



# Practices and Strategic Investment Section

Resource Practices Branch PO Box 9513 Stn. Prov. Govt. Victoria. BC V8W 9C2

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## SILVICULTURE NOTE 34

### Establishment Success using a Hollow Dibble Planting Tool

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#### PURPOSE

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A literature review of recent studies on survival and growth of seedlings established with a hollow dibble planting tool was conducted to help BC forest professional practitioners in developing the most suitable and cost effective means of re-establishing a forest crop.

*This note does not constitute endorsement or authorization of the use of hollow dibles for tree planting by the government of British Columbia.*

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#### INTRODUCTION

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The main question raised by practitioners in regard to tree-planting using hollow dibles (Figure 1) is soil compaction which may impede root penetration particularly on heavy clay soils<sup>1</sup>. Many studies have found that soil compaction has a negative effect on survival and growth of conifer plantations<sup>2,3</sup>.



**Figure 1.** Hollow dibble planting tool ([www.forestry-suppliers.com](http://www.forestry-suppliers.com)).

The hollow dibble is a hand-planting tool for containerized seedlings that removes a plug of soil where the planter can then insert a seedling<sup>4</sup>. The hollow dibble has been reported to be: lightweight; fast; inexpensive; and easy on the operator<sup>5</sup>. However, dibles have been reported to be unsuitable for rocky or extremely compacted soils<sup>5</sup>.

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## LITERATURE REVIEW

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Several experimental trials in the Sub-boreal Spruce biogeoclimatic zone of British Columbia (approximately 70 Km northwest of Prince George) compared performance and root development of shovel and hollow dibble planted Lodgepole pine (*Pinus contorta* Douglas) and white spruce (*Picea glauca* (Moench) Voss)<sup>6</sup>. These sites had mainly silty loam and sandy clay soils.

Two years after planting the hollow dibble and the shovel planted seedlings had similar survival and growth performance but the spatial distribution of egressed roots differed between the tools. The results suggest that the hollow dibble planted seedlings had superior root distribution over the markedly bi-directional root system of the shovel planted seedlings.

Another study in the Pacific Northwest of North America found no significant differences in performance or root development two years after Douglas-fir (*Pseudotsuga menziesii* (Mirb.) Franco) seedlings were planted in fine texture clay soils using either a shovel or a hollow dibble<sup>7</sup>.

A Newfoundland study found no significant differences in survival and growth of 2-year-old black spruce (*Picea mariana* Mill.) planted using any of the following tools: dibble; pottipukti; and shovel<sup>8</sup>.

On a fine sandy loam soil in Louisiana (USA) an experimental trial found no significant differences in seedling survival

and growth 17 months after planting longleaf pine (*Pinus palustris* Mill.) with either a solid or a hollow dibble<sup>9</sup>.

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## CONCLUSION

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The literature review indicates that the use of the hollow dibble tool for hand planting does not significantly affect the survival rate of the seedlings.

Moreover, the current literature suggests that, up to two years after establishment, the hollow dibble planting tool does not have a significant effect on growth performance of the planted seedlings.

However, more information regarding survival and growth on seedlings planted on heavy clay soils is needed, especially in the context of conditions found within BC.

No current information was available to assess the suitability of the hollow dibble for planting in rocky or extremely compacted soils.

For ergonomic information associated with the use of dibbles and other planting tools please refer to the following website: <https://fpi.adobeconnect.com/a944324542/tree-planters/>.

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## REFERENCES

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<sup>3</sup> Grossnickle, S.C., 2000. *Ecophysiology of Northern Spruce Species: The Performance of Planted Seedlings*. NRC Research Press, Ottawa, Ontario, Canada. 409pp.

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<sup>5</sup> Trent, A., 1999. Improved tree-planting tool. US Forest Service. *Timber Tech Tips:* 9924-2316. 3 pp.

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<sup>7</sup> Rischbieter, N.O., 1978. Root egress from dibble planted containerized Douglas-fir seedlings. University of Washington, USA. 192 pp.

<sup>8</sup> English, B., 1998. Container seedling planting tool comparison trial: second year results. Newfoundland Forest Service. *Silviculture Notebook No.:* 40. 4 pp.

<sup>9</sup> Leduc, D.J., Haywood, J.D., Sung, S.S., 2011. Comparing planting tools for container longleaf pine. *Tree Planters' Note*, Vol. 54, No. 1. 4 pp.

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