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## Influence of growth promoters on fourteen gerbera (*Gerbera jamesonii*) cultivars

Meer Rifath Jahan Usha<sup>1&2</sup>, M. Rakibuzzaman<sup>1</sup>, Dina Akter<sup>1</sup> and AFM Jamal Uddin<sup>1</sup><sup>1</sup>Department of Horticulture, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh<sup>2</sup>Department of Horticulture, Khulna Agricultural University, Khulna, Bangladesh✉ For any information: [rifath\\_7@yahoo.com](mailto:rifath_7@yahoo.com) (Usha, MRJ), Contact No.: +8801912172602

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### ABSTRACT

Applications of plant growth promoters influenced plants growth and have a quicker effect on vegetative growth as well as flower yield of flowering crops. That's why an experiment was accomplished in the Department of Horticulture, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh to observe the effect of the growth promoters on Gerbera cultivars. Fourteen gerbera cultivars viz. V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre were used as factor A in this experiment. Factor B was growth chemicals denoted as T<sub>0</sub> (control), T<sub>1</sub> (4-CPA), T<sub>2</sub> (Flora) and T<sub>3</sub> (GA<sub>3</sub>). This experiment was organised in Randomized Complete Block Design with three replications. In this study, V<sub>6</sub> showed the highest head diameter but V<sub>1</sub> showed the highest flower head diameter when treated with GA<sub>3</sub> (T<sub>3</sub>). Again in all other cases, V<sub>1</sub> showed the best performance and among the growth chemicals GA<sub>3</sub> (T<sub>3</sub>) was observed best, Flora (T<sub>2</sub>) showed better performance than 4-CPA (T<sub>1</sub>).

**Key Words:** Growth regulator, Gerbera, Cultivars and Gerbera jamesonii.

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### I. Introduction

Gerbera (*Gerbera jamesonii*) is an herbaceous perennial flowering plant that belongs to the family Asteraceae. It is a very popular cut flower because of its daisy like bloom and long lasting vase life. It is also a popular ornamental flower because of its various colors and long blooming period. Worldwide it is mostly used cut flower which ranks among the top 10 cut flowers. In Bangladesh, the demand for cut flowers is increasing day by day in our country as well as the international market over time for increasing several numbers of activities (Rakibuzzaman et al., 2018). Gerbera is one of the most popular cut flowers in Bangladesh. It contributes 16 percent to the flower market. But the production is not

sufficient to meet its demand. It has a better prospect in the future. However, due to using local cultivars, quality flower production is hampered. Again, farmers use the conventional method of flower production. Very few farmers are successful in the commercial production of gerbera because most of the farmers in Bangladesh have lack of knowledge in the advanced production technology of gerbera. Effect of plant growth regulators like 4-CPA, GA<sub>3</sub> and Flora on flowering production also will be a help for farmers to quality flower production. Previous experiments showed that three times spraying of 150ppm GA<sub>3</sub> at 15, 30 and 45 DAT could increase plant growth, flower production and flower quality of Gerbera (Mehraj et al., 2013). GA<sub>3</sub> spray increases spike length and floret numbers per spike in tuberose (Mukhopadhyay and Bankar, 2003).

Flora (Nitrobenzene 20% w/w) is the flowering booster and plant energizer. Nitrobenzene based flower booster, used in floriculture industry for yielding excellent quality flower. It ensures uniform and profuse flowering, increases in flowering rate and improvement in the yield of flower up to 20%-40 % (Shammy, 2009). There is increasing use of nitrobenzene compound as plant growth nutrient in recent era because it promotes flowering in plants and also prevents flower shedding. Nitrobenzene is a combination of nitrogen and plant growth regulators that act as plant energizers, flowering stimulants, and yield booster (Singh et al., 2015).

Auxins are widely used commercially to produce more vigorous growth, promote flowering and fruiting in plants that are not easy to propagate by stem cuttings, retard fruit drop and produce seedless varieties. Spraying with 4-CPA (Group-Auxin) increases fruit set, fruit size and induces early yield. However, it may cause puffy fruits at high concentrations or under high temperatures (AVRDC, 1990) in tomato. Fruit size related to flower size. If flower size is large then fruit size is also larger. So that 4-CPA can be used to increase flower size and quality as it is considered as a sufficiently safe plant growth regulator (Athanasios et al., 2005). Cultivation of gerbera has grown considerably recently in Bangladesh but very few research works are related to development and production of gerbera have been carried out in Bangladesh. Therefore, our research was to evaluate better adaptable and performing gerbera cultivars, and several growth promoting chemicals to increase the production of gerbera flowers in Bangladesh.

## II. Materials and Methods

Research work was accomplished in the Horticulture farm of Sher-e-Bangla Agricultural University, Dhaka, Bangladesh from January, 2017 to April, 2017 to study the effect of the growth promoters on Gerbera cultivars. The area was divided into plots of 60cm × 50 cm and the fertilizers were used such as Cowdung- 10 t/ha, Cocodust - 10 t/ha, Urea- 350 Kg/ha, TSP-250 Kg/ha, MoP-300 Kg/ha, MgSO<sub>4</sub> -300 Kg/ha. All these components were applied to the plot soil during final land preparation. Cocodust was mixed with soil to make it more friable for easier root penetration. These two factorial experiment were laid out in Randomized Complete Blocked Design (RCBD) with three replications. 30 cm distance from row to row and 25 cm distance from plant to plant was maintained in each replication. Factor A was fourteen Gerbera cultivars were used in this experiment viz. V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre (Plate 01). Factor B was growth chemicals denoted as T<sub>0</sub> (control), T<sub>1</sub> (4-CPA), T<sub>2</sub> (Flora) and T<sub>3</sub> (GA<sub>3</sub>). Data on No. of flower/plant, Peduncle length (cm), Peduncle diameter (mm), Receptacle diameter (mm), Ray floret diameter (mm), Trans floret diameter (mm), Disc floret diameter (mm), were collected to compare the performances among used gerbera cultivars. Collected data were organized and analysis of variance was conducted by "F" (variance ratio) test using MSTAT-C computer package program in relation to the objectives of experiment. Differences between treatments were estimated by the Least Significant Difference (LSD) test at 5% level of significance (Gomez and Gomez, 1984).

V<sub>1</sub>V<sub>2</sub>V<sub>3</sub>V<sub>4</sub>V<sub>5</sub>V<sub>6</sub>V<sub>7</sub>V<sub>8</sub>V<sub>9</sub>V<sub>10</sub>V<sub>11</sub>V<sub>12</sub>V<sub>13</sub>V<sub>14</sub>

#### Plate 01. Gerbera cultivars were used in the experiment

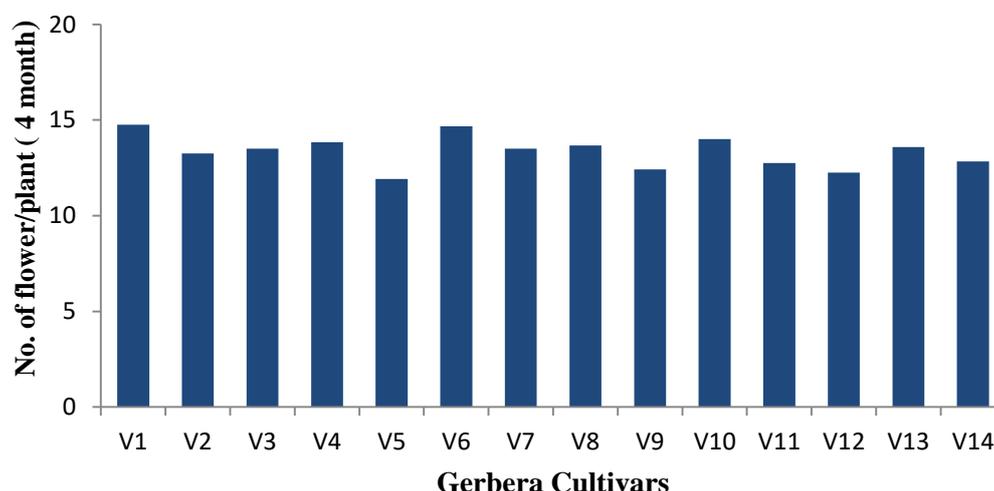
Here, V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre.

### III. Results and Discussion

#### No of flower per plant

Variation in number of flowers/plant was observed among the different cultivars of gerbera. The highest number of flowers/plant was observed in V<sub>1</sub> (14.75/plant/4month) and the lowest was observed in V<sub>12</sub> (12.25/plant/4 month) (Figure 01). A similar variation was also observed by Hossain et al. (2015), Jamal Uddin et al. (2014); in case of gerbera. Also, similar result was found by Wazir (2014), Uddin et al. (2013) and Uddin et al. (2015a) in their evaluation of different lines of lisianthus. Variation in number of flowers was also observed in gerbera (Mahant et al., 2003; Reddy et al., 2003; Chobe et al., 2010 and Mahmood et al., 2013).

Growth chemicals significantly influenced the production of flowers per plant. This was in agreement with Narayanan et al. (2003). Plant treated with T<sub>3</sub> produced maximum (17.81/plant/4 month) number of flowers, While minimum (8.41/plant/4 month) number of flower was obtained from the T<sub>0</sub> treatment (Table 01). Similar opinions were also put forward by AVRDC (1990). Number of flowers varied significantly among the varieties, different concentrations of GA<sub>3</sub> and their combinations (Jamal Uddin et al., 2014). Gerbera cultivar produced 20-35 flower sticks per plant annually on an average (Li Zhang et al., 2008; Singh and Mandhar, 2004) which have strongly support the findings of the current study for the foliar application of different growth promoters such as flora, 4-CPA & GA<sub>3</sub>. Foliar application of GA<sub>3</sub> increases number of flowers in strawberries (Jamal Uddin et al., 2012). Flower abscissions are usually due to high level of ethylene in the flower (Malik et al., 2003) and the lower concentration of auxin and gibberellin (Aneja and Gianfagna, 1999; Malik and Singh, 2006).



**Figure 01. Performance of different cultivars on number of gerbera flower/plant**

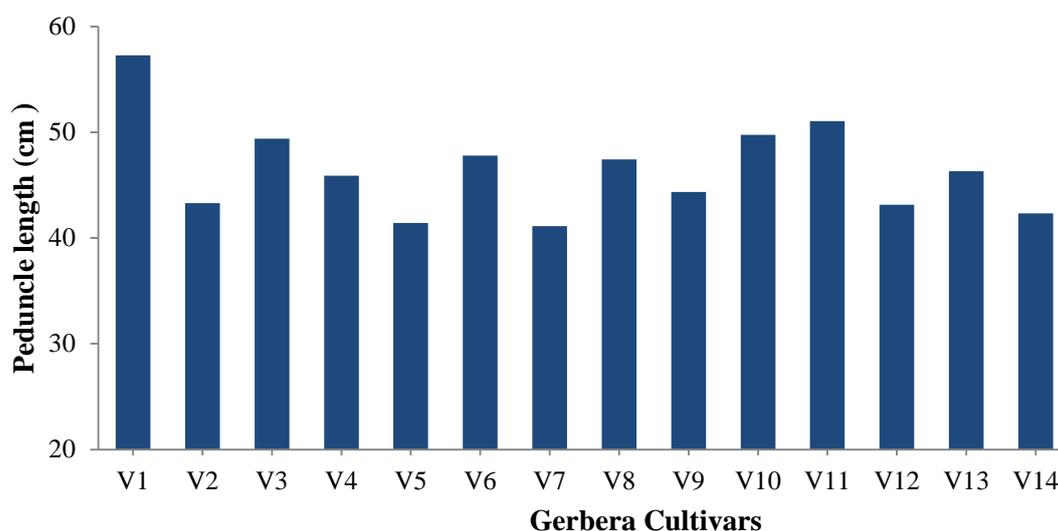
Here, V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellowcentre, V<sub>14</sub>= Yellow with greenish centre.

#### Peduncle length

Peduncle is the part of stem or stalk which supports inflorescence as well as flower. In case of gerbera, it is a very important parameter. As gerbera is a cut flower it's long, straight and strong peduncle strongly effects on vase life. Significant variation in case of peduncle length was recorded due to varietal performance. Highest (57.26 cm) length of peduncle was observed in V<sub>1</sub> treatment and the lowest (41.13 cm) length of peduncle was noticed in V<sub>7</sub> treatment at 16 days after flower bud initiation (Figure 02). Hossain et al., (2015) was found variation in peduncle length among sixteen cultivars from 65 cm to 35.5 cm which confirms the findings of this experiment. Uddin et al. (2015a) found stem length variation ranging from 45.7 cm to 25.0 cm in their study on eight lisianthus lines. This difference in stalk length could be attributed to a genetic factor that is expected to vary among cultivars. Stem length is the single most important factor in ensuring quality of a cut flower. A longer stem ensures strength and flexibility for arrangement in a bouquet as well as in vase. Variation in stem length was also observed in rose

(Mantur et al., 2005; Fascella and Zizzo, 2005), in chrysanthemum (Uddin et al., 2015b). Stalk length of gerbera varied among the cultivars and maximum 56.77 cm were found by Sankar et al. (2003).

Effect of growth promoters manifested statistically significant variation in terms of the length of peduncle. Highest length (53.62 cm) was observed in T<sub>3</sub> treatment and the lowest length (39.67 cm) was observed in T<sub>0</sub> treatment (Table 01). Jamal Uddin et al. (2014) found significant variation among the peduncle length of Gerbera varieties at different concentrations of GA<sub>3</sub> spraying. Though, the peduncle length of flower was found positively higher with 4-CPA application than GA<sub>3</sub> application. This opinion was not similar to Zhuang-yingoian (2004); Mukhopadhyay and Banker (2003); Kim et al. (2000) but similar to Kwon et al. (2001).

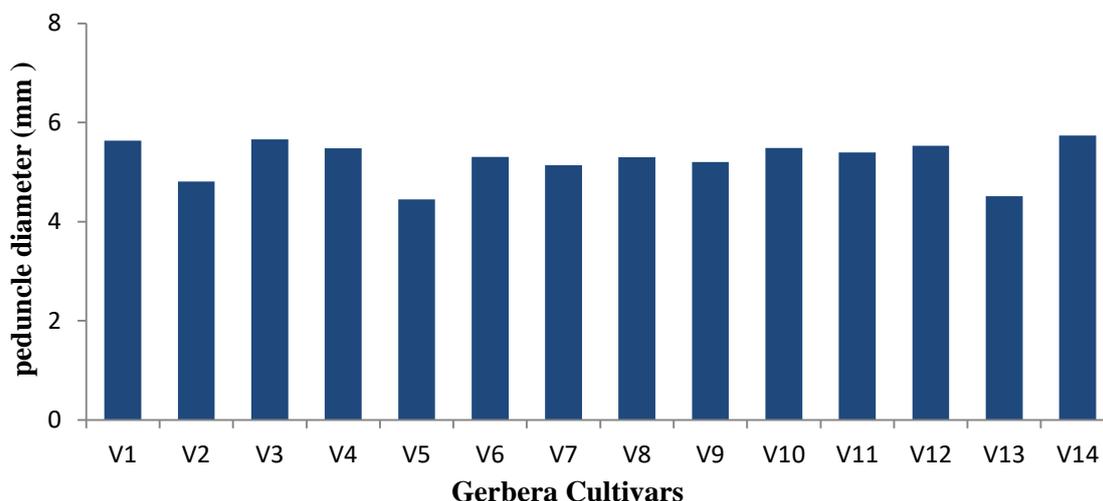


**Figure 02. Performance of different cultivars on peduncle length of Gerbera**

Here, V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre.

### Peduncle Diameter

Peduncle diameter increases the strength of peduncle which keeps the flower straight and upright. It is an important parameter for quality Gerbera flower assessment. Peduncle diameter was significantly influenced by different gerbera cultivars. The highest (5.73 mm) peduncle diameter was noted in V<sub>14</sub> treatment and the lowest (4.46 mm) peduncle diameter was observed in V<sub>5</sub> treatment at 16 days after flower bud initiation (Figure 03). According to Ahmad (2017) stem diameter showed significant statistical variation among different lines of lisianthus due to varietal differences. This variation in stem diameter was also documented by Harbaugh (2000); Uddin et al. (2015a) who stated that stem thickness or diameter varies from line to line. Stem diameter is an important character of an ideal cut flower. A good diameter ensures the strength of the stem that will hold the blooming flowers. Also, higher diameter will ensure a good surface area for absorption of water when cut for the vase extending the vase life. Stalk diameter and number of leaves had the greatest positive direct effect on cut flower yield (Anuradha and Narayanagowda, 2002). The influence of growth promoters on peduncle diameter of different gerbera cultivars showed statistically significant variation. Peduncle diameter differed significantly among the treatments on spraying growth promoters where the highest diameter of peduncle was observed in T<sub>3</sub> (6.12 mm) and lowest diameter of peduncle was observed in T<sub>0</sub> (4.54 mm) (Table 01). A similar type of result was found by Mehraj et al. (2013) that the highest peduncle diameter was found in G<sub>3</sub> (3.1 mm) which was statistically similar to the G<sub>2</sub> (3.0 mm) and G<sub>1</sub>. The lowest diameter was observed in G<sub>0</sub> (2.7 mm). Gautam et al. (2006) was found that GA<sub>3</sub> increased peduncle length.



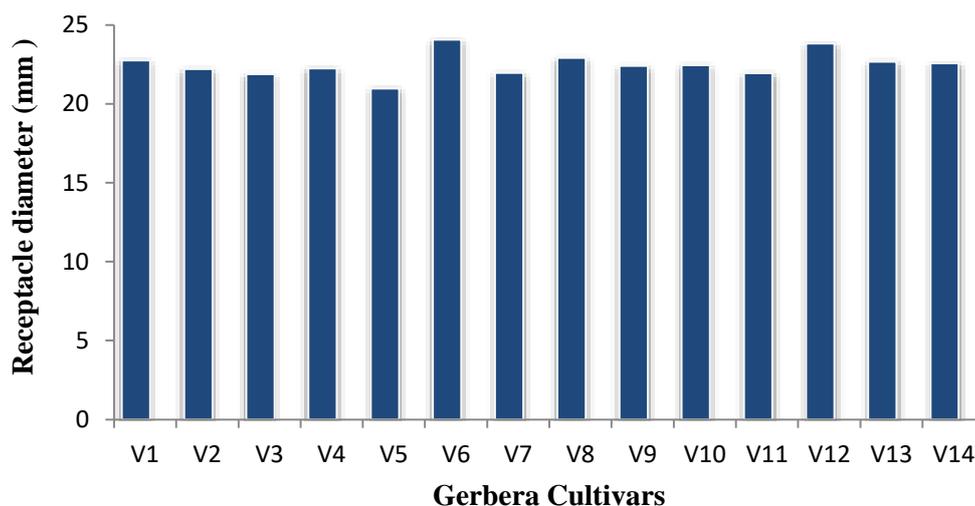
**Figure 03. Performance of different cultivars on peduncle diameter of Gerbera**

Here, V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre.

### Receptacle diameter

The receptacle or torus (an older term is thalamus) is the thickened part of a stem from which the flower organs grow. A receptacle is the part of a flower stalk where the parts of the flower are attached and the quality of flower depends on it. The receptacle diameter of flower varied significantly among the cultivars due to varietal performance. Highest (24.24 mm) diameter of receptacle was noticed in V<sub>6</sub> treatment which is similar to V<sub>10</sub> (23.83 mm) and the lowest (20.99 mm) diameter of receptacle was found in V<sub>5</sub> treatment at 16 days after flower bud initiation (Figure 04).

Growth chemicals appeared significant variation in the diameter of receptacle of flowers (Table 01). The diameter of receptacle (25.89 mm) was highest in T<sub>3</sub> treatment and smallest was (19.43 mm) in T<sub>0</sub> treatment. It means 4-CPA increased diameter of flower bud that was disagreement with the results forwarded by Khan et al. (2007), Than et al. (2007), Moond et al. (2006). But similar opinion was discovered by Sidahmed and Kliewer (1980).



**Figure 04. Performance of different cultivars on receptacle diameter of Gerbera**

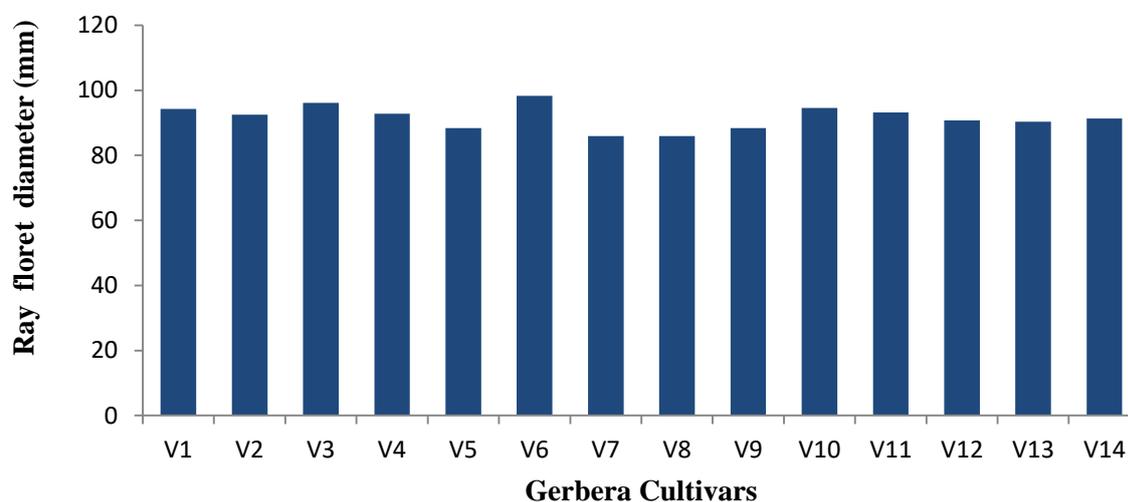
Here, V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre.

### Ray floret Diameter

Ray floret is a small flower with a flat strap-shaped corolla usually occupying the peripheral rings of a flower under Composite or Asteraceae family. It's the most attractive and colorful part of the flower.

Significant variation in respect of ray floret diameter was noted due to varietal performance (Figure 05). The highest (98.69 mm) diameter of ray floret was observed in V<sub>6</sub> treatment and the lowest (87.45 mm) diameter of ray floret was noticed in V<sub>8</sub> treatment at 16 days after flower bud initiation. Flower head diameter varied significantly among the varieties (Uddin et al., 2014). Gerbera cultivars varied significantly among the cultivars for flower diameter (Sankar et al., 2003). Kumar and Kumar (2001) also found that the variation in flower diameter among the gerbera cultivars. In case of gerbera, it may be mentioned that more flowering plants would be increased the total yield and the flower having the maximum flower head diameter represented as the best flower (Hossain et al., 2015).

Effect of growth promoters showed statistically significant variation in terms of the diameter of ray floret (Table 2). Highest diameter (100.1 mm) was noticed in T<sub>3</sub> treatment and the lowest length (85.16 mm) was observed in T<sub>0</sub> treatment. Foliar spraying on flowers significantly affects the flower head diameter (Saira et al., 2011). Effect of growth chemicals on the diameter of flower was found (Shammy, 2009). Considering growth chemicals the diameter of flower was lowest under T<sub>3</sub> treatment that similar opinion was put forwarded by Khan et al. (2007); Than et al. (2007); Moond et al. (2006); Zhuang-yingoang (2004) and Meher et al. (1999).



**Figure 05. Performance of different cultivars on ray floret diameter of Gerbera**

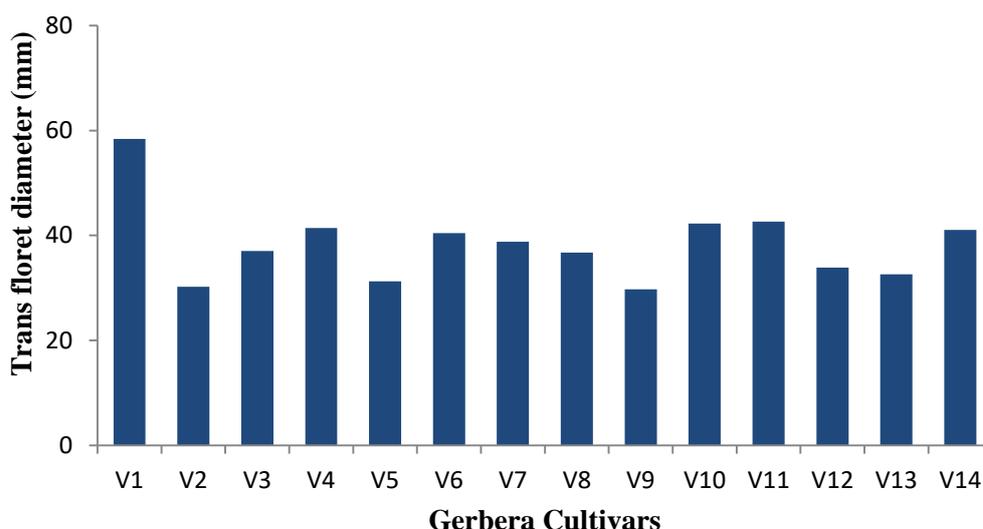
Here, V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre

### Trans floret Diameter

Trans floret is the middle whorl petals of the Compositae or Asteraceae flowers especially having showy or colorful parts. As the attractiveness of flowers depends on trans floret so it's color, size and shape effects on the quality of flowers.

Trans floret diameter of flower varied significantly among the cultivars due to varietal performance. Highest (68.51 mm) diameter of trans floret was found in V<sub>8</sub> treatment and the lowest (20.31 mm) diameter of trans floret was found in V<sub>5</sub> treatment at 16 days after flower bud initiation (Figure 06). Wazir (2014) found Cultivars resulted in maximum flower size (9.2 and 9.0 cm respectively) owing to their double character. It should be mentioned that only double and semi-double gerbera flowers have distinguishable trans floret (UPOV).

Growth chemicals showed significant variation in the trans floret diameter of flowers. The diameter of trans floret (45.23 mm) was highest in T<sub>3</sub> treatment and smallest was (31.14 mm) in T<sub>0</sub> treatment (Table 02).

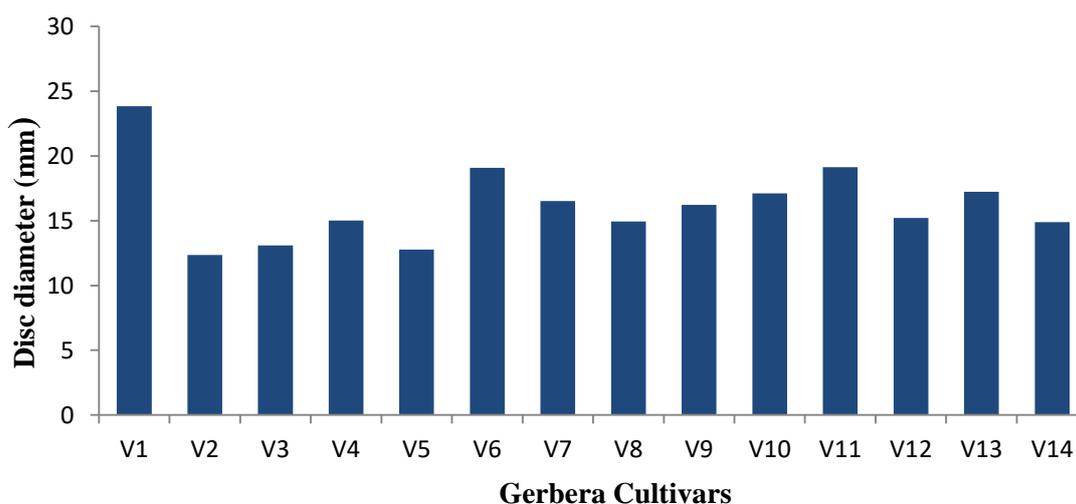


**Figure 06. Performance of different cultivars on trans floret diameter of Gerbera**

Here, V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre.

**Disc Diameter**

Disc means any of the tiny tubular flowers in the central portion of the capitulum or flower head of certain plants of the Composite or Asteraceae family. Disc diameter was significantly affected by different gerbera cultivars. Highest (24.62 mm) disc diameter was found in V<sub>1</sub> treatment and the lowest (13.0 mm) disc diameter was found in V<sub>2</sub> treatment at 16 days after flower bud initiation (Figure 07). Influence of growth promoters on disc diameter of different gerbera cultivars showed statistically significant variation. Disc diameter differed significantly among the treatments on spraying growth promoters where the highest diameter of disc was observed in T<sub>3</sub> (21.69 mm) and lowest diameter of disc was observed in T<sub>0</sub> (12.46 mm) (Table 02).



**Figure 07. Performance of different cultivars on disc diameter of Gerbera**

Here V<sub>1</sub>= Sweet pink with black centre, V<sub>2</sub>= Yellow with black centre, V<sub>3</sub>= Reddish orange with black centre, V<sub>4</sub>= Red with yellow centre, V<sub>5</sub>= White with yellow centre, V<sub>6</sub>= Purplish pink with yellow centre, V<sub>7</sub>= Yellow, V<sub>8</sub>= Creamy yellow with yellow centre, V<sub>9</sub>= Magenta with black centre, V<sub>10</sub>= Red with black centre, V<sub>11</sub>= Bright orange with yellow centre, V<sub>12</sub>= Magenta pink with black centre, V<sub>13</sub>= Orange with yellow centre, V<sub>14</sub>= Yellow with greenish centre.

**Table 01. Effects of different treatments on receptacle diameter, peduncle length, peduncle diameter and no. of flower per plant**

| Treatment      | No. Flower per plant per 4 month |   | Peduncle length (cm) |   | Peduncle diameter (mm) |   | Receptacle Diameter (mm) |   |
|----------------|----------------------------------|---|----------------------|---|------------------------|---|--------------------------|---|
| T <sub>0</sub> | 8.40                             | d | 39.67                | d | 4.535                  | d | 19.43                    | d |
| T <sub>1</sub> | 12.29                            | c | 43.43                | c | 5.434                  | b | 21.48                    | c |
| T <sub>2</sub> | 14.9                             | b | 49.52                | b | 4.949                  | c | 23.4                     | b |
| T <sub>3</sub> | 17.81                            | a | 53.62                | a | 6.124                  | a | 25.89                    | a |
| Lsd            | 0.18                             |   | 0.28                 |   | 0.22                   |   | 0.31                     |   |
| CV%            | 3.14                             |   | 1.41                 |   | 9.99                   |   | 3.19                     |   |

Here, T<sub>0</sub> = Control (Fresh water), T<sub>1</sub> = 4-CPA (4-Chloro phenoxy acetic acid), T<sub>2</sub> = Flora (Nitrobenzene 20% weight/weight basis) and T<sub>3</sub> = GA<sub>3</sub> (Gibberelic acid).

**Table 02. Effects of different treatments on ray floret diameter, trans floret diameter and disc diameter**

| Treatment      | Ray floret diameter (mm) |   | Trans floret diameter (mm) |   | Disc diameter (mm) |   |
|----------------|--------------------------|---|----------------------------|---|--------------------|---|
| T <sub>0</sub> | 85.16                    | d | 31.14                      | d | 12.46              | d |
| T <sub>1</sub> | 88.67                    | c | 36.4                       | c | 14.53              | c |
| T <sub>2</sub> | 95.12                    | b | 40.76                      | b | 17.72              | b |
| T <sub>3</sub> | 100.1                    | a | 45.23                      | a | 21.69              | a |
| Lsd            | 0.32                     |   | 0.28                       |   | 0.25               |   |
| CV%            | 0.82                     |   | 1.74                       |   | 3.58               |   |

Here, T<sub>0</sub> = Control (Fresh water), T<sub>1</sub> = 4-CPA (4-Chloro phenoxy acetic acid), T<sub>2</sub> = Flora (Nitrobenzene 20% weight/weight basis) and T<sub>3</sub> = GA<sub>3</sub> (Gibberelic acid).

#### IV. Conclusion

From above the result and discussion, it can be concluded that the gerbera cultivars and different growth promoters manifested significant variation in the studied characteristics. Among gerbera cultivars, Sweet pink with black centre cultivar appeared fabulous performance. Again, application of gibberellic acid influenced flower production and quality. So, it can be concluded that Sweet pink with black centre gerbera cultivar with application of gibberellic acid would be preferable for increasing the flowering as well as quality in Bangladesh.

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