

A Vacuum System for Precision Planting of Seeds in a Nurserybed

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A handheld vacuum seeder, which can be used to seed small seedlots rapidly and with the same degree of accuracy obtained by using a planting table or board, has been developed.

It is often necessary to plant small seedlots at precise spacings in nurserybeds. Such seeding is generally done by dropping one seed at a time through appropriately spaced holes in a planting board placed directly on the soil surface. The use of these boards is tiring and time consuming and requires close attention to insure that a seed is placed in each hole. Recently Kok (1) described a planting table—a boxlike structure with one planting board as the top and another as the bottom, with matching holes in the boards connected with plastic tubing. This table eliminates the physical strain of stooping or squatting while placing a seed at each seed spot. However, the table has not eliminated the need to insure that all seed spots are filled, and the release of individual seeds is still time consuming.

A search for a better seeding device led to the development of a vacuum system for rapid pickup and placement of seed in the seedbed.

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The system described here was developed for planting small seedlots of Choctawhatchee sand pine (*Pinus clausa* var. *immuginata* D. B. Ward). The vacuum head or brush of a small, handheld, alternating current vacuum cleaner was replaced with a piece of 1/2-inch-diameter conduit pipe 25 inches long (fig. 1). Starting at a point 3/4 inch from one end of this pipe, a row of 48 holes, 1/30 inch in diameter, spaced 1/2 inch apart, were drilled in a straight line along

the length of the pipe. A 1/4- by 3/4-inch slot was cut out at the center of the conduit pipe on the side opposite and parallel to the line of 1/30-inch-diameter holes. The metal end of the vacuum hose was compressed into an elongated oval and shaped to fit over the slot in the conduit pipe, thus forming a T. The two pieces were then taped together to form an airtight seal, but could have been soldered for a more permanent connection. The ends of the conduit pipe were closed with rub-



Figure 1.—Seeding small nurserybeds with a vacuum system is fast and efficient.

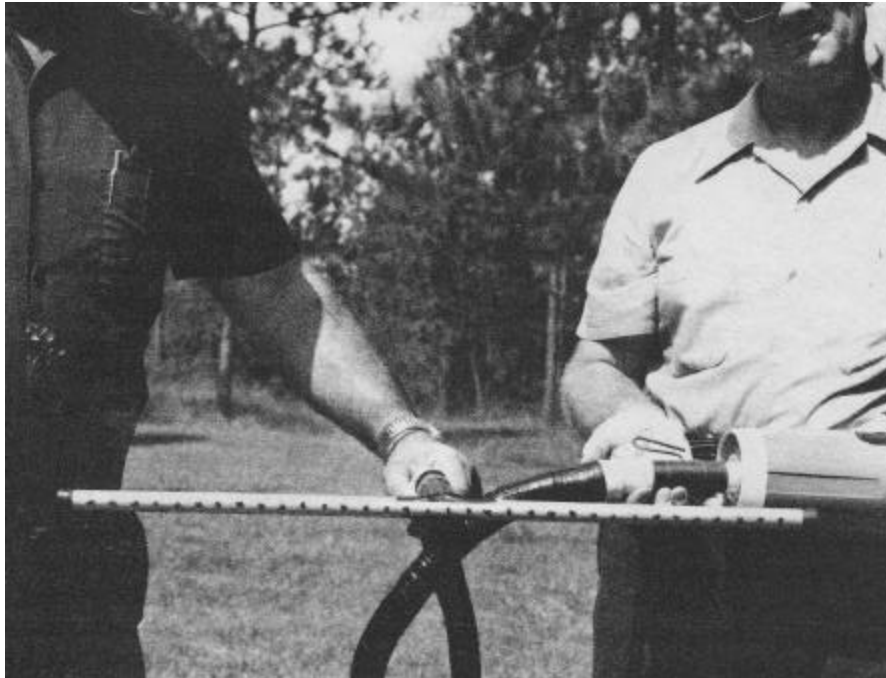


Figure 2.—Suction through a seed head, made of 1/2-inch conduit pipe, holds small sand pine seeds for accurate placement in the seedbed.

ber stoppers so that suction could develop at the small pickup holes in the pipe (fig. 2).

A pipe fitted with a flutter valve and control handle was installed

between the body of the vacuum cleaner and the hose (fig. 3). This allows suction to be broken at the instant seeds are to be released onto the seedbed.

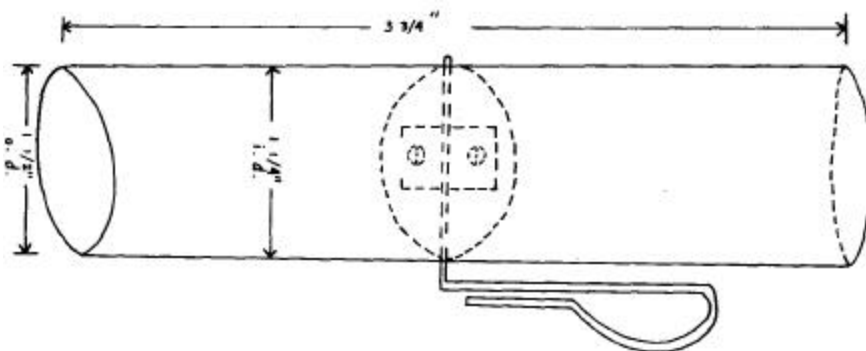


Figure 3.—Diagram of flutter valve and control handle for breaking suction to drop seeds.

A tray to hold the seeds was constructed of thin sheet metal (fig. 4). The tray is 26 inches long, 2 inches wide, and 2 inches deep, with a slightly concave bottom to keep the seeds concentrated where they can be easily picked up by the vacuum seed head. The square ends of the tray form a stand to keep it upright.

After the seedbed is marked for the desired row intervals, one person holds the vacuum cleaner and controls the vacuum shut-off valve. At the same time, a second person manipulates the vacuum seed head to place the seeds at the desired location.

This system is faster and less tiring than a planting board and just as accurate in placing seeds. It can be adapted easily to different spacings by sealing the appropriate pickup holes or by making a series of pickup pipes to cover a range of within-range spacings. A pickup pipe can be made to plant different sizes or different kinds of seeds by varying the size of the pickup holes.

A small, gasoline-powered generator could be used to power this seeder if it is necessary to use it in a section of a nursery where there is no electric current. Battery-powered vacuum cleaners are becoming more reliable and could be substituted for the conventionally powered vacuum cleaner.



Figure 4.—*A concave metal tray concentrates seeds for easy pickup by the vacuum system.*

Literature Cited

1. Kok, H. R. A handy, inexpensive planting table for small seed lots. *Tree Plant. Notes* 30(2):4-5;1979.