

Original Research Article

EFFECT OF MULCH MATERIALS AND FOLIAR APPLICATION OF MICRONUTRIENTS ON THE GROWTH AND YIELD OF SWEET PEPPER UNDER NET HOUSE

Abstract

The study was carried out to evaluate the effect of different mulch materials and foliar application of micronutrients on growth and yield of sweet pepper under net house. The experiment consisted of two factors. Factor A: Three mulch materials viz., M₀-No mulch (control), M₂-Black polyethylene mulch and M₂-Rice straw mulch and Factor B: Three foliar application of micronutrients viz., N₀-control (No micronutrients), N₁-Zn @0.6% as ZnSO₄ and N₂-B @0.6% as H₃BO₃. The experiment was laid out in a Randomized Complete Block Design (RCBD) with three replications. Data were recorded on growth, yield components, yield and quality of sweet pepper and significant variation was observed for most of the studied characters. Analysis revealed that the M₂N₂ treatment combination appeared to be best for achieving the higher growth, fruit yield and economic benefit of sweet pepper.

Keywords : Foliar Application, Micronutrients, sweet pepper, crop growth

1.Introduction

“Sweet Pepper (*Capsicum annum* L.) is a year-round international vegetable crop belongs to Solanaceae family used in variety of ways for home consumptions, catering and industries” [1]. “Sweet pepper is native to southern part of North America and southern South America” [2]. “It is source of vitamin A, C and E. A 100 g of edible portion of pepper provides 24 Kcal of energy, 1.3 g of protein, 4.3 g of carbohydrates and 0.3 g of fat” [3]. “The nutritional quality of the fruits, especially as an excellent source of antioxidants- ascorbic acid, carotenoids and phenolic compounds makes the daily intake of pepper a health protecting factor in the prevention of chronic human degenerative and systemic sicknesses including cancer, diabetes, liver cirrhosis and cardio-vascular diseases” [4]. “It has introduced in Bangladesh for several years but not much familiar by the people or farmers. Some improper management practices contribute to produce low yield, mulching practices help to conserve soil moisture by reducing evaporation and control weeds effectively by reducing physiological functions of weed like germination, root, shoot and stem growth” [5]. “Mulching covers the soil surface, and hence, it is helpful in maintaining the soil temperature which is beneficial for overall crop growth. Nutrients are provided to the plants through both soil and foliar. Foliar application is the quickest and an excellent method of supplying plant nutrients” [6]. “Irregular nutrients management is mainly responsible for low production because application of different nutrients in required amount is given no attention. Many production problems in chillies are related to micronutrients deficiency” [7]. “Micronutrients are needed in very little quantity but are very important for proper growth of plants” [8]. “Micronutrients are usually required in minute quantities but essential for various activities; particularly zinc and boron play vital in the growth and development of plants due to catalytic effect on many metabolic processes” [9]. “Zinc activates the electrophile and nucleophiles as a component of plant carbonic anhydrase and many other photosynthetic enzymes, which influences the photosynthetic efficiency, chlorophyll structure and content. B is important for both flower development and initial fruit or seed set” [10] and “maintaining the structural integrity of cell wall and cell membranes” [11]. Therefore, it is clear that the growth and yield of sweet pepper can be increased by suitable mulch materials and judicious foliar application of micronutrients

2.MATERIALS AND METHODS

2.1 Experimental Site and experimental Framework The research work was conducted at Horticulture Farm, Sher-e-Bangla Agricultural University, Sher-e-Bangla Nagar, Dhaka, during the period from November 2020 to April 2021. The location of the site was 23°74' N Latitude and 90°35' E Longitude with an elevation of 8.2 meters from the sea level. The experiment consisted of two factors viz. different mulch materials and foliar application of micronutrients **Factor A:** Mulch materials M₀=No mulch (control) M₁= Black polyethylene mulch and M₂= Rice straw mulch **Factor B:** Foliar application of micronutrients N₀= Control (No micronutrients) N₁= Zn @ 0.6% as ZnSO₄ and N₂= B @ 0.6% as H₃BO₃. The two-factorial

experiment was laid out in a Randomized Complete Block Design (RCBD) with three replications the size of unit plot was 1.5 m × 1.2 m. The total number of treatments was 9 and the number of plots were 27.

2.2 Crop/planting material

The seed of variety BARI Misti morich-2 was collected from Bangladesh Agricultural Research Institute (BARI), Joydebpur, Gazipur, Bangladesh.

2.3 Application of manures and fertilizers

Total amount of organic manure, TSP and MoP were applied during final land preparation and urea was applied at equal three installments i.e. 15, 30 and 45 DAT (days after transplanting). Zinc and boron fertilizer used as a foliar application. Foliar application of zinc and boron micronutrients at three times during vegetative stage, flower initiation stage and fruit setting stage when fruit attained marble shaped.

The following doses of fertilizers and manures were used in this experiment:

List 1 : Doses of fertilizers and manures used in the study

Fertilizers	Manures	Doses (per hectare)
	Cow dung	10 t
Urea		250 kg
TSP		330 kg
MoP		250 kg
Zinc		As par treatment
Borax		As par treatment
Gypsum		110 kg

2.4 Seed sowing

Seeds were sown on 3 November 2020 in the seedbed. Sowing was done thinly in lines spaced at 5 cm distance. Seeds were sown at a depth of 2 cm and covered with a fine layer of soil before being lightly watered with a water can. When the seeds germinated, white polythene was used to provide shade to protect the young seedlings from the scorching sun and rain.

Data Analysis Technique

“The collected data were compiled and tabulated. Statistical analysis was done on various plant characters to find out the significance of variance resulting from the experimental treatments. Data were analyzed using analysis of variance (ANOVA) technique with the help of computer package program MSTAT-C (software) and the mean differences were adjudged by least significant difference test (LSD) as laid out” by [12].

3. RESULTS AND DISCUSSION

3.1 Plant height

Statistically significant variation was observed on plant height at 45, 65 and 85 DAT and at harvest due to different mulch materials (Table1). At harvest, the tallest plant (83.02 cm) was obtained from M₁ (Black polyethylene mulch) treatment and the shortest plant (68.10 cm) was revealed from M₀ (control) treatment. It was revealed that the plant height increased with the increase in days after transplanting (DAT) i.e., 45, 65, 85 DAT and at final harvest. [13] who reported that “the application of organic mulch compared to the control resulted in increased plant height, canopy size and stem diameter in the dry season”. Micronutrients showed significant influence on the plant height of sweet pepper at 45, 65, 85 DAT and at final harvest (Table1). At harvest, the tallest plant (76.99 cm) was observed from N₁ (Zn @ 0.6% as ZnSO₄) treatment. On the other hand, the shortest plant (71.25 cm) was observed from N₀ (control) treatment. [14] reported that “to the excelling of the spraying treatment was superior (2 gL⁻¹) which significantly increased in plant height, number of fruit branches, leaf area of plant, dry weight of vegetative group, leaf content of chlorophyll, nitrogen, phosphorus and potassium”.

Significant influence was observed on plant height due to the combined effect of different mulch materials and foliar application of micronutrients (Table 3). From the results of the experiment showed that the tallest plant height at harvest (85.73 cm) was observed from the treatment combination of M₁N₁(Black

polyethylene mulch+ Zn @ 0.6% as ZnSO₄) treatment. On the other hand, the shortest plant at harvest (61.78 cm) was observed from M₀N₀ (control) treatment combination.

3.2 Number of leaves per plant

Significant variation was observed on number of leaves per plant of sweet pepper due to different mulch materials under the experiment (Table 2). At harvest, the maximum number of leaves per plant (131.15) was obtained from M₂ (rice straw mulch) treatment where minimum number of leaves per plant (115.46) was observed from M₀ (control) treatment. [15] who reported that plant height, number of primary branches, stem base diameter, number of leaves and yield were better for the mulch materials. Number of leaves per plant showed significant variation on due to the influence of foliar application of micronutrients (Table 2). At harvest, the maximum number of leaves per plant (125.83) was observed from N₁ (Zn @ 0.6% as ZnSO₄) treatment. On the other hand, the minimum number of leaves per plant (120.74) was observed from N₀ (control) treatment. [16] who found the similar results. They reported that “maximum number of leaves, number of flowers was observed with the foliar application of Boron (H₃BO₃) + Magnesium (MgSO₄.7H₂O) at 100 ppm and minimum was found in the control treatment”.

Table 1. Effect of mulch materials on plant height at different days after transplanting of sweet pepper

Treatments	Number of leaves per plant at			
	45 DAT	65 DAT	85 DAT	Harvest
M ₀	8.63 c	17.14 c	32.15 c	68.10 c
M ₁	10.27 a	21.69 a	45.53 a	83.02 a
M ₂	9.63 b	20.18 b	35.39b	73.26 b
LSD _(0.05)	0.3953	0.9396	1.3118	1.5882
CV%	4.20	4.82	3.51	2.14
Treatment				
N ₀	9.11 b	18.27 b	34.69 b	71.25 b
N ₁	9.91 a	20.76 a	39.67 a	76.99 a
N ₂	9.50 b	19.98 a	38.71 a	76.14 a
LSD _(0.05)	0.3953	0.9396	1.3118	1.5882
CV%	4.20	4.82	3.51	2.14

In a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly at 0.05 level of probability. Here, N₀= control, N₁= Zn @ 0.6% as ZnSO₄ and N₂= B @ 0.6% as H₃BO₃, M₀= Control, M₁= Black polyethylene mulch and M₂= Rice straw mulch

3.2 Number of leaves per plant

Significant variation was observed on number of leaves per plant of sweet pepper due to different mulch materials under the experiment (Table 2). At harvest, the maximum number of leaves per plant (131.15) was obtained from M₂ (rice straw mulch) treatment where minimum number of leaves per plant (115.46) was observed from M₀ (control) treatment. [15] who reported that “plant height, number of primary branches, stem base diameter, number of leaves and yield were better for the mulch materials”. Number of leaves per plant showed significant variation on due to the influence of foliar application of micronutrients (Table 2). At harvest, the maximum number of leaves per plant (125.83) was observed from N₁ (Zn @ 0.6% as ZnSO₄) treatment. On the other hand, the minimum number of leaves per plant (120.74) was observed from N₀ (control) treatment. [16] who found the similar results. They reported that maximum number of leaves, number of flowers was observed with the foliar application of Boron (H₃BO₃) + Magnesium (MgSO₄.7H₂O) at 100 ppm and minimum was found in the control treatment. Combined effect of mulch materials and foliar application of micronutrients significantly influenced by number of leaves per plant (Table 3). At harvest, the maximum number of leaves per plant (135.15) was achieved from M₂N₁(Rice straw mulch + Zn @ 0.6% as ZnSO₄) treatment combination. On the other hand, the minimum number of leaves per plant (113.17) was observed from M₀N₀ (control) treatment combination.

Table 2. Effect of mulch materials on number of leaves per plant at different days after transplanting of sweet pepper

Treatments	Number of leaves per plant at			
	45 DAT	65 DAT	85 DAT	Harvest
M₀	7.46 c	18.57 c	56.89 c	115.46 c
M₁	9.43 b	19.96 b	64.57 b	122.82 b
M₂	10.33 a	23.24 a	70.29 a	131.15 a
LSD_(0.05)	0.4113	0.9700	0.6883	1.3438
CV%	4.58	4.76	5.09	4.10
Treatment				
N₀	8.38 b	19.05 b	61.66 c	120.74 c
N₁	9.60 a	21.44 a	66.02 a	125.83 a
N₂	9.25 a	21.28 a	64.07 b	122.86 b
LSD_(0.05)	0.4113	0.9700	0.6883	1.3438
CV%	4.58	4.76	5.09	4.10

In a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly at 0.05 level of probability. Here, N₀= control, N₁= Zn @ 0.6% as ZnSO₄ and N₂= B @ 0.6% as H₃BO₃, M₀= Control, M₁= Black polyethylene mulch and M₂= Rice straw mulch

Table 3. Combined effect of mulch materials and foliar application of micronutrients on plant height at different days after transplanting of sweet pepper

Treatment Combination	Plant height (cm) at different days after sowing (DAS)				Number of leaves per plant at			
	45 DAS	65 DAS	85 DAS	At final harvest	45 DAS	65DAS	85DAS	At final harvest
M₀N₀	7.77 e	14.19 f	29.19 f	61.78 e	7.02 f	15.66 f	53.23 h	113.17 f
M₀N₁	8.98 d	18.95 de	34.16 d	71.96 d	7.95 e	20.49 cd	60.44 f	117.39 e
M₀N₂	9.13 d	18.28 e	33.10 de	70.58 d	7.41 ef	19.55 de	56.99 g	115.83 e
M₁N₀	10.19 ab	20.93 bc	43.37 b	80.23 b	8.67 d	19.72 de	63.63 e	120.78 d
M₁N₁	10.75 a	22.72 a	47.86 a	85.73 a	9.97 bc	18.72 e	65.18 d	124.96 c
M₁N₂	9.87 bc	21.44 ab	45.37 b	83.11 a	9.67 c	21.44 bc	64.88 d	122.7cd
M₂N₀	9.37 cd	19.69 cde	31.52 e	71.73 d	9.44 c	21.77 bc	68.11 c	128.29 b
M₂N₁	10.00 bc	20.62 bc	37.00 c	73.30 cd	10.88 a	25.11 a	72.44 a	135.15 a
M₂N₂	9.51 bcd	20.23 bcd	37.66 c	74.75 c	10.67 ab	22.85 b	70.34 b	130.02 b
LSD_(0.05)	0.6847	1.6275	2.2721	2.7508	0.7124	1.6802	1.1922	2.3275
CV%	4.20	4.82	3.51	2.14	4.58	4.76	5.09	4.10

In a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly at 0.05 level of probability. Here, M₀= Control, M₁= Black polyethylene mulch and M₂= Rice straw mulch N₀= control, N₁= Zn @ 0.6% as ZnSO₄ and N₂= B @ 0.6% as H₃BO₃

3.3 Number of flowers per plant

Statistically significant variation on number of flowers per plant of sweet pepper was observed due to different mulch materials (Table 4). The maximum number of flowers per plant (33.19) was observed from M₂ (rice straw mulch) treatment while the minimum number of flowers per plant (25.22) was obtained from M₀ (control) treatment. Significant difference on number of flowers per plant of sweet pepper was observed due to different levels of foliar application of micronutrients (Table 4). It was revealed that the maximum number of flowers per plant (32.25) was obtained from N₂ (B @ 0.6% as H₃BO₃) treatment. On the other hand, the minimum number of flowers per plant (27.90) was observed from N₀ (control) treatment. [16] who observed the similar results. They reported that combined application of B +Mg at 100 ppm was found to be effective in enhancing plant growth, flowering and fruit yield of chilli. Combined effect of mulch materials and micronutrients significantly influenced by number of flowers per plant of

sweet pepper (Table 5). From the results of the experiment revealed that the maximum number of flowers per plant of sweet pepper (36.13) was observed from M₂N₂ (rice straw mulch + B @ 0.6% as H₃BO₃) treatment combination. On the other hand, the minimum number of flowers per plant of sweet pepper (23.92) was observed from M₀N₀ (control) treatment combination

Table 4. Effect of mulch materials and foliar application of micronutrients on number of flowers, number of fruits, individual fruit weight, fruit length, yield per hectare, days to first flowering of sweet pepper

Treatment	Number of flower	Number of fruit	Individual fruit weight	Length of fruit(cm)	Yield per hectare of land(ton)	Days to first flowering
Mulching						
M ₀	25.22 c	7.90 c	70.13 c	12.08 c	29.50 c	52.29 a
M ₁	30.61 b	11.11 b	83.02 b	12.69 b	39.50 b	46.88 b
M ₂	33.19 a	13.59 a	89.85 a	13.99 a	55.17 a	45.87 c
LSD (0.05)	0.4263	0.4669	1.8237	0.5200	1.0401	0.7140
CV%	3.89	4.30	2.25	4.06	2.51	5.3
Nutrients						
N ₀	27.90 c	8.96 c	70.22 c	12.28 c	33.00 c	50.82 a
N ₁	28.88 b	10.22 b	84.83 b	12.92 b	43.17 b	47.93 b
N ₂	32.25 a	13.43 a	87.95 a	13.57 a	48.00 a	46.29 c
LSD (0.05)	0.4263	0.4669	1.8237	0.5200	1.0401	0.7140
CV%	3.89	4.30	2.25	4.06	2.51	5.3

Here, M₀= Control, M₁= Black polyethylene mulch and M₂= Rice straw mulch N₀= control, N₁= Zn @ 0.6% as ZnSO₄ and N₂= B @ 0.6% as H₃BO₃ in a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly at 0.05 level of probability.

3.4 Number of fruits per plant

Significant influence on number of fruits per plant of sweet pepper was observed due to different mulch materials (Table 4). The maximum number of fruits per plant (13.59) was observed from M₂ (rice straw mulch) treatment while the minimum number of fruits per plant (7.90) was obtained from M₀ (control) treatment. [15] who also observed the similar results. They revealed that mulching produced the fruits with the highest chlorophyll-a, chlorophyll-b and total chlorophyll contents and also increased the number of fruits per plant and yield. Number of fruits per plant of sweet pepper showed significant variation due to different levels of foliar application of micronutrients (Table 4). It was noted that the maximum number of fruits per plant (13.43) was obtained from N₂ (B @ 0.6% as H₃BO₃) treatment. The minimum number of fruits per plant (8.96) was observed from N₀ (control) treatment. [17] who also revealed the similar result. [18] who reported that about 25% yield increment compared to control treatment when treated with micronutrients such as zinc, boron, copper etc. Combined effect of mulch materials and micronutrients significantly influenced by number of fruits per plant of sweet pepper (Table 5). From the results of the experiment revealed that the maximum number of fruits per plant of sweet pepper (16.92) was observed from M₂N₂ (rice straw mulch + B @ 0.6% as H₃BO₃) treatment combination. On the other hands the minimum number of fruits per plant of sweet pepper (5.83) was observed from M₀N₀ (control) treatment combination

3.5 Length of fruit

Statistically significant variation on length of fruit of sweet pepper was observed due to varied levels of phosphorus (Table 4). But the maximum length of fruit (9.00 cm) was observed from M₂ (rice straw mulch) treatment while the minimum length of fruit (6.81 cm) was obtained from M₀ (control) treatment. Significant difference on length of fruit per plant of sweet pepper was observed due to varied application

of micronutrients (Table 4). It was revealed that the maximum length of fruit (8.73 cm) was obtained from N₂ (B @0.6% as H₃BO₃) treatment. On the other hands the minimum length of fruit (7.32 cm) was observed from N₀ (control) treatment. Combined effect of mulch materials and foliar application of micronutrients significantly influenced by length of fruit per plant of sweet pepper (Table 5). The maximum length of fruit per plant (10.10 cm) was observed from M₂N₂ (rice straw mulch + B @0.6% as H₃BO₃) treatment combination. On the other hands the minimum length of fruit per plant (6.18 cm) was observed from M₀N₀ (control) treatment combination.

3.6 Days to first flowering

Significant variation on days to first flowering of sweet pepper was observed due to different mulch materials (Table 4). The maximum days to first flowering of sweet pepper (52.29) was obtained from M₀ (control) treatment. On the other hands the minimum days to first flowering of sweet pepper (45.87) was obtained from M₂ (rice straw mulch) treatment. [23] who reported that the plant grown with mulch materials requires minimum days to first flowering than control.

Statistically significant difference on days to first flowering of sweet pepper was observed due to varied foliar application of micronutrients (Table 4). It was revealed that the minimum days to first flowering of sweet pepper (46.29) was obtained from N₂ (B @0.6% as H₃BO₃) treatment. On the other hands the maximum days to first flowering of sweet pepper (50.82) was observed from N₀ (control) treatment. The combined effect of mulch materials and foliar application of micronutrients significantly influenced by days to first flowering of sweet pepper (Table 5). From the results of the experiment revealed that the minimum days to first flowering of sweet pepper (43.17) was observed from M₂N₂ (rice straw mulch + B @ 0.6% as H₃BO₃) treatment combination. On the other hands the maximum days to first flowering of sweet pepper (55.55) was observed from M₀N₀ (control)treatment combination.

3.7 Individual fruit weight per plant

Significant variation on individual fruit weight per plant was observed due to different mulch materials (Table4). From the results of the experiment showed that the maximum individual fruit weight per plant (89.85 g) was obtained from M₂ (rice straw mulch) treatment. On the other hand, the minimum individual fruit weight per plant (70.13 g) was obtained from M₀ (control) treatment. Similar result was also observed by [19] who reported that number of fruits, fruit length, fruit width, fruit weight and fruit yield were significantly influenced by mulch materials. Statistically significant influence on individual fruit weight per plant was observed due to different foliar application of micronutrients under the present experiment (Table 4). The maximum individual fruit weight per plant (87.95 g) was obtained from N₂ (B @0.6% as H₃BO₃) treatment. On the other hands the minimum individual fruit weight per plant (70.22 g) was observed from N₀ (control)treatment. The result of the experiment was in coincided with the findings of [14]. [20] who reported that “number of fruits per plant, fruit length, fruit weight plant⁻¹, yield t/ha 1000 seed weight were recorded maximum in the plot to which received zinc @ of 3 kg per hectares. It is concluded from the results that foliar application of boron and zinc should be used @ of 3 kg per hectares for better chilli production in the agro-climatic conditions of Swat”. Combined effect of mulch materials and foliar application of micronutrients significantly influenced by individual fruit weight per plant (Table 5)). From the results of the experiment revealed that the maximum individual fruit weight per plant (97.64 g) was observed from M₂N₂ (rice straw mulch + B @0.6% as H₃BO₃) treatment combination. On the other hand, the minimum individual fruit weight per plant (62.66 g) was observed from M₀N₀ (control) treatment combination.

Table 5. Combined effect of mulch materials and foliar application of micronutrients on number of flowers, number of fruits, individual fruit weight, fruit length, yield per hectare days to first flowering, yield per plot of sweet pepper

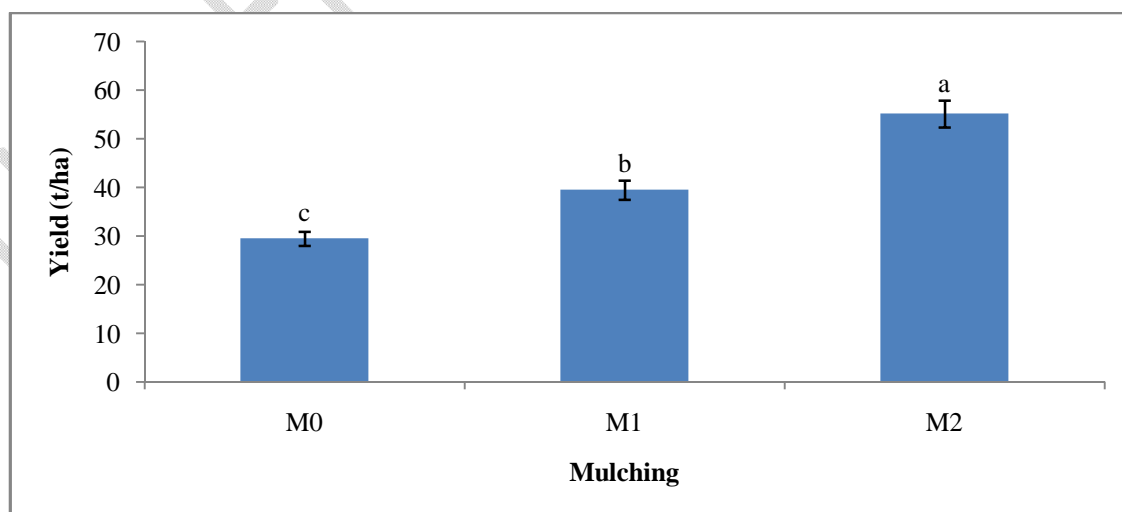
Treatment Combinations	Number of flowers per plant	Number of fruits per plant	Individual fruit weight(g)	Fruit length(m)	Yield per hectare(ton)	Days to first flowering
M ₀ N ₀	23.92 h	5.83 g	62.66 g	6.18 f	24.50 l	55.55 a
M ₀ N ₁	24.18 h	8.05 f	72.90 ef	7.12 e	31.00 g	51.50 b
M ₀ N ₂	27.57 g	9.83de	74.82 de	7.13 e	33.00 f	49.83 c
M ₁ N ₀	28.62 f	9.30 e	70.27 f	7.69 de	29.00 h	48.33 d
M ₁ N ₁	30.17 e	10.52 d	87.41 c	8.62 bc	41.50 e	46.44 e
M ₁ N ₂	33.05 b	13.53 b	91.39 b	8.97 b	48.00 c	45.87 e
M ₂ N ₀	31.17 d	11.76 c	77.73 d	8.08 cd	45.50 d	48.57 d
M ₂ N ₁	32.29 c	12.10 c	94.18 b	8.82 b	57.00 b	45.87 e
M ₂ N ₂	36.13 a	16.92 a	97.64 a	10.10 a	63.00 a	43.17 f
LSD (0.05)	0.7384	0.8088	3.1588	0.7331	1.8014	1.23
CV%	3.89	4.30	2.25	7.28	2.51	5.30

Here, M₀= Control, M₁= Black polyethylene mulch and M₂= Rice straw mulch N₀= control, N₁= Zn @ 0.6% as ZnSO₄ and N₂= B @ 0.6% as H₃BO₃ in a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly at 0.05 level of probability.

3.8 Yield per hectare

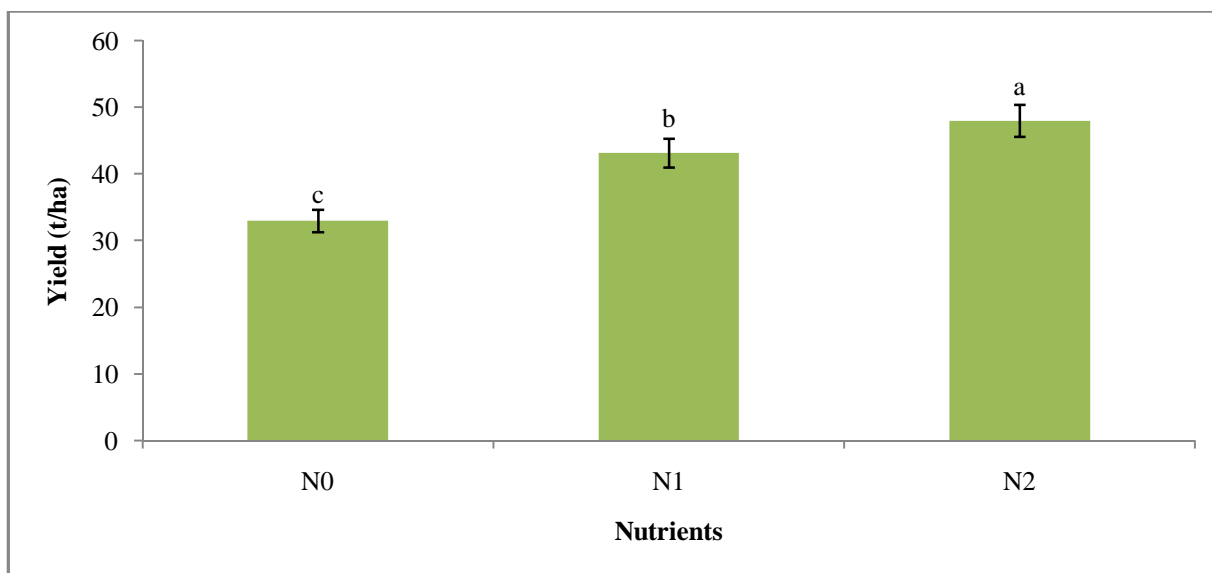
Significant variation was observed on yield per hectare of sweet pepper due to different mulch materials under the present study (Fig. 1). From the results of the experiment showed that the maximum yield per hectare (55.17 t) was obtained from M₂ (rice straw mulch) treatment. On the other hand, the minimum yield per hectare (29.50 t) was obtained from M₀ (control) treatment. The result was in coincided with the findings of [25] who reported that rice straw mulch treatment produced highest green chilli yield which was 26.94 % increase over no mulch treatment. Statistically significant influence on yield per hectare was observed due to different levels of foliar application of micronutrients (Fig.2). It was revealed that the minimum yield per hectare (48.00 t) was revealed from N₂ (B @0.6% as H₃BO₃) treatment. On the other hand, the minimum yield per hectare (33.00 t) was obtained from N₀ (control) treatment. The result of the experiment was also coincided with the findings of [26] who reported that maximum fruit yield per plant, maximum fruit yield per hectare, highest value of 100 seeds weight were obtained by foliar application of micronutrients.

Combined effect of mulch materials and foliar application of micronutrients significantly influenced by yield per hectare of sweet pepper (Table 5). From the results of the experiment revealed that the maximum yield per hectare (63.00 t) was observed from M₂N₂ (rice straw mulch + B @0.6% as H₃BO₃) treatment combination (Table. On the other hand, the minimum yield per hectare (24.50 t) was obtained from M₀N₀ (control) treatment combination.



Here, M₀= Control, M₁= Black polyethylene mulch and M₂= Rice straw mulch

Fig. 1. Effect of mulch materials on yield per hectare of sweet pepper



Here, N₀= control, N₁= Zn @ 0.6% as ZnSO₄ and N₂= B @ 0.6% as H₃BO₃

Fig. 2 Effect of foliar application of micronutrients on yield per hectare of sweet pepper

Conclusion

This study revealed that different mulch materials and foliar application of micronutrients have a positive effect on growth and yield of sweet pepper. In case of yield of sweet pepper, the combination of mulch materials M₂N₂ (Straw mulch) along with foliar application of micronutrients N₂ (B @0.6% as H₃BO₃) were given the better performance of all the yield contributing parameters, yield (63.00 t ha⁻¹) and quality of sweet pepper than the other treatment combinations. So, it can be concluded that farmers will be benefitted by applying rice straw mulch with three times foliar application of B @ 0.6% in capsicum production. But it can be repeated in different agro ecological zones of Bangladesh for better yield and consideration value for money concept.

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