Breeding Processes of Lodgepole Pine

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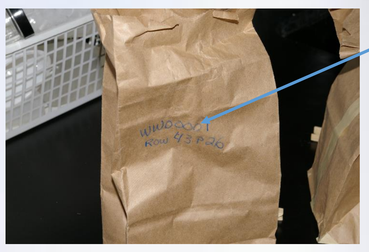
Male Pollen Extraction



Male cones are picked and dried. Pollen can only be collected once the pollen has dried sufficiently to be released.



Bags should be labeled to maintain genetic identity for controlled crosses.



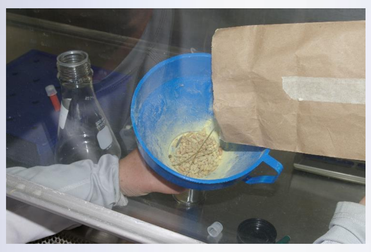
A cluster of male pollen cones.



Pollen extraction is done inside a fume hood to prevent pollen contamination (and for allergies).



Cones are poured into the funnel for extraction.



Pollen is filtered through a small mesh screen in the funnel to remove cone particulates.



Funnels should be cleaned or exchanged with fresh ones between collections to prevent genetic contamination.



Pollen is transferred into a storage container and labelled to identify genetic identity.



Extracted pollen may be stored in a freezer for later use.



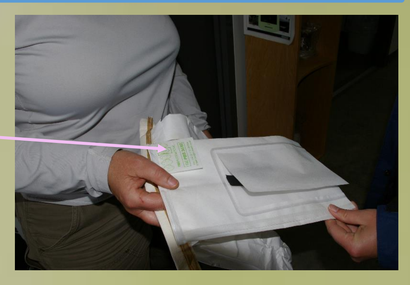
Orchard pollen contamination from outside pollen is monitored using pollen traps spread throughout the orchard.

Pollen overwinters inside the conelets. Fertilization occurs the following spring and cones will mature over that growing season. Cones are collected in September, after ~ 26 months from time of conelet initiation to mature seed development.



Female Conelet Fertilization

Breeding bags are used to exclude unwanted pollen from the conelets.



A conelet that appears to be entering the receptive stage. Conelets to be bred should be bagged prior to entering receptivity to ensure exclusion of undesired pollen.



A large gauge needle is attached to the pollen bottle to penetrate the breeding bag. Holes are sealed with tape.



Breeding bags are affixed to branches being sure the bag does not touch the conelet.



The end of the needle is inserted into the breeding bag.



Pollen is sprayed into the bag by gently squeezing the sides of the pollen bottle.



The punctures in the bags are sealed using electricians tape to prevent cross contamination from outside pollen. Pollen can be applied over several days during receptivity.



Branches are labelled with crosses to maintain genetic identity.







Demonstration of breeding by Diane Renaud
Photos by B. Thomas