and row to row (45 \* 15cm). The weeds are very much aggressive in nature and able to take maximum nutrients from the soil to complete their life cycle. In case of mulch, mulch is giving proper space and favorable soil conditions to weeds whatever they needed to grow very well. The temperature under the mulch condition will increase which is very much harmful for the weed growth and proving protection from the direct contact of sunlight. The moisture level under the mulch condition will remain present for long time and plant will take water when they need.

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