CHAPTER 2

STUDIES ON EFFECT OF *Lemna paucicostata* EXTRACTS ON GROWTH, DEVELOPMENT AND YIELD OF WHEAT.
STUDIES ON EFFECT OF 
*Lemna paucicostata* EXTRACTS ON GROWTH, DEVELOPMENT AND YIELD OF WHEAT

The influence of pre-soaking seed treatments for 6, 12 and 24 hrs with water extract and ether extract suspended in water of *Lemna paucicostata* has been studied on the growth and yield of wheat var. "Shekhar/K 7410" grown under normal field conditions. Effect of 5 percent water and 5 percent ether extracts on wheat has been studied as these concentrations exercised sustained improvement on juvenile seedling growth. Effect of these concentrations on subsequent mature plant growth and development appeared to be of proven significance. The observations are given below.

INFLUENCE OF 6 HRS PRE-SOAKING SEED TREATMENT ON VEGETATIVE GROWTH AND DEVELOPMENT:

Height of Plants:

Results on influence of 6 hrs pre-soaking seed treatment with 5 percent water and 5 percent ether
SHOWING EFFECT OF 6 HRS PRE-SOAKING TREATMENT WITH EXTRACTS OF *Lemna paucicostata* PLANTS ON GROWTH, DEVELOPMENT AND YIELD OF WHEAT PLANTS
extract of *Lemna paucicostata* are given in Table-7 and Graph-7. An examination of data shows that both 5 percent water and 5 percent ether extract promote height of plants over control but comparatively water extract is more beneficial. The beneficial influence of treatments is maintained throughout the duration of crop.

The data has been statistically analysed following analysis of variance method. Observed increases with both 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Number of Tillers Per Plant:**

A perusal of results given in Table-7 and Graph-7 show beneficial effect of 5 percent water and 5 percent ether extracts. The stimulatory effect is observed throughout the duration of the crop. Comparatively 5 percent water extract, promotes number of tillers per plant to a greater extent than 5 percent ether extracts.

Statistically analysis of the data, suggests that observed effect with 5 percent water extract is significant at 5 percent error probability.

[64]
**TABLE -7 :**

**EFFECT OF 6 HRS PRE-SOAKING SEED TREATMENT WITH *Lemna paucicostata* EXTRACTS ON VEGETATIVE GROWTH OF WHEAT PLANTS**

<table>
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<th>HEIGHT OF PLANTS (IN CM)</th>
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<th>NUMBER OF LEAVES (PER PLANT)</th>
<th>LENGTH OF LEAVES (IN CM)</th>
<th>BREADTH OF LEAVES (IN CM)</th>
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<td>C 5% EW 5% W</td>
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C.D. = 10.78
DIFFERENCE:
5% W-C = 19.00
DIFFERENCE:
5% EW-C = 13.56

C.D. = 2.91
DIFFERENCE:
5% W-C = 7.16
DIFFERENCE:
5% EW-C = 1.31

C.D. = 8.92
DIFFERENCE:
5% W-C = 26.75
DIFFERENCE:
5% EW-C = 17.64

C.D. = 2.53
DIFFERENCE:
5% W-C = 5.23
DIFFERENCE:
5% EW-C = 0.95

C.D. = 0.21
DIFFERENCE:
5% W-C = 1.05
DIFFERENCE:
5% EW-C = 0.38

**ABBREVIATIONS USED:**
GRAPH - 7: EFFECT OF 6 HOURS PRE-SOAKING SEED TREATMENT WITH *Lemna paucicostata* EXTRACT ON VEGETATIVE GROWTH OF WHEAT PLANT

EW - ETHER - WATER EXTRACT
W - WATER EXTRACT
- HEIGHT OF PLANT
- NO. OF TILLERS PER PLANT
- NO. OF LEAVES PER PLANT
- LENGTH OF LEAVES
- BREADTH OF LEAVES

### EW

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### W

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Number of Leaves Per Plant:

Observations given in Table-7 and Graph-7 are indicative of increasing number of leaves from the beginning of experiment and the beneficial effect is maintained during subsequent observations. It has been observed that 5 percent water extract is more effective than 5 percent ether extract.

Statistically analysis of data suggests that observed effect with 5 percent water extract is significant at 5 percent error probability.

Length of Leaves:

A perusal of Table-7 and Graph-7 show that length of leaves enlarges with 5 percent water and 5 percent ether extracts. A sustained beneficial effect of length of leaves has been observed throughout the duration of the crop. The effect of 5 percent water extract is comparatively more pronounced than 5 percent ether extract.

Statistical analysis of results shows that observed increase with 5 percent water extract is statistically significant at 5 percent error probability.
Breadth of Leaves:

Observations on the effect of *Lemna paucicostata* extracts on breadth of leaves are given in Table-7 and Graph-7. The data shows an overall increase in breadth of leaves in treatments with 5 percent water and 5 percent ether extracts. However, effect of 5 percent water extract is more pronounced than 5 percent ether extract.

The data has been statistically analysed following analysis of variance method and effects of 5 percent water and 5 percent ether extracts are found to be significant at 5 percent error probability.

**INFLUENCE OF 12 HRS PRE-SOAKING SEED TREATMENT ON VEGETATIVE GROWTH AND DEVELOPMENT:**

Height of Plants:

Results on influence of 12 hrs pre-soaking seed treatment with 5 percent water and 5 percent ether extract of *Lemna paucicostata* are given in Table 8 and Graph-8. An examination of data shows that both 5 percent water and ether extract promote height of plants over control but comparatively water extract is more beneficial than ether extract. The beneficial
PHOTO - 7: SHOWING EFFECT OF 12 HOURS PRE-SOAKING TREATMENT WITH EXTRACTS OF *Lemna paucicostata* PLANTS ON GROWTH, DEVELOPMENT AND YIELD OF WHEAT PLANTS

CONTROL

5 PERCENT WATER EXTRACT
influence of treatments is maintained throughout the duration of crop.

The data has been statistically analysed following analysis of variance method and effects of 5 percent water and 5 percent ether extracts are found to be significant at 5 percent error probability

**Number of Tillers Per Plant:**

Observation given in Table 8 and Graph-8 exhibit that number of tillers increases under treatment with both 5 percent water and 5 percent ether extract. Effect of water extract is comparatively more effective than ether extract. However the stimulatory effect of treatments are maintained throughout the duration of the observations.

The data were statistically analysed and observed increase with 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Number of Leaves Per Plant:**

Observations entered in Table-8 and Graph-8 are indicative of increasing number of leaves from the beginning of experiment and the beneficial effect is maintained during subsequent observations. It has been

[70]
**TABLE 8: EFFECT OF 12 HRS PRE-SOAKING SEED TREATMENT WITH *Lemna paucicostata* EXTRACTS ON VEGETATIVE GROWTH OF WHEAT PLANTS.**

<table>
<thead>
<tr>
<th>DAYS</th>
<th>HEIGHT OF PLANTS (IN CM)</th>
<th>NUMBER OF TILLERS (PER PLANT)</th>
<th>NUMBER OF LEAVES (PER PLANT)</th>
<th>LENGTH OF LEAVES (IN CM)</th>
<th>BREADTH OF LEAVES (IN CM)</th>
</tr>
</thead>
<tbody>
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<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
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<td>14.23 16.43 19.21</td>
<td>1.18 1.88 2.01</td>
</tr>
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</table>

**C.D. =** 2.47  **DIFFERENCE:** 3.17  **DIFFERENCE:** 8.49  **DIFFERENCE:** 1.89  **DIFFERENCE:** 0.33

**5% W-C =** 12.86  **5% W-C =** 8.26  **5% W-C =** 27.65  **5% W-C =** 6.77  **5% W-C =** 0.96

**DIFFERENCE:** 7.96  **DIFFERENCE:** 3.93  **DIFFERENCE:** 16.19  **DIFFERENCE:** 3.70  **DIFFERENCE:** 0.01

**ABBREVIATIONS USED:** C: Control, EW: Ether-Water extract, W: Water extract and C.D: Critical Difference
GRAPH - 8: EFFECT OF 12 HOURS PRE-SOAKING SEED TREATMENT WITH *Lemna paucicostata* EXTRACT ON VEGETATIVE GROWTH OF WHEAT PLANT

**LEGEND**
- EW - ETHER-WATER EXTRACT
- W - WATER EXTRACT
- **HEIGHT OF PLANT**
- NO. OF TILLERS PER PLANT
- NO. OF LEAVES PER PLANT
- LENGTH OF LEAVES
- BREADTH OF LEAVES

**CHART**
- EW and W charts showing percentage increase in various parameters over different days (30, 45, 60, 75, 90, 105)
observed that 5 percent water extract is more effective than 5 percent ether extract.

The data has been statistically analysed and observed increase with 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Length of Leaves :**

A perusal of Table-8 and Graph-8 show that length of leaves enlarges with 5 percent water and 5 percent ether extracts. A sustained beneficial effect on length of leaves has been observed throughout the duration of the crop. The effect of water extract is comparatively more pronounced than 5 percent ether extract.

Statistical analysis of results shows that observed increase with 5 percent water and 5 percent ether extracts are statistically significant at 5 percent error probability.

**Breadth of Leaves :**

Observations on the effect of *Lemna paucicostata* extracts on breadth of leaves are given in Table-8 and Graph-8. The data shows an overall increase in breadth
of leaves in treatments with 5 percent water and 5 percent ether extracts. The beneficial effect is maintained throughout the duration of crop. However, effect of 5 percent water extract is more pronounced than 5 percent ether extract.

The data has been statistically analysed following analysis of variance method and effect of 5 percent water extract is found to be significant at 5 percent error probability.

INFLUENCE OF 24 HRS PRE-SOAKING SEED TREATMENT ON VEGETATIVE GROWTH AND DEVELOPMENT:

Height of Plants:

Results on influence of 24 hrs pre-soaking seed treatment with 2 percent water and 5 percent ether extract of *Lemna paucicostata* are given in Table-9 and Graph-9. An examination of data shows that both 2 percent water and 5 percent ether extract promote height of plants over control but comparatively 2 percent water extract is more beneficial than 5 percent ether extract. The beneficial influence of treatments is maintained throughout the duration of crop.
PHOTO - 8: SHOWING EFFECT OF 24 HOURS PRE-SOAKING TREATMENT WITH EXTRACTS OF *Lemna paucicostata* PLANTS ON GROWTH DEVELOPMENT AND YIELD OF WHEAT PLANTS

CONTROL

2 PERCENT WATER EXTRACT
The data has been statistically analysed following analysis of variance method. Observed increase with 2 percent water and 5 percent ether extracts found to be significant at 5 percent error probability.

**Number of Tillers Per Plant:**

Observations given in Table-9 and Graph-9 exhibit that number of tillers increases under treatments with 2 percent water and 5 percent ether extract. Effect of 2 percent water extract is comparatively more marked than 5 percent ether extract. However, the stimulatory effect of treatments are maintained throughout the duration of the observation.

The data has been statistically analysed following analysis of variance method observed increased with 2 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Number of Leaves:**

Observation given in Table-9 and Graph-9 are indicative of increasing number of leaves from begining of experiment and the beneficial effect is maintained during subsequent observations. It has been observed that 2 percent water extract is more effective than 5 percent ether extract.
**Table 9**: Effect of 24 hrs pre-soaking seed treatment with *Lemna paucicostata* extracts on vegetative growth of wheat plants.

<table>
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<tr>
<th>DAYS</th>
<th>Height of plants (in cm)</th>
<th>Number of tillers (per plant)</th>
<th>Number of leaves (per plant)</th>
<th>Length of leaves (in cm)</th>
<th>Breadth of leaves (in cm)</th>
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<td>C 5% EW 2% W</td>
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<td>C 5% EW 2% W</td>
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<td>13.43 14.11 18.17</td>
<td>0.88 1.09 1.57</td>
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<td>3.16 3.21 4.02</td>
</tr>
</tbody>
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C.D. = 2.27
difference:
2% W-C = 10.99
difference:
5% EW-C = 7.03

C.D. = 2.69
difference:
2% W-C = 6.87
difference:
5% EW-C = 2.76

C.D. = 8.96
difference:
2% W-C = 30.89
difference:
5% EW-C = 16.73

C.D. = 1.57
difference:
2% W-C = 6.67
difference:
5% EW-C = 1.67

C.D. = 0.21
difference:
2% W-C = 0.86
difference:
5% EW-C = 0.05

**Abbreviations used**: C- Control, EW- Ether-Water extract, W- Water extract and C.D.- Critical Difference.
GRAPH - 9: EFFECT OF 24 HOURS PRE-SOAKING SEED TREATMENT WITH *Lemna paucicostata* EXTRACT ON VEGETATIVE GROWTH OF WHEAT PLANT

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- HEIGHT OF PLANT
- NO. OF TILLERS PER PLANT
- NO. OF LEAVES PER PLANT
- LENGTH OF LEAVES
- BREADTH OF LEAVES

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<th>Percentage Increase</th>
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The data has been statistically analysed and observed increases with 2 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Length of Leaves:**

A perusal of Table-9 and Graph-9 show that length of leaves enlarges with 2 percent water and 5 percent ether extracts. A sustained beneficial effect on length of leaves has been observed throughout the duration of the crop. The effect of 2 percent water extract is comparatively more pronounced than 5 percent ether extract.

Statistically analysis of results show that observed increases with 2 percent water and 5 percent ether extracts are statistically significant at 5 percent error probability.

**Breadth of Leaves:**

Observations on the effect of *Lemna paucicostata* extracts on breadth of leaves are given in Table-9 and Graph-9 the data show an overall increase in breadth of leaves in treatments with 2 percent water and 5 percent ether extracts. The beneficial effect is maintained
throughout the duration of crop. However, effect of 2 percent water extract is more pronounced than 5 percent ether extract.

The data has been statistically analysed following analysis of variance method and effects of 2 percent water extract is found to be significant at 5 percent error probability.
EFFECT OF WATER AND ETHER EXTRACTS ON VEGETATIVE DRY MATTER, YIELD AND EAR EMERGENCE OF WHEAT:

INFLUENCE OF 6 HRS TREATMENT:

Dry Weight of Straw:

Observations entered in Table-10 and Graph-10 show that there is an increase in dry weight of straw, under treatments with both 5 percent ether and 5 percent water extracts. However, the effect of 5 percent water extract is more pronounced than 5 percent ether extract.

Statistical analysis of data shows that observed effects with both 5 percent water and ether extracts are significant at 5 percent error probability.

Dry Weight of Ears:

Results given in Table-10 and Graph-10 show that there is an increase in dry weight of ears under treatments with both 5 percent water and 5 percent ether extracts. However, the effect of 5 percent water extract is more stimulatory than 5 percent ether extract.

Results were statistically analysed following analysis of variance method and observed increases with both 5
percent water and 5 percent ether extracts were significant at 5 percent error probability.

**Dry Weight of Single Ear:**

A perusal of Table-10 and Graph-10 exhibit that there is an increase in dry weight of single ear under treatments with both 5 percent water and 5 percent ether extracts. However, the effect of 5 percent water extract is more pronounced than ether extract.

Statistical analysis of data shows that observed effects both with 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Dry Weight of 1000 Seeds:**

An examination of Table-10 and Graph-10 indicate that there is an increase in dry weight of 1000 seeds under treatments with both 5 percent water and 5 percent ether extracts. However, the effect of 5 percent water extract is more stimulatory than ether extract.

Results were statistically analysed following analysis of variance method and observed increase with both 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.
**Table - 10:** Influence of Pre-soaking Seed Treatment with *Lemna paucicostata* Extracts on Vegetative Dry Matter, Yield of Wheat Plants.

<table>
<thead>
<tr>
<th>Soaking Period</th>
<th>Dry Wt. of Straw Per Plant (in gm)</th>
<th>Dry Wt. of Ears Per Plant (in gm)</th>
<th>Dry Wt. of Single Ear (in gm)</th>
<th>Dry Wt. of 1000 Seeds (in gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 HRS</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
</tr>
<tr>
<td></td>
<td>32.81 48.31 83.53</td>
<td>38.21 75.33 80.76</td>
<td>2.93 3.15 4.54</td>
<td>33.43 42.17 44.14</td>
</tr>
<tr>
<td>12 HRS</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
</tr>
<tr>
<td></td>
<td>26.16 38.71 54.41</td>
<td>31.83 49.15 62.61</td>
<td>2.64 2.86 4.03</td>
<td>32.61 37.60 41.56</td>
</tr>
<tr>
<td>24 HRS</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
<td>C 5% EW 5% W</td>
</tr>
<tr>
<td></td>
<td>22.71 33.62 48.25</td>
<td>31.05 42.48 49.11</td>
<td>2.12 2.23 3.84</td>
<td>30.54 34.46 38.11</td>
</tr>
</tbody>
</table>

C.D. = 20.61
DIFFERENCE : 6 HRS
5% W-C = 28.25
5% EW-C = 12.55
DIFFERENCE : 12 HRS
5% W-C = 50.72
5% EW-C = 15.50
DIFFERENCE : 24 HRS
2% W-C = 25.54
5% EW-C = 10.91

C.D. = 21.20
DIFFERENCE : 6 HRS
5% W-C = 42.55
5% EW-C = 37.12
DIFFERENCE : 12 HRS
5% W-C = 30.78
5% EW-C = 17.32
DIFFERENCE : 24 HRS
2% W-C = 18.06
5% EW-C = 11.43

C.D. = 0.32
DIFFERENCE : 6 HRS
5% W-C = 1.61
5% EW-C = 0.22
DIFFERENCE : 12 HRS
5% W-C = 1.39
5% EW-C = 0.11
DIFFERENCE : 24 HRS
2% W-C = 1.72
5% EW-C = 0.11

C.D. = 3.59
DIFFERENCE : 6 HRS
5% W-C = 10.71
5% EW-C = 8.74
DIFFERENCE : 12 HRS
5% W-C = 8.95
5% EW-C = 4.99
DIFFERENCE : 24 HRS
2% W-C = 7.57
5% EW-C = 3.92

**Abbreviations Used:** C - Control, EW - Ether-Water extract, W - Water extract and C.D. - Critical Difference.
Percentage Ear Emergence:

Observations entered in Table-11 and Graph-11 suggest that there is an increase in percentage ear emergence under treatments with both 5 percent water and 5 percent ether extracts. However, the effect of 5 percent water extract is more stimulatory than 5 percent ether extract.

Statistical analysis of data shows that observed effects with both 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

Time Required for Ear Emergence:

Results given in Table-12 and Graph-12 indicate that treatments with 5 percent water and 5 percent ether extracts induce earlier fruiting and ear emergence. However, the effect of 5 percent water extract is more pronounced as compared with 5 percent ether extract.

Statistical analysis of data shows that observed effects both with 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

INFLUENCE OF 12 HRS TREATMENT:

Dry Weight of Straw:

Perusal of Table-10 and Graph-10 show that both 5 percent water and ether extracts impart stimulatory effect
**TABLE - 11:** EFFECT OF 6, 12 AND 24 HRS PRE-SOAKING SEED TREATMENT WITH *Lemna paucicostata* EXTRACTS ON PERCENTAGE EAR EMERGENCE PER DAY ON WHEAT PLANTS.

<table>
<thead>
<tr>
<th>SOAKING PERIOD</th>
<th>PERCENTAGE EAR EMERGENCE (PER DAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C</td>
</tr>
<tr>
<td>6 HRS</td>
<td>7.10</td>
</tr>
<tr>
<td>12 HRS</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>5.54</td>
</tr>
<tr>
<td>24 HRS</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>4.44</td>
</tr>
</tbody>
</table>

C.D. = 0.52

DIFFERENCE: 6 HRS
5% W - C = 1.11
DIFFERENCE: 12 HRS
5% W - C = 1.57
DIFFERENCE: 24 HRS
2% W - C = 0.88

DIFFERENCE: 6 HRS
5% EW - C = 0.79
DIFFERENCE: 12 HRS
5% EW - C = 0.84
DIFFERENCE: 24 HRS
5% EW - C = 0.49

**ABBREVIATIONS USED:** C- Control, W- Water extract, EW- Ether-Water extract and C.D.- Critical Difference.
GRAPH - 11: EFFECT OF 6, 12 AND 24 HOURS PRE-SOAKING TREATMENT WITH *Lemna paucicostata* EXTRACTS ON PERCENTAGE EMERGENCE PER DAY ON WHEAT PLANTS.
on dry weight of straw. However, the effect of 5 percent water extract is more effective than ether extract.

Results were statistically analysed following analysis of variance method and observed increase with both 5 percent water and ether extracts are significant at 5 percent error probability.

**Dry Weight of Ears:**

An examination of Table-10 and Graph-10 indicate that both 5 percent water and ether extracts exercise stimulatory effect on dry weight of ears. However, the effect of 5 percent water extract is more pronounced than ether extract.

Statistical analysis of data shows that observed effects with both 5 percent water and ether extracts are significant at 5 percent error probability.

**Dry Weight of Single Ear:**

Results given in Table-10 and Graph-10 suggest that both 5 percent water and ether extracts impart stimulatory effect on dry weight of single ear. However, the effect of 5 percent water extract is more effective than ether extract.
### TABLE - 12:

Effect of 6, 12 and 24 Hrs Pre-Soaking Seed Treatment with *Lemna paucicostata* Extracts on Time Required for Ear Emergence on Wheat Plants.

<table>
<thead>
<tr>
<th>Soaking Period</th>
<th>Time Required for Ear Emergence (in Days)</th>
<th>5% EW</th>
<th>5% W</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>6 HRS</td>
<td>81</td>
<td>79</td>
</tr>
<tr>
<td>5% EW</td>
<td></td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>12 HRS</td>
<td>84</td>
<td>81</td>
</tr>
<tr>
<td>5% EW</td>
<td></td>
<td>77</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>24 HRS</td>
<td>89</td>
<td>84</td>
</tr>
<tr>
<td>5% EW</td>
<td></td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>C.D. = 3.70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference: 6 HRS</td>
<td>5% W - C = 10</td>
<td>5% EW - C = 2</td>
<td></td>
</tr>
<tr>
<td>Difference: 12 HRS</td>
<td>5% W - C = 7</td>
<td>5% EW - C = 3</td>
<td></td>
</tr>
<tr>
<td>Difference: 24 HRS</td>
<td>2% W - C = 11</td>
<td>5% EW - C = 5</td>
<td></td>
</tr>
</tbody>
</table>
GRAPH - 12: EFFECT OF 6, 12 AND 24 HOURS PRE-SOAKING TREATMENT WITH *Lemna paucicostata* EXTRACTS ON TIME REQUIRED FOR EAR EMERGENCE ON WHEAT PLANTS.

- **C** - CONTROL
- **EW** - ETHER-WATER EXTRACT
- **W** - WATER EXTRACT

Lines represent:
- 6 HRS
- 12 HRS
- 24 HRS
Results were statistically analysed following analysis of variance method and observed increases with both 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Dry Weight of 1000 Seeds:**

Observations entered in Table-10 and Graph-10 show that both 5 percent water and ether extracts exercise stimulatory effect on dry weight of 1000 seeds. However, the effect of 5 percent water extract is more pronounced than ether extract.

Statistical analysis of data shows that observed effects with 5 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Percentage Ear Emergence:**

A perusal of Table-11 and Graph-11 suggest that both 5 percent water and ether extracts impart stimulatory effect on percentage ear emergence. However, the effect of 5 percent water extract is more pronounced than ether extract.

Results were statistically analysed following analysis of variance method and observed effects with both 5 percent water and 5 percent ether extracts are significant
at 5 percent error probability.

**Time Required for Ear Emergence:**

Results given in Table-12 and Graph-12 indicate that treatment with 5 percent water and 5 percent ether extracts induce earlier fruiting and ear emergence. However, the effect of 5 percent water extract is more pronounced as compared with 5 percent ether extract.

Results were statistically analysed and observed influence time of ear emergence is significant with both 5 percent water and ether extracts at 5 percent error probability.

**INFLUENCE OF 24 HRS TREATMENT:**

**Dry Weight of Straw:**

A perusal of Table-10 and Graph-10 exhibit that both 2 percent water and 5 percent ether extracts impart stimulatory effects on dry weight of straw. However, the effect of 2 percent water extract is more pronounced than 5 percent ether extract.

Statistical analysis of data shows that observed effect of 2 percent water extract is significant at 5 percent error probability.
Dry Weight of Ears:

An examination of Table-10 and Graph-10 show that both 2 percent water and 5 percent ether extracts impart stimulatory effect on dry weight of ears. However, the effect of 2 percent water extract is more effective than 5 percent ether extract.

Results were statistically analysed following analysis of variance method and observed increase with 2 percent water extract was significant at 5 percent error probability.

Dry Weight of Single Ear:

Results given in Table-10 and Graph-10 indicate that both 2 percent water and 5 percent ether extracts exercise stimulatory effect on dry weight of single ear. However, the effect of 2 percent water extract is more marked as compared to 5 percent ether extract.

Results were statistically analysed following analysis of variance method and observed increase with both 2 percent water and 5 percent ether extracts are significant at 5 percent error probability.

Dry Weight of 1000 Seeds:

Observations entered in Table-10 and Graph-10 suggest that both 2 percent water and 5 percent ether extracts
exercise stimulatory effect on dry weight of 1000 seeds. However, the effect of 2 percent water extract is more pronounced than 5 percent ether extract.

Statistical analysis of data shows that observed increases with both 2 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Percentage Ear Emergence:**

A perusal of Table-11 and Graph-11 exhibit that both 2 percent water and 5 percent ether extracts impart stimulatory effect on percentage of ear emergence. However, the effect of 2 percent water extract is more pronounced than 5 percent ether extract.

Results were statistically analysed following analysis of variance method and observed effects with both 2 percent water and 5 percent ether extracts are significant at 5 percent error probability.

**Time Required for Ear Emergence:**

Results given in Table-12 and Graph-12 indicate that treatments with 2 percent water and 5 percent ether extracts induce earlier fruiting and ear emergence. However, the effect of 2 percent water extract is more pronounced as compared with 5 percent ether extract.
Statistical analysis of data shows that observed effect with both 2 percent water and 5 percent ether extracts are significant at 5 percent error probability.