

Hot Water and Javex Enhance Pine and Spruce Seed Extraction

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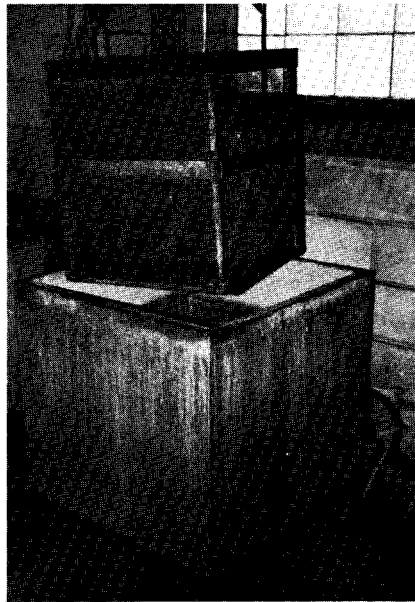
A method was developed at the Pineland Forest Nursery to increase seed recovery from pine and spruce cones and decrease the time required to open closed cones in a dry kiln.

Various detergents, bleaches, and temperatures were experimented with until the most suitable solution was found. It consists of one part of Javex to 20 parts of water, heated and kept at a constant temperature of 150° F.

Equipment Required

- Three 90-gallon insulated tanks with covers, equipped with 2,000 watt controlled heaters.
- Three steel frame baskets, 20 x 20 x 24 inches high lined with t/a inch steel mesh (4 bushel capacity).
- One hundred-twenty frame trays, 24 x 36 x 4 inches, 4 inch steel mesh bottom (% bushel capacity).
- One t/z ton chain hoist on steel track.
- Hot air dry kiln, 8 feet x 12 feet, holding 60 bushels.

Submerged time varies with species. Jack pine (*Pinus divaricata* (Ait.) Dumont) and



Method

The steel tanks are filled to two-thirds with the water and Javex solution and heated to 150° F. The 4-bushel basket is completely submerged when lowered by hoist.

scotch pine (*Pinus sylvestris* L.) require from 1 to 2 minutes, and red pine (*Pinus resinosa* Ait.) and black spruce (*Picea mariana* (Mill.) B. S. P.) require from 30 seconds to 1 minute.

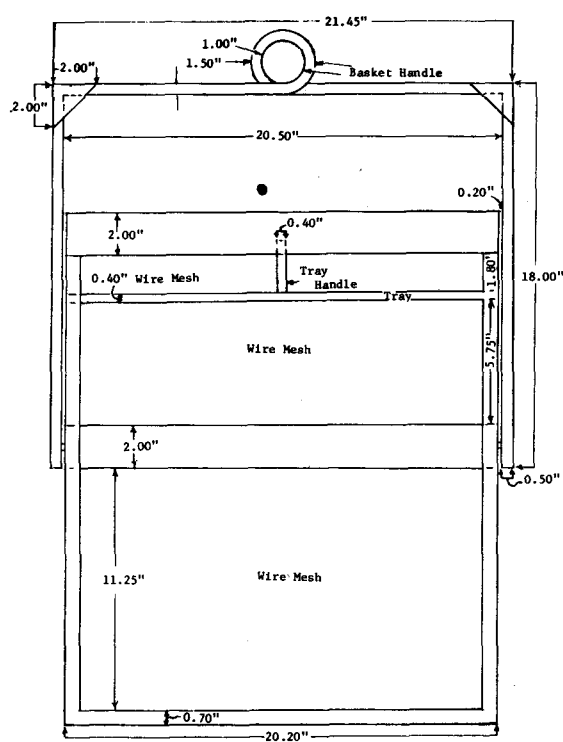
After appropriate submersion, the basket is lifted and suspended above the tank for a few minutes to drain.

The cones are then spread out in the wood frame trays and left to dry for 24 hours, or placed immediately into the hot air kiln, in which case a longer kiln time is required.

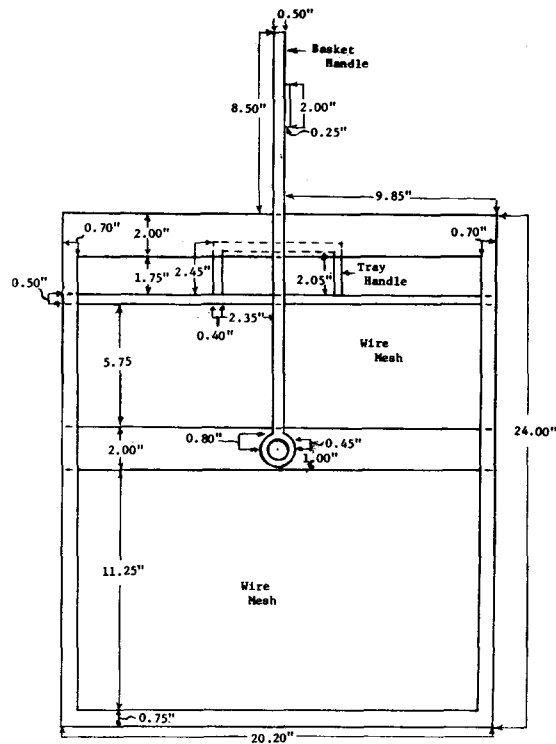
At the end of the 24-hour drying period, the trays are placed in the hot air kiln, 145° F., for 6 to 12 hours.

Results

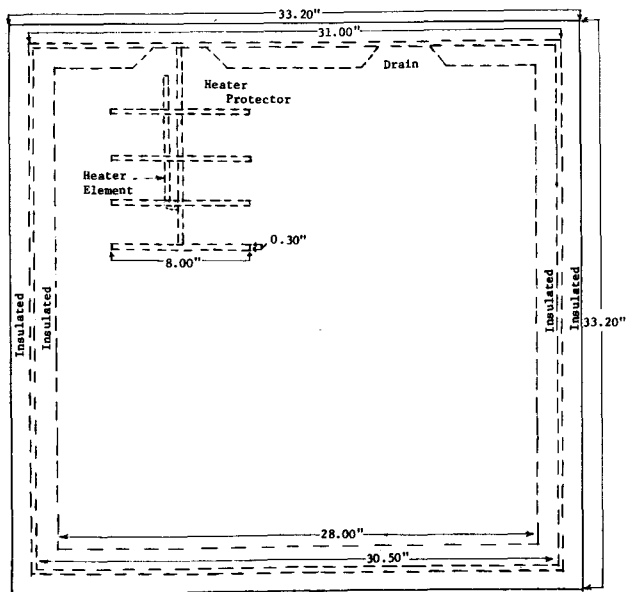
The described process results in 100 per cent opening of pine and spruce cones after 6 to 12 hours in the hot air kiln, compared to approximately 85 per cent after 24 to 36 hours with the direct dry heat method.



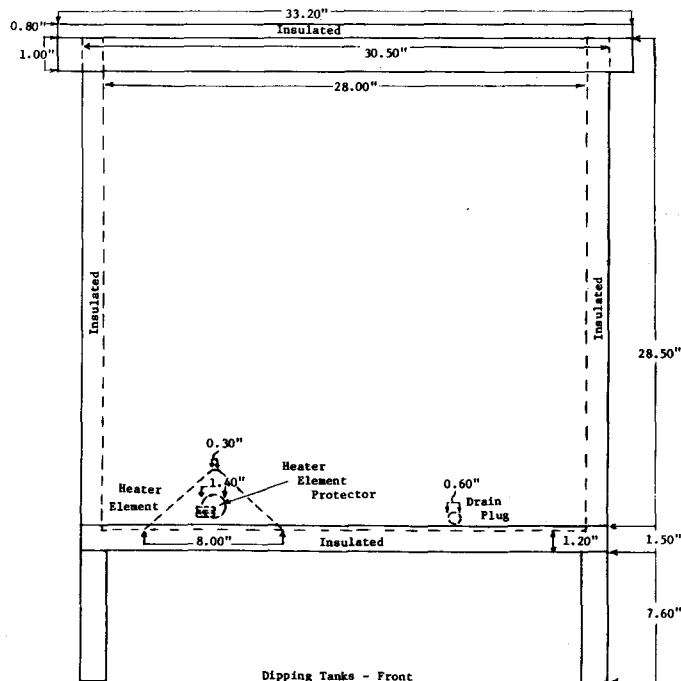
Dipping Tanks (Basket - Front)



Dipping Tanks (Basket - L. Side)



Dipping Tanks - Top



Dipping Tanks - Front

Wire Mesh	Insulation	Heater	Tank	Basket
4 blocks per inch Smoke stack screen	Fibreglass	2000 watt Thermostat controlled	22 Gauge galvanized	4 Bushel