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EARLY SURVIVAL OF COTTONWOOD AND  
HYBRID POPLAR PLANTATIONS AT STONEVILLE, MISS.

By

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The major portion of this study was carried on in cooperation with the Mississippi Agricultural Experiment Station under the Cooperative Farm Forestry Act of 1937.

6. Early vs. late planting of stored cuttings after growth started. The survival of stored cuttings was equally good at 2 to 3 weeks and at 4 weeks after cottonwood buds opened in the woods.

7. Stored vs. fresh cuttings, planted after the dormant period. Stored dormant cuttings showed higher survival than fresh cuttings when planted after the dormant period. Stored dormant 20-inch cuttings planted 16 inches deep showed 6 to 18 percent better survival when planted at the time cottonwood buds opened in the woods, and 46 to 52 percent better survival when planted 2 to 3 weeks after the buds opened, than fresh cuttings of the same specifications.

8. Date of planting in relation to exposed length of stock. The later the date of planting (except for stored material), the greater was the disadvantage of having a large proportion of the length of the planting stock above the ground.

9. Site in relation to date of planting. The effect of site on the survival of seedlings depended on the date of planting. On the ridge, fresh seedlings planted early showed better survival than stored seedlings planted late. In the swamp, however, stored seedlings planted late showed better survival than fresh seedlings planted early. These differences probably are due to the adverse effect of the ridge becoming dryer, and the beneficial effect of the swamp becoming dryer, as the season advanced. Fresh cuttings showed no consistent differences in survival between the ridge and the swamp at the earlier plantings, but higher survival in the swamp at the later plantings.

10. Length and depth of planting of the best cuttings in relation to site. Twenty-inch cuttings generally showed higher survival than shorter or longer cuttings, and the effect of depth of planting depended on the site. In the swamp better survival usually was obtained with relatively shallow planting, whereas on the ridge, relatively deep planting generally was better.

### Conclusions

Present indications are that seedlings make the best cottonwood planting stock, that they should be obtained and planted before the buds open in the spring (or obtained at that time and held in cold storage if the planting is to be done after growth has started), and that they should be cut back to 24 inches or less immediately following planting. If fresh seedlings are used, ridges may be planted at any time before cottonwood buds open in the woods, but swamps should be planted as late in the dormant period as possible. If stored seedlings are used, ridges should be planted soon after growth starts in the woods, and swamps should be planted later when the water table is much lower. A more complete analysis and report will be made following the survival examination in the fall of 1940, at the end of the first complete growing season.

Table 1.—Experiment D-2: Summary of survival on June 18 - 21, 1940  
of plantings made January 30 - February 2, 1940

Site: flat

Species and class of stock	Length of cutting	Depth of planting	Total	
			Planted	Alive
	-- Inches --		Number	Percent
<u>Hybrid poplar cuttings</u>				
(Nonterminal <sup>1/</sup> )				
Oxford Paper Co. No. 6 (P. nigra x P. laurifolia)	12	9	87	60
Oxford Paper Co. No. 14 (P. charkowiensis x P. balsamifera virginiana)	12	9	87	71
Oxford Paper Co. No. 21 (P. charkowiensis x P. caudina)	12	9	87	66
Oxford Paper Co. No. 29 (P. charkowiensis x P. trichocarpa)	12	9	88	91
Oxford Paper Co. No. 33 (P. angulata x P. berolinensis)	12	9	88	45
Oxford Paper Co. No. 39 (P. petrowskyana x P. caudina)	12	9	88	86
Oxford Paper Co. No. 42 (P. maximowiczii x P. trichocarpa)	12	9	88	89
Oxford Paper Co. No. 48 (P. maximowiczii x P. berolinensis)	12	9	87	36
Oxford Paper Co. No. 53 (P. maximowiczii x P. caudina)	12	9	88	49
Oxford Paper Co. No. 55 (P. tacamahacca clon candicans x P. berolinensis)	12	9	88	97
<u>Fresh cottonwood cuttings</u>				
Terminal cuttings <sup>1/</sup>	12	9	44	57
Nonterminal cuttings	12	9	44	45
Terminal cuttings	16	12	43	51
Nonterminal cuttings	16	12	44	50
Terminal cuttings	20	15	43	47
Nonterminal cuttings	20	15	43	53
<u>Fresh cottonwood seedlings</u>				
Cut back to 2-inch stem			44	84
Not cut back			44	68

<sup>1/</sup> A terminal cutting is one made from the end of a shoot, including the last or terminal bud.

Table 2.—Experiment D-5: Summary of survival on June 18 - '21, 1940 of cottonwood plantings made March 6 - April 26, 1940

Class of stock	Length of cutting	Depth of planting	Site	Date of planting							
				March 6 - 8		March 25 - 27		April 15 - 17		April 26	
				planted	alive	planted	alive	planted	alive	planted	alive
	— — — Inches — — —			No.	Percent	No.	Percent	No.	Percent		
<u>Fresh cuttings</u>	10	6	Ridge	100	17	99	18	100	3		
	10	6	Swamp	97	28	99	35	98	19		
	10	8	Ridge	100	35	100	44	100	0		
	10	8	Swamp	83	30	89	42	83	4		
	20	12	Ridge	99	54	100	36	100	6		
	20	12	Swamp	99	55	100	35	100	3		
	20	16	Ridge	100	64	100	53	100	7		
	20	16	Swamp	97	26	100	29	98	3		
	40	15	Ridge	100	33	100	17	100	1		
	40	15	Swamp	99	37	99	30	100	6		
	40	20	Ridge	100	53	100	27	100	1		
	40	20	Swamp	100	36	100	23	100	15		
	60	18	Ridge	50	24	50	10	50	2		
	60	18	Swamp	50	40	50	14	50	6		
	60	24	Ridge	50	32	50	16	49	4		
	60	24	Swamp	50	38	49	8	50	32		
<u>Stored cuttings</u>	20	16	Ridge			100	71	100	53	No.	Percent
	20	16	Swamp			98	35	100	55	100	53
										100	54
	Top cut back to										
					March 11						
<u>Fresh seedlings</u>	4	—	Ridge	25	88	12	92	12	8		
	4	—	Swamp	25	80	11	73	12	25		
	18 - 24	—	Ridge	25	80	13	69	13	15		
	18 - 24	—	Swamp	25	88	13	85	13	15		
	Not cut back	—	Ridge	50	64	25	88	25	4		
	Not cut back	—	Swamp	50	46	25	52	25	8		
<u>Stored seedlings</u>	4	—	Ridge							12	83
	4	—	Swamp							12	92
	18 - 24	—	Ridge							13	69
	18 - 24	—	Swamp							13	100
	Not cut back	—	Ridge							25	48
	Not cut back	—	Swamp							25	84

Table 3.—Cottonwood planting stock with at least 25% survival, both plantations

Site	Planting date							
	March 6 - 8		March 25 - 27		April 15 - 17		April 26	
	Kind of stock <sup>1/</sup>	Survival	Kind of stock <sup>1/</sup>	Survival	Kind of stock <sup>1/</sup>	Survival	Kind of stock <sup>1/</sup>	Survival
		Percent		Percent		Percent		Percent
<u>Ridge</u>	Fresh sdlgs. 4"	88	Fresh sdlgs. 4"	92	Stored ctgs. 20-16"	53	Stored sdlgs. 4"	83
(D-5)	Fresh sdlgs. 20"	80	Fresh sdlgs. Uncut	88			Stored sdlgs. 20"	69
	Fresh sdlgs. Uncut	64	Stored ctgs. 20-16"	71			Stored ctgs. 20-16"	53
	Fresh ctgs. 20-16"	64	Fresh sdlgs. 20"	69			Stored sdlgs. Uncut	48
	Fresh ctgs. 20-12"	54	Fresh ctgs. 20-16"	53				
	Fresh ctgs. 40-20"	53	Fresh ctgs. 10-8"	44				
	Fresh ctgs. 10-8"	35	Fresh ctgs. 20-12"	36				
	Fresh ctgs. 40-15"	33	Fresh ctgs. 40-20"	27				
	Fresh ctgs. 60-24"	32						
<u>Swamp</u>	Fresh sdlgs. 20"	88	Fresh sdlgs. 20"	85	Stored ctgs. 20-16"	55	Stored sdlgs. 20"	100
(D-5)	Fresh sdlgs. 4"	80	Fresh sdlgs. 4"	73	Fresh ctgs. 60-24"	32	Stored sdlgs. 4"	92
	Fresh ctgs. 20-12"	55	Fresh sdlgs. Uncut	52	Fresh sdlgs. 4"	25	Stored sdlgs. Uncut	84
	Fresh sdlgs. Uncut	46	Fresh ctgs. 10-8"	42			Stored ctgs. 20-16"	54
	Fresh ctgs. 60-18"	40	Stored ctgs. 20-16"	35				
	Fresh ctgs. 60-24"	38	Fresh ctgs. 10-6"	35				
	Fresh ctgs. 40-15"	37	Fresh ctgs. 20-12"	35				
	Fresh ctgs. 40-20"	36	Fresh ctgs. 40-15"	30				
	Fresh ctgs. 10-8"	30	Fresh ctgs. 20-6"	29				
	Fresh ctgs. 10-6"	28						
	Fresh ctgs. 20-16"	26						
<u>January 30 - February 2</u>								
<u>Flat</u>	Fresh sdlgs. 2"	84						
(D-2)	Fresh sdlgs. Uncut	68						
	Fresh ctgs. 12-9"	51						
	Fresh ctgs. 16-12"	51						
	Fresh ctgs. 20-15"	50						

<sup>1/</sup> The figures following "sdlgs" (seedlings) represent the height in inches to which they were cut back after planting. The figures following "ctgs" (cuttings) represent the length and the depth of planting, respectively, each in inches.