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FRILLS MUST BE COMPLETE

When cull hardwoods are being deadened, frills or girdles must be complete. Even though a chemical is poured into the cut, the tree may survive if any of the cambium has been left unsevered.

At the Bluff Experimental Forest, near Vicksburg, Mississippi, American beech trees were encircled with cuts made with a 1-1/2-inch wood chisel. The trees, which were 17 inches or more in diameter, each received 6 chisel cuts at equal distances apart. Bark between the cuts was left intact. One cut on each tree was given no chemical. The other 5 each were dosed with 1 cc of propylene glycol butyl ether ester of 2, 4, 5-T acid at a concentration of 7.84 pounds of acid per hundred gallons of mixture. The diluents were either water, No. 1 diesel fuel, or one of three trade-marked herbicidal oils. Ten trees were treated in August, 10 in December, and 10 in April.

One year after treatment, the cambium was dead for 0.165 inch on each side of chisel cuts made in April and dosed with 2, 4, 5-T in diesel oil. All other treatments showed less lateral kill of cambium. Though the differences between treatments were statistically significant, even the best side kill was too small to be of practical importance. This study therefore reinforces what many practicing foresters have observed: 2, 4, 5-T is no substitute for sloppy ax work. -- R. L. Johnson.

REPELLENTS REDUCE CATTLE BROWSING ON PINES

Two recent tests in central Louisiana, planned in cooperation with the U.S. Fish and Wildlife Service, have shown that several chemicals are effective in reducing cattle browsing of planted slash pines. The most promising are ZAC, a zinc compound; TMTD, a thiram compound; ZIP, a commercial rabbit and deer repellent which contains 30 percent ZAC; and a mixture of copper carbonate and asphalt emulsion.

In a 1957 test, slash pine seedlings were hand-sprayed in the field immediately following planting. The native bluestem forage was heavily grazed by cattle from late winter through the summer. Sixty-four percent of the untreated seedlings were severely damaged or killed by mid-June. Losses of seedlings treated with copper carbonate, ZAC, or TMTD were only half as great.

In 1958, seedlings were treated with the same repellents plus ZIP. Moreover, three methods of application were tested--spraying in the nursery before lifting, bundle dipping just prior to planting, and spraying individual seedlings in the field after planting. Seedlings sprayed with copper carbonate and asphalt emulsion in the nursery and baled for shipping were seriously injured by the chemical. Apparently, close confinement of treated seedlings in the bale several days caused the damage. The other 11 combinations of application methods and chemicals substantially reduced grazing damage. By June, no more than 16 percent of the treated seedlings were damaged, as compared to 30 percent on untreated plots.

The mixture of copper carbonate and asphalt emulsion is relatively cheap and easy to prepare. Seedlings should be treated by dipping tops of bundles shortly before planting. Repellent materials will cost about \$0.20 per 1,000 seedlings.

The repellent is formulated by diluting 3 pounds of asphalt emulsion (Flintkote C-13-HPC) in 10 quarts of water and adding 2 pounds of copper carbonate (55 percent copper). The solution should be stirred or agitated frequently to prevent the copper carbonate from settling out. New solutions should be made up every 2 or 3 days.

Formulations containing ZAC and TMTD are difficult to prepare, but ready-mixes are now commercially available.--Don A. Duncan and Louie B. Whitaker.

HARDWOODS RECOVERING FROM DROUGHT

Observations throughout the Midsouth hardwood region indicate that dieback and mortality resulting directly or indirectly from the 1952-1956 drought have ended. After the ample and well-distributed rains of 1957 and 1958, very little additional mortality and no new dieback can be seen. Live limbs below dead tops showed renewed vigor in 1958, indicating that the effects of the drought have finally halted.

Rainfall deficit from 1952 through 1956 averaged more than 5 inches per year, with most of the shortage during the growing season. The drought began in the summer of 1952, when precipitation was more than 10 inches below normal. Soil moisture was never fully recharged during the 4 succeeding years, so that the deficit of available soil moisture accumulated. Some previous single years of drought have been worse than any of these 5, but weather records fail to reveal as long a sequence of dry years.

The apparent cessation of damage should allay the anxiety of forest owners as to whether continued management of hardwoods is feasible.--W. M. Broadfoot and E. R. Toole.

2, 4, 5-T BETTER IN DIESEL OIL

In the Ouachita Mountains of Arkansas, 2,4,5-T in a diesel oil carrier, applied with a tree injector, killed the crowns of 98 percent of the treated trees in one year. The same concentration of the chemical with a water carrier gave a 65-percent kill. The mixture was applied to white oak stems 3 to 6 inches in d.b.h. at a dosage of one injection (about ¼ ounce of mixture) per inch of d.b.h. No sprouting occurred with either treatment.

The mixture tested was a 44-pound ahg. (acid per hundred gallons) concentration of 2,4,5-T (4 lbs. acid equivalent of 2-ethyl-hexyl ester of 2,4,5-trichlorophenoxyacetic acid.--
Edwin R. Lawson.

RECENT PUBLICATIONS

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- Smith, V.K., Jr. *Treating stored wood: decay in pulpwood inventories can be reduced.* Pulpwood Production, February 1959, pp. 10, 12.
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- *Warren, L.O., and Coyne, J.F. *The pine sawfly, Neodiprion taedae linearis Ross, in Arkansas.* Arkansas Agricultural Experiment Station Bulletin 602, 23 pp.
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- *Avery, Gene. *Easy as P.I.!* Pp. 109-111.
- *Ferguson, E.R. *Plows for woods planting.* Pp. 92-93.
- *Johnson, R.L. *Bluff Hills--ideal for hardwood timber production.* Pp. 126-128.
- *Russell, T.E. *Spacing--its role in the growth of planted slash pine.* Pp. 115-117.
- *Smalley, G.W. *Stand improvement pays off.* Pp. 100-102.

*Copies are available at the Southern Station.