

ID 131

## Comparison of paddy straw and paddy husk as mulching materials in Turmeric (*Curcuma longa* L.)

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### Abstract

Soil and water management is equally important as same as quality of planting material for getting high yield of turmeric (*Curcuma longa* L.). Among management practices, mulching plays a critical role in conserving soil moisture, enhancing soil temperature for proper germination of rhizome, improving soil physical properties, suppressing weed growth, enriching soil fertility after decomposing mulching materials and preventing leaching from soil nutrients. Therefore, present study was carried out to compare the effect of two abundant mulching materials, paddy straw and paddy husk on the growth and yield of turmeric at the Faculty of Technology, University of Ruhuna, Sri Lanka from January 2021 to December 2021. The treatments used in this study were paddy straw (T<sub>1</sub>), paddy husk (T<sub>2</sub>) and control (T<sub>0</sub>) without any mulching material. The experiment was laid out in a Randomized Complete Block Design with three replicates and twenty-four plants were used for one replicate in four rows with 30×30 cm spacing. After 11 months, plant height (cm), number of leaves, number of tillers/plants, leaf length (cm), leaf width (cm), fresh rhizomes weight (g), number of mother rhizomes/plant, number of primary fingers/plant and number of secondary fingers/plants were measured. Analysis of Variance was performed to determine the significant differences among T<sub>1</sub>, T<sub>2</sub>, and T<sub>0</sub>. Plant height (162.45 ± 16.27 cm), number of tillers (6.07 ± 1.68), leaf width (15.5 ± 2.96 cm), fresh rhizomes weight (1560.9 ± 775.68 cm), number of mother rhizomes (6.4 ± 1.94), number of primary rhizomes (32 ± 14.19) and number of secondary rhizomes (93.5 ± 36.06) were significantly higher in T<sub>2</sub> than control treatment (P<0.05). There were no significant differences between the parameters of T<sub>1</sub> and T<sub>2</sub> or T<sub>1</sub> and T<sub>0</sub>. Significant correlations were found between number of leaves with the fresh rhizome weight (r=0.678, α=0.01), number of tillers (r=0.874, α=0.01) and with the fresh rhizome weight (r=0.653, α=0.01) in control treatment. In treatment T<sub>1</sub>, significant correlations were found between the same parameters, the number of leaves and the fresh rhizome weight (r=0.795, α=0.01), and number of tillers with the fresh rhizome weight (r=0.738, α=0.01). In treatment 2, number of leaves (r=0.795, α=0.01), number of tillers (r=0.738, α=0.01) and leaf length were (r=0.408, α=0.05) significantly correlated with the fresh rhizome weight. Paddy husk and paddy straw had similar impact on the growth and yield of turmeric except that paddy husk significantly increased the leaf length of turmeric. Increasing leaf length directly increases the sink capacity and consequently, it contributes to the yield increment of turmeric.

**Keywords:** Growth, Mulching, Paddy husk, Paddy straw, Turmeric, Yield