# EFFECT OF POTASSIUM AND STEM PRUNING ON GROWTH AND YIELD OF TOMATO (*Lycopersicon esculentum* Mill.)

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***Paper Received on: 07/12/2014***
***Paper Reviewed on: 10/12/2014***
***Paper Accepted on: 12/12/2014***

## *Abstract*

*The experiment was conducted in the farm of Sher-e-Bangla Agricultural University, Dhaka-1207, Bangladesh during October 2012 to March 2013 to determine the effect of potassium and stem pruning on growth and yield of tomato. The experiment was laid out in Randomized Complete Block Design (RCBD) with three replications. The experiment consisted of two factors: Factor A: four levels of potassium viz. $K_0$: 0 kg $K_2O$ $ha^{-1}$, $K_1$: 150 kg $K_2O$ $ha^{-1}$, $K_2$: 160 kg $K_2O$ $ha^{-1}$ and $K_3$: 170 kg $K_2O$ $ha^{-1}$; Factor B: $P_0$: No pruning; $P_1$: One stem pruning; $P_2$: Two stem pruning and $P_3$: Three stem pruning. In case of potassium, $K_3$ produced the maximum fruits per plant (37.08) and highest yield $plot^{-1}$ (42.22 kg) and lowest yield $plot^{-1}$ (28.05 kg) and minimum fruits per plant (26.19) were from $K_0$. For pruning, $P_3$ produced the maximum fruits per plant (35.33) and highest yield $plot^{-1}$ (42.79 kg) while the minimum fruits per plant (27.05) and yield $plot^{-1}$ (33.49 kg) were obtained from $P_1$. For combined effect, $K_3P_3$ produced the highest yield (47.85 kg) while the minimum yield $plot^{-1}$ (20.88 kg) was found from $K_0P_0$. It may be concluded that 170 kg $K_2O$ $ha^{-1}$ with three stem pruning was found suitable for growth and yield of tomato.*

***Keywords:*** Tomato, potassium, pruning, growth and yield.

**INTRODUCTION:**

Tomato (*Lycopersicon esculentum* Mill.) is a member of Solanaceae family is one of the important, popular and nutritious vegetables grown in Bangladesh during winter season and cultivated mostly in all parts of the country (Haque *et al.*, 1999). It is adapted to a wide variety of climates. At present, tomato ranks third, next to potato and sweet potato, in terms of world vegetable production (FAO, 2002). Its food value is very rich because of higher contents of vitamins A, B and C including calcium and carotene (Bose and Som, 1990). Bangladesh produced 0.60 million tons of tomato in 0.15 million hectares of land and the average yield being 9.4 t $ha^{-1}$ (BBS, 2011). The yield of tomato in our country is not satisfactory enough in comparison to requirement (Aditya *et al.*, 1999). The low yield of tomato in Bangladesh, however, is not an indication of low yielding ability of this crop, but of the fact that the tomatoes grown here are not always of high yielding cultivars and that the cultural practices commonly used by the growers are not improved. Potassium is especially important in a multi nutrient fertilizer application (Brady, 1995). Potassium application increases the flower number, the peduncle length, the fruit set and the number of fruit (Besford and Maw, 1975). It has marked effect on the quality of tomato fruits particularly on colour (Wall, 1940; Ozbun *et al.*, 1967). Potassium also has an important role on balancing physiological activities. Tomato plant can be severely pruned without affecting the yield (Patil *et al.*, 1973). Proper pruning method gives the best quality and early fruit in tomato (Lopez and Chan, 1974). Although pruning needs extra cost, the practice could increase the economic return by increasing yields and improvement of the quality of fruits (Davis and Ester, 1993). Pruning and training in tomato plants are practiced in certain areas of the United States, especially in some parts of the Southern States and in few other regions (Thompson and Kelly, 1957). But majority of the tomato growers of Bangladesh have little knowledge about the advantage of pruning in tomato production. Pruning associated with different levels of potassium is an important factor for successful tomato production. However, the combined effects of these production practices have not been defined clearly and the information in this respect is meager in Bangladesh. Therefore, in accordance with recent agricultural policy to increase yield vertically and to get early yield and better quality fruit, an attempt was made to study the effects of different levels of potassium and different degrees of stem pruning on plant growth, fruit yield and quality of tomato with the following objectives (i)

to find out the optimum level of potassium for the maximum yield, (ii) to find out the suitable pruning practices for higher yield and better quality and (iii) to find out the suitable combination of potassium level and pruning practices for ensuring the maximum yield.

## MATERIALS AND METHODS

The experiment was conducted in the experimental farm of Sher-e-Bangla Agricultural University, Sher-e-Bangla Nagar, Dhaka-1207, Bangladesh during the period from October 2012 to March 2013. The location of the experimental site was at 23.75‘N latitude and $90^0$34‘E longitude with an elevation of 8.45 meter from sea level. Soil of the study site was silty clay loam in texture belonging to series. The area represents the Agro-Ecological Zone of Madhupur tract (AEZ-28) with $P^H$ 5.8-6.5, ECE-25.28 (Haider *et al*., 1991).

The tomato variety used in the experiments was "Ratan". This is a high yielding indeterminate type and the seeds were collected from the Horticulture Research Centre, Bangladesh Agricultural Research Institute (BARI) at Joydebpur, Gazipur. Tomato seedlings were raised in five seedbeds of 3 m x 1m size. The experiment consisted of two factors as follows: factor A: $K_0$ = Control treatment (No fertilizer), $K_1$ = 150 kg $K_20$/ha (250 kg MP/ha), $K_2$ = 160 kg $K_20$/ha (266 kg MP/ha) and $K_3$ = 170 kg $K_20$/ha (284 kg MP/ha) and factor B: $P_0$ = No pruning, $P_1$= One stem pruning, $P_2$ = Two stem pruning and $P_3$ = Three stem pruning. The experiment was laid out in Randomized Complete Block Design (RCBD) having two factors with three replications. There were 48 unit plots in the experiment. The size of each plot was 3.2 m x 2 m. The soil was well prepared and good tilth was ensured for commercial crop production. Urea, triple super phosphate (TSP) and Muriate of potash (MoP) were applied as the source of nitrogen, phosphorus and potassium respectively as per treatment in each plot. Potassium was applied as per treatment and Urea and TSP was applied at the rate of 550 kg/ha and 450 kg/ha (Razzak *et al.* 2000). The quantity of manure, cow dung was also determined as recommended at the rate of 10 t/ha (BARC, 2010). Healthy and uniform 30 days old seedlings were uprooted separately from the seed bed and maintaining a spacing of 50 cm x 40 cm between the rows and plants respectively. This allowed an accommodation of 32 plants in each plot. Fruits were harvested at 3 days intervals during early ripe stage when they attained slightly red color. Ten plants were

selected randomly from each plot for data collection in such a way that the border effect could be avoided for the highest precision. The collected data were analyzed with the help of MSTAT-C program and mean values of all the parameters were adjusted by Duncan's Multiple Range Test (DMRT) at 5% level of probability (Gomez and Gomez, 1984).

## RESULTS AND DISCUSSION

### Plant height

Plant height varied significantly due to the application of different levels of potassium at 40, 50, 60, 70 DAT and at harvest. Figure 1 showed that plant height increased with advancing growing period irrespective of potassium levels. Murphy (1964) found that application of potassium increased plant height up to 65%.

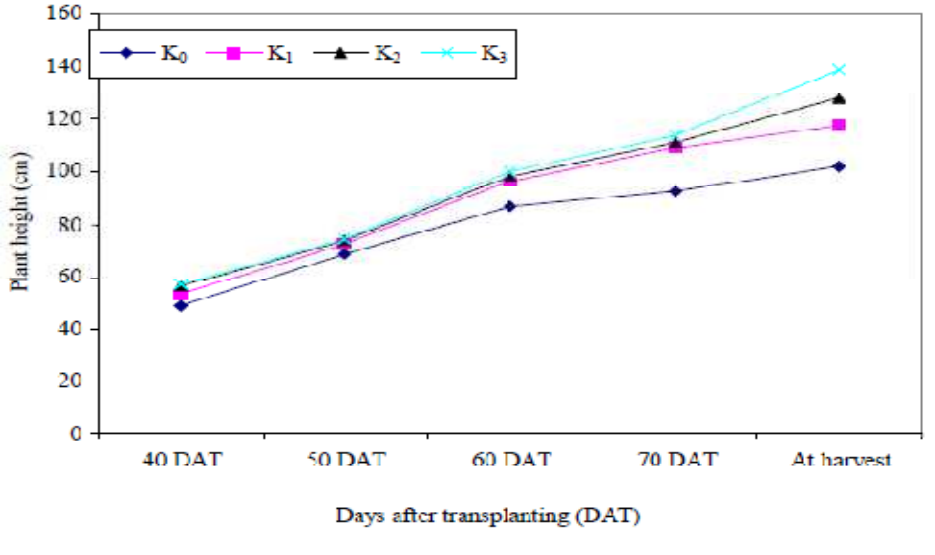


**Figure 1. Effect of potassium on plant height of tomato**

Plant height varied significantly due to the stem pruning at 50, 60, 70 DAT and at harvest except at 40 DAT. Figure 2 showed that plant height increased with advancing growing period irrespective of pruning.

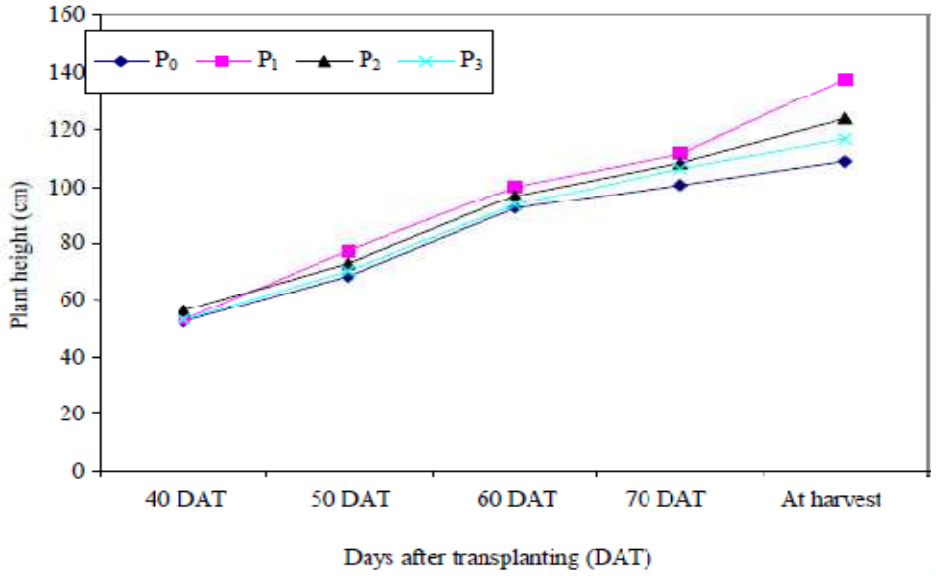


**Figure 2. Effect of stem pruning on plant height of tomato**

Combined effect of potassium and pruning showed statistically significant on plant height at 40, 50, 60, 70 DAT and harvest. At harvest, the highest plant height (173.76 cm) was recorded from $K_3P_1$ and the shortest (92.02 cm) was found from the treatment combination of $K_0P_0$ (Table 1).

**Table 1. Combined effect of potassium and pruning on plant height of tomato**

| Treatment combinations | Plant height (cm) at | | | | |
|---|---|---|---|---|---|
| | 40 DAT | 50 DAT | 60 DAT | 70 DAT | At harvest |
| $K_0P_0$ | 48.35 c | 63.66 e | 82.56 g | 84.68 f | 92.02 f |
| $K_0P_1$ | 40.74 d | 70.18 d | 84.66 g | 87.33 f | 93.68 ef |
| $K_0P_2$ | 54.35 a-c | 71.56 cd | 87.47 fg | 94.84 ef | 113.65 d-f |
| $K_0P_3$ | 51.77 bc | 69.05 d | 92.04 ef | 102.99 de | 108.99 d-f |
| $K_1P_0$ | 52.82 bc | 68.91 d | 93.81 de | 104.34 de | 106.72 d-f |
| $K_1P_1$ | 53.40 bc | 77.48 b | 102.22 bc | 117.20 a-c | 135.97 b-d |
| $K_1P_2$ | 55.17 a-c | 72.92 cd | 98.56 cd | 111.45 a-d | 115.79 d-f |
| $K_1P_3$ | 52.81 bc | 69.80 d | 91.73 ef | 102.83 de | 112.54 d-f |
| $K_2P_0$ | 53.91 bc | 70.14 d | 95.01 de | 105.35 c-e | 112.02 d-f |

| | | | | | |
|---|---|---|---|---|---|
| $K_2P_1$ | 57.63 ab | 79.21 ab | 104.45 ab | 119.02 ab | 147.67 b |
| $K_2P_2$ | 56.63 abc | 73.19 cd | 98.81 b-d | 112.36 a-d | 118.31 c-f |
| $K_2P_3$ | 57.93 ab | 72.69 cd | 94.92 de | 108.42 b-d | 133.61 b-d |
| $K_3P_0$ | 58.23 ab | 72.03 cd | 97.02 c-e | 108.63 b-d | 123.46 b-e |
| $K_3P_1$ | 62.08 a | 82.05 a | 107.95 a | 121.65 a | 173.76 a |
| $K_3P_2$ | 59.56 ab | 75.45 bc | 101.39 bc | 113.94 a-d | 145.80 bc |
| $K_3P_3$ | 51.30 bc | 69.28 d | 94.71 de | 111.12 a-d | 112.43 d-f |
| $LSD_{(0.05)}$ | 7.454 | 4.167 | 5.314 | 10.47 | 25.65 |
| CV (%) | 8.29 | 6.45 | 10.34 | 5.89 | 12.66 |

In a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly as per 0.05 level of probability.

**Number of flower cluster per plant**

Significant variation was recorded on number of flower cluster per plant due to the application of different levels of potassium. Table 2 showed that number of flower cluster per plant increased with increasing potassium levels. Number of flower cluster per plant varied significantly due to the pruning. The maximum flower cluster per plant (10.42) was recorded from $P_3$ (three stem pruning) while the minimum (7.05) was obtained from $P_1$ (one stem pruning) (Table 2). Rahman *et al.* (1988) reported that number of flower clusters plant$^{-1}$ were maximum in un-pruned plant than single stem pruning followed by two time pruning which was disagree to the present findings. Combined effect of potassium and pruning showed statistically significant differences on number of flower cluster per plant. The maximum number of flower cluster per plant (12.00) was recorded from $K_2P_3$ (160 kg $K_2O$ + Three stem pruning) and the minimum (5.78) was found from the treatment combination of $K_0P_1$ (no potassium + one stem pruning) (Table 2).

**Table 2. Effect of potassium and pruning on number of flower cluster per plant, number of flowers per cluster and number of flowers per plant of tomato**

| Treatment(s) | Number of flower cluster per plant | Number of flowers per cluster | Number of flowers per plant |
|---|---|---|---|
| **Potassium** | | | |
| $K_0$ | 7.97 d | 5.89 c | 47.48 d |
| $K_1$ | 8.53 c | 6.58 b | 55.69 c |
| $K_2$ | 9.69 b | 6.89 b | 66.96 b |
| $K_3$ | 10.33 a | 7.64 a | 78.83 a |
| $LSD_{(0.05)}$ | 0.371 | 0.396 | 4.197 |
| **Pruning** | | | |
| $P_0$ | 9.44 b | 6.33 b | 60.88 b |
| $P_1$ | 7.05 c | 7.05 a | 50.93 c |
| $P_2$ | 9.61 b | 6.86 a | 66.54 a |
| $P_3$ | 10.42 a | 6.75 a | 70.61 a |
| $LSD_{(0.05)}$ | 0.371 | 0.396 | 4.197 |
| **Potassium × Pruning** | | | |
| $K_0P_0$ | 7.67 e | 5.33 h | 41.04 f |
| $K_0P_1$ | 5.78 f | 5.61 gh | 32.28 f |
| $K_0P_2$ | 8.89 cd | 6.17 fg | 53.98 e |
| $K_0P_3$ | 9.45 b-d | 6.51 d-f | 61.75 de |
| $K_1P_0$ | 9.07 cd | 6.25 fg | 55.13 de |
| $K_1P_1$ | 6.00 f | 7.11 c-e | 42.66 f |
| $K_1P_2$ | 8.78 d | 6.62 d-f | 57.48 de |
| $K_1P_3$ | 10.22 b | 6.49 d-f | 65.99 cd |
| $K_2P_0$ | 9.58 b-d | 6.33 ef | 61.84 de |
| $K_2P_1$ | 7.55 e | 7.11 ce | 53.75 e |
| $K_2P_2$ | 9.48 b-d | 6.89 c-f | 66.71 cd |
| $K_2P_3$ | 12.00 a | 7.22 b-d | 86.75 a |
| $K_3P_0$ | 11.33 a | 7.44 bc | 84.40 ab |
| $K_3P_1$ | 8.94 cd | 8.44 a | 75.04 bc |
| $K_3P_2$ | 11.22 a | 7.89 ab | 88.65 a |
| $K_3P_3$ | 9.89 bc | 6.78 c-f | 67.22 cd |
| $LSD_{(0.05)}$ | 0.957 | 0.715 | 10.31 |
| CV(%) | 6.28 | 6.36 | 9.94 |

In a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly as per 0.05 level of probability.

**Number of flowers per cluster**

Different levels of potassium showed significant differences on number of flowers per cluster under the present study. Table 2 showed that number of flowers per cluster increased with increasing potassium levels. Number of flowers per plant varied significantly due to the pruning. Clarke (1944) found little effect of potassium application on flower production, although the proportion of flowers that matured into marketable fruit which supported to the present investigation. Number of flowers per cluster varied statistically due to the pruning of tomato plant. The maximum number of flowers per cluster (7.05) was recorded from $P_1$ (one stem pruning) while the minimum (6.33) was found from $P_0$ (no pruning) (Table 2). Adriance and Brison (1979) found that where tomatoes are to be staked it is necessary to prune the plants 1, 2 or 3 stems with closer spacing for attaining maximum number of flowers per cluster. Combined effect of potassium and pruning showed significant differences on number of flowers per cluster. The maximum number of flowers per cluster (8.44) was recorded from $K_3P_1$ (170 kg $K_2O$ + one stem pruning) and the minimum (5.33) was found from $K_0P_0$ (no potassium + no pruning) (Table 2).

**Number of flowers per plant**

Number of flowers per plant differs significantly due to the application of different level of potassium. Table 2 showed that number of flowers per plant increased with increasing potassium levels. Number of flowers per plant varied significantly due to the pruning. The maximum number of flowers per plant (70.61) was recorded from $P_3$ (Three stem pruning), while the minimum (50.93) number of flowers per plant was recorded from $P_1$ (one stem pruning). Rahman *et al.* (1988) reported that number of flowers were maximum in un-pruned plant than single stem pruning followed by two time pruning. Combined effect of potassium and pruning showed significant differences for number of flowers per plant. The maximum number of flowers per plant (88.65) was recorded from $K_3P_2$ (170 kg $K_2O$ + Two stem pruning) and minimum (32.28) was recorded from $K_0P_1$ (no potassium + one stem pruning) (Table 2).

**Number of fruits per plant**

Number of fruits per plant differed significantly due to the application of different level of potassium. Table 3 showed that number of fruits per plant increased with increasing potassium levels. Number of fruits per plant varied significantly due to pruning. The maximum number of fruits per plant (35.33) was recorded from $P_3$ (Three stem pruning) and the minimum (27.05) was counted from $P_1$ (one stem pruning) (Table 3). Sharfuddin and Ahmed (1986) noted that plants under un-pruned treatment produced maximum number (36) of fruits plant$^{-1}$ which was antagonistic to the present study. Combined effect of potassium and pruning showed significant differences on number of fruits per plant. The maximum number of fruits per plant (40.89) was recorded from $K_3P_2$ (170 kg $K_2O$ + two stem pruning) and the minimum (15.89) was obtained from the treatment combination of $K_0P_1$ (no potassium + one stem pruning) (Table 3).

**Table 3. Effect of potassium and pruning on yield contributing characters and yield of Tomato**

| Treatment(s) | Number of fruits per plant | Number of fruits per cluster | Diameter of fruit (cm) | Weight of Individual fruit (g) | Dry matter content of fruits (%) | Yield per plot (kg) |
|---|---|---|---|---|---|---|
| **Potassium** | | | | | | |
| $K_0$ | 26.19 c | 2.72 d | 5.17 b | 77.03 c | 8.85 b | 28.05 c |
| $K_1$ | 32.52 b | 3.55 c | 5.85 a | 89.89 b | 11.65 a | 37.15 b |
| $K_2$ | 34.46 ab | 4.06 b | 5.92 a | 97.70 ab | 11.95 a | 40.41 a |
| $K_3$ | 37.08 a | 4.42 a | 6.15 a | 102.45 a | 12.08 a | 42.22 a |
| $LSD_{(0.05)}$ | 2.961 | 0.329 | 0.296 | 8.770 | 1.635 | 2.216 |
| **Pruning** | | | | | | |
| $P_0$ | 33.97 a | 3.44 b | 5.64 b | 86.89 b | 10.85 | 34.97 bc |
| $P_1$ | 27.05 b | 4.25 a | 6.40 a | 103.26 a | 11.41 | 33.49 c |
| $P_2$ | 34.11 a | 3.36 b | 5.47 b | 86.25 b | 11.12 | 36.57 b |
| $P_3$ | 35.33 a | 3.69 b | 5.67 b | 90.67 b | 11.16 | 42.79 a |
| $LSD_{(0.05)}$ | 2.729 | 0.339 | 0.239 | 8.170 | 1.635 | 2.234 |
| **Potassium × Pruning** | | | | | | |
| $K_0P_0$ | 25.22 d | 2.22 h | 4.94 de | 66.33 f | 8.01 d | 20.88 g |
| $K_0P_1$ | 15.89 e | 2.33 h | 5.37 c-e | 73.69 ef | 7.72 d | 22.62 g |
| $K_0P_2$ | 29.78 cd | 2.78 gh | 4.73 e | 80.58 d-f | 9.08 cd | 30.26 f |
| $K_0P_3$ | 33.89 a-c | 3.59 c-g | 5.64 c | 87.53 c-e | 10.62 bc | 38.46 c-e |
| $K_1P_0$ | 34.22 a-c | 3.33 e-g | 5.74 c | 84.96 c-f | 11.86 ab | 38.39 c-e |
| $K_1P_1$ | 30.54 b-d | 4.33 bc | 6.70 ab | 103.93 bc | 12.18 ab | 35.57 de |
| $K_1P_2$ | 31.81 b-d | 3.11 fg | 5.62 c | 83.32 c-f | 11.66 ab | 33.95 ef |

| | | | | | | |
|---|---|---|---|---|---|---|
| $K_1P_3$ | 34.11 a-c | 3.49 d-g | 5.50 cd | 87.47 c-e | 10.75 a-c | 40.74 b-d |
| $K_2P_0$ | 35.55 a-c | 3.67 c-f | 5.84 c | 92.98 b-e | 11.84 ab | 39.90 b-d |
| $K_2P_1$ | 30.77 b-d | 4.89 ab | 6.73 ab | 112.30 ab | 12.48 ab | 38.42 c-e |
| $K_2P_2$ | 34.50 a-c | 3.36 d-g | 5.73 c | 88.03 c-e | 12.01 ab | 39.16 b-e |
| $K_2P_3$ | 37.78 ab | 4.22 b-d | 5.79 c | 97.89 b-d | 11.62 ab | 44.19 ab |
| $K_3P_0$ | 40.89 a | 4.56 b | 6.05 bc | 103.45 bc | 11.79 ab | 40.83 b-d |
| $K_3P_1$ | 31.71 b-d | 5.44 a | 6.97 a | 123.13 a | 12.84 a | 37.34 de |
| $K_3P_2$ | 40.55 a | 4.11 b-e | 5.85 c | 93.83 b-e | 11.86 ab | 42.92 bc |
| $K_3P_3$ | 35.61 a-c | 3.63 c-g | 5.63 c | 88.99 c-e | 11.77 ab | 47.85 a |
| $LSD_{(0.05)}$ | 6.278 | 0.713 | 0.615 | 18.24 | 1.880 | 4.570 |
| CV (%) | 11.54 | 11.61 | 6.36 | 11.92 | 10.12 | 7.42 |

In a column means having similar letter(s) are statistically similar and those having dissimilar letter(s) differ significantly as per 0.05 level of probability.

**Number of fruits per cluster**

Number of fruits per cluster differs significantly due to the application of different levels of potassium. Table 3 showed that number of fruits per cluster increased with increasing potassium levels. Number of fruits per cluster varied significantly due to the pruning. The maximum fruits per cluster (4.25) were recorded from $P_1$ (one stem pruning), while the minimum (3.36) was obtained from $P_2$ (two stem pruning) (Table 3). Campos *et al.* (1987) reported that stem pruning increased number of fruits per cluster. Combined effect of potassium and pruning showed significant differences on number of fruits per cluster. The maximum fruits per cluster (5.44) was recorded from $K_3P_1$ (170 kg $K_2O$ + One stem pruning) and the minimum (2.22) was found from $K_0P_0$ (no potassium + no pruning) (Table 3).

**Diameter of fruit**

Diameter of fruit varied significantly due to the application of different levels of potassium. Table 3 showed that diameter of fruit increased with increasing potassium levels. Diameter of fruit showed significant differences due to pruning. The maximum diameter of fruit (6.40 cm) was recorded from $P_1$ (one stem pruning), while the minimum (5.47 cm) was found from $P_2$ (two stem pruning) (Table 3). Hernandez *et al.* (1992) found that fruit diameter was highest in plants

pruning to one stem and the number of fruits was higher. Combined effect of potassium and pruning showed statistically significant differences for diameter of fruit. The maximum (6.97 cm) diameter of fruit was recorded from the treatment combination of $K_3P_1$ (170 kg $K_2O$ + one stem pruning) and the minimum (4.73 cm) was found from $K_0P_2$ (no potassium + two stem pruning) (Table 3).

**Weight of individual fruit**

Weight of individual fruit differed significantly due to the application of different level of potassium. Table 3 showed that weight of individual fruit increased with increasing potassium levels. Weight of individual fruit showed significant differences due to pruning. The maximum weight of individual fruit (103.26 g) was recorded from $P_1$ (one stem pruning), while the minimum (86.25 g) was found from $P_2$ (two stem pruning) (Table 3). Kusumo (1978) obtained larger and smooth skin when the plants were restricted to single stem it was found that fruit size increased when plants were pruned. Combined effect of potassium and pruning showed statistically significant differences for weight of individual fruit. The maximum weight of individual fruit (123.13 g) was recorded from $K_3P_1$ (170 kg $K_2O$ + one stem pruning) and the treatment combination of $K_0P_0$ (no potassium + no pruning) performed the minimum (66.33 g) (Table 3).

**Dry matter content of fruits**

Dry matter content on fruits differed significantly due to the application of different levels of potassium. Table 3 showed that dry matter content of fruits increased with increasing potassium levels. No significant differences were recorded on dry matter content of fruits due to the pruning. Numerically the highest dry matter content of fruit was obtained from $P_1$ (one stem pruning), and the lowest was found from $P_2$ (two stem pruning) (Table 3). Combined of potassium and pruning showed statistically significant differences on dry matter content of fruits. The maximum dry matter content of fruits (12.84%) was recorded from $K_3P_1$ (170 kg $K_2O$ + one

stem pruning) and the minimum (7.72%) was found from $K_0P_1$ (no potassium + one stem pruning) (Table 3).

**Yield per plot (kg)**

Yield per plot differs significantly due to the application of different level of potassium. Table 3 showed that yield per plot increased with increasing potassium levels. Yield showed significant differences due to the pruning of tomato. The maximum yield per plot (42.79 kg) was recorded from $P_3$ (three stem pruning), while the minimum (33.49 kg) was obtained from $P_1$ (one stem pruning) (Table 3). Patil *et al.* (1973) pointed out that tomato plants can be severely pruned without affecting the yield. Combined effect of potassium and pruning showed statistically significant differences on yield per plot. The maximum yield per plot (47.85 kg) was recorded from $K_3P_3$ (170 kg $K_2O$ + three stem pruning) and the minimum (20.88 kg) was recorded from $K_0P_0$ (no potassium + no pruning) (Table 3).

**CONCLUSION**

Growth and yield contributing parameters increased with increasing potassium levels up to 170 kg $K_2O$ $ha^{-1}$. One stem pruning showed best results in case of number of flowers per cluster, number of fruits per cluster, diameter of fruit and weight of individual fruit. Flower cluster per plant, number of flowers per plant, number of fruits per plant and yield per plot was maximum at three stem pruning. It may conclude that the 170 kg $K_2O$ $ha^{-1}$ and three stem pruning allowed for higher yield of tomato.

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