COLD TREATMENT OF SEED AND MOISTURE ABSORPTION

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This experiment was initiated in order to determine the rate of moisture absorption of ponderosa and Jeffrey pine seed in +1°C. temperatures, and to determine if a moisture holding material is necessary for maintaining the moisture.

Samples of ponderosa and Jeffrey pine seed were selected from seed that had been stored for 2 to 4 years in our seed cooler at -3°C. (we now store the seed at -17.8°C.). The samples were weighed as they came out of storage and the weights recorded. Then the samples were put into cans and dried in an oven at 90°C. for 24 hours. The samples were then weighed again. The difference in weights was considered as a moisture loss and recorded on a percentage basis.

The seed samples were placed in plastic bags and soaked for 24 hours, and after the soaking period the water was drained off and the bags tied up, tight, and placed in a cooler at + 1° C. for the required time.

Other samples from the same lots were selected and put in soak for 24 hours and the moisture percentage was determined. Then the seed was soaked an additional 24 hours in order to determine if the seed would absorb any more moisture. The results were as follows

	Moisture percent			
	Before soaking	After soaking 24 hours and chilled 24 hours	After soaking 24 hours and chilled 72 hours	After soaking 48 hours
Ponderosa pine..	9.46	30.16	31.50	30.18
Jeffrey pine.....	9.48	37.06	40.90	37.15

Several samples of seed were mixed with sponge rock and water added and drained off, so that no free water was present. The mixture was placed in plastic bags and chilled at +1°C. Then samples were taken out after 24 and 72 hours and the moisture percent determined.

The ponderosa pine contained 35.02 percent moisture and the Jeffrey pine 33.77 percent after 24 hours. Moisture percent had only increased to 35.25 for ponderosa and 33.95 for Jeffrey pine after 72 hours in stratification.

Ponderosa pine seed that had been soaked for 24 hours and chilled for 2 weeks without any media contained 34.26 percent moisture. Jeffrey pine seed stratified with sponge rock contained 36.56 percent moisture after 2 weeks in stratification.

Samples of endrin- and Arasan-treated ponderosa seed, chilled without media for 60 days at +1°C. then dried quickly for sowing, contained 30.21 percent moisture when sowed.

All the samples were sowed after a 60-day chilling period and germination was satisfactory in all the above tests.

Conclusions

This test was based on twelve replications for each category, and it is safe to assume that no medium such as sponge rock, vermiculite, or sand is required for maintenance of moisture during the chilling period.

The seed is able to absorb only a certain amount of moisture and, when stored in tightly tied plastic bags, maintains the maximum of required moisture for at least 60 days. Soaking ponderosa and Jeffrey pine seed for about 24 hours before chilling appears to be sufficient.