SUBSOILER FOR IMPROVING SURVIVAL IN HARDPAN AREAS

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During the spring of 1959, while tree-planting equipment was being field tested on the Dixie National Forest, a problem cropped up which may be troublesome elsewhere.

Although the Holt Plow was quite successful in digging contour trenches for erosion control and competition removal, the colter on the planting machine would not dig into the *clay* hardpan in the bottom of the trenches for more than 4 inches. This was not deep enough to plant the trees. At the suggestion of the tractor company, we tried a subsoiler or panbreaker in an effort to break the hardpan sufficiently to allow machine planting.

The subsoiler completely shattered the hardpan down 18 inches below the bottom of the trench. The water-holding capacity was greatly increased. The planter was able to function as it should. At the end of the first season, mortality of the transplants is about 1 percent.

Pan breaking is an additional step to the normal machine planting operation. Where needed, it is done after trenching to make the soil in the bottom of the trench receptive to the colter, shoe, and tamping wheels on the planter. First season tests on the Dixie indicate that the pan breaking cost will average about $ 5 per acre. The extra cost is cheap when compared with regional averages for hand planting.

The model pictured is manufactured by the John Deere-Killefer Company, Los Angeles, California, and is listed as The Ripper Model #22A-0C. It attaches directly to the 3-point lift on John Deere tractors. It costs less than $100 and has the following dimensions

1. Length from tip to crossbar--33"
2. Width of point--2-1/2"
3. Distance from crossbar to top of linkage--18"
4. Crossbar length--33"
5. The blade can be shortened from tip to crossbar if full depth is not desired.