## Washington Department of Natural Resources Seed Plant 2022



# **Cone Shed**

Cones are stored for 2 weeks to several months in burlap bags on racks until they start to flare before being moved to the kiln





# Southpine Kiln

Used to dry cones before extraction

**1.8 hectolitres per** screened tray

Runs at 40 degrees C for 24hrs

86 hectolitre max capacity currently







#### **Southpine Extraction Table**



#### LMC shaker deck modified by Southpine

Used for primary seed extraction from cones

**Diverters help control flow** 

Feeder hopper keeps consistent flow





## Rotary Screens





Used for tumbling cones to extract seed

Left: interchangeable screens allow this rotary to be used for cedar or true firs

**Right: Rotary used as a last step in the extraction process as well as a standalone for larch** 





BCC Batch De-winger Used mainly for true firs and hemlock Uses slotted drums with a rubber wiper to break wings Cement mixer Used to de-wing pines Usually used with small amounts of water





Missoula De-winger Continuous flow Used on Douglas-fir and western larch

**De-Wingers** 

De-winging is done after an initial scalping with an Eclipse to remove chaff that may break up or damage seed



### A.T. Ferrell Eclipse 324

Used to scalp/screen material before de-winging, then more finely after



Uses up to 3 screens, and aspirates the main output for light separation

Screens are kept from blinding by trays of bouncing balls directly underneath







## Aspirators

Left: BCC gravity separator Right: 1957 ESMC Pneumatic separator

Used for density separation of seed material

Also used to remove light/heavy chaff from seed lots

BCC pulls vacuum through seed and ESMC blows air through seed flow







#### Oliver 30 Gravity Table



Air flows through the tilted cloth deck to float continuously fed material while shaking Heavy material moves to the top of the flow while lighter material runs off the bottom



#### BCC Water Separator

Used for removing pitch from seed material

Pitch sinks to the bottom and is captured while seed floats and runs off the top into a tray at the end





#### Small Lot Cleaning



Left: Hand screens - used for hand cleaning small quantities or for finding a screen size for larger equipment

Center: Mater vibratory separator used for separating material based on surface texture and density

**Right: A.T. Ferrell office clipper used for screening/scalping small lots** 







# X-ray machine





Kubtec Parameter 2D Used in equipment setup and adjustments Used in seed testing to find the number of filled seeds



# Seed Testing

DNR does in-house seed testing on our own collections as well as purchased lots





Seed is tested for moisture content, purity, cut(filled seed), seeds/lb, and germination capacity



# Seed Storage





Seed Storage consists of a three room building: a 2°C room and two -18°C rooms

Seed is stored in the -18°C rooms and is stratified in the 2°C room Seed is packaged in two plastic bags and then stored in labeled boxes





Jeff deGraan Jeff.deGraan@dnr.wa.gov 360-789-2872

Or

Tel Vaughn Tel.Vaughn@dnr.wa.gov 360-789-0310

