EXPERIMENTAL FINDINGS
EXPERIMENTAL FINDING

EFFECT OF PLANT GROWTH REGULATORS ON FLOWERING AND FRUITING CHARACTERS OF MANGO:

In general all the flowering characters observed, namely - length of panicle, breadth of panicle, duration of flowering, number of flowers per panicle, number of male and hermaphrodite flowers and sex ratio. Where influenced by the treatment of NAA, GA\textsubscript{3} and Ethrel. With increase in concentration of NAA most of the characters were increased with advancement in age. Similar result were seen in the treatment of GA\textsubscript{3} and Ethrel. The quantum of result varied from treatment to treatment.

Length of panicle -

A critical examination of data (Table-2 and Fig-2 proved that the length of the panicle was appreciably affected by the spray of various concentration of plant growth regulators in comparison to control. The trend of development rate in all the treatment in
**Table - 2**

**EFFECT OF PLANT GROWTH REGULATORS ON LENGTH OF PANICLE (CM)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>1991 Length of panicle</th>
<th>1993 Length of panicle</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st stage (5Feb)</td>
<td>IIInd stage (20Feb)</td>
</tr>
<tr>
<td>T&lt;sub&gt;1&lt;/sub&gt;</td>
<td>7.4</td>
<td>19.1</td>
</tr>
<tr>
<td>T&lt;sub&gt;2&lt;/sub&gt;</td>
<td>8.1</td>
<td>20.3</td>
</tr>
<tr>
<td>T&lt;sub&gt;3&lt;/sub&gt;</td>
<td>7.9</td>
<td>20.0</td>
</tr>
<tr>
<td>T&lt;sub&gt;4&lt;/sub&gt;</td>
<td>7.1</td>
<td>18.3</td>
</tr>
<tr>
<td>T&lt;sub&gt;5&lt;/sub&gt;</td>
<td>7.6</td>
<td>19.4</td>
</tr>
<tr>
<td>T&lt;sub&gt;6&lt;/sub&gt;</td>
<td>6.9</td>
<td>17.2</td>
</tr>
<tr>
<td>T&lt;sub&gt;7&lt;/sub&gt;</td>
<td>6.9</td>
<td>17.2</td>
</tr>
<tr>
<td>T&lt;sub&gt;8&lt;/sub&gt;</td>
<td>6.3</td>
<td>16.9</td>
</tr>
<tr>
<td>T&lt;sub&gt;9&lt;/sub&gt;</td>
<td>6.3</td>
<td>16.3</td>
</tr>
<tr>
<td>T&lt;sub&gt;10&lt;/sub&gt;</td>
<td>5.1</td>
<td>13.3</td>
</tr>
<tr>
<td>CD at 5%</td>
<td>0.599</td>
<td>1.166</td>
</tr>
<tr>
<td>CD at 1%</td>
<td>0.821</td>
<td>1.597</td>
</tr>
</tbody>
</table>
EFFECT OF PLANT GROWTH REGULATORS ON LENGTH OF PANICLE (cm) (1991)

FIG. 2 (A)

[Graph showing the effect of different treatments on the length of panicle across stages.]
EFFECT OF PLANT GROWTH REGULATORS ON LENGTH OF PANICLE (cm) (1993)

![Graph showing the effect of plant growth regulators on the length of panicle. The graph compares different treatment groups with lines indicating I, II, III, and IV stages. The x-axis represents the treatment group (T1 to T10), and the y-axis shows the length of panicle (cm) from 0 to 35.]
both the year was almost same. In all the stages of observation during both the years, the spray of NAA 200 ppm concentration had significant effect on this character as compared to other chemicals and control. The highest value for the length of panicle at all four stages (8.1 cm, 20.3 cm 24.2 cm and 34.2 cm) was recorded under T2 followed by (7.9 cm, 20.0 cm 24.1 cm and 32.1 cm) under T3 respectively. The lowest value was recorded in T1 under control in all four stages (5.1 cm, 13.3 cm 18.9 cm 23.3 cm) respectively.

**Breadth of Panicle:**

The breadth of panicle was also recorded in Table 3 and Fig.3, growth regulators whose increased the maximum length hence automatically it is expected that the breadth of the panicle so maximum breadth was measured with T1 (5.1 and 2.9 cm, 17.8 cm and 24.3 cm respectively): The minimum breadth was recorded with control T1 in all four stages/stayes (3.2 cm 9.3 cm, 14.2 cm 19.6 cm). It was found that
<table>
<thead>
<tr>
<th>Treatment</th>
<th>IInd stage (20Feb)</th>
<th>IIIrd stage (March)</th>
<th>Ith stage (20March)</th>
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<tr>
<td>T1</td>
<td>4.8</td>
<td>11.8</td>
<td>23.3</td>
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<tr>
<td>T2</td>
<td>5.1</td>
<td>12.9</td>
<td>24.3</td>
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<tr>
<td>T3</td>
<td>5.0</td>
<td>12.2</td>
<td>24.3</td>
</tr>
<tr>
<td>T4</td>
<td>4.8</td>
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<td>23.7</td>
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<td>T5</td>
<td>4.9</td>
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<td>T6</td>
<td>4.53</td>
<td>11.9</td>
<td>22.3</td>
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<tr>
<td>T7</td>
<td>4.5</td>
<td>10.9</td>
<td>21.9</td>
</tr>
<tr>
<td>T8</td>
<td>4.4</td>
<td>10.7</td>
<td>21.8</td>
</tr>
<tr>
<td>T9</td>
<td>4.2</td>
<td>10.6</td>
<td>15.5</td>
</tr>
<tr>
<td>T10</td>
<td>3.2</td>
<td>9.3</td>
<td>14.2</td>
</tr>
<tr>
<td>C.D. at 5%</td>
<td>0.435</td>
<td>0.863</td>
<td>0.998</td>
</tr>
<tr>
<td>C.D. at 1%</td>
<td>0.597</td>
<td>1.183</td>
<td>1.367</td>
</tr>
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</table>

Table 3

EFFECT OF PLANT GROWTH REGULATORS ON BREADTH OF PANICLE (CM)
EFFECT OF PLANT GROWTH REGULATORS
ON BREADTH OF PANICLE (cm)
(1991)

FIG. 3 (A)
EFFECT OF PLANT GROWTH REGULATORS ON BREADTH OF PANICLE (cm) (1993)

FIG. 3 (B)
there was statistically significant difference between all treatment superior to the control in increasing the length and breadth of panicle. The similar trend was obtained in the IIrd year 1993, maximum length in all four stages with $T_2$ (6.9 cm, 17.9 cm, 22.9 cm and 29.13 cm). The minimum length given $T_{10}$ (Control) in all four stages (4.7 cm, 15.7 cm, 20.7 cm and 26.7 cm).

**Duration of Blossoming:**

Statistical analysis of the data revealed that this character was changed non significantly by the treatments of plant growth regulators. A perusal of data in table 4 and graphically illustrated in Fig. 4 through NAA 300 ppm (29.3 days) ($T_3$) appeared to be a little more effective in reducing the flowering period. Different concentration of GA$_3$ and Ethrel also proved ineffective in altering the duration of blossoming. A similar result to be obtained in the year 1993- also $T_3$ was found to be the best 30.60 days.

**Total Number of flower:**

It is clearly revealed from the data presented
## Table - 4

**EFFECT OF PLANT GROWTH REGULATORS ON DURATION OF BLOSSOMING**

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Duration of blossoming in days</th>
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<tr>
<td></td>
<td>1st year</td>
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<tr>
<td></td>
<td>1991</td>
</tr>
<tr>
<td>NAA 100ppm $T_1$</td>
<td>30.67</td>
</tr>
<tr>
<td>NAA 200ppm $T_2$</td>
<td>30.00</td>
</tr>
<tr>
<td>NAA 300ppm $T_3$</td>
<td>29.33</td>
</tr>
<tr>
<td>$GA_3$ 25ppm $T_4$</td>
<td>31.33</td>
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<tr>
<td>$GA_3$ 50ppm $T_5$</td>
<td>31.00</td>
</tr>
<tr>
<td>$GA_3$ 100ppm $T_6$</td>
<td>30.33</td>
</tr>
<tr>
<td>Ethrel 250ppm $T_7$</td>
<td>31.67</td>
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<tr>
<td>Ethrel 500ppm $T_8$</td>
<td>32.00</td>
</tr>
<tr>
<td>Ethrel 750ppm $T_9$</td>
<td>32.33</td>
</tr>
<tr>
<td>Ethrel $T_{10}$</td>
<td>33.00</td>
</tr>
<tr>
<td>C.D. at 5%</td>
<td>1.31</td>
</tr>
<tr>
<td>1%</td>
<td>1.95</td>
</tr>
</tbody>
</table>
that in the first year $T_{5}$ showed maximum number of flower per panicle (1369.33) and $T_{6}$, 1303.66 as against 930.33 of the control ($T_{10}$).

In the IIInd year maximum number of flower per panicle $T_{5}$ i.e. 1261.33 and $T_{6}$, 1233.00 as against (890.00) of the control. Thus it is clear that treatment of $GA_{3}$ with growth regulators found to be highly superior to the control and even effect of NAA was found to be satisfactory.
**Percentage of Male flower :**

The percentage of male flower per panicle has been presented in Table 5 and illustrated in fig.5 and By observing the table it was clear that there existed significant difference in between treatment and percentage of male flower ranged in between the maximum in control i.e. (39.77%) to the minimum in $T_3$ (27.73%). A very similar trend was obtained in 1993 also $T_3$ showed the minimum percentage of male flower i.e. (26.39%) and $T_4$ i.e. (27.49%) in maximum in control i.e. (43.20%). All the treatment reduced male flower per panicle.

**Percentage of Hermaphrodite flower per panicle :**

There were significant difference with the percentage of Hermaphrodite flower per panicle, it was recorded that $T_3$ had highest percentage of perfect flower in 1st year i.e. 72.27%. The same result was obtained in the 2nd year. $T_3$ slowed lowest percentage of hermaphrodite flower both the year i.e. (60.23% and 56.80%) respectively.

**Sex Ratio - (Male: Hermaphrodite flower)**

The sex ratio was affected significantly
<table>
<thead>
<tr>
<th></th>
<th>Total Number of flowers</th>
<th>Male flower No.</th>
<th>Male flower %</th>
<th>Hermaphrodite No.</th>
<th>Hermaphrodite %</th>
<th>Sex Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>1203.00</td>
<td>382.66</td>
<td>31.80</td>
<td>820.33</td>
<td>68.20</td>
<td>0.4661</td>
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<tr>
<td>T2</td>
<td>1265.66</td>
<td>387.66</td>
<td>30.62</td>
<td>878.00</td>
<td>69.38</td>
<td>0.443</td>
</tr>
<tr>
<td>T3</td>
<td>1288.33</td>
<td>357.33</td>
<td>27.73</td>
<td>931.00</td>
<td>72.27</td>
<td>0.384</td>
</tr>
<tr>
<td>T4</td>
<td>1277.33</td>
<td>404.00</td>
<td>31.63</td>
<td>873.33</td>
<td>68.37</td>
<td>0.462</td>
</tr>
<tr>
<td>T5</td>
<td>1369.33</td>
<td>437.00</td>
<td>32.15</td>
<td>932.33</td>
<td>67.85</td>
<td>0.469</td>
</tr>
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<td>T6</td>
<td>1303.66</td>
<td>412.33</td>
<td>31.63</td>
<td>891.33</td>
<td>68.37</td>
<td>0.489</td>
</tr>
<tr>
<td>T7</td>
<td>1172.00</td>
<td>379.66</td>
<td>32.39</td>
<td>792.33</td>
<td>67.61</td>
<td>0.479</td>
</tr>
<tr>
<td>T8</td>
<td>1162.33</td>
<td>427.66</td>
<td>36.79</td>
<td>734.66</td>
<td>63.21</td>
<td>0.582</td>
</tr>
<tr>
<td>T9</td>
<td>1155.00</td>
<td>440.00</td>
<td>39.09</td>
<td>715.00</td>
<td>61.91</td>
<td>0.615</td>
</tr>
<tr>
<td>T10</td>
<td>930.33</td>
<td>370.00</td>
<td>39.77</td>
<td>560.33</td>
<td>60.23</td>
<td>0.66</td>
</tr>
</tbody>
</table>

C.D at
5% 24.325  62.076
1% 26.701  85.033
EFFECT OF PLANT GROWTH REGULATORS ON FLOWERING BEHAVIOUR

(1991)

FIG. 5 (A)

Percentage

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10

Treatment Group

Male Flower  Hermaphrodite

FIG. 5 (A)
### Table 5B
EFFECT OF PLANT GROWTH REGULATORS ON FLOWERING BEHAVIOUR 1993

<table>
<thead>
<tr>
<th>Total Number of Flower</th>
<th>Male flower No.</th>
<th>Male flower %</th>
<th>Hermaphrodite flower No.</th>
<th>Hermaphrodite flower %</th>
<th>Sex Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>1132.00</td>
<td>341.00</td>
<td>30.12</td>
<td>791</td>
<td>69.88</td>
</tr>
<tr>
<td>T2</td>
<td>1165.33</td>
<td>333.33</td>
<td>28.60</td>
<td>832</td>
<td>71.40</td>
</tr>
<tr>
<td>T3</td>
<td>1199.66</td>
<td>316.66</td>
<td>26.39</td>
<td>883</td>
<td>73.61</td>
</tr>
<tr>
<td>T4</td>
<td>1204.00</td>
<td>331.00</td>
<td>27.49</td>
<td>873</td>
<td>72.51</td>
</tr>
<tr>
<td>T5</td>
<td>1261.33</td>
<td>367.00</td>
<td>29.10</td>
<td>844.33</td>
<td>70.9</td>
</tr>
<tr>
<td>T6</td>
<td>1233.00</td>
<td>384.00</td>
<td>31.14</td>
<td>849</td>
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<td>1100.00</td>
<td>393.66</td>
<td>35.79</td>
<td>706.34</td>
<td>64.21</td>
</tr>
<tr>
<td>T8</td>
<td>1111.33</td>
<td>413.33</td>
<td>37.19</td>
<td>698.00</td>
<td>62.81</td>
</tr>
<tr>
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<td>1117.33</td>
<td>424.66</td>
<td>38.00</td>
<td>692.67</td>
<td>62.00</td>
</tr>
<tr>
<td>T10</td>
<td>890.33</td>
<td>384.66</td>
<td>43.20</td>
<td>505.67</td>
<td>56.80</td>
</tr>
</tbody>
</table>

C.D at

- 5%: 55.479
- 1%: 75.996

220.706
302.328
EFFECT OF PLANT GROWTH REGULATORS ON FLOWERING BEHAVIOUR (1993)

FIG. 5 (B)
by different treatment which can be seen from Table 5 and figure 5. It was minimum in \( T_3 \) (0.384 and 0.359) in both the year respectively, as against 0.66 and 0.761 of the control.

**Effect of growth regulators on fruiting behaviour:**

**Total No. of fruit set per panicle** - The data pertaining to this character is presented in Table 6 and Table 8. By observing the table it is clear that \( \text{GA}_3 \) gave poorer result than that of \( \text{NAA, Ethrel} \).

There was significant difference among the all treatment which showed better result than that the control. In the 1st year NAA treatments. i.e. \( T_1, T_2, T_3 \) gave 78.33, 80.66 and 81.00 fruits set per panicle in comparison to 62.00, 64.33 and 69.66 of \( T_4, T_5 \) and \( T_6 \) respectively. In the IIInd year similar trend was recorded, NAA showed the best result i.e. 70.33, 72.33, 74.33 in \( T_1, T_2 \) and \( T_3 \) respectively. Minimum fruit set was recorded in both the year in the control i.e. 44.33 and 52.33 respectively.

**No. and percentage of fruit drop:**

The fruit drop was counted at 20 days,
intervals right from March 31 till May 10. The No. and percentage of fruit drop has been presented in Table 6 and Table 7. Treatment of all these plant growth regulators reduced fruit drop in all three stages. In the 1st stage Maximum drop was recorded in control $T_{10}$ 75.00 and 75.78 in both the year respectively and $T_{1}$ 100ppm NAA had maximum number of fruits at 1st observation (64.25) which are very close with $T_{2}$ 65.29 and $T_{7}$ 65.90 respectively. In the second stage $T_{1}$ had maximum number of fruit 83.40 while in the third stage $T_{2}$ have maximum no. of fruit i.e. 97.52. All the concentration of NAA found to be highly superior to the control and even effect of Ethrel was found to be satisfactory.

In the IIInd year minimum drop was recorded with $T_{7}$ i.e. 67.48 in the 1st stage. All the treatment showed better results than that of control. In the second stage the same treatment $T_{7}$ given minimum drop 79.81 which was much close to $T_{3}$ (79.82%). In the third stage $T_{2}$ shed the maximum No. of fruit i.e. 97.23. The maximum drop was recorded in all three stages with control (i.e. 75.78%, 85.34% and 98.74%).
<table>
<thead>
<tr>
<th></th>
<th>Fruit set Tr. per Panicle</th>
<th>Number of fruit drop</th>
<th>No. of fruit Retention</th>
<th>Percentage of Fruit Drop</th>
<th>% of fruit Retention</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Ist stage (31Mar)</td>
<td>IIInd stage (20Apr.)</td>
<td>IIIrd stage (10May)</td>
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<tr>
<td>T₁</td>
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<td>67.74</td>
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</table>

C.D. at 5%  7.261  6.916  10.002  11.054  0.9674
C.D. at 1%  9.946  9.474  13.701  15.142  1.3250
EFFECT OF PLANT GROWTH REGULATOR ON FRUITING BEHAVIOUR (1991)

Fruit Drop-I Stage
Fruit Drop-II Stage
Fruit Drop-III Stage
Fruit Retention

FIG. 6

Treatment Group

Percentage

0 20 40 60 80 100 120

T1 T2 T3 T4 T5 T6 T7 T8 T9 T10
<table>
<thead>
<tr>
<th>Tr.</th>
<th>Fruit set per Panicle</th>
<th>Number of fruit drop</th>
<th>No. of fruit Retention</th>
<th>Percentage of Fruit Drop</th>
<th>% of fruit Retention</th>
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<tr>
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<td>Ist stage</td>
<td>IInd stage</td>
<td>IIIrd stage</td>
<td>(31 Mar)</td>
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<td>1.67</td>
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<td>58.00</td>
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<td>51.33</td>
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<td>1.66</td>
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<td>53.66</td>
<td>64.00</td>
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<td>55.00</td>
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<td>55.66</td>
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<td>1.33</td>
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<tr>
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<td>47.56</td>
<td>55.00</td>
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<td>T10</td>
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<td>39.66</td>
<td>44.66</td>
<td>51.67</td>
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</tbody>
</table>

C.D. at
5% 14.596 11.404 13.210 13.969 0.983
1% 19.993 15.622 18.094 19.136 1.436
EFFECT OF PLANT GROWTH REGULATOR ON FRUITING BEHAVIOUR (1993)

FIG. 7

- Fruit Drop-I Stage
- Fruit Drop-II Stage
- Fruit Drop-III Stage
- Fruit Retention

Percentage

Treatment Group

FIG. 7
Number and Percentage of fruit retention per panicle:

The data pertaining to the number and percentage of fruit retained per panicle had been presented in Table 6 and Table 7 in 1991 and Table 8 and Table 9 in 1993. It is tangible from the result of the study that growth regulators have increased the fruit retention per panicle over the control significantly. The maximum number of fruit retained per panicle was recorded with T2 as 2.00 and 2.00 in both the year respectively and maximum percentage of fruit retention was recorded with T2 as 2.48 and 2.77 in 1991 and 1993 respectively, while the minimum number and percentage of fruit retention per panicle were obtained with the control i.e. 0.67 and 0.66 as the number of fruit retained with the corresponding percentage to be 1.36 and 1.26 in the year 1991, and 1993 respectively. Most of the other treatment proved to be (satisfactory) significantly superior to the control.
EFFECT OF VARIOUS TREATMENT ON PHYSICO-CHEMICAL COMPOSITION OF FRUIT:

Size of the fruit: The size of the fruit was recorded in two stages at 10th April and 10th May. In the first stage the length and Diemeter of the fruits was increased by the effect of different plant growth regulators, treatment Ethrel given longest size of the fruit comparing to another plant growth regulators; NAA and GA3. The longest fruit was found with T8 in both the year i.e., 5.9cm and 4.3cm in the 1st stage and 12.46 cm and 10.3cm in the IIInd stage. As regards to the diemeter of the fruit, the maximum increase was observed with T8 i.e. 3.63 cm and 2.8cm at the 1st stage in both the year 1991 and 1993. In the IIInd stage data are showed that the maximum increased was observed with T8 also i.e. 6.7cm and 7.4 in the year 1991 and 1993. In the all two stage Minimum size of fruit were observed with the control i.e. 2.63:1.93cm and 6.2:3.4cm in the 1991 and 1.6cm:0.96and 6.66:3.36 in 1993 (Length: Diemeter) respectively. It was also revealed that all the concentration of there growth regulators were significantly superior to the control.
<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>1st stage (10th Apr)</td>
<td>IIInd Stage (10th May)</td>
<td>1st stage (10th Apr)</td>
<td>IIInd stage (10th May)</td>
</tr>
<tr>
<td></td>
<td>(in cm) Length</td>
<td>Diameter</td>
<td>Length</td>
<td>Diameter</td>
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<tr>
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<td>9.73</td>
<td>6.33</td>
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<tr>
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<td>3.6</td>
<td>2.43</td>
<td>9.83</td>
<td>6.4</td>
</tr>
<tr>
<td>T3</td>
<td>3.93</td>
<td>2.66</td>
<td>10.8</td>
<td>6.5</td>
</tr>
<tr>
<td>T4</td>
<td>3.5</td>
<td>2.46</td>
<td>8.63</td>
<td>5.13</td>
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<tr>
<td>T5</td>
<td>3.8</td>
<td>2.8</td>
<td>9.1</td>
<td>5.3</td>
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<td>3.13</td>
<td>11.0</td>
<td>6.6</td>
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<td>4.16</td>
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<td>9.66</td>
<td>5.96</td>
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<tr>
<td>T8</td>
<td>4.73</td>
<td>3.5</td>
<td>11.73</td>
<td>6.6</td>
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<tr>
<td>T9</td>
<td>4.9</td>
<td>3.63</td>
<td>12.46</td>
<td>6.7</td>
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<tr>
<td>T10</td>
<td>2.63</td>
<td>1.93</td>
<td>6.2</td>
<td>3.7</td>
</tr>
</tbody>
</table>

C.D.at 5% 0.420 0.115 0.880 0.691 0.496 0.326 0.650 0.584
       1% 0.576 0.158 1.206 0.947 0.682 0.446 0.949 0.801
SIZE OF FRUIT
1st STAGE (10th APRIL 1991)

FIG. 8 (A)
SIZE OF FRUIT
2nd STAGE (10th MAY 1991)

Lenght/Diameter of Fruit (cm)

<table>
<thead>
<tr>
<th>Treatment Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
</tr>
<tr>
<td>T2</td>
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</tr>
<tr>
<td>T8</td>
</tr>
<tr>
<td>T9</td>
</tr>
<tr>
<td>T10</td>
</tr>
</tbody>
</table>

FIG. 8 (B)
SIZE OF FRUIT
IIInd STAGE (10th MAY 1993)

Treatment Group

FIG. 8 (D)
EFFECT OF GROWTH REGULATORS ON THE FRESH WEIGHT OF THE FRUIT AND DIFFERENT FRACTIONS OF THE FRUIT:

Fresh Weight of the fruit:

The growth regulators significantly increased the fresh weight of the fruits over control i.e. Table No. 9 and Table 10 and illustrated the fig. 9. In both the year of study the fruits had the highest (maximum) weight was recorded with T_g as 255.3 gm and 220.5 gm in 1991 and 1993 respectively. All the treatment of Ethrel, GA_3 and NAA significantly improve the fresh weight of the fruit as compared to control. The lowest weight of the fruit were recorded with control i.e. 150 gm and 140 gm in both the year.

Fresh weight of the pulp:

The fresh weight of the pulp were increased by the treatment. The data pertaining to the fresh weight of pulp had been presented in Table 9 and Table 10 and graphically presented in fig. 9, 10. It is tangible from the result of the study that growth regulators have increased the amount of the pulp over the control significantly. Maximum amount of the pulp were found to be 194.23 and 163.3 gm with T_g in 1991 and 1993 respectively.
Weight of the stone:

A critical observation on the Table 9 and Table 10 in the year 1991 and 1993, and graphically presented in Fig 9, 10. In the year 1991 maximum weight of the stone was recorded with $T_g$ 33.53 gm while the second year same as maximum obtained also with $T_g$ 31.1 gm. The lowest weight of stone was obtained with $T_2$ 19.2 gm in the 1st year and $T_1$ as 19.6 gm in the 2nd year 1993 respectively.

Weight of the Peel:

It is evident from the table 9 and 10 and fig 9, & 10 that different growth regulators brought about significant change in weight of the peel. The maximum weight of peel was recorded in both the year with $T_g$ i.e. 27.7 gm and 26.1 gm followed by $T_6$ 28.86 gm and 28.63 gm in 1991 and 1993 respectively. The minimum weight of the peel was recorded with $T_{10}$ i.e. 16.5 and 15.4 gm in the year 1991 and 1993 respectively.

Pulp : Stone Ratio:

The ratio between pulp and stone were presented in Table 9 and 10 and illustrated in fig 9, 10 which revealed that as 6.55 and 6.41 respectively in 1991 and 1993. The $T_1$ was 2nd highest i.e. 6.23 and 6.34
### EFFECT OF PLANT GROWTH REGULATORS ON FRESH WEIGHT OF THE WHOLE FRUIT, WEIGHT OF ITS DIFFERENT FRACTION AND PULP: STONE RATIO OF MANGO OR LANGRA 1991

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Fresh weight of fruit (in gms)</th>
<th>Fresh Wt. of Pulp (in gms)</th>
<th>Wt. of stone (in gms)</th>
<th>Wt. of Peel (in gms)</th>
<th>Pulp: Stone Ratio</th>
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<tr>
<td>T1</td>
<td>165.1</td>
<td>127.53</td>
<td>20.16</td>
<td>17.43</td>
<td>6.23:1</td>
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<td>T2</td>
<td>162.3</td>
<td>125.83</td>
<td>19.2</td>
<td>17.2</td>
<td>6.55:1</td>
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<td>T3</td>
<td>175.0</td>
<td>133.10</td>
<td>22.9</td>
<td>19.0</td>
<td>5.81:1</td>
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<td>172.2</td>
<td>131.70</td>
<td>22.2</td>
<td>18.3</td>
<td>5.93:1</td>
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<td>197.13</td>
<td>146.5</td>
<td>26.6</td>
<td>24.66</td>
<td>5.51:1</td>
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<tr>
<td>T6</td>
<td>203.83</td>
<td>150.43</td>
<td>28.86</td>
<td>24.9</td>
<td>5.21:1</td>
</tr>
<tr>
<td>T7</td>
<td>192.3</td>
<td>144.16</td>
<td>26.4</td>
<td>21.7</td>
<td>5.46:1</td>
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<tr>
<td>T8</td>
<td>219.16</td>
<td>169.3</td>
<td>28.73</td>
<td>21.46</td>
<td>5.89:1</td>
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<td>33.53</td>
<td>27.7</td>
<td>5.79:1</td>
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<td>108.6</td>
<td>24.9</td>
<td>16.5</td>
<td>4.36:1</td>
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C.D. at

5% 21.390 15.934 2.813 2.855 -
1% 29.301 21.827 3.854 3.911 -
EFFECT OF PLANT GROWTH REGULATORS ON PHYSICAL CHARACTERISTICS (1991)

Weight (gms)

- Fresh Wt. of Fruit
- Fresh Wt. of Pulp
- Wt. of Stone
- Wt. of Peel

Treatment Group

FIG. 9
### Table - 10

EFFECT OF PLANT GROWTH REGULATORS ON FRESH WEIGHT OF THE WHOLE FRUIT, WEIGHT OF ITS DIFFERENT FRACTION AND PULP: STONE RATIO OF MANGO OR LANGRA 1993

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<tr>
<th>Treatment</th>
<th>Fresh weight of fruit</th>
<th>Fresh Wt. of pulp</th>
<th>Wt. of stone</th>
<th>Wt. of Peal</th>
<th>Pulp: Stone Ratio</th>
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<td>15.53</td>
<td>6.34:1</td>
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<tr>
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<td>128.9</td>
<td>20.1</td>
<td>16.5</td>
<td>6.41:1</td>
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<td>19.9</td>
<td>5.31:1</td>
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<tr>
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<td>172.0</td>
<td>131.3</td>
<td>22.46</td>
<td>18.23</td>
<td>5.84:1</td>
</tr>
<tr>
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<td>143.5</td>
<td>27.6</td>
<td>24.43</td>
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<td>27.66</td>
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<td>26.0</td>
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<td>5.797:1</td>
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<td>163.3</td>
<td>31.1</td>
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<td>140.0</td>
<td>102.0</td>
<td>22.6</td>
<td>15.4</td>
<td>4.51:1</td>
</tr>
</tbody>
</table>

C.D. at 5% 19.792 14.986 2.723 6.004 -
C.D. at 1% 27.112 20.929 3.729 8.219 -
in both the year respectively. The minimum was recorded with $T_{10}$ i.e. control 4.36 and 4.51 in 1991 and 1993 respectively.

**EFFECT OF GROWTH REGULATORS ON CHEMICAL COMPOSITION OF FRUIT:**

**Total Soluble Solid:**

A glance of the tables 11 and 12 manifested the significant effect of plant growth regulators on T.S.S. content of mango fruit. The maximum T.S.S. content was recorded with $T_9$ as 22.17% and 21.8% in both the year respectively 1991 and 1993. All the treatments of Ethrel gave better result than that the NAA and $GA_3$, while the minimum was recorded with the control which had only 16.10 and 15.47 percent respectively in the 1st and 2nd year of experimentation.

**Acidity:** It is obvious from table 11 and 12 that effect of plant growth regulators on the mango pulp had significant changes in the acidity content. The data obtained remain in between 0.298 in control and 0.195 in the year 1991 and 0.233 in the control and 0.161 in $T_9$ respectively. All the various concentration
of treatments were statistically superior to the control.

**Ascorbic Acid** - It is evident from Table 11 and 12 that the ascorbic acid content in mango pulp had improved by the effect of all three plant growth regulators. The maximum ascorbic acid content was recorded with T9 as 139.13 which was very close with T2 i.e. 138.13 in the 1st year and in the IIInd year T9 as 136.43 and T2 136.15 in comparison to the minimum with the control in the both the year i.e. only 111.12 and 109 mg/100gm of pulp.

**Reducing Sugar**:

It is obvious from Table 11 and 12 and illustrated in fig No III the application of growth regulators increased the reducing sugar during both the year. All the treatments were found to be statistically superior to the control. The treatment of T9 gave maximum content of reducing sugar i.e. 7.80 and 6.73 percent in the year 1991 and 1993 respectively. The treatment control in both the year had the minimum percentage of reducing sugar which were 4.11 and 4.00 during the year 1991 and 1993 respectively.
### Table - 11

**EFFECT OF PLANT GROWTH REGULATORS ON CHEMICAL COMPOSITION OF FRUIT (1991)**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total Soluble Solid (T.S.S) Percentage</th>
<th>Acidity Percentage</th>
<th>Ascorbic Acid (mg/100gm)</th>
<th>Reducing Sugar</th>
<th>Non-Reducing Sugar</th>
<th>Total Sugar</th>
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<tr>
<td>T₁</td>
<td>17.47</td>
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<td>18.37</td>
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<td>18.40</td>
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<td>6.79</td>
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<tr>
<td>T₇</td>
<td>20.87</td>
<td>0.211</td>
<td>136.14</td>
<td>6.73</td>
<td>11.10</td>
<td>17.83</td>
</tr>
<tr>
<td>T₈</td>
<td>21.67</td>
<td>0.198</td>
<td>137.74</td>
<td>7.12</td>
<td>11.88</td>
<td>19.00</td>
</tr>
<tr>
<td>T₉</td>
<td>22.17</td>
<td>0.195</td>
<td>139.13</td>
<td>7.80</td>
<td>12.5</td>
<td>20.3</td>
</tr>
<tr>
<td>T₁₀</td>
<td>16.10</td>
<td>0.298</td>
<td>111.12</td>
<td>4.11</td>
<td>6.63</td>
<td>10.74</td>
</tr>
</tbody>
</table>

C.D. at 5% 1.341 0.024673 6.613 1.157 0.754 0.901

C.D. at 1% 1.836 0.033796 9.057 1.585 1.032 1.234
EFFECT OF PLANT GROWTH REGULATOR ON CHEMICAL COMPOSITION OF FRUIT

T1  T2  T3  T4  T5  T6  T7  T8  T9  T10
Total Sugar  T.S.S. (%)  KM  Acidity (%)  Hill  Ascorbic Acid (mg/100 mg)
60  40  20  0  0
80  60  40  20  0

FIG. 11

T.S.S. (%)  Acidity (%)  Total Sugar  Ascorbic Acid (mg/100 mg)

T1  T2  T3  T4  T5  T6  T7  T8  T9  T10  Treatment Group

160  140  120  100  80  60  40  20  0
Table - 12
EFFECT OF PLANT GROWTH REGULATORS ON CHEMICAL COMPOSITION OF FRUIT (1993)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total Soluble Solid (T.S.S.) Percentage</th>
<th>Acidity Percentage</th>
<th>Ascorbic Acid (mg/100gm)</th>
<th>Reducing Sugar</th>
<th>Non-Reducing Sugar</th>
<th>Total Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>T_1</td>
<td>16.97</td>
<td>0.215</td>
<td>128.27</td>
<td>5.25</td>
<td>9.15</td>
<td>14.40</td>
</tr>
<tr>
<td>T_2</td>
<td>17.80</td>
<td>0.244</td>
<td>136.15</td>
<td>5.75</td>
<td>9.65</td>
<td>15.4</td>
</tr>
<tr>
<td>T_3</td>
<td>18.13</td>
<td>0.205</td>
<td>121.12</td>
<td>6.10</td>
<td>10.12</td>
<td>16.19</td>
</tr>
<tr>
<td>T_4</td>
<td>17.07</td>
<td>0.236</td>
<td>128.17</td>
<td>5.00</td>
<td>8.12</td>
<td>13.12</td>
</tr>
<tr>
<td>T_5</td>
<td>18.67</td>
<td>0.207</td>
<td>131.13</td>
<td>5.93</td>
<td>9.13</td>
<td>15.67</td>
</tr>
<tr>
<td>T_6</td>
<td>18.00</td>
<td>0.209</td>
<td>126.12</td>
<td>4.98</td>
<td>8.02</td>
<td>13.00</td>
</tr>
<tr>
<td>T_7</td>
<td>20.97</td>
<td>0.172</td>
<td>129.73</td>
<td>5.78</td>
<td>9.74</td>
<td>15.52</td>
</tr>
<tr>
<td>T_8</td>
<td>20.10</td>
<td>0.169</td>
<td>132.42</td>
<td>6.18</td>
<td>10.72</td>
<td>16.9</td>
</tr>
<tr>
<td>T_9</td>
<td>21.80</td>
<td>0.161</td>
<td>136.43</td>
<td>6.73</td>
<td>11.17</td>
<td>17.9</td>
</tr>
<tr>
<td>T_10</td>
<td>15.47</td>
<td>0.233</td>
<td>109.42</td>
<td>4.00</td>
<td>6.12</td>
<td>10.12</td>
</tr>
<tr>
<td>C.D.at 5%</td>
<td>1.131</td>
<td>0.09648</td>
<td>8.4005</td>
<td>0.6710</td>
<td>0.5868</td>
<td>0.7899</td>
</tr>
<tr>
<td>C.D.at 1%</td>
<td>1.154</td>
<td>0.13216</td>
<td>11.5071</td>
<td>0.9191</td>
<td>0.8038</td>
<td>1.0819</td>
</tr>
</tbody>
</table>
EFFECT OF PLANT GROWTH REGULATOR ON CHEMICAL COMPOSITION OF FRUIT (1993)

T.S.S. (%)  Acidity (%)  Ascorbic Acid  Total Sugar (mg/100 gm)

FIG. 12
Non Reducing Sugar:

The data of Non-reducing sugar was recorded in Table 11 and 12 and fig. 11 and 12. The maximum amount of non-reducing sugar was obtained with T9 as (12.5 and 11.17 percent in both the year while the control was found to be minimum with non-reducing sugar content. In 1991 it was 6.63 percent while in the year 1993, it was 6.12 percent. T9 in the first and second year also had a high non-reducing sugar level and was statistically equal to effect of T3. The treatments were found statistically superior to the control.

Total Sugar:

Data recorded in table 11 and 12 and illustrated in fig 11 and 12 made it obviously clear that various treatments of plant growth regulators had influenced highly significantly. Minimum sugar percentage was recorded with T10 in control which was 10.74 percent and 10.12 percent in during the year 1991 and 1993 respectively and the maximum were recorded with T9 in both the year as 20.3 and 17.9 percent followed by T8 as 19.00 and 16.9 percent respectively.