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A Reliable Oak Seed Trap

Accurate estimates of acorn crops require the capture of all acorns falling into the seed traps —none should bounce out. Few of the traps developed so far meet this requirement, particularly in the southern bottom land forests where oaks often reach heights of 100 feet or more. An example of existing traps is the paperboard seed trap designed by Easley and Chaiken[1] for pine seed. As originally designed, the trap is a four-sided, inverted pyramid with a sampling area of ¼ milacre. It caught only 7 percent of the acorns dropped from a 90-foot fire tower. Covering the traps with poultry netting, draping them with burlap, or using vertical cloth baffles reduce but do not eliminate the losses. Anyone with a supply of these traps on hand, however, can easily convert them into reliable seed traps for oak.

Conversion, by removing one of the side panels and reassembling as a three-sided trap, gives greater efficiency (Fig. 1). Over 90 percent of the acorns dropped from 90 feet were caught. An even better trap is obtained by cutting a narrow, triangular strip, 3 inches wide at the top, from both ends of each panel (Fig. 2), and reassembling the trap into a steeper, three-sided version. All acorns dropped into this trap from the fire tower were captured. The sampling area of this version is 3.40 square feet, or 0.08 milacre.

Success in trapping depends a great deal on the way the acorns bounce. In the original four-sided trap the first and second bounces are upward—acorns escape easily. In the three-sided traps deflection is downward, increasing as the sides of the trap are made steeper. Naturally, this change affects the angle of the third bounce which is theoretically slightly upward in the first modification and nearly horizontal in the second (Fig. 3). But acorns lose speed with each collision and actual trajectories and impact points are lower than in the theoretical paths. The first modification catches a high percentage of acorns because the acorn is deep within the trap by the third bounce and usually lacks sufficient momentum to bounce out. The second modification works much better because the third bounce is deeper and seemingly d o w n w a r d. Of course, acorns are not spheres and may develop some spin as they fall. Furthermore, the paperboard is not a perfect deflecting surface. Aberrant bounces may occasionally occur with the possibility of acorn losses. But the empirical tests show that losses, if any, will be small.

A larger trap with an area of 1/10 milacre can be made to increase the sampling size and facilitate computations. The dimensions of one of the three identical sides of a 1/10 milacre trap are given in Figure 4. The angles of this trap nearly duplicate those of the successful second modification, and the larger size should give an even greater acorn-capturing efficiency.

For field use, the modified trap is assembled and set up as described by Easley and Chaiken. Discarded luncheon meat cans, with holes punched downward through the can bottom to provide drainage, may be used as seed containers. A fine mesh screen placed over the inside bottom prevents loss of small seed and reduces plugging of the drain holes. A triangular hardware cloth funnel extending into the can acts as a predator guard.

[1]Easley, L. T., and L. E. Chaiken. An expendable seed trap, Jour. Forestry 49:652-653. 1951.

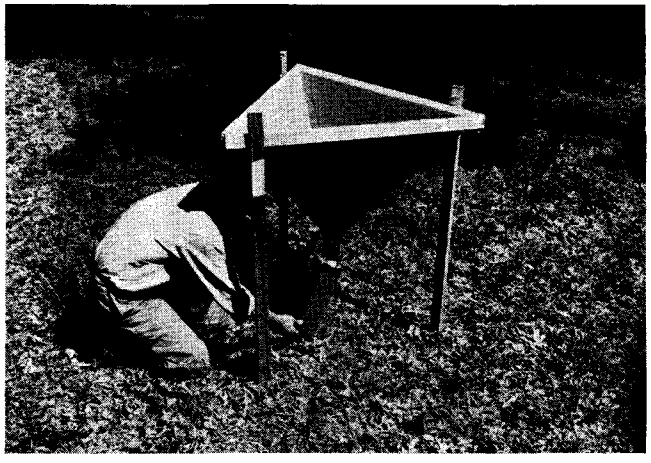

FIG. 1.—Collecting seed from a three-sided trap.

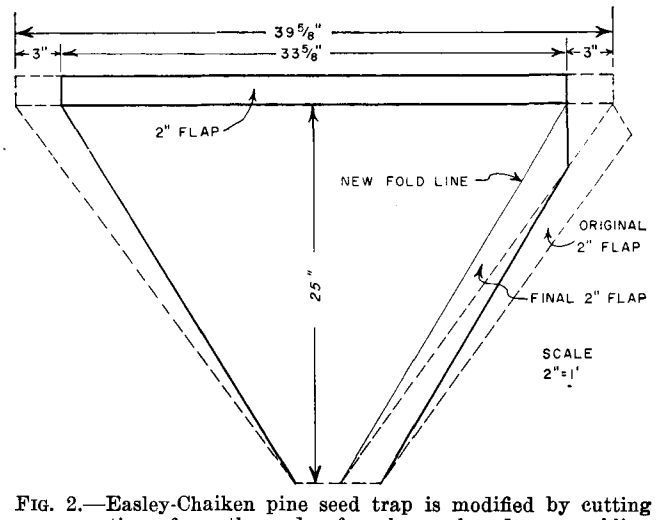

FIG. 2.—Easley-Chaiken pine seed trap is modified by cutting away portions from the ends of each panel and reassembling as a three-sided seed trap.

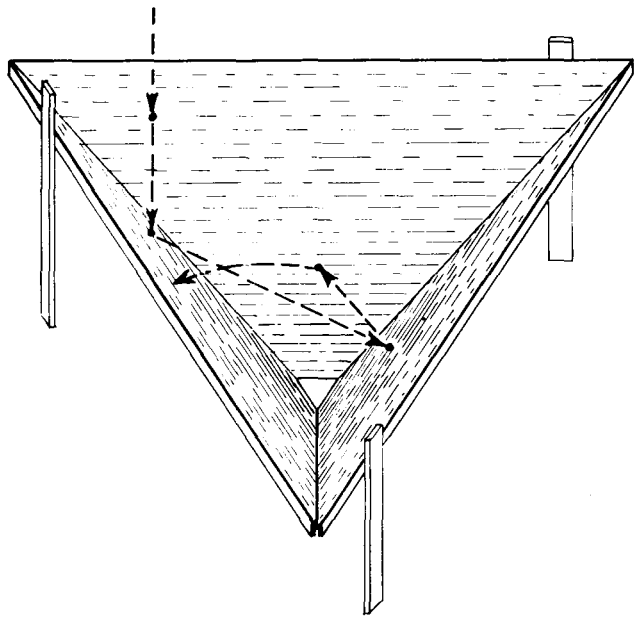

FIG. 3.—The theoretical series of bounces made by an acorn falling into a three-sided trap. In practice, the acorn loses much of its momentum by the fourth bounce.

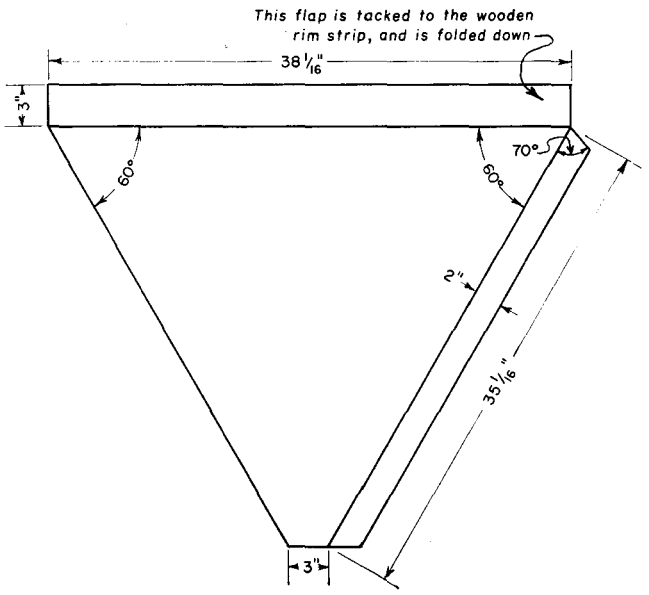

FIG. 4.—Pattern for a section of a 1/10 milacre three-sided seed trap.

The small end is just big enough to pass the largest acorns. The large end is wired over the triangular opening at the base of the paperboard trap. No predator guard or other obstruction should be placed above the trap's top or bottom openings or acorns will be deflected out. The paperboard portion of the new 1/10 milacre acorn trap is available from the International Paper Company, Container Division, Georgetown, S. C.

RALPH A. KLAWITTER
and JACK STUBBS
Southeastern Forest Expt. Sta., Forest Service, U. S. Dept. Agric., Asheville, N. C.