

# BLACK ROCK FOREST PAPERS

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## TESTS OF CHEMICAL CONTROL OF HARDWOOD SPROUTS

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## TESTS OF CHEMICAL CONTROL OF HARDWOOD SPROUTS

IN THIS locality the conversion of a hardwood stand to a mixed coniferous and hardwood forest creates immediately the problem of controlling competing hardwood sprouts until the conifers have reached sufficient height to remain in the clear. Cutting back the sprouts is costly and must be repeated several times before the conifers can take care of themselves. A cheaper method, and one that need not be repeated, would be helpful. Hence, in the spring following a cutting, several test areas were set up to determine if such sprouts could be controlled by chemical means, and incidentally, to ascertain whether chopped or sawn stumps exhibited any significant differences in sprouting ability.

Thirteen chopped stumps (A) were staked in June, 1940. Species, age and stump DIB were recorded. The same data were collected for 10 sawn stumps.

On the same area (B-1, June, 1940) ten stumps were hacked, close to the ground, well through the cambium, and completely around the stump. Into these gashes sodium chlorate solution (1 lb. chlorate to 1 gallon of water) was poured at a rate of 1/6 to 1/10 gallon of solution per stump, depending on size.

Four stumps (B-2, June, 1940) were hacked as above and into the cuts ammonium thiocyanate solution (3/4 gallon ammonium thiocyanate liquor to 1/4 gallon of water) was poured, wetting the exposed sapwood thoroughly.

Five stumps (B-3, June, 1940) in the same area were given a thorough dosage of the thiocyanate solution by wetting the ground in a complete ring close to each stump.

Near the south end of a heavy thinning made the winter of 1940-41 a further test (C, 1941) of the chlorate solution was made. Acting upon what had been learned from B-1 and B-2 above, two 2-man crews were utilized, one man with an axe, his partner carrying a watering can. One axeman of one crew hacked a connected, or continuous half-circle about a number of stumps, while the axeman of the other crew merely made four deep hacks at approximately equal distances around each stump. The gashes were drenched with the solution.

In May, 1941 (D) two 50' x 100' plots were laid out. These areas had been cut clean the winter of 1939-40, and the stools were well sprouted. The stumps on one plot were drenched with the same chlorate solution at an average rate of about 1 quart per stump. The leaves and stems of the sprouts on the second plot were sprinkled with the same solution.

In June, 1940 (E) on a mixed red pine-European larch plantation in a small burn below Eagle Cliff the leaves of 1-year-old sprouts (red maple, *Hammamelis* sp. and red oak) were sprinkled with the chlorate solution in a strip about 20 feet wide around the edge of the planting.

On another red pine area (F) lying directly across the brook from the Mailley Place, the sprouts were

sprayed with chlorate solution in June, 1940. These sprouts were about 8 years old.

### Discussion

Statistical analyses failed to disclose any significant difference in sprouting vigor or quantity between the chopped and sawn stumps on the areas referred to as A, B-1, B-2 and B-3. The only poisoning methods that were effective were the hacking and ringing, using either chlorate or thiocyanate solution.

On the stumps hacked in four places (C) the treatment was only partially effective. Sprouts emerging at or close to the hacks were well dried out, but little other killing was noticed. Stumps in the "half-circle" class (C) were pretty well done for around the hacked side. Clearly, to be thoroughly effective, stumps must be hacked entirely around, or nearly so.

Drenching stools or the leaves and twigs of sprouts with the chlorate solution (D, E, F) is quite ineffective and offers the danger of getting the solution on the foliage of the plantation.

So far as we can now tell, the use of either the chlorate or the thiocyanate solution under the hacking or the "ringing" method causes no soil injury. This assertion is based on the condition of the red and white pines planted amongst stumps so treated. To date, no evidence of damage has appeared.



PLATE 1. A red oak stump (center) "ringed" with thiocyanate solution and quite dead. The two vigorous red maple stumps, cut at the same time, were untreated.

The practice would appear to be worth while in this region. The tests carried on here took about four man-hours per acre for complete hacking and wetting; this was our first attempt at this procedure, and undoubtedly some time was lost. The efficiency of the crew would be considerably increased after the details of quick hacking, wetting and re-filling of watering cans was developed. Incidentally, a good type of can is the kind used by gas stations for filling radiators. The nozzle should be plugged with a cork having a  $\frac{1}{4}$ " or  $\frac{3}{8}$ " hole. Probably the most efficient system is to "ring" the stumps. This reduces somewhat the danger of missing hacked stumps in case the axeman gets too far ahead of the other man.

### *Summary*

Either the calcium chlorate solution (1 lb. per gallon of water) or the ammonium thiocyanate solution ( $\frac{3}{4}$  gallon liquor per  $\frac{1}{4}$  gallon of water) if applied by complete hacking or ringing will insure practically 100% prevention of sprouts. The authors believe this sort of "advance releasing" work to be a justifiable expense. Certainly the cost (around \$2.20 per acre) is much less than the cost of annual or even biennial machete treatments which, when applied here, is much higher per acre. All of our plantations have had at least two such releasings—an average minimum cost of around \$3.00 per acre.