

In Vitro Regeneration of *Rudbeckia hirta* L.

'Plainview Farm' from Leaf Tissue

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Introduction

The *Rudbeckia hirta* L. is a native plant in America. 'Plainview Farm', selected from an open-pollinated population, is a new cultivar with multiple layers of ray flowers. It shows the potential for potted plant production. After several years of seed propagation, this specific morphological trait was still unstable. However, it is well known that tissue culture is an efficient tool for mass propagation of uniform plants. Some interesting results of tissue culture of *Rudbeckia* species have been reported. Therefore, *in vitro* regeneration of *Rudbeckia hirta* 'Plainview Farm' would be possible to provide many plants with uniform flower feature for nursery growers.

Materials and Methods

- ❖ New leaves were disinfested using 10% ultra bleach,
- ❖ Leaf sections (0.25 cm²) were cultured on MS media supplemented with either 0.5, 1.0 or 2.0 mg·L⁻¹BA; 2.5, 5 or 10 mg·L⁻¹KT or 0.5, 1.0 or 2.0 mg·L⁻¹ZT to induce callus and micro-shoots at 27 C and 16 h photoperiod,
- ❖ All induced microshoots were cultured on 1/4 strength MS media plus either 0.5, 1.5 or 3.0 mg·L⁻¹IBA or NAA,
- ❖ The plantlets were transplanted in media with 1:1 (v:v) ratio of perlite and peat moss, acclimatized in mist system for 25 days, potted and grown in greenhouse.

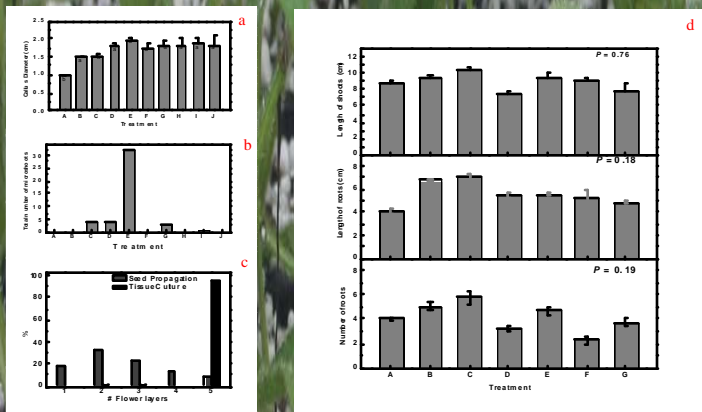


Fig.1. a-b: Induction of callus and microshoots in response to different cytokinin, A: Control, B-D: 0.5, 1.0, or 2.0 mg·L⁻¹BA, E-G: 2.5, 5, or 10 mg·L⁻¹KT, H-J: 0.5, 1.0, or 2.0 mg·L⁻¹ZT, c: Variation of flower layers from seed propagation and tissue culture, d: Root formation in response to different auxin, A: Control, B-D: 0.5, 1.5, or 3.0 mg·L⁻¹IBA, E-G: 0.5, 1.5, or 3.0 mg·L⁻¹NAA.



Fig.2. Microshoot induction(A), root formation(B), acclimatization(C) and growing (D&E) of *Rudbeckia hirta* 'Plainview Farm'.

Results and Discussion

After cultivating 33 days, all treatments significantly induced callus and the callus size were 1.5-2.4 fold bigger than that of no cytokinin (Fig.1a). KT (2.5 mg·L⁻¹) was the better cytokinin concentration for callus induction and microshoot formation. A total of 4 microshoots per explant could be produced from that KT concentration (Fig.1b and 2A). All induced microshoots were cultured on the rooting media for 46 days. No significant rooting difference was observed in comparison with control (no auxin) (Fig.1d and 2B). The plantlets were acclimatized in mist system (Fig.2C) and grown in greenhouse (Fig.2D). When they were blooming, the number of each type of flower were counted. A total of 96.4% of the potted plants derived from tissue culture were multiple layers of ray flowers, while only 9.6% from seed propagation (Fig.1c and 2E). Therefore, *in vitro* regeneration of *Rudbeckia hirta* 'Plainview Farm' was a feasible way to produce multiple ray flowered plants.

References

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