OHIO AGRICULTURAL EXPERIMENT STATION
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Progress Report: 1945 Post Service Life Test on Red Pine

by

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How well is copper naphthenate performing as a wood preservative? Undoubtedly many people are wondering about this question in view of current wood treating recommendations from the Experiment Station. Indications based on the index of condition after eight years service of red pine posts treated by cold soaking in copper naphthenate solutions are that this preservative is performing well.

These experimental posts serve as windbreak fence supports located directly under the sprinkler system at the Marietta State Forest Nursery. The effect of the watering, presence of termites, a uniform soil (Wheeling sand), and other conditions make the nursery an excellent place for the testing of wood materials treated with chemical preservatives.

A total of 866 plantation-grown red pine posts, six and a half feet in length, and having top diameters of three to four inches, were peeled and well air-seasoned for use in this study. The majority of the posts are round; however, a limited number were split and used among the various treatments.

The experimental plan of copper naphthenate concentrations, diluents, soaking periods, and number of posts involved per treatment is given in the attached table. A number of posts were pressure treated with creosote and incorporated into the test for comparison purposes. Also given in the table is the index of ground line and post top condition, based upon the 1953 inspection of a sample of the posts in the test. Note that at this date post top condition of all posts is excellent regardless of treatment. All untreated posts in the test failed during the eight year period prior to the 1953 inspection.

1/ Acknowledgement is made to Robert R. Paton, formerly Associate Forester, O.A.E.S. Paton initiated this study in 1945. Credit also the Ohio Division of Forestry for provision of posts and labor; the Nuodex Company, Elizabeth, New Jersey, for the supply of copper naphthenate; and Donald E. Richter, Superintendent, Marietta State Forest Nursery for his helpful assistance on the project.

Table 1. Experimental plan and index of post conditions for cold soak treated red pine posts in service at Marietta State Forest Nursery, Washington County, Ohio. Inspection date - September 1953.

Preservative		Soaking Period	Round Posts				Split Posts			
			No. in test	No. inspected	Index of condition[2]/ G.L.	Top	No. in test	No. inspected	Index of condition G.L	Top
Cu. Naphthenate Oil diluent*	2% copper metal content	15 seconds	17	15	70	100	3	3	60	100
	" " " "	1 hour	64	16	84	100	16	4	84	100
	" " " "	4 hour	64	16	95	100	16	4	88	100
	" " " "	8 hour	64	16	100	100	16	4	94	100
	" " " "	16 hour	64	16	100	100	16	4	77	100
	1% " " "	16 hour	64	16	94	100	16	4	88	100
Cu. Naphthenate Water Diluent**	2% " " "	15 minutes	17	17	60	94	3	3	0	100
	" " " "	1 hour	32	8	84	100	8	3	33	100
	" " " "	4 hour	32	8	88	100	8	2	75	100
	" " " "	8 hour	32	8	94	100	8	2	88	100
	" " " "	16 hour	32	8	74	100	8	2	88	100
	1% " " "	16 hour	32	8	88	100	8	2	75	100
Pressure creosote			206	21	98	100				
Untreated controls			20	0	0	-				

* Oil diluent was No. 1 fuel oil.

** Water diluent is properly termed an ammoniacal solution (a solution of ammonia in water). Though inexpensive, such a diluent is extremely disagreeable to handle and should not be considered for cold soak treating.

[2]/ Index of post condition is an average percent value based on the post grades assigned those posts examined at the time of the latest inspection. The grading system used is a percent depreciation system, i.e., sound (no decay) = 100 percent; medium (positive) decay = 50 percent; failure at the ground line or severe top disintegration = 0 percent.