

SEED PRODUCTION IN LODGEPOLE PINE

Seed yields (filled seeds per cone) from north Okanagan (NO) lodgepole pine (*Pinus contorta* var. *latifolia*) orchards have not met expectations compared to seed yields routinely realized at Prince George (PG). Since the NO is substantially hotter and drier than PG, early efforts focused on better irrigation systems (broad cast sprayers) and crown cooling (misting). Data collected from Kalamalka Seed Orchard 307 over the period of 2000 to 2005 did not show any significant improvement in either cone numbers or seed yields. However, cones protected by insect bags had consistently more seed.

Since most NO orchards were experiencing poor seed production, in 2006 we began to collect standardized orchard statistics from eight orchards on four NO sites and two orchards at the PG Tree Improvement site. All 10 orchards produce seed for three PG and three southern interior seed planning units. We also compared production from two orchards of the same provenance base at PG and NO.

Over the period of 2006 to 2012, the trend for higher seed yields per cone but fewer cones at PG continued. Since the number of filled seed per cone (FSPC) was high and remained fairly consistent (20–25 FSPC) at PG, variation in the number of seed per tree principally resulted from variation in the number of cones per tree (100–300 cones per tree). Year-to-year variation occurred in all orchards but those NO orchards producing seed for the PG area (with one notable exception) consistently produced lower yields than those NO orchards producing seed for the southern interior. Orchard site also was important. Southern interior orchards in Armstrong, BC (Pacific Regeneration Technology Inc.) (PRT) equalled or exceeded that from PG and for the last two years have consistently out-produced all other NO orchards.

Over the seven years of observation, the loss of seed from un-bagged cones in all NO orchards ranged from about 2 to 11 FSPC. There was no seed loss from un-bagged cones at PG. Of the four NO orchard sites, Kalamalka and Tolko had the greatest losses (about 10) with the two PRT and Vernon Seed Orchard Company orchards each losing about 5 and 4 FSPC, respectively. The greatest loss of seed from un-bagged cones appeared to occur in August. Cones exposed for a two week period from April to the end of July were not significantly affected but cones exposed in August had significantly fewer seed per cone. Again, bagged and un-bagged cones from PG did not show any differences in seed yields.

There is no general agreement about the bagging affect. One side of the argument suggests the losses are too large to be caused by insects. However, bagged cones and insect management (spraying) all show better seed yields than untreated cones. Insect-protected cones can account for some of the losses but on average, we expect seed yields from lodgepole pine to be in the order of 20–25 FSPC. However, production from NO orchards ranges from 10–15 FSPC. If we account for 5–10 FSPC losses from unprotected cones, we still must account for the other 5–10 FSPC that may not be attributed to insect predation.

Joe Webber

Saltspring Island, BC

E-mail: jwebber@telus.net