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FENCE POSTS FOR SOUTHERN FARMS

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The following is an article published in several of the leading Southern journals, by H. H. Muntz. It is based upon cooperative work of the Southern Forest Experiment Station and the Delta Experiment Station, done under the supervision of J. A. Putnam.

Of the more common woods native to the South, the heartwood of osageorange (bois d'arc), black locust, red mulberry, cedar, and baldcypress is most desirable and makes good fence posts without any preservative treatment. The heartwood of other southern tree species, and all sapwood is much less durable and will give only a few years of service when used for fence posts unless treated with a preservative. When properly treated, however, there is little to choose between different species.

Service Test Records

Results of service tests over a 5-year period on 454 untreated fence posts set in the Yazoo-Mississippi Delta are summarized in table I. The untreated posts embraced only species reputed to be durable, but as the results show, several species performed poorly. Osageorange proved to be the most durable, with all posts still serviceable at the end of 5 years. This was followed in order of descending durability by black locust (hill-grown), red mulberry, black locust (Delta-grown), baldcypress, honeylocust, and overcup oak. Split posts were as serviceable as round posts when size and amount of heartwood were taken into account. It made little or no difference whether the posts were cut in the summer or winter preceding the setting.

The poor performance of baldcypress is explained by the fact that the test posts were cut from young second growth, mostly sapwood, which has low durability. Overcup oak and honeylocust consisted mostly of sapwood; moreover, their heartwood is less durable than that of the other species tested.

In addition to the untreated posts, the test included loblolly pine, shortleaf pine, southern cottonwood, and sweetgum posts commercially pressure-treated with creosote, with each species treated at two absorption rates (6 pounds and 12 pounds per cubic foot). These posts were all sound, and in serviceable condition at the end of 5 years.

Table I -- Condition of untreated posts at the end of 5 years*

Species	No.	Age in years	Percent of heartwood	Condition after 5 years: Mostly sound	Somewhat deteriorated	Total Serviceable
				---percentage of all posts ---		
Osageorange	80	18	69	59	41	100
Black locust, hill-grown	48	15	62	29	62	91
Red mulberry	80	23	64	24	65	89
Black locust, Delta grown	80	8	66	11	62	73
Baldcypress	36	31	19	8	36	44
Honeylocust	82	29	26	0	26	26
Overcup oak	48	26	20	0	23	23
Total or average	454	21	51	20	46	66

*The average circumference of the posts in this group was 15 inches. By species it varied from 13 to 17 inches; it was 14 inches for the round posts, and 16 inches for the split.

Since most species of wood are unsuitable for fence posts unless previously treated with a preservative, tests have been conducted on the Delta Experimental Forest at Stoneville, Miss., to work out a proper treating technique for posts and other farm timbers using creosote applied by the hot-and-cold-bath, open tank process. This is the most thorough method of treatment that is practicable on the farm and is especially suitable for round posts (exposing only sapwood except at the ends) and split posts consisting mostly of sapwood. Creosote is a proven preservative, and its effectiveness if properly applied is well established. The principles involved in the process are rather simple. The posts (or other timbers) are first heated in the preservative, which causes air and moisture in the wood to be driven out by expansion. Then the posts are quickly transferred to a cold tank, where the cool (air temperature) oil causes the air and moisture in the wood to contact and draw in the oil. Very little absorption of oil occurs in the hot bath.

Most of the tree species common to the Delta region of Mississippi were treated at Stoneville, and the treating schedules recommended for them are shown in table 2. These schedules are based on average posts of each species and are recommended because they result in adequate penetration with only a moderate absorption of oil. Penetration generally varies from one-eighth to three-fourths of an inch, depending on the condition of the wood, and absorption will approximate 8 pounds of oil per cubic foot. For a post of average size (7 feet long with a 4½-inch top diameter), this amounts to roughly three-fourths of a gallon per post.

Table 2 -- Recommended hot-and-cold-bath schedule for creosoting fence posts

Species	Hot bath	Cold bath
	Minutes	
Ash	90	40
Baldcypress (sap)	90	15
Elm:		
White or soft	90	15
Rock	90	20
Hackberry	75	15
Honeylocust	90	15
Maple	90	20
Oak	90	15
Pecan	105	60
Persimmon	105	50
Sweetgum	90	15
Willow	75	20

All posts should be thoroughly seasoned before treating to facilitate penetration of the oil and to prevent checking after treatment, which would expose untreated wood. When properly piled, and in good seasoning weather, 30 to 60 days should be sufficent time for seasoning.

The plant used at Stoneville consisted of two 1,200-gallon tanks, made by cutting a large boiler in two. The tanks were placed end to end with an improvised dutch oven under one and a working platform and guardrail around each. A chain hoist on an overhead trolley enabled prompt transfer of posts from the

heated tank to the cold tank. A plant of this size is probably too large for use on most farms, but could be operated cooperatively for a group of farms. A plant made from two 110-gallon oil drums, or other metal tanks of similar size, is more appropriate for average, individual farm use, but would permit only butt treatment. Detailed information on the preservative treatment of posts and farm timbers, including plans for small treating plants, is given in U.S.D.A. Farmers' Bulletin 744, "The Preservative Treatment of Farm Timbers."

The oil in the hot tank should be pure coal tar creosote, maintained at a constant temperature of 220°F. In the cold tank, maintained at air temperature, the creosote oil should be mixed with an equal amount of diesel fuel oil for economy, since fuel oil costs only about one-thrid as much as creosote oil. Fuel oil should not, however, be added in the hot bath as it is much more volatile than creosote and would concequently be lost by heating.

The treatment cost per post for oil alone usually varies from about 10 to 30 cents. This can be substantially lowered by bulk purchases of oil and my modifying the method of treatment whereby the hot bath is given to the full post length, but the cold bath only to the lower half of the post. The cost of treatment is nominal when compared to the increased service obtained. Untreated posts of the less durable woods last only a few years, whereas properly treated posts of the same woods should last 15 to 20 years.

Improvement Cuttings to Furnish Fence Posts

A great opportunity exists for farmers to improve their woodlands by cutting out undesirable trees, and utilizing them for fence posts and other farm timbers on a profitable basis by treating them with a preservative. Most farm woodlots contain many inferior trees that ordinarily cannot be utilized profitably. Their removal is very beneficial in releasing thrifty, more desirable trees for optimum growth and development.

Good utilization and sound cutting practices should be an integral part of the management of every farm woodlot. Under these conditions the woodlot will supply an ample and continuous supply of fence posts and other farm timbers.