



EFFECT OF DIFFERENT MULCHING TYPES ON INSECT AND DISEASE INFESTATION AND YIELD OF ONIONS (*Allium Cepa* L.)

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Abstract

This research was carried out to assess the effect of different mulching types on insect, disease infestation, and yield of onions. The experimental treatments were: Non mulch + Earth F1(T1), Non mulch +Texas Early Grano 502 PPR (T2), Rice Straw mulch +Earth F1 (T3), Rice Straw mulch + Texas Early Grano 502 PPR (T4), Silver Polythene mulch + Earth F1(T5), Silver Polythene mulch + Texas Early Grano 502 PPR (T6), Black Polythene mulch + Earth F1 (T7) and Black Polythene mulch +Texas Early Grano 502 PPR (T8). As the result, the bulb yield of onions among the treatments was found superior in treatment (T8) with Black Polythene mulch +Texas Early Grano 502 PPR (44.81t/ha) followed by silver polythene mulch + Texas Early Grano 502 PPR (40.37 t/ha) and rice straw mulch + Texas Early Grano 502 PPR (33.56 t/ha) while the lowest was found in Non mulch + Earth F1 (7.18 t/ha).

Introduction

Onion bulbs (*Allium cepa* L.) are important vegetables in Cambodia and important popular vegetable crops in the world. Variety is a major factor in cultivation and also a factor influencing crop yields. If mentioning on crop cultivation, it is not only about high yields, but also about ensuring sustainability (Rachel et al.,2018). On the other hand, the usage of other mulching, such as black plastic, Transparent plastic, rice straw, sawdust, and water hyacinth, are reported that it can effectively maintain soil moisture and soil temperature for growing onions and garlic(Rahman et al.,2009, Orzolek and lamont,2017).

Methodology

The Randomized Complete Block Design(RCBD) was arranged for the replication and randomization of treatment. The plots were designed by eight treatments and four replicates giving a total of 32 plots. The size of each plot was 1 x 4 m² and onion bulb were planted at 20 x 12 cm² spacing.

Result

Table 1: Effect of different mulches Stand count, Leaf number plant⁻¹, bulb diameter, single bulb weight ,yield of onions, Soil Temperature, Insect Incidence and Disease Incidence

Treatment	SC (Stem)	LNP (leaves)	BD(Cm)	SBW (g)	BY (t/ha)	ST (°C)	II(%)	DI(%)
T1	87.25d	7.68e	4.23d	69.38f	7.18f	31.67bc	13.71a	27.25a
T2	121.50ab	8.55c	5.02bc	107d	15.68de	32.03b	10.76bc	9.37d
T3	90.25d	8.23d	4.53cd	84.49e	13.50e	31.22bc	10.94b	19.96b
T4	126.25ab	8.95b	5.31ab	122.10c	33.56c	31.03c	7.81de	8.50d
T5	101.75cd	8.92b	4.56cd	103.88d	14.93e	33.91a	10.76bc	15.27c
T6	127ab	9.61a	5.57ab	137.57b	40.37b	34.35a	6.77ef	5.38e
T7	112bc	8.82bc	5.05bc	108.07d	19.18d	34.79a	9.20cd	13.54c
T8	134.50a	9.63a	5.77a	150.17a	44.81a	34.66a	5.55f	3.99e
CV (%)	9.21	2.33	7.59	7.61	11.96	1.88	12.48	14.89

Note: SC(Stand count), LND(Leaf Number/plant), BD(Bulb Diameter), ST(Soil Temperature), II(Insect Incidence), DI(Disease Incidence), SBW(Single Bulb Yield) and BY (Bulb Yield).

Discussion

Mulching induced significant enhancement on soil temperature as well as enhances plant growth and development of onion. Among the mulches, Black polythene mulch + Texas Early Grano 502 PPR performed the best of getting maximum bulb yield in onion. So. it can be suggested to use Black polythene + Texas Early Grano 502 PPR for increase production of onion in Cambodia.

References

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