Table1 Effect of the collection times on the time of sprout and numbers of *Lycoris radiate.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Collection times | Leaf phase (means±SD) | Dormancy phase 1 (means±SD) | Flowering phase (means±SD) | Dormancy phase 2 (means±SD) |
| Shoot initiation after 2 weeks culture (%) | 29±1d | 30±0.5b | 28±0.5c | 39±1a |

Means followed by the same letters are not significantly different at *p* ≤ 0.05, according to LSD’s multiple range test.

Table2 Effect of different sterilization treatments in bulbs contamination rate and bulbs showing regenerations of *Lycoris radiate.*

|  |  |  |
| --- | --- | --- |
| Treatments | % of Contamination rate  (2 weeks)  (means±SD) | % of bulbs showing regenerations (4 weeks)  (means±SD) |
| 5.65%hypochlorite | 21±2b | 0 |
| 3.39%hypochlorite | 25±2.5cd | 54±3.6c |
| 2.26%hypochlorite | 29±2.5d | 82±3.5ab |
| 0.1%mercuric chloride | 9±1.5bc | 20±2.0c |
| 0.2%mercuric chloride | 5±1.5e | 9±3.0a |

Means followed by the same letters are not significantly different at *p* ≤ 0.05, according to LSD’s multiple range test.

Table3 Result of orthogonal design experiments for adventitious buds initiation of *Lycoris radiate.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Treatments | 6-BA(mgl-1) | NAA(mgl-1) | % of bulb showing regenerations (means±SD) | Number of buds (means±SD) |
| 1 | 1.0 | 0 | 8±1.2e | 0.67±0.9d |
| 2 | 1.0 | 0.2 | 11±1.1ef | 2.0±0.8cd |
| 3 | 1.0 | 0.4 | 7±1.4de | 1.67±1.2cd |
| 4 | 3.0 | 0 | 74±4.3b | 2.33±0.4cd |
| 5 | 3.0 | 0.2 | 92±2.2a | 6.33±0.47a |
| 6 | 3.0 | 0.4 | 62±1.6c | 5.2±0.81a |
| 7 | 5.0 | 0 | 44±4.0b | 2.33±0.47cd |
| 8 | 5.0 | 0.2 | 52±2.3c | 4.33±0.47ab |
| 9 | 5.0 | 0.4 | 49±1.1d | 3.0±0.81bc |

Means followed by the same letters are not significantly different at *p* ≤ 0.05, according to LSD’s multiple range test.

Table4 Effect of different plant growth regulator combination with on callus induction and multiplication in *Lycoris radiate.*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Plant growth regulator | Callus induction and increment (%) (means±SD) | | | | | | | | |
| 0 mg/l BA | | 0.5mg/l BA | | 1.0mg/l BA | | 2.0mg/l BA | | |
| 1.0mg/l 2,4-D | -- | -- | 31.9±2.5f | 144.3±7.8d | 25.8±1.8g | 156.3±7.5c | 16.6±0.7h | 63±3.6i | |
| 2.0mg/l 2,4-D | 17.7±1.3h | 121±9.2e | 66.9±3.3b | 157.3±9.0c | 76.1±4.2a | 168±9.5b | 42.03±3.d | 197.7±5.5a | |
| 4.0mg/l 2,4-D | 10.7±1.2i | 134±2.1f | 40.9±2.5de | 89.3±2.5fg | 45.3±2.9c | 114.3±9.9e | 38.4±1.9e | | 121.7±6.7e |
| 0.2mg/lNAA | -- | -- | 5.43±0.7j | 46.7±4.2k | 7.6±0.6ij | 53.3±3.2jk | 10.8±0.5i | | 36.7±4.2l |
| 0.4mg/lNAA | -- | -- | 6.3±1.2j | 74.7±2.5h | 10.7±0.9i | 83±3.2gh | 24.2±3.7g | | 46.3±3.0k |
| 0.8mg/lNAA | -- | -- | 4.3±0.45j | 48.3±2.5k | 5.8±0.9j | 62±3.0ij | 15.5±0.9h | | 54±2.6ijk |

Means followed by the same letters are not significantly different at *p* ≤ 0.05, according to LSD’s multiple range test.

Table5 Effect of different cytokinins in combination with on shoot regeneration in *Lycoris radiate.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Plant growth regulator | Number of shoots per callus (means±SD) | | | | Shoot length (cm)  (means±SD) | | | |
| 0 mg/l NAA | 0.5 mg/l NAA | 1.0 mg/l NAA | 2.0 mg/l NAA | 0 mg/l NAA | 0.5 mg/l NAA | 1.0 mg/l NAA | 2.0 mg/l NAA |
| 0 mg/l BA | 1.3±0.1g | -- | -- | -- | 3.65±0.56h | -- | -- | -- |
| 1 mg/l BA | 2.6±0.45de | 2.5±0.2e | 1.9±0.2f | 1.03±0.02g | 3.74±0.28gh | 3.94±0.05g | 4.02±0.48fg | 4.35±0.70g |
| 2mg/l BA | 2.87±0.15de | 2.97±0.12d | 2.03±0.25f | 1.18±0.24g | 4.35±0.46f | 4.56±0.57e | 4.75±0.39de | 4.87±0.86de |
| 3mg/l BA | 4.1±0.3c | 4.4±0.36bc | 1.87±0.15f | 1.25±0.46g | 4.87±0.59de | 5.48±0.42b | 5.34±0.75bc | 5.35±0.38bc |
| 5mg/l BA | 5.63±0.3b | 8.17±0.38a | 2.13±0.92f | 1.04±0.19g | 5.04±0.97cd | 5.78±0.64a | 5.67±0.49b | 5.47±0.84bc |

Means followed by the same letters are not significantly different at *p* ≤ 0.05, according to LSD’s multiple range test.

Table6 Effect of various concentrations of IAA, NAA and IBA on root formation from regenerated shoots on MS medium of *Lycoris radiate.*

|  |  |  |
| --- | --- | --- |
| Plant growth regultor | Percentage of  Rooting(%) (means±SD) | Number of roots per shoot (means±SD) |
| (Control) | 47d | 3.88±0.18ef |
| 0.5 mg/l IAA | 77c | 4.10±0.54def |
| 1 mg/lIAA | 97ab | 6.32±0.43bc |
| 2 mg/lIAA | 100a | 6.38±0.49bc |
| 0.5mg/lNAA | 83c | 5.52±0.37cd |
| 1 mg/lNAA | 90b | 4.96±0.40cde |
| 2 mg/lNAA | 80c | 4.88±0.53de |
| 0.5 mg/l IBA | 100a | 7.31±0.38b |
| 1 mg/l IBA | 100a | 8.91±0.72a |
| 2 mg/l IBA | 100a | 8.75±0.31a |

Means followed by the same letters are not significantly different at *p* ≤ 0.05, according to LSD’s multiple range test.