

A Cottonwood Planting Punch for 1-Year-Old, Rooted Whips

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A tractor-mounted hydraulic ram was developed for deep planting 1-year-old, rooted cottonwood whips. The ram has proved to be efficient and durable when used in rough, newly cleared areas.

In order to establish fast-growing, long-rotation cottonwood plantations in which the first thinning would remove saw-log-size material, a wide spacing of 28 feet by 28 feet has been adapted by the Anderson-Tully Co. Test plantings demonstrated that survival was excellent for deep-planted, 1-year-old, nursery-grown cottonwood whips with roots, if planting holes were completely closed. Dry sand poured into the planting holes proved to be the most efficient method to insure closure. Because planted heights are 4 feet or more, such plantings produce plantations in which the intensity of cultivation is significantly lessened, compared to conventional planting with 20-inch, unrooted cuttings.

Planting operations are usually carried out on newly cleared areas. An efficient and durable tractor-mounted hydraulic ram for punching planting holes at least 2-1/2 inches in diameter and 3 feet deep was developed by Anderson-Tully Co. The hydraulic specifications

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were developed by Mr. S. Vinyard² and personnel of the Forest Service Engineering Laboratory at Auburn, Ala. A sand hopper-equipped trailer is coupled to the tractor and carries the cottonwood whips (fig. 1). Fabrication was done by a private machine shop.



Figure 1.—Tractor-mounted hydraulic punch with sand hopper-equipped trailer carrying whips.

The Cottonwood Planting Punch

The tractor-mounted punch (fig. 2) consists of a double-acting hydraulic cylinder with a 60-inch stroke, 3-inch-diameter bore, and 1-1/2-inch-diameter shaft. The probe, attached to the end of the cylinder, is 52 inches long with 8 inches of ground clearance. This probe has the ability to punch a 44-inch-deep hole on even ground, while in rough ground a 36-inch hole has always been attained.

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One probe is 2-7/8 inches outside diameter, while the other is 2-1/2 inches outside diameter. One is made from black iron pipe and the other is stainless steel. The black iron pipe does as well as the stainless steel probe once it becomes polished. The lateral roots



Figure 2.—Anderson-Tully cottonwood planting punch

are pruned and whips are selected for straightness (fig. 3).

The punch was designed to fit the hydraulic system of an I-H 856 tractor. This tractor has a closed system, 90-quart reservoir with maximum pressure of 2,000 pounds per square inch, and maximum flow rate of 12 gallons per minute.

To date, the punch has averaged 21 seconds per hole, which includes moving time, or 2.7 to 2.8 holes per minute. This was on 24-foot spacing with an experienced operator and excludes downtime.

As each hole is punched, the person who does the planting on the rear of the tractor inserts a whip in the previously punched hole and fills the hole with dry sand from the hopper (fig. 4). The planter must be quick and efficient to complete the planting before the tractor moves on to punch the next hole. The planting punch, coupled with the sand hopper-equipped trailer, has proved to be a labor-saving device enabling the establishment of high-value saw-log plantations for the future.



Figure 3.—A sample of cottonwood whips, which must be as straight as possible.



Figure 4.—Dry sand used to fill around cottonwood whip.