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MINIATURE SOIL AUGER FOR POT SAMPLING

Abstract. --A carpenter's ship auger makes an efficient tool for sampling the soil in pots. The auger minimizes the size of sampling holes and is unhampered by large soil particles.

Researchers conducting pot studies often need to sample the soil in the pots. To minimize root damage and soil loss, a sampling tool should make the smallest possible hole. We find that a carpenter's ship auger extracts samples ***from*** small-diameter holes ***more*** efficiently than do conventional tools.

Field sampling tools leave holes at least an inch in diameter--gaping wounds even in large pots. Small-diameter metal tubes are also troublesome because soil compacts in the tube after an inch or so, and deeper sampling requires tedious emptying and refilling. In contrast, ship augers with diameters as small as 5/16 of an inch can extract samples from top to bottom in one operation (fig. 1).

Figure 1. --Sampling pot soil with a 5/16-inch ship auger.

Southeastern Forest Experiment Station-Asheville, North Carolina

U.S. Department of Agriculture-Forest Service

Designed to bore thick timbers, ship augers are threaded differently than other wood bits. A familiar wood bit looks like a shaft wrapped with a spiral thread. But a ship auger is a spiral thread. Its center shaft has been eliminated by cutting radius-deep threads (fig. 2). This design enables a small-diameter ship auger to lift large soil particles that would fall off the shallow threads of a conventional bit or bridge over the cutting edge of a hollow tube.

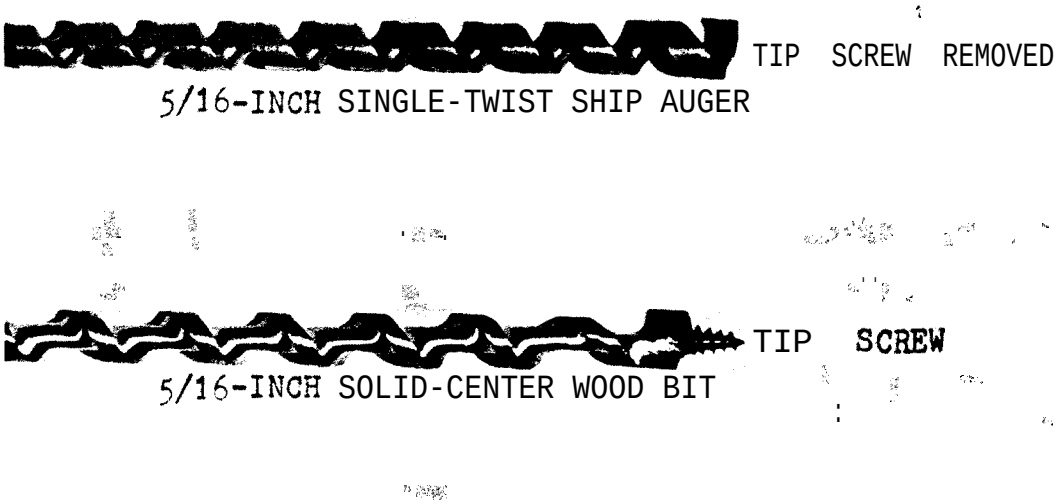

Figure 2. --Single-twist design-- deep threads and no center shaft--enables ship augers to carry larger particles than can solid-center wood bits.

Ship augers as small as 1/4 inch in diameter are available in overall lengths up to 18 inches with 12 inches threaded--long enough to reach the bottom of large pots. Order ship augers without tip screws, or grind them off, to avoid screwing the auger to the bottoms of plastic pots.

A hose spigot's round handle welded to the auger's shank makes an ideal grip for twisting the auger into the soil (fig. 1). Extract the auger by pulling it straight from the hole and recover the sample by rattling the auger inside a tall, narrow canister. Cleaning the auger with a toothbrush and the canister with a paper towel prevents contamination between samples.

George Meskimen, Associate Silviculturist
Fort Myers, Florida