

Seed Use Efficiency Meeting

Langley, BC July 30 & 31, 2008

Dave Kolotelo

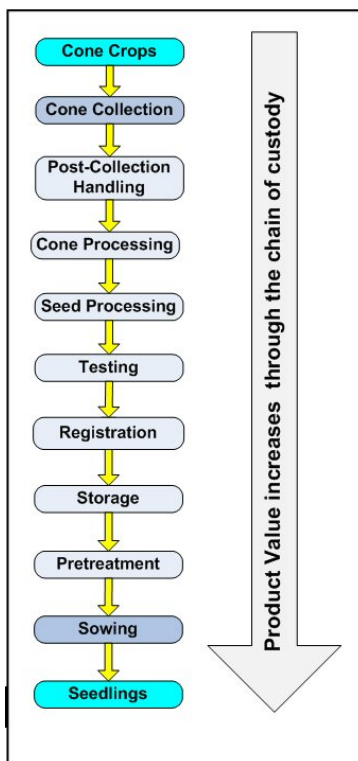
Tree Improvement Branch

Introduction

The objectives of the Seed Use Efficiency meeting were:

- To promote activities to increase seed use efficiency.
- To provide a dedicated forum for the exchange of information spanning the entire Seed Handling System.
- To better understand each others business', the drivers and bottlenecks (both financial and biological) and
- To celebrate the Tree Seed Centre's 50th Anniversary

The scope of the meeting was the Seed Handling System spanning all activities from cone collection (or cone induction for seed orchard operations) to the sowing of seed in the nursery. This chain of custody involves a variety of businesses with different drivers and bottlenecks. An appreciation of the entire system is important as any previous link can impact the quality of the product you are trying to produce. It is also important to appreciate that product value increases through the system as 'investments' are made to go from reproductive buds to the seedlings we desire for reforestation.



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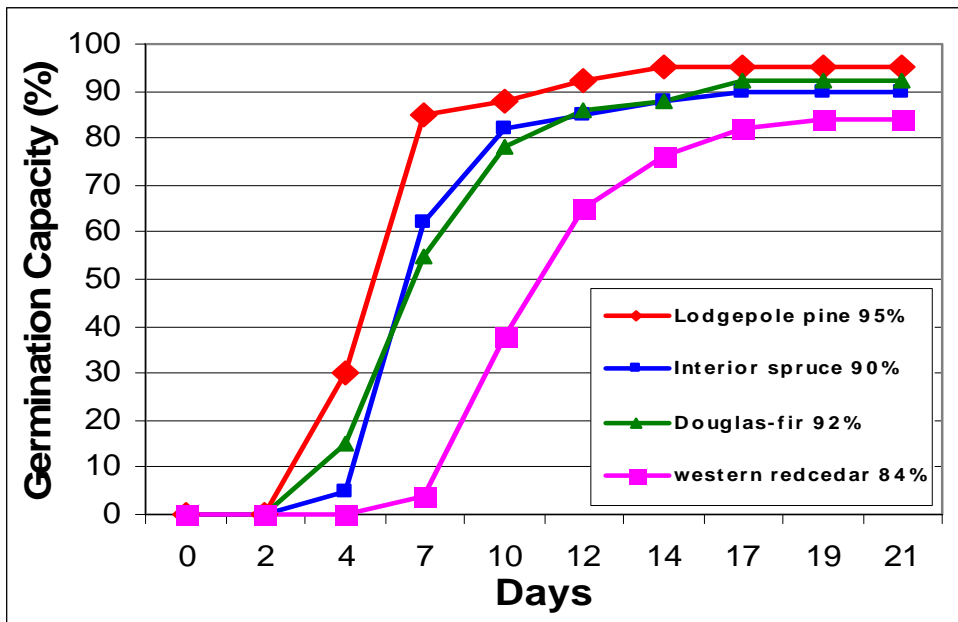
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Conifers are extremely variable organisms and this diversity is a very good thing for these long-lived species. It is also this variability that complicates direct adoption of seed treatments designed for low variability agricultural crops. One of the fundamental tenants of quality assurance is to reduce variability and to some extent seed is part of a sophisticated material handling system. The trick is to not remove any genetic variability as we try to make the system more efficient.

I'll initially provide some broad context to seed use in BC and then briefly seed characteristics of our major reforestation species. In 2008, provincial sowing was 214 Million seedlings - down substantially from 265 million in 2007, but approximately equal to our 15-year average. Seed orchard seed accounted for 46% of sowing in 2008 and is expected to continue to rise to approximately 70% by 2013. In British Columbia, there are approximately twenty one tree species used in commercial forestry, but lodgepole pine and interior spruce together account for 78% of the provinces sowing. Adding Douglas-fir and western red-cedar to the mix we have the "Big Four" accounting for 93% of provincial sowing.

The germination patterns of these four illustrate the extremely rapid germination of lodgepole pine and delayed germination of western redcedar.



Seeds per gram, used to describe seed 'size' is the other seedlot input, in addition to germination capacity, that translates orders for trees into grams of seed to withdraw, possibly treat and ship to nurseries. Seeds per gram (SPG) averages are shown for the Big 4 species by genetic class (orchard or wild stand) and a ratio indicating relative difference. The largest difference in seed size between orchard and wild seed is found with lodgepole pine.

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Species	Orchard SPG	Wild SPG	Orchard/ Wild
Lodgepole pine	253	338	0.75
Interior spruce	390	459	0.85
Douglas-fir	87	96	0.91
Western redcedar	751	805	0.93

As we move through the seed handling system it is important to address what the largest sources of variability or bottlenecks are. Path analysis is suggested as a good means to address this quantification. A system that is complicated with different business drivers also will include some unforeseen feedback loops. If anyone has seen the 'gorilla' video you will understand "you can miss some really big things if you are focused too much in one area" and I think that is worth considering. I'll also offer the following favourite quote "Most mistakes in thinking are inadequacies of perception rather than mistakes of logic". Enjoy the meeting!