Data underlying the publication: **Development of high frequency in vitro shoot regeneration system from leaves of apple cultivar Oregon Spur and optimization of antibiotics concentration**

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**Table.1 Effect of various combinations of BA and NAA on the shoot regeneration efficiency from ‘Oregon Spur’ leaf explants cultured for five weeks**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Plant growth regulators** | | **Without dark treatment Incubation** | | **With dark treatment Incubation** | |
| **BAP**  **(mg/l)** | **NAA**  **(mg/l)** | **Frequency of shoot regeneration (%)Mean±SE** | **Average number of regenerating shoots per explant**  **Mean±SE** | **Frequency of shoot regeneration (%)**  **Mean±SE** | **Average number of regenerated shoots per explant**  **Mean±SE** |
| 1 | 1 | 0.5 | 0.00±0.00k | 0.00±0.00c | 0.00±0.00k | 0.00±0.00d |
| 2 | 1.5 | 0.5 | 0.00±0.00k | 0.00±0.00c | 0.00±0.00k | 0.00±0.00d |
| 3 | 2 | 0.5 | 28.46±0.59j | 1.00±0.16c | 23.05±0.57j | 1.00±0.57cd |
| 4 | 2.5 | 0.5 | 40.47±0.47h | 1.00±0.05bc | 40.85±0.57h | 1.23±0.57cd |
| 5 | 3 | 0.5 | 75.49±0.34e | 1.95±0.57b | 60.75±0.57f | 1.32±0.57cd |
| 6 | 3.5 | 0.5 | 85.94±0.65c | 3.88±0.53a | 60.03±0.57d | 3.20±0.57ab |
| **7** | 4 | 0.5 | 90.84±0.47b | 3.46±0.82a | 78.22±0.57b | 3.75±0.57a |
| 8 | 1 | 0.2 | 0.00±0.00k | 0.00±0.00c | 0.00±0.00k | 0.00±0.00d |
| 9 | 1.5 | 0.2 | 0.00±0.00k | 0.00±0.00c | 0.00±0.00k | 0.00±0.00d |
| 10 | 2 | 0.2 | 31.00±0.46i | 1.00±0.00bc | 26.55±0.57i | 1.02±0.57cd |
| 11 | 2.5 | 0.2 | 65.87±0.38g | 1.20±0.12bc | 48.25±0.57g | 1.55±0.57cd |
| 12 | 3 | 0.2 | 73.57±0.48f | 1.60±0.40b | 65.46±0.57e | 1.99±0.57bc |
| 13 | 3.5 | 0.2 | 80.15±0.37d | 3.65±0.54a | 72.33±0.57c | 3.33±0.57ab |
| 14 | 4 | 0.2 | 95.68±0.47a | 4.76±0.80a | 80.02±0.57a | 3.50±0.57ab |
| **CD0.05** |  |  | 1.23 | 1.21 | 1.42 | 1.42 |

The data were statistically analyzed using Duncan’s multiple range test (DMRT). Data represent the mean± standard error (SE) of three experiments. In the same column, significant differences according to the least significant difference (LSD) at the P < 0.5 level are indicated by different letters.

**Table: 2 Effect of various concentrations of TDZ in combination with IBA or NAA on shoot regeneration efficiency from ‘Oregon Spur’ leaf explants cultured for five weeks**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S.No.** | **Plant growth regulators** | | **Without dark treatment Incubation** | | **With dark treatment Incubation** | |
| **TDZ**  **(mg/l)** | **IBA**  **(mg/l)** | **Frequency of shoot regeneration (%)**  **Mean±SE** | **Mean number of regenerated shoots per explant**  **Mean±SE** | **Frequency of shoot regeneration (%) Mean±SE** | **Mean number of regenerated shoots per explants Mean±SE** |
| 1 | 0.2 | 1 | 28.05±054j | 2.0±0.56d | 23.05±0.57k | 1.0±0.54f |
| 2 | 0.4 | 1 | 35.88±0.52i | 2.02±0.54d | 35.33±0.64j | 2.00±0.55def |
| 3 | 0.6 | 1 | 43.02±0.56g | 3.01±0.57cd | 40.85±0.57i | 2.89±0.56de |
| 4 | 0.8 | 1 | 60.55±0.53e | 3.20±0.57cd | 55.75±0.56f | 3.02±0.57de |
| 5 | 1.0 | 1 | 75.08±0.59d | 4.20±0.52bc | 65.03±0.57e | 3.80±0.57cd |
| 6 | 2.0 | 1 | 82.09±0.56c | 4.75±0.57bc | 75.22±0.57d | 5.75±0.58c |
|  | **TDZ** | **NAA** |  |  |  |  |
| 7 | 0.2 | 0.5 | 28.02±0.58j | 2.0±0.57d | 25.02±0.55l | 1.89±0.54ef |
| 8 | 0.4 | 0.5 | 38.55±0.59h | 2.89±0.52cd | 42.85±0.55h | 2.80±0.55def |
| 9 | 0.6 | 0.5 | 58.03±0.56f | 4.23±0.55bc | 52.03±0.56j | 5.23±0.56bc |
| 10 | 0.8 | 0.5 | 81.55±0.58c | 5.32±0.56b | 79.55±0.57c | 5.35±0.56bc |
| 11 | 1.0 | 0.5 | 92.88±0.59b | 8.20±0.57a | 90.08±0.57b | 6.00±0.57b |
| 12 | 2.0 | 0.5 | 100.00±0.57a | 9.75±0.57a | 96.20±0.58a | 7.75±0.57a |
| CD0.05 |  |  | 1.66 | 1.69 | 1.71 | 1.69 |

The data were statistically analyzed using Duncan’s multiple range test (DMRT). Data represent the mean± standard error (SE) of three experiments. In the same column, significant differences according to the least significant difference (LSD) at the P < 0.5 level are indicated by different letters.

**Table 3: Effect of IBA concentrations on rooting ability of regenerated shoots**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **IBA mg/l in ½ st solid MS medium** | **Rooting frequency**  **Mean±SE** | **Number of roots per shoot**  **Mean±SE** | **Root length (cm)**  **Mean±SE** |
| 1 | 0.1 | 95.45 ±0.58a | 6.35±0.58a | 5.3±0.58a |
| 2 | 0.2 | 83.78±0.57b | 5.69±0.58ab | 4.4±0.57a |
| 3 | 0.3 | 69.64±0.57c | 4.67±0.57bc | 3.7±0.57a |
| 4 | 0.4 | 40.76±0.56d | 3.98±0.56cd | 3.5±0.57a |
| 5 | 0.5 | 30.46±0.56e | 2.89±0.55d | 2.8±0.56a |
| CD0.05 |  | 1.84 | 1.84 | 1.83 |

The data were statistically analyzed using Duncan’s multiple range test (DMRT). Data represent the mean± standard error (SE) of three experiments. In the same column, significant differences according to the least significant difference (LSD) at the P < 0.5 level are indicated by different letters.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S. No.** | **SRM with kanamycin**  **(mg/l)** | **Percent explants died after 40 days (%)**  **Mean±SE** | **Frequency of shoot regeneration Mean±SE** | **Number of regenerating shoots per explants**  **Mean±SE** |
| 1 | 0 | 0.00±0.00d | 85.00±0.58a | 4.0±0.58a |
| 2 | 1 | 0.00±0.00d | 70.56±0.57b | 2.25±0.58b |
| 3 | 2 | 0.00±0.00d | 40.32±0.56c | 1.50±0.57bc |
| 4 | 3 | 0.00±0.00d | 30.24±0.56d | 1.28±0.57bcd |
| 5 | 4 | 40.40±0.55c | 15.84±0.54e | 1.00±0.57cd |
| 6 | 5 | 81.30±0.56b | 10.00±0.54f | 1.00±0.57cd |
| 7 | 6 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| 8 | 7 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| 9 | 8 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| 10 | 9 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| 11 | 10 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| 12 | 15 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| 13 | 20 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| 14 | 25 | 100±0.57a | 0.00±0.00g | 0.00±0.00d |
| CD0.05 |  | 1.41 | 1.11 | 1.11 |

**Table 4: Effect of antibiotic kanamycin on regeneration efficiency of leaf explants of ‘Oregon Spur’**

The data were statistically analyzed using Duncan’s multiple range test (DMRT). Data represent the mean± standard error (SE) of three experiments. In the same column, significant differences according to the least significant difference (LSD) at the P < 0.5 level are indicated by different letters.

**Table: 5 Effect of antibiotic cefotaxime on shoot regeneration efficiency from leaf explants of ‘Oregon Spur’.**

|  |  |  |  |
| --- | --- | --- | --- |
| **S. No.** | **SRM with cefotaxime (mg/l)** | **Frequency of shoot regeneration (%)**  **Mean±SE** | **Number of regenerating shoots per explant Mean±SE** |
| 1 | 0 | 90.2±0.58a | 3.5±0.58a |
| 2 | 100 | 80.0±0.57b | 3.1±0.58ab |
| 3 | 200 | 75.0±0.57c | 2.1±0.57bc |
| 4 | 300 | 70.6±0.32d | 1.0±0.57c |
| 5 | 400 | 30.0±0.23e | 1.0±0.57c |
| 6 | 500 | 15.8±0.11f | 1.0±0.57c |
|  | CD0.05 | 1.37 | 1.27 |

The data were statistically analyzed using Duncan’s multiple range test (DMRT). Data represent the mean± standard error (SE) of three experiments. In the same column, significant differences according to the least significant difference (LSD) at the P < 0.5 level are indicated by different letters.

**Table: 6 Bacteriostatic effect of cefotaxime on Agrobacterium growth after cocultivation**

|  |  |  |
| --- | --- | --- |
| **S.No.** | **Cefotaxime concentrations (mg/l)** | **Percentage of explants showing bacterial overgrowth**  **Mean±SE** |
| 1 | 0 | 100±0.09a |
| 2 | 100 | 100±0.57a |
| 3 | 200 | 95.7±0.46b |
| 4 | 300 | 60.6±0.29c |
| 5 | 400 | 22.7±0.40d |
| 6 | 500 | 0.0±0.00e |
| CD0.05 |  | 1.14 |

The data were statistically analyzed using Duncan’s multiple range test (DMRT). Data represent the mean± standard error (SE) of three experiments. In the same column, significant differences according to the least significant difference (LSD) at the P < 0.5 level are indicated by different letters.