



# Cone and Seed Improvement Program BCMoF Tree Seed Centre

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## Western White Pine Stratification

Western white pine [Pw] continues to be problematic in matching lab testing results with operational quantities of seed. Gains were realized in the 2002 sowing year and this note will discuss the improvements that were incorporated. I would like to first provide a brief summary of western white pine use. In 2002 sowing, 61 Kg of seed was used to produce a total of 1.09 million seedlings in 62 sowing requests. This is significantly reduced from the 112 Kg of seed used to produce 1.88 seedlings in 2001 over 101 sowing requests. For 2002 sowing, almost all requests were for orchard-produced seed (97%) and for 1-0 stock (92%). The majority of seedlings (78%) were destined for interior planting sites.

In 2002, stratification of Pw included:

- 1) Moving back to stratifying Pw in plastic bags *vs.* tray-type systems used in 2000 and 2001.
- 2) Increased moisture content in stratification by eliminating surface drying before stratification and monitoring moisture content (non-destructively) for all sowing requests at one month intervals during stratification.
- 3) Monitoring and 'mixing' (redistribution of moisture and gases) of all Pw sowing requests every Monday, Wednesday and Friday.
- 4) Extending stratification for up to 3 weeks (if possible) in consultation with the nursery. All nurseries agreed to 3 weeks additional stratification, but this was not always possible due to the late entry of some requests.

One of the biggest apparent problems with our tray-type stratification unit was that moisture was lost during stratification. Returning to stratification in plastic bags and eliminating surface drying before stratification resulted in all sowing requests being maintained at moisture contents between 35.1 and 38.6% with an average of 36.7%.

The falldowns in germination (lab *vs.* operational seed preparation) were reduced from an average of 37.5% in 2001 (n=29) to 19.4% (n=19). Seedlot again seems to be an important source of variation and when 3 seedlots (4 sowing requests) were removed from the database the falldown becomes more reasonable at 11.7%. For 17 sowing requests, germination tests were performed after 98 days stratification and with an additional 3 weeks of stratification (119 days). This extension in stratification resulted in an average increase in germination of 3.8%. We are recommending to seed owners and clients that **stratification be extended for 5 weeks in 2003**. This results in a total pretreatment duration of 147 days [ 14 day soak + 133 days cold stratification]. In order to be able to meet this objective it is extremely important that sowing requests are put into SPAR early. For example, for a February 18, 2003 sow date the request will have to go into soak on September 24<sup>th</sup> and therefore the request must be approved in SPAR a few days before this date to allow for seed withdrawal and administration.

An additional area we will investigate in 2003 is a reduction in the stratification unit size. In Pw we are currently only putting 1 000 grams in a bag versus 3 000 grams that is used for all other species. There is some indication that smaller units perform better and we will be reducing our

stratification unit size to 750 grams for 2003 sowing of Pw. We will also be putting more emphasis on monitoring for chitting or seed coat cracking. With extended stratification this is a possibility and the chitted seed would be more susceptible to drying of internal contents or infection by fungi. Nurseries growing Pw should be careful in surface drying Pw to just remove the moisture from the seed coat prior to sowing.

Please forward any comments, concerns or questions regarding western white pine to me at the Tree Seed Centre. Good Luck with your crops.

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