STORAGE OF HARDWOOD SEED: THIRD YEAR TEST RESULTS OF SYCAMORE, SWEETGUM AND TUPELO GUM

Earl W. Belcher
Eastern Tree Seed Laboratory, Macon, Georgia

This paper will present to you the third year results of the hardwood storage study recently completed at the Eastern Tree Seed Laboratory. Three species (sycamore, sweetgum, and tupelo gum) were stored in sealed jars at temperatures above and below freezing at different moisture contents. Samples were removed annually and tested for moisture content and germination.

SYCAMORE (Plantanus occidentalis)

Seed provided by the Siviculture Project, Southeastern Forest Experiment Station, Athens, Georgia were 67 percent full. The third year germination results are given in Table I. Regardless of moisture content, all samples stored at room temperature lost viability; where as, seed in cold storage maintained viability regardless of moisture content.

The proporation of no living material in the achene is so much greater than the amount of living material that accurate moisture adjustment is extremely difficult. The third year moisture tests indicate that the highest level of moisture was 13 rather than 16 percent. Also, the 8 and 12 percent treatments were actually all 8 percent and the 4 percent treatment *was* 6 percent. Narrowing the moisture range to 6-13% undoubtedly had an influence on these results but in no way detracts from the results of temperature.

Moisture Level	Storage Temperature		
	20°F	40°F	70°F
	(Full Seed Germination Percent)		
4	89	90	57
8	91	92	
12	91	92	53
16	91	92	53

Table 1, Full Seed Germination Percentage of sycamore seed after third year of storage. Percentages not connected by line within each moisture level are significant at the 1% level of probability.

SWEETGUM (Liquidambar styraciflua)

Fresh, full sweetgum seed was provided for the study by the Louisiana Forestry Commission, Woodworth, Louisiana. The third year germination results are given in Table II.

Storage temperature and moisture content are critical factors. A high storage temperature reduced viability until, at high moistures, the seed were rendered nonviable. At high moisture contents, viability decreases as the storage temperature increased. Optimum storage followed that prescribed for the pines.

Moisture Level	Storage Temperature 20°F	40°F	70°F
	Seed Germination Percent)		
4	94	94	31
8	94	95	29
12	94	90	0
16	80	36 0	

Table II. Full seed germination percentage of sweetgum seed after third year of storage. Percentages not connected by line within each moisture level are significant at the 1% level of probability.

TUPELO GUM (Nyssa aquatica)

Fresh tupelo fruit was provided by the Federal Paper Board Company Nursery at Lumberton, North Carolina. Seed were cleaned and prepared for storage at the seed lab. Due to the limited amount of seed, only two moisture contents and two temperatures were used and replication was omitted. The three year germination results are given in Table III.

	Storage Temperature 20°F			40°F		
	Years of Storage					
Moisture Level	1	2	3	1	2	3
	(Full Seed Germination Percent)					
5.2	96	90	88	96	92	90
10.5	86	62	39		46 0	0

Table III. Full seed germination percentages of tueplo gum after storage in sealed jars. Percentages within each moisture level and storage tmeperature not connected by line are significantly different at 1% level of probability.

In all treatments viability was reduced with storage intervals of more than one year. Moisture content was more detrimental than temperature.

In conclusion, this data indicates that both sycamore and sweetgum could best be stored like the pines (sealed in a container with moisture content less than 10% and held at freezing temperatures) although moisture content may not be *as* critical for sycamore *as* it is for sweetgum. Tupelo gum, on the other hand, would appear to lose some viability with storage of more than one year regardless of storage temperature and seed moisture content. However, a high viability can be maintained for three years by storing the seed at cool temperatures with a low moisture content.