

**Comparison Of The Thickness Of Rice Straw Mulch, Rice Husk And Reeds
On The Observation Of The Number Of Fruit Plants Tomato (*Solanum
lycopersicum*)**

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Abstract

Mulch is a surface covering material used to prevent weed growth, protect soil moisture, keep the soil structure stable and protect against erosion. The thickness of the mulch itself is also very influential on the life processes and development of plants. This study aims to determine and study the ratio of types of mulch thickness to observations of the number of fruits of tomato plants. The method used was literature review by searching several journals that discussed the thickness of mulch of various types of organic mulch, namely rice straw, rice husk, and reeds using the search engine Google Scholar and Connected Papers with the keywords mulch thickness, type -types of organic mulch, and tomato plants. Several journals show that the difference in dosage or thickness of mulch which is consistent with one level higher than low content is significantly different which affects plant height, number of branches, number of flowering, and number of fruit produced. So it can be concluded that the use of organic mulch is very good for improving the quality of tomato plants and plays an important role in maintaining the stability of temperature, humidity and nutrients in the soil.

Keywords: *thickness of mulch, type of organic mulch, tomato plants*

INTRODUCTION

Tomato plants are one group of fruit vegetables that are classified into shrubs that live seasonally and are included in the Solanaceae family. Tomatoes can be cultivated and can produce abundant fruit depending on plant growth and environmental conditions (Wasonowati, 2011). Tomato plants can grow well in the highlands (more than 700 meters above sea level), medium plains (200 m - 700 meters above sea level), and lowlands (less than 200 meters above sea level). There are factors that can affect the color of the fruit, namely the temperature factor. When the temperature reaches 32^oC the color of tomato fruit will tend to yellow, while when the temperature changes the color of tomato fruit is uneven. While at the ideal temperature, which is between 24^oC - 28^oC can have a good effect on the color of tomato fruit, which is evenly red. (Mustika, 2019)

Mulch is a type of artificial or organic soil cover material that is widely used for crop cultivation activities, and aims to obtain beneficial changes in certain soil environments. (Amir, et al, 2021). Mulch can be grouped based on its material, namely organic mulch and inorganic mulch. Organic mulch is mulch whose material comes from plants or agricultural residues. Mulch derived from crop residues has many advantages including improving soil fertility, structure, soil water reserves and is available in large quantities (Gema, 2014). Cultivation of vegetable crops by utilizing mulch is one of the efforts to care for the outside of the plant to protect from bad weather in the outside environment during the planting process (Irawati et al., 2017).

One of the cultivation techniques of tomato plants that is mostly done by farmers is by utilizing organic mulch either from rice straw, rice husks, or from reeds. organic mulch either from rice straw, rice husk, or from reeds. This cultivation technique aims to supply the supplies needed by plants in the soil, useful for maintaining the stability

of tomato plant production and the utilization of mulch intends to suppress weed proliferation, inhibit water flow and maintain temperature humidity in the soil and other environmental factors (Rahmawati, 2011).

This research is expected to review the effect of comparing various types of mulch thicknesses from either rice straw mulch, rice husk, or reed mulch on observations of tomato plant growth so that tomato plant production is increasing and of good quality to meet Indonesia's local and export market commodities.

RESEARCH METHOD

This research uses the literature review method taken from several journal sources that discuss the various thicknesses of organic mulch either mulch from rice straw, rice husk or reed mulch on the effect of tomato plant growth with a search engine using Google Scholar with keywords mulch thickness, types of mulch, and tomato plants. The results of the search for journal literature obtained 6 journals showing various types of mulch thickness used in the process of planting tomato plants, and observing parameters of tomato growth, differences in the number of treatments, and differences in the amount of mulch thickness given in tomato plants.

RESULTS AND DISCUSSION

Based on the search regarding the thickness of organic mulch on tomato plant growth observations, 10 journal literature were obtained and only 7 journals that met the criteria were in accordance with the objectives of this study. From the evaluation, it is known that the thickness of organic mulch has a significant effect on the amount of tomato production.

Organic Mulch

Mulch is defined as organic material left over from agricultural or inorganic products that is used to cover the soil surface which aims to minimize water loss due to evaporation by sunlight, prevent weed growth and to stabilize soil structure and moisture from the influence of environmental factors. Mulch itself is divided into 2 types, namely organic and inorganic mulch. Organic mulch is one of the alternatives for farmers to overcome obstacles when the crop land is dry. Organic mulch also has several types, one of which comes from rice straw, rice husks and reeds (Lubis et al., 2017).

2.1 The thickness of rice straw mulch used in the treatment of tomato plants can increase the production of tomato plants even though the growth observations do not give a significantly different effect. The application of rice straw mulch can significantly increase phosphorus and potassium substances in the soil. (Anggorowati et al., 2016). Meanwhile, the use of different thicknesses of reed mulch in its application gave real results on tomato growth parameters. This shows that reed mulch in the form of agricultural residues can fulfill the growth of tomato plant production (Assagaf, 2020). In addition, the thickness of rice husk mulch on tomato plants also has an impact on tomato growth due to the genetic factors of the plant, namely the age of the plant can affect the age of flowers and the growth of tomato plants. Plant genetic factors, namely plant age, can affect flower and harvest age. This states that the longer the age of the plant, the longer the flowering and fruit produced.(Rahmawati, 2011).

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Effect of Organic Mulch thickness on the number of fruits of tomato plants

Tomato plant growth can be influenced by various types of mulch thickness, both organic and inorganic. The effect can be seen from research parameters such as plant height, flower age, total fruit number per plant, fresh fruit weight, number of branches and others. In this study will take parameters from the total number of fruits per tomato plant produced. The results obtained may be significantly different and not significantly different.

It can be seen that the effect of rice straw mulch thickness on the total number of fruits per plant shows differences between the 7 mulch treatments with a thickness of 1.5 cm producing the number of fresh fruits of 9.00 fruits tan⁻¹, a thickness of 3.0 cm producing the number of fruits of 7.83 fruits tan⁻¹ which is not significantly different from the treatment without using mulch for a thickness of 4.5 cm weed growth of 59.71% and the results can produce as many as 21.24 fruits tan⁻¹. While for mulch thicknesses of 6.0, 7.5 and 9.0 cm can produce the number of fruits that are not

significantly different from the mulch treatment with a thickness of 4.5 cm.(Anggorowati et al., 2016).

The data generated from the number of tomato fruits from the treatment of alang-alang mulch with a thickness of 2 cm stated that it was not significantly different, unlike the case with a thickness of 4 cm which stated that the number of fruits produced met the best quality standards, reaching 29.42 cm which was very significantly different from without treatment or without using mulch. (Assagaf, 2020). In the treatment of rice husk mulch thickness, it is stated that the dose or thickness of rice husk mulch is not significantly different from the treatment or without using mulch.

Comparison of Mulch Thickness of Rice Straw, Rice Husk and Reeds on the observation of the number of fruits of tomato plants

The thickness of rice straw mulch, rice husk and reeds used in the process of planting tomato plants differs from one type to another. This allows the effect of various parameters to have a real impact or influence on the number of fruits produced by tomato plants, both from the

treatment without mulch, 5 tons/ha mulch treatment and 10 tons/ha mulch used and the environmental conditions planted, be it temperature, humidity, to flowering time which has an impact on the results of the amount of tomato fruit production. Below is a table comparing the thickness or dose of organic mulch used in tomato plants with several different treatments. (Rahmawati, 2011).

Jumlah Perlakuan	Jenis dan ketebalan Mulsa Organik		
	Jerami Padi	Alang-alang	Sekam Padi
M0	10,42 ab	19,84 a	14,61
M1	1 cm = 9,00 a	2 cm = 24,62 a	0,5 cm = 16,67
M2	3,0 cm = 7,83 a	4 cm = 29,42 a	1 cm = 15,40
M3	4,5 cm = 21,24 c	-	-
M4	6,0 cm = 17,14 bc	-	-
M5	7,5 cm = 20,41 c	-	-
M6	9,0 cm = 19,33 c	-	-

Description:

1. Rice straw: numbers accompanied by the same letter indicate not significantly different based on 5% BNT test; data analysis after transformed to x
2. Reeds: Numbers followed by the same letter are significantly different at the BNJ 0.05 test level.
3. Rice husk: Different superscripts in the same column indicate significant differences ($p < 0.05$)

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