USE OF A WHITFIELD SEEDER AT GSPC'S WOODLANDS' NURSERY

By Gary P. Cannon

Great Southern Paper Company's Woodlands Nursery is located in the southwestern corner of the state of Georgia at Cedar Springs. The nursery was constructed in 1975 with the first crop sown in 1976. Our annual production is approximately 20 - 25 million seedlings. Loblolly is our prevalent species followed by slash, sand and, occasionally, longleaf pine.

In purchasing the original equipment for our nursery, consideration was given to "what was available" at the time (1975-76), the advantages and disadvantages of such equipment, etc. The final decision was made based upon the ability of the equipment to fit our program producing the necessary number of seedlings which fulfilled our foresters needs.

At that time the number of types of "pine" seeders was very limited. Probably the only two availabe for purchase were the Stanhay and the Whitfield. Based on a number of considerations, the decision was made to purchase the Whitfield seeder for our use.

We have successfully used the Whitfield seeder since 1976 and have encountered very few problems with it. Although our seedbed density has not always been exactly as we had planned, we have been able to produce a high percentage of plantable seedlings that fulfill our needs. I feel that factors other than the actual mechanics of the machine and seed placement add to variation in seedbed density. Among these factors which are used in calculating sowing density are the seed quality (i.e. germination percentage, number of seed per pound, and purity) and the expected survival rate. A change in the actual field numbers over those reported in the seed germination reports will quickly increase or decrease the seedbed density if the sowing rates have been calculated on laboratory germination data and the field conditions are different.

Upon purchasing our seeder we contacted other organizations using them to get suggestions for successful use. Only a couple of suggestions were made. Primarily, we removed the rubber "drop" tubes which extend from the seed caps to the planter "feet" replacing them with a two piece P.V.C. tube. We felt that this P.V.C. tube would allow the seed to fall from the cups to the feet in a smoother manner enhancing a more uniform seed placement on the bed.

We have also removed the flat plates which were installed in the bottom of the seed box above the holes which allow the seed to be fed into the seed cup at the top of the drop.

The "sword" feet or opening plow as they came from the manufacturer made a deep V-shaped groove in the bed surface which I did not like, so we flattened the bottom of each of these feet with a grinder. This allows the seed to be spread in a somewhat wider band and prevents them from being sown too deeply in the V-shaped slit as has happened in the past.

Also the use of the seed covering foot or "shoe" was scrutinized and this attachment is only used when we encounter heavier soils or moist soils where the seed cannot be pressed into the soil as we like. However, we have minimized the use of these attachments.

In sowing our seed beds, we prefer to sow in beds which have minimal soil moisture but which have been made up ahead of sowing for a sufficient amount of time for the soil to "crust" over lightly. The seed are then simply pressed into the soil whereby they are very, very lightly covered with soil which is not over one-eighth of an inch deed. We feel that by covering the seed with more than a very thin layer of soil the germination will be inhibited.

In order to assist in pressing the seed into the seed bed we have added metal rods to the frame of the rear packing wheel whereby weights can be

added. Even with these and the flattening of the "sword" feet the individual feet must be adjusted up or down in the field to achieve uniform depth of seed replacement.

These have been the major changes made to our seeder other than adding a deck and a seat for a rider on the rear of the seeder. This allows a person to ride the seeder and monitor its operation during the bed sowing.

Seed bed density depends on the sowing rate and the seed quality and survival factors previously mentioned and how they were used in the formula to develop the sowing rate. The accuracy of the germination percentage, number of seed per pound, purity, etc. are paramount in achieving the desired density. After the sowing rate has been calculated the seeder has to be calibrated in order to achieve this rate.

We normally calculate our sowing rates for each lot of seed immediately prior to calibration and sowing. In order to calibrate our seeder, we make a "calibration" bed adjacent to the area being sown. This bed is used only for calibration and has a measured one hundred foot section in it. The seed lot being sown is loaded into the seeder and taken to the calibration bed. The lower portion of the drop tubes (pipes) are removed and a catch tray made from 3" P.V.C. pipe is attached to the seeder with the upper portions of the eight drop tubes placed in the tray. The seeder is then pulled down the measured distance of bed, the seed removed, weighed, and adjustments to the seeder are made as needed to get the weight of the seed dropped on the measured calibration bed to within .01 of a pound. Quite often we are able to calibrate to within .001 pound over a one hundred foot length of bed.

After an inital calibration has been made, so we have a point from which to work, further calibrations are generally fast. Very seldom do we have to try over 2 to 3 times before we achieve the rate we desire. We

always calibrate immediately prior to sowing each seed lot and we will check the calibration at occasional times during the sowing of the various lots. During the past 11 seasons, we have not lost any mulching time due to our calibration. In order to further check the accuracy of our calibration, we generally estimate at what point a seed lot will run out. Quite often our estimate is within a few feet of the actual point of ending. Our seed bed density is normally within a 5 - 10 percent range of that for which we sow.

The major drawback we see to the Whitfield seeder is that ours has a tendancy to drop seed in "clumps" rather than evenly distributing them within a drill. I feel that this can partially related to the speed the seeder is being pulled but even at slower speeds we have encountered the same problem although it is not as noticeable as that at observed higher speeds. There is also a difference among the drop tubes in the weight of seed dropped over a given distance. I am sure some adjustments can be made by the users or manufacturer to overcome these problems; however, to date, such adjustments on our machine have not been made due to the insignificance of the problem.

We have successfully sown loblolly, slash, and sand pine with our Whitfield seeder and, at this point, are satisfied with its performance. We realize seed bed density is critical in producing good, high quality seedlings but we also realize that there are a number of factors involved in achieving a desired density other than the seeder used.