MACHINE FOR APPLYING SAND OR SAWDUST TO SEEDBEDS

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Conifer seed germination difficulties have been experienced at both the Bogue and Russ nurseries operated by the Michigan State College. The Hillsdale fine sandly loam soil at the Bogue nursery and the Fox sandly loam at Russ both become compact and form a crust on the surface after a rain. The packed soil and surface crust creates considerable resistance to emergence of jack pine, white spruce, red pine and Scots pine seedlings. Tilling peat and sawdust in the soil has improved the physical character of the soil, but it still is necessary to sow these smaller seeds on the surface of the ground covered with a thin even layer of sand or sawdust in order to get good emergence of seedlings. White pine, Austrian pine, and Douglas fir seeds are covered with nursery soil, then mulched with 1/4-inch sawdust to prevent a surface crust from forming.

A few years ago hand labor was used to sift sand over new seedlings. This was hard, time consuming work. With the high labor rate of recent years it became necessary to design and build a mechanical sifter. This machine consists of a tractor-trailer with a box large enough to hold the sawdust or sand needed for one seedbed. In front of this box a sifter is suspended to cross members in the trailer frame by four pieces of strap iron 8-inches long.. The sifter frame is made of one and a half-inch angle iron fourteen inches wide and four feet long. Inside the frame resting on the angle iron is a removable wood frame sifter on which hardware cloth is fastened. The sifter is filled by two men who ride on the trailer and scrape the sawdust or sand into it. Since the sifter frame lies loose on the angle iron it may be removed to clean the coarse material collected in it.

We have three wood frame sifters with different size mesh hardware cloth 1/4-inch for sand, 3/8 and 1/2-inch for sawdust. By adjusting the screen and the speed of the tractor to the material to be sifted the desired thickness of cover can easily be obtained.

A shaft with two universal' joints transmits the power from the power takeoff of the tractor to the sifter. This makes it possible to turn at a sharp angle to enter the seedbeds without disconnecting the drive shaft. The universal shaft connects to a short rigid shaft two-feet six-inches long mounted on the front of the trailer frame. A Velos V-belt is used to transmit the power from the shaft to a pulley on the end of a crankshaft which oscillates the sifter. A Velos belt can be used without a tightener because links can be removed from or added to the belt depending on the length desired. A crankshaft and piston rod salvaged from a one-cylinder gasoline engine is used to oscillate the sifter.

The speed of the sifter in relation to the speed of the R. P. M. of the power take-off can be regulated by the size of the pulleys used. We use a 4-inch pulley on the shaft that is mounted on the trailer frame, and an 8-inch pulley on the crankshaft.

This machine can also be used to mulch 1-0 seedlings with a half-inch of' sawdust to prevent frost heaving. It is inexpensive to apply, it conserves soil moisture, and it improves the soil when it is worked into the ground after the trees are lifted. A straw mulch is costly to apply, it has to be raked off in the Spring, and it leaves weed seeds in the beds.