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Research Article

Influence of Variety and Distance in the Growth and Performance of Hybrid Corn

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Abstract

Field tests were conducted by the Agricultural research field at Patuakhali Science and Technology University from January to June 2018 to examine the effects of variety and plant spacing on yield. The experiment included three hybrid varieties: Pioneer-3396, Titan, Sunshine, and three spacing of plant: (70 X 15) cm^2, (60 X 20) cm^2 and (50 X 25) cm^2. The experiment created with a randomized complete block design with three replicates. Results showed a significant impact of the variety and spacing on yields and yields examined. Maximum rows cob^{-1}, seeds row^{-1}, cob breadthm, cob weight, stems girth, and grain yield were recorded from the hybrid variety Titan. Maximum number of cob $plant^{-1}$, seeds row^{-1}, seeds cob^{-1}, highest cob length, cob weight, grain weight cob^{-1}, grain yield, and straw yield were recorded in spacing (60 X 20) cm^2. In contrast, (50 X 25) cm^2 spacing produced minimum values of the above-mentioned plant parameters also lowest grain and straw yield. Interaction effects of variety and spacing, showed the maximum seeds Cob^{-1} (339.0), the highest cob (13.52 cm), the maximum cob weight (129.7 g), and grain weight Cob^{-1} (104.7 g) with titanium. Significant 1000 seed weight (272.7 g) recorded with Titan. At (60 X 20) cm^2 intervals, maximum grain yield (9.0 tha^{-1}) and straw yield (4.2 tha^{-1}). Minimum outputs were recorded at Pioneer 3396 with closest plant distance of (70 X 15) cm^2. Because of experimental results, we can conclude that corn (CV. Hybrid-Titan -Corn) can be grown with a distance of (60 X 20) cm^2 for the highest income.

Keywords

Maize, Spacing, Cob and Yield

1. Introduction

Maiz is an important grain plants in the world and acceptable for increased productivity as Bangladesh's third measure [6]. Bangladesh covers approximately thirty-five million hectares of land which produce 2.3 million tonnes of grain [3, 9]. Globally production of corn is 785 million tons. The United States is the largest producer and produce 42 percent. Production increases daily from a variety of foods, feed for cattle, poultry, fuel, and industrial raw materials [11]. Corn cob can

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be consumed as green, roasted, or bright grain. Grain can be used corn flour, fried grains, and flour by human being. Grains are nutritious containing starch (66.2%), protein (11.1%), oil (7.12%) and minerals (1.5%). Corn also contains carotene (90 mg), niacin (1.8 mg), thiamine (0.8 mg), and riboflavin (0.1 mg) in each 100 g grains [4]. Corn contains food oil of good quality. The green part is used as food for beef and chicken. Stovers and dried leaves are used as excellent fuels [1]. Average national return rate is 6.45 tha^{-1}, but newly invented varieties can exceed 8.0 tha^{-1} [2]. Diversity and plant distance generally affect the harvest environment and affect growth and yield of harvest. Varieties of maize have influence on yields. Hybrid varieties produce more than twice the height of local varieties. Hybrid varieties and cultivation of various plant distances can increase corn production. Proper plant spacing adjustment is important to ensure maximum solar energy use by collecting and reducing soil moisture evaporation [8]. Radiation through leaf surface and efficiency of its use in the development of biomass regulates the overall production of dry matter. Plant population levels need to be maintained for ensuring satisfactory yields using the largest natural resources, such as nutrients, sunlight, and soil moisture. Very tight planting is undesirable as it promotes competition between plants for resources. Harvest biomass production is heavily dependent on leaf surface development and the function of consistent photosynthetic activity [10]. According to FAO around 158 million hectares of corn are harvested worldwide [7]. The experiment was undertaken with an aim to study the effect of Variety and Spacing on growth and performance of hybrid corn.

2. Materials and Methods

The experiment was created with a randomized complete block design with three replicates, each replicate representing a block. Each block was divided into unit diagrams. Processing was randomly distributed across the unit diagram of each block. The total number in the figure was 27, with plot = 1 m. Varieties made such as Pioneer 3396 (V_1), Titan (V_2), and Sunshine (V_3) were used as factor A and distance (70 x 15) cm^2 (S_1), (60 x 20) cm^2 (S_2), (50 x 25) cm^2 (S_3). Corn harvest fertilized in triplicate amounts with urea, DAP and MOP at @120 kg Nha^{-1}, 60 kg Pha^{-1} and 60 kg Kha^{-1}. Recommended amounts of nitrogen, phosphate and potassium fertilizer at 60:60 kg/ha were calculated, weighted individually, and used in all experimental diagrams. In farmer practice, corn harvest fertilized at 53.2 kg Nha^{-1}, 30.4 kg Pha^{-1} and 0 kg Kha^{-1} with two divided doses with Urea, DAP, and MOP. Amounts of recommended nitrogenous fertilizers were calculated individually used in all experimental diagrams. @30 kg/ha, 45 gm seed speed in each figure (15 m^2). The bottom of the Patuakhali Science and Technology University Farm is muddy clay or an alluvial pH value of 6.8. Intercultural operations such as weeding, irrigation, thinning, and management of pest were carried out. Harvest occurred at 80% ripeness, including physiological maturation symptoms. In grains, moisture is less than 22-25%, the shell color becomes light brown, and 25–30 days from the tassel. Plant heights, leaves $plant^{-1}$, cob $plant^{-1}$, rows cob^{-1}, seeds row^{-1}, seed cob^{-1}, cob length, cob breadthm, cob weight, stem girth, grain weight cob^{-1}, 1000 seed weight, grain yield, and straw yield. Corn yields, a system of individual property, were recorded.

The grain performance was calculated on the basis of the hectare using the following formula:

$$\text{Grain yield (kg ha}^{-1}) = [\text{Fresh grain weight (kg)} \times (100 - \text{moisture \%})] \div [\text{Harvested area (m}^2) \times (100 - 15)] \times 10{,}000$$

The data were analyzed statistically using the MSTAT program.

3. Results and Discussion

Results recorded analyzing this study is presented in this chapter.

3.1. Effect of Variety

Plant height (cm), leaves $plant^{-1}$, cob $plant^{-1}$, rows cob^{-1}, seeds row^{-1} influenced significantly by various varieties is presented in Table 1.

Table 1. Effect of maize on plant height, leaves $plant^{-1}$, cob $plant^{-1}$, rows cob^{-1}, seeds row^{-1}.

Variety	Plant height (cm)	Leaves $plant^{-1}$	Cob $plant^{-1}$	Rows cob^{-1}	Seeds row^{-1}
V_1 =Pioneer 3396	190.42^a	12.44^a	1.022^a	14.20b^b	22.22^b
V_2 =Titan	160.78^c	12.33^a	1.000^a	15.02a^a	25.91^a
V_3 =Sunshine	180.78b^b	12.56^a	1.000^a	14.58^{ab}	25.77^a
LSD (0.05)	2.992	0.6553	0.03248	0.5672	1.212

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

Result revealed that varieties significantly increase number of plant height, rows cob^{-1}, seeds row^{-1} etc. Leaves plant^{-1}, cob plant^{-1} did not differ significantly. Maximum leaves plant-1 was observed in Pioneer 3396 (12.44) where the minimum leaves were observed in Titan (12.33) which did not differ significantly. Maximum rows cob^{-1} (15.02) found in Titan and minimum rows cob^{-1} (14.20) obtained in Pioneer 3396 statistically not similar. Highest plant height (190.42) found in Pioneer 3396 and lowest (160.78) obtained in Titan which differs significantly.

Highest no. of cob plant^{-1} (1.022) was found in Pioneer 3396 followed by Titan and Sunshine (1.000) having no significant differences. Highest no. of seeds row^{-1} (25.91) was found in Titan and the lowest no. of seeds row^{-1} was found in Pioneer 3396 which are statistically similar.

Seed cob^{-1}, length, breadthm, weight, stem girth, significantly influenced by various varieties are tabulated in Table 2.

Table 2. *Influence of maize variety on seed cob^{-1}, length, breadthm, weight.*

Variety	Seed cob^{-1}	Cob length (cm)	Cob breadthm (cm)	Cob weight (gm)
V_1 =Pioneer 3396	285.2^{b}	11.44^{b}	4.600^{a}	82.33^{b}
V_2 =Titan	354.2^{a}	13.97^{a}	4.733^{a}	110.0^{b}
V_3 =Sunshine	360.2^{a}	14.09^{a}	4.600^{a}	107.6^{b}
LSD (0.05)	13.60	0.6545	0.1378	3.715

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

Result revealed that varieties significantly increase maximum seed cob^{-1} observed in Titan (354.2) and minimum seed cob^{-1} observed in Pioneer 3396 (285.2) and are statistically similar.

Highest cob length (15.02) found in Sunshine were the lowest (13.97) obtained in Titan (11.34) with statistical difference. Maximum cob breadthm (4.733 cm) was found in Titan followed by Pioneer 3396 and Sunshine (4.600cm) respectively and are significantly influence by each other. Highest cob wt. (110.00) was found in Titan and the lowest in Pioneer 3396 (82.00) was obtained with no significant difference.

The stem girth, grain weight cob^{-1}, 1000 seed weight influenced significantly based on various varieties tabulated in Table 3.

Table 3. *Influence of maize variety on stem girth, grain wt. cob^{-1}, 1000 seed wt.*

Variety	Stem girth (cm)	Grain weight cob^{-1} (gm)	1000 seed weight (gm)
V_1 = Pioneer 3396	2.233^{a}	70.33^{c}	284.1^{a}
V_2 = Titan	2.256^{a}	85.60^{b}	272.4^{b}
V_3 = Sunshine	2.244^{a}	89.66^{b}	255.3^{c}
LSD (0.05)	0.1866	2.978	3.477

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

Maximum grain weight cob^{-1} was observed in Sunshine (89.66) and minimum observed in Pioneer 3396 (70.33) with significant difference. Highest 1000 seed wt. (284.1) was found in Pioneer 3396 where the lowest 1000 seed weight (255.3) obtained in Sunshine that differ significantly. Highest stem girth (2.256 cm) was found in Titan and the lowest stem girth (2.233 cm) was found in Pioneer 3396 and is statistically similar.

3.2. Effect of Spacing

Leaves plant^{-1}, rows cob^{-1}, plant height, cob plant^{-1}, seeds row^{-1} etc. has a significant effect by different spacing which is tabulated in Table 4.

Table 4. Influence of spacing on plant height, leaves plant^{-1}, cob plant^{-1}, rows cob^{-1}, seeds row^{-1}.

Spacing (cm)	Plant height (cm)	Leaves plant^{-1}	Cob plant^{-1}	Rows cob^{-1}	Seeds row^{-1}
S_1= (70 X 15) cm^2	177.01^b	13.38^a	1.000^a	14.53^a	24.71^a
S_2= (60 X 20) cm^2	177.53^b	12.13^b	1.022^a	14.53^a	24.83^a
S_3= (50 X 25) cm^2	188.18^c	11.82^b	1.000^a	14.73^a	24.36^a
LSD (0.05)	2.992	0.6553	0.03248	0.5672	1.212

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

Highest number leaves plant^{-1} observed in spacing (70 X 15) cm^2 (13.38) where the lowest in (50 X 25) cm^2 (11.82) with statistical difference. Maximum rows cob^{-1} (14.73) found in (50 X 25) cm^2 followed by the lowest in spacing (70 X 15) cm^2 and (60 X 20) cm^2 respectively having no significant difference. Highest plant height (188.18) was found in spacing (50 X 25) cm^2 and the lowest in spacing (70 X 15) cm^2 (177.01) that differ significantly. Highest no. of cob plant^{-1} (1.022) was found in spacing (60 X 20) cm^2 followed by (70 X 15) cm^2 and (50 X 25) cm^2 (1.000) respectively with no significant difference. Highest no. of seeds row^{-1} (24.83) was found in spacing (60 X 20) cm^2 and the lowest (24.36) found in spacing (50 X 25) cm^2 with no dissimilar effect.

Number of seed cob^{-1}, length, breadthm and weight of cob significantly influenced by different spacing which is mentioned in Table 5.

Table 5. Effect of spacing on seed cob^{-1}, cob length, cob breadthm, cob wt.

Spacing	Seed cob-^{1}	Cob length (cm)	Cob breadthm (cm)	Cob weight (gm)
S_1= (70 X 15) cm^2	337.8^a	12.92^a	4.656^a	100.0^b
S_2= (60 X 20) cm^2	339.0^a	13.52^a	4.600^a	107.6^a
S_3= (50 X 25) cm^2	322.9^b	13.06^a	4.678^a	92.37^c
LSD (0.05)	13.60	0.6545	0.1378	3.715

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

The highest number of seed cob^{-1} observed in spacing 60 cm x 20 cm (339.0) and lowest in spacing (50 X 25) cm^2 (322.9) with no statistical similarity. Highest cob length (13.52 cm) was found in spacing (60 X 20) cm^2 and the lowest cob length (12.92 cm) was obtained in spacing (70 X 15) cm^2 having no significant difference. Maximum cob breadthm (4.678 cm) was found in spacing (50 X 25) cm^2 followed by spacing (70 X 15) cm^2 (4.656) and (60 X 20) cm^2 (4.600 cm) respectively did not differ significantly. Highest cob weight (107.6 gm) was found in spacing (60 X 20) cm^2 and the lowest in spacing (50 X 25) cm^2 (92.37 gm) was obtained with significant difference.

The grain weight cob^{-1}, 1000 seed weight, stem girth and straw yield (Kg) significantly influenced by various varieties presented in Table 6.

Table 6. Effect of spacing on stem girth, grain weight cob^{-1}, 1000 seed weight.

Spacing	Stem girth (cm)	Grain weight cob^{-1}	1000 seed weight
S_1= (70 X 15) cm^2	2.311^a	76.53^b	271.6^a
S_2= (60 X 20) cm^2	2.278^a	92.39^b	270.6^a
S_3= (50 X 25) cm^2	2.144^a	76.67^b	269.8^a
LSD (0.05)	0.1866	2.978	3.477

The means followed by the same letter in the column did not significantly differ at 5% according to LSD. Maximum grain weight cob^{-1} observed in spacing (60 X 20) cm^2 (92.39) where the minimum in spacing (70 X 15) cm^2 (76.53 gm) did not differ significantly. Highest 1000 seed wt.(271.6 gm) was found in spacing (70 X 15) cm^2 and the lowest 1000 seed weight (269.8 gm) was obtained in spacing (50 X 25) cm^2 did not differ significantly. Highest stem girth (2.311 cm) found in spacing (70 X 15) cm^2 and the lowest stem girth (2.144 cm) was found in spacing 50 cm X 25 cm with no significant difference.

3.3. Effect of Variety X Spacing

Significance on interaction effect observed between variety and plant spacing on leaves plant^{-1}, rows cob^{-1}, plant height, cob plant^{-1}, seeds row^{-1} etc. presented in Table 7.

Table 7. Effect of variety x spacing on plant height, leaves plant^{-1}, cob plant^{-1}, rows cob^{-1}, seeds row^{-1}.

Interaction (VXS)	Plant height (cm)	leaves plant^{-1}	cob plant^{-1}	Rows cob^{-1}	Seeds row^{-1}
V_1 x S_1	189.67 ^{b}	14.00^{a}	1.000^{b}	13.20 ^{f}	21.47 ^{e}
V_1 x S_2	192.73 ^{b}	12.33 ^{d}	1.067^{a}	14.67 ^{c}	21.67 ^{e}
V_1 x S_3	194.87 ^{a}	11.00 ^{g}	1.000 ^{b}	14.73 ^{c}	23.53 ^{d}
V_2 x S_1	163.73 ^{e}	13.60 ^{b}	1.000 ^{b}	16.00 ^{a}	24.73 ^{c}
V_2 x S_2	175.67 ^{d}	11.87 ^{ef}	1.000 ^{b}	13.87 ^{e}	26.53 ^{b}
V_2 x S_3	163.93 ^{e}	11.53 ^{f}	1.000 ^{b}	15.20 ^{b}	26.47 ^{b}
V_3 x S_1	175.40 ^{d}	12.53 ^{d}	1.000 ^{b}	14.40 ^{cd}	27.93 ^{a}
V_3 x S_2	164.20 ^{e}	12.20d^{e}	1.000 ^{b}	15.07 ^{b}	26.30 ^{b}
V_3 x S_3	187.73 ^{c}	12.93^{c}	1.000 ^{b}	14.27 ^{d}	23.07 ^{b}
LSD (0.05)	1.728	0.3783	0.01875	0.3275	0.6996

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

In Pioneer 3396 with spacing (50 X 25) cm^2 showed the tallest plant height (194.87cm) with no statistical similarity. The shortest plant height (163.73 cm) recorded from Titan with spacing (70 X 15) cm^2. Maximum numbers of leaves (14.00) found in Pioneer 3396 with (70 X 15) cm^2 spacing followed by Titan (13.60) where the minimum (10.0) obtained from Pioneer 3396 with (50 X 25) cm^2 spacing having significant difference. Maximum numbers of cob diameter were found in Pioneer 3396 with (60 X 20) cm^2 spacing (1.067) which differs significantly followed by Titan and Sunshine with (70 X 15) cm^2 and (50 X 25) cm^2 respectively. Highest number of rows cob^{-1} (16.00) in Titan with (70 X 15) cm^2 and Titan with (50 X 25) cm^2 spacing showed rows cob^{-1} (15.20) while the lowest (13.20) was in Pioneer 3396 with (70 X 15) cm^2 spacing (Table 7). The highest seeds row^{-1} (34.00) found from Sunshine with (70 X 15) cm^2 spacing and the lowest number (21.47) obtained from Pioneer 3396 with (70 X 15) cm^2 (Table 7).

Significant effect observed in interaction on seed cob^{-1}, cob length, cob breadthm, cob weight, stem girth presented in Table 8.

Table 8. Effect of variety X spacing on seed cob^{-1}, cob length, cob breadthm, cob weight.

Combination (VXS)	Seed cob^{-1}	Cob length (cm)	Cob breadthm (cm)	Cob weight	Stem girth (cm)
V_1 x S_1	272.3^{f}	10.60^{f}	4.633^{c}	88.47^{g}	2.300^{b}
V_1 x S_2	265.3^{f}	11.57^{e}	4.400^{d}	67.70^{h}	2.267^{b}
V_1 x S_3	318.0^{e}	12.17^{d}	4.767^{ab}	90.83^{f}	2.133^{cd}
V_2 x S_1	374.3^{b}	13.97^{b}	4.700^{bc}	104.0^{d}	2.433^{a}

Combination (VXS)	Seed cob^{-1}	Cob length (cm)	Cob breadthm (cm)	Cob weight	Stem girth (cm)
V_2 x S_2	358.7^{c}	14.43^{a}	4.700^{bc}	129.7^{a}	2.267^{b}
V_2 x S_3	329.7^{d}	13.50^{c}	4.800^{a}	96.43^{e}	2.067^{d}
V_3 x S_1	366.7^{b}	14.20^{ab}	4.633^{c}	107.7^{c}	2.200^{bc}
V_3 x S_2	393.0^{a}	14.57^{a}	4.700^{bc}	125.3^{b}	2.300^{b}
V_3 x S_3	321.0^{e}	13.50^{c}	4.467^{d}	89.83^{fg}	2.233^{bc}
LSD (0.05)	7.850	0.3778	0.07956	2.145	0.1077

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

Highest number of seed cob^{-1} found in Sunshine (393.0) with 60 cm x 20 cm spacing followed by Titan (374.3) with (70 X 15) cm^2 and the lowest (265.3) was obtained from Pioneer 3396 with (60 X 20) cm^2 spacing that differ significantly. Highest cob length (14.57) were found in Sunshine with (60 X 20) cm^2 spacing followed by Titan (374.3) with (70 X 15) cm^2 and the lowest number of rows cob-1 (10.60) obtained from Pioneer 3396 with (70 X 15) cm^2 spacing. Maximum cob breadthm (4.800 cm) found in Titan with (50 X 25) cm^2 spacing followed by Pioneer 3396 (4.767cm) with (50 X 25) cm^2 and lowest number of rows cob-1 (4.400cm) obtained from Pioneer 3396 with (60 X 20) cm^2 spacing. Highest cob weight (129.7) was found in spacing Titan with (60 X 20) cm^2 followed by Sunshine (125.3) with spacing (60 X 20) cm^2 and the lowest cob weight (67.70) was obtained from Pioneer 3396 with (60 X 20) cm^2 spacing. Highest no. of stem girth (2.433cm) was found in spacing Titan with (70 X 15) cm^2 followed by Pioneer 3396 and Sunshine (2.300) with spacing (60 X 20) cm^2 and (70 X 15) cm^2 respectively whereas the lowest no. of stem girth (2.067) was obtained from Titan with (50 X 25) cm^2 spacing differ significantly with Pioneer 3396 with (60 X 20) cm^2 spacing.

Interaction had a significant effect on Grain weight cob^{-1} and 1000 seed weight presented in Table 9.

Table 9. *Effect of variety x spacing on stem girth, grain weight cob^{-1}, 1000 seed weight.*

Combination (VxS)	Grain weight cob^{-1}	1000 seed weight
V_1 x S_1	69.47^{h}	284.7^{a}
V_1 x S_2	71.37^{g}	284.7^{a}
V_1 x S_3	70.17^{gh}	283.0^{a}
V_2 x S_1	78.77^{e}	271.7^{b}
V_2 x S_2	104.7^{a}	272.7^{b}
V_2 x S_3	73.37^{f}	273.0^{b}
V_3 x S_1	81.37^{d}	258.3^{c}
V_3 x S_2	101.1^{b}	254.3^{d}
V_3 x S_3	86.47^{c}	253.3^{d}
LSD (0.05)	1.719	2.008

The means followed by the same letter in the column did not significantly differ at 5% according to LSD.

Significant effect observed in interaction on grain weight and seed wt. Maximum grain weight cob^{-1} found in Titan (107.7) with (60 X 20) cm^2 spacing followed by Sunshine (101.1) with (60 X 20) cm^2 and the lowest (69.47) from Pioneer 3396 with (70 X 15) cm^2 spacing differ significantly. Highest 1000 seed weight (284.7) were found in Pioneer 3396 with (70 X 15) cm^2 and (60 X 20) cm^2 spacing respectively followed by Pioneer 3396 (283.0) with (50 X 25) cm^2 did not differ significantly and the lowest seed wt. (253.3) was obtained from Sunshine with (50 X 25) cm^2 spacing with statistical difference.

Grain yield significantly influenced by variety. Maximum

yield (8.9 tha^{-1}) found in Titan where the minimum recorded in Pioneer 3396 (6.5 tha^{-1}) (Figure 1). Straw yield also influenced significantly by variety. Maximum straw yield (4.1 tha^{-1}) found in Pioneer 3396 where the lowest (2.6 tha^{-1}) obtained from Sunshine (Figure 1).

Recorded data statistically identical among varieties. Maximum yield of grain (9.1 tha^{-1}) found in spacing (60 X 20) cm^2 and minimum spacing (50 X 25) cm^2 (6.7 tha^{-1}) (Figure 2). Highest straw yield (4.1 tha^{-1}) was found in spacing (60 X 20) cm^2 and the lowest (2.9 t ha^{-1}) in spacing (50 X 25) cm^2 (Figure 2). Recorded data on different characters was statistically identical among spacing.

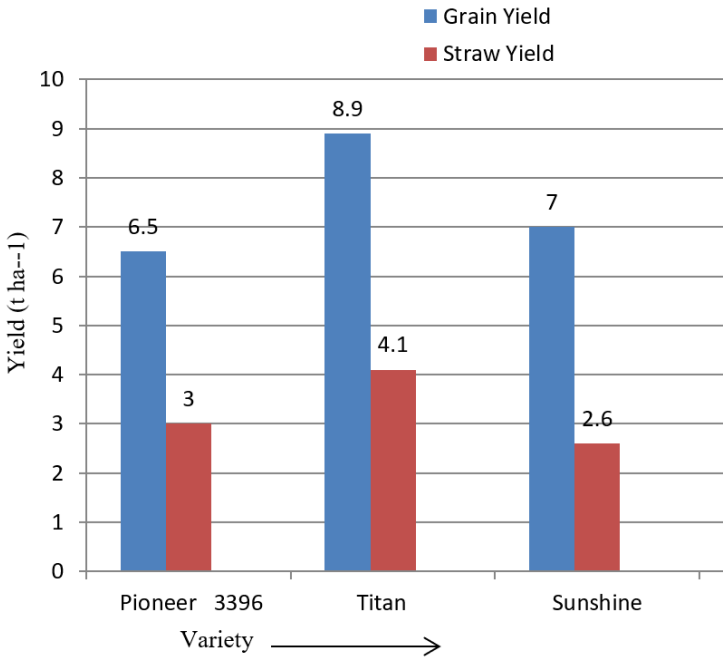

Figure 1. *Influence of hybrid maize variety on grain and straw yield.*

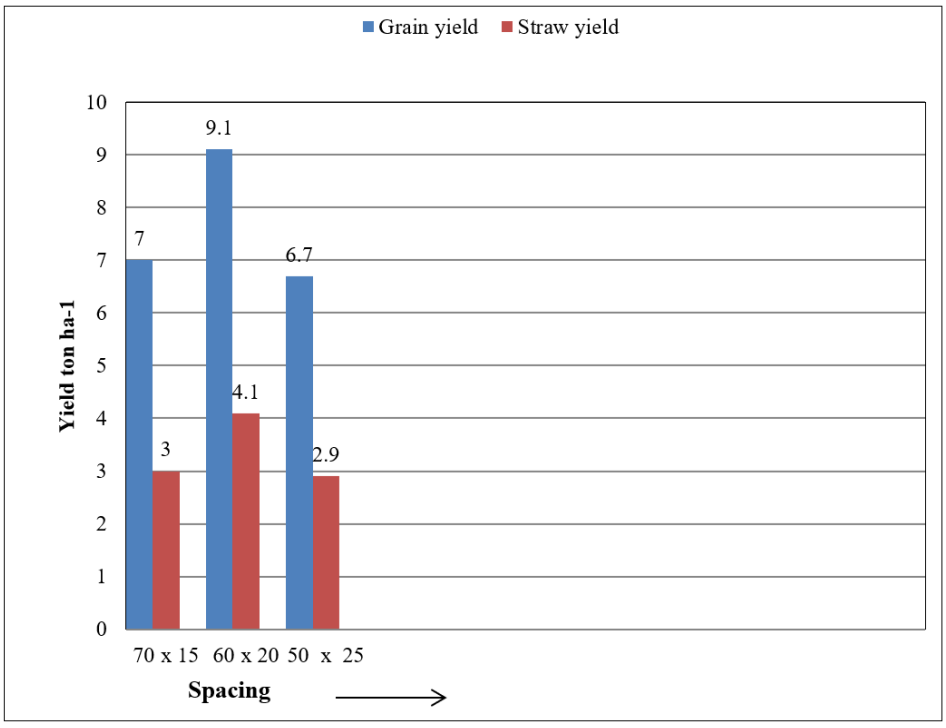

Figure 2. *Influence of spacing on grain and straw yield.*

Maximum grain yield (9.0 t ha^{-1}) found in Titan followed by Sunshine (7.1 t ha^{-1}) with 60 cm x 20 cm spacing and the lowest (5.8 t ha^{-1}) obtained from Pioneer 3396 with 60 cm × 20 cm spacing (Figure 3). Highest straw yield found in Titan (4.2 t ha^{-1}) followed by (3.2 t ha^{-1}) with spacing 70 cm x 15 cm and the lowest (2.1 t ha^{-1}) was obtained from Sunshine with 70 cm × 15 cm spacing (Figure 3). Grain and straw yield was statistically identical between variety x interaction.

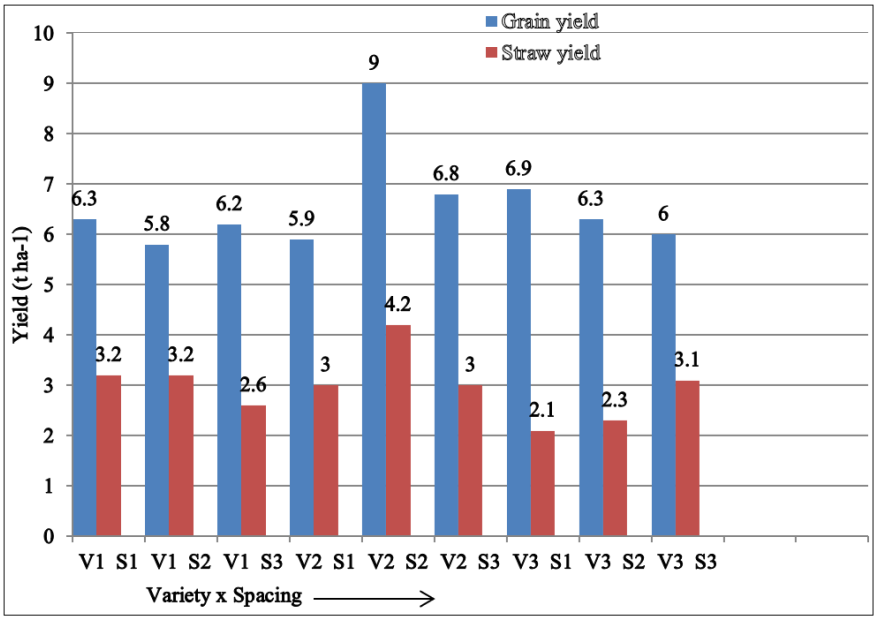

Figure 3. *Influence of variety and spacing (interaction) on grain and straw yield.*

Significant plant height (75.53 cm), maximum cob plant^{-1} (1.022), seeds row^{-1} (24.83), significant rows cob^{-1} (14.53), maximum seeds cob^{-1} (339.0), highest cob length (13.52 cm), maximum cob weight (107.6 gm), grain weight cob^{-1} (92.39 gm) significant 1000 seed weight (270.6 gm) recorded in spacing (60 X 20) cm^2 highest grain yield (9.1 tha^{-1}) and straw yield (4.1 tha^{-1}) were recorded. Pioneer 3396 with spacing (70 X 15) cm^2 also yielded grain yield (7.0 tha^{-1}) and straw yield (3.0 tha^{-1}) followed by Titan with spacing (60 X 20) cm^2. Similar trend was reported by Dawadi [5].

Maximum plant height (87.42cm), cob plant^{-1} (1.022), 1000 seed weight, (284.1) were recorded in Pioneer 3396 and highest straw yield was recorded (4.1 t $^{-1}$). Maximum number of rows cob^{-1} (15.02), no. of seeds row^{-1} (25.91), cob breadthm (4.733), cob weight (110.0), stem girth (2.256) were recorded from the hybrid variety Titan and highest grain yield was recorded (8.9 t ha^{-1}). M. S. I. Zamir stated about same results [9].

4. Conclusion

From the above investigation, it is clear that with respect to rows cob^{-1}, seeds row^{-1}, cob breadthm, cob weight, stem girth, cob length, grain weight cob^{-1}, weight of seed and yield results the study revealed that maize variety Titan with spacing (60 X 20) cm^2 exhibited maximum grain and straw yield followed by Sunshine with spacing (60 X 20) cm^2 and (70 X 15) cm^2 respectively interaction in Agro-ecological region of Patuakhali (AEZ 13).

Abbreviations

AEZ	Agro Ecological Zone
DAP	Di-Ammonium Phosphate
MOP	Muriate of Potash
TDM	Total Dry Matter
CC	Corn Cob
MSTAT	Master of Statistics
DAS	Days After Sowing
CV	Coefficient of Variation
HI	Harvest Index
HA	Harvest Area
BP	Biological Performance
BARI	Bangladesh Agricultural Research Institute
LSD	Least Significant Difference

Author Contributions

Kuddus: Formal Analysis, Investigation, Writing – original draft

Akram Hossain: Conceptualization, Software, Writing – original draft

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Billal Hossain: Writing – original draft, Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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