

## MODIFYING THE PANAMA HAND SEEDER FOR USE IN THE NORTHEAST

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Experimental testing of the Panama Hand Seeder for preparing seed spots and dispensing tree seed has revealed certain inadequacies of this tool. These we have corrected by modifying its scarifying point and seed dispensing unit. Because these modifications have greatly increased the utility of this seeder in direct seeding work at the University of Massachusetts, and have stimulated interest elsewhere in the Northeast, they are described here for the benefit of others.

### Modified Scarifying Point

The small (three-fourths inch wide), curved scarifying point (Drag Shoe) with which the factory-issue seeder is equipped was found to be too small to prepare the ground for seed spotting and to cover the seed after sowing. Therefore, this point was modified by heating and bending it at a 90-degree angle to the seed tube. A piece of 1/8-inch steel, approximately 2 x 6 1/2 inches, was then welded to the bottom surface of the bent point to serve as a scarifying blade. The bottom and two ends of the blade were ground on a bevel to form cutting edges, thus increasing the versatility of the tool. By simply turning it at a right angle in the hands of the operator, a 2- or 6 1/2-inch scarifying blade can be used (fig. 1).

### Modified Seed Dispenser

By adding a larger scarifying point, more force is often applied when the seeder is used, and greater shock is transmitted to the seed container and metering device. The very thin metal cover of the container is attached to the metering device by two bolts which tend to work loose from this increased shock. These same bolts also hold the trigger and brush holder in place. Consequently, until this weakness was corrected, the operator was frequently forced to stop seeding, remove the container of seed, and tighten the loosened bolts.

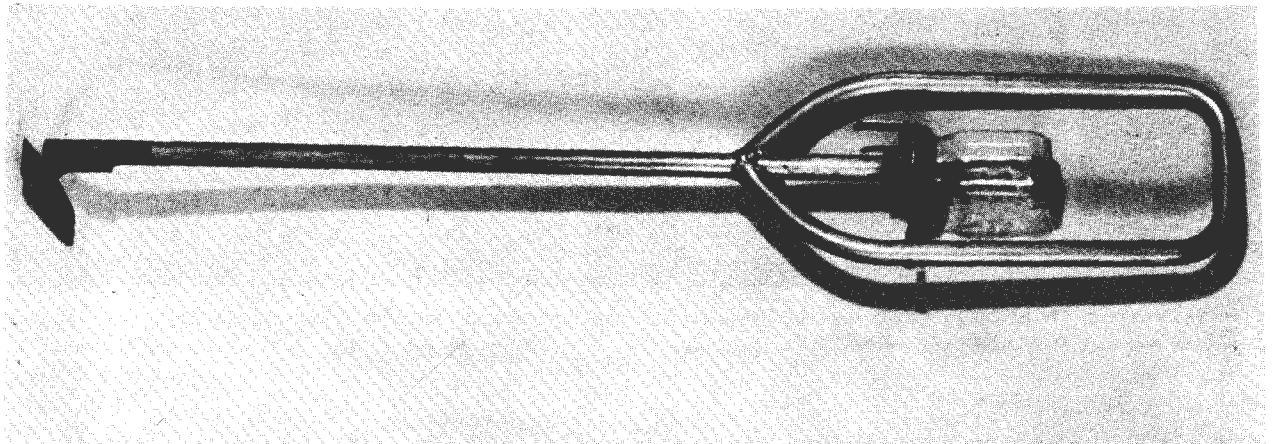


Figure 1.--Panama Hand Seeder with Drag Shoe modified into a scarifying blade.

Our modification consists of strengthening the container cover with a circular liner of 19-gage galvanized metal. A notch is cut in the liner to correspond to the rectangular hole in the cover; in addition, two holes are needed for the bolts which attach the cover to the metering device. The liner can be installed by removing the cover bolts and brush holder and by inserting the liner between the cover and the brush holder. The original bolts are then replaced with ones which are one-sixteenth inch longer (fig. 2).

However, before this installation is made, the brush holder must also be modified. This is necessary because the addition of the cover liner prevents the bottom edge of the rubber brush from contacting the top surface of the seed-dispensing trigger. This situation is easily corrected by inserting a metal spacer, of the same thickness as the liner, into the cap of the brush holder at the top of the rubber. The rubber must be removed in order to add the spacer, and this is done by bending outward the thin metal sections of the brush holder which hold the rubber in place. With the spacer in position, and the metering device reassembled, the rubber of the brush holder will again function, thus stopping the movement of all seeds from the container except those held in the bushing-lined hole of the trigger.

Scarifying points and metering devices have been modified on four seeders. Costs of materials used were almost negligible, and approximately 2 hours of labor were required to modify each tool. It is believed that these modifications will make the Panama Hand Seeder a more useful tool for direct seeding in the Northeast.

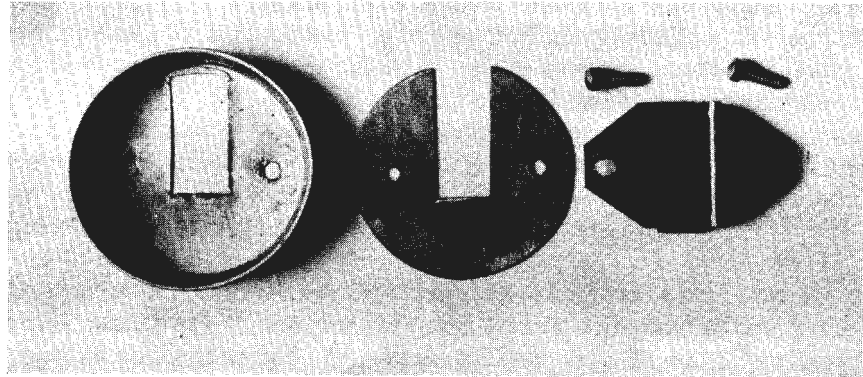


Figure 2.--Photograph showing seed container cover (left), galvanized metal liner to strengthen cover (center), and modified brush holder (right).