

MECHANIZATION OF SASKATCHEWAN NURSERIES

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Seed Extraction

The present seed extraction plant is a single story frame building built in 1961 and consists of a kiln and extraction room in the front and a cone storage room in the back. The present facility will handle about 3,500 bushels of cones a year in an operating period from November 1 to May 30.

The kiln has an oil fired, forced air heating system and holds 56 bushels per change. Due to the time it takes to heat up the kiln when putting cones into it that are at 0 to -40 F. Jack Pine cones may take up to 48 hours before opening sufficiently for seed removal. When the cones have opened sufficiently, they are brought out of the kiln and elevated up into a screened revolving drum, and tumbled for seed removal. The drum is slightly higher at the entrance end and by the time the cones reach the other end the seed has been removed. The cones then drop out the open exit end of the drum, and are elevated out into a truck for removal. The seed, as it falls out of the drums, drops into a hopper below and is ready for dewinging and cleaning. This spring we contracted the building of a new seed dewinger along the same design as the one used at Couer d'Alene, but have had some problems with it. The seed, after being dewinged, builds up in the machine, and will not flow through evenly. Possibly some of our trouble may be not having enough vacuum to draw off the lighter material.

We also purchased a new 36-inch dustless model seed cleaner manufactured by Forever Industries in Winnipeg, Manitoba. However it arrived too late to put it into operation this year, so we will have to wait until this fall to try it. We did run some tests with it, and it seemed to perform satisfactorily.

We have plans on file for a new seed extraction plant, and it is ready to go to tender as soon as funds are allotted for it. Its design uses the best features of several seed extraction plants in both the United States and Canada. We are looking forward to using this new facility in the near future.

Field Equipment

For general field work, we use standard farm equipment, such as plows, discs, cultivators, harrows, packers, etc.

When preparing fields for seedbeds we spread about 1" to 2" of peat moss on them, using a manure spreader, then work well into the soil with an E Series IV 5' Howard Rotovator. This is a 3-point hitch model and can be mounted directly behind the tractor or off set.

The seeder used until now is a home built 7-row unit made out of John Deere, International Harvester and Planet Jr. parts. The machine consists of a 24" front bed roller, followed by a Planet Jr. seeding unit, and again followed by another 24" bed roller. The seed metering units from an I.H.C. grass seeder have given us fairly good results.

This spring we purchased an Oyjord precision bed seeder. Our first operational experiences with the machine were very disappointing. The machine is anything but precise. Our major problem, however, was caused by the furrow opening shoes. We should have ordered a machine with press wheels. Seeding depth would probably be easier to regulate with the press shoes. Nonetheless, we are determined that, with some modifications, we will be able to use the machine. Until that time, however, thank goodness for homebuilts!

After seeding is completed, we cover the beds with hydro mulch, using a Bowie Victor 800 equipped with a seedbed spreader. We had some trouble adjusting the bed spreader so that it wouldn't come down with too much force, and drive the seed out of the drills.

Due to lack of time, we abandoned its use and used the discharge gun only. By aiming it slightly up and looping the mulch pattern, we were able to cover 3 to 4 beds per pass. This fall we will be spending more time on the adjustment of the bed spreader.

For applying fertilizers, mylone, and sulphur, we have a 12' 3-point hitch mounted Gandy spreader with hydraulic drive and an International No. 7 trailing fertilizer spreader. We plan on mounting the International on a 3-point hitch and driving it hydraulically, as we cover three beds at a time and do get some tramping of seedlings with the wheels.

The sprayers we use are also home built after having bought the tanks, pumps and nozzles.

Cultivation of transplants is done by a 5-Row cultivator mounted under the belly of a 140 International, and cultivation of deciduous material is with a single row cultivator, again mounted under a 140 I.H.C.

Until this year, all our lifting has been done with a 3-point hitch undercutting blade with hand lifting behind. This spring we purchased a Crayco Tiny Tim Tree Seeding Harvester with a personnel bulk Handler. This machine built in Ontario is abed type lifter and operates on the same principle as a potato digger.

It consists of a lifting blade undercutting the bed. Behind the blade is a short elevating chain with short teeth welded to the bars to help lift the seedlings up the chain. Behind this short chain is a second elevating and shaker chain which shakes the dirt off while elevating the seedlings up, dropping them on to the personnel carrier.

On the personnel carrier, persons standing on each side sort the seedlings out while they are being conveyed to the back by another conveyor chain, where they are packed in tubs for transport to the packing shed. In the packing shed they are dumped on the grading table for culling, counting and packing. We pack our trees into cardboard boxes with plastic liners, semi-sealed, and loaded on to pallets, then transported by forklift truck into the refrigerated storage room. In storage, they are stacked up to 3 pallets high and kept until required at the various planting sites.

We have two refrigerated storage rooms at the Prince Albert Nursery, one measuring 60'x60'x20' high and another one 30'x60'x20' high, giving us a total of 108,000⁰ feet of storage space. In storage, they are maintained at 28 *29 F. for short^o term storage. For long term storage we drop the temperature to 25 to 26 F. Most of our reforestation stock is spring lifted and shipped the same spring. All of our deciduous stock is lifted in late September and October and is held in storage until the first of May. We generally start spring lifting the last week in April, and have about three weeks before bud break. Spring planting usually starts around the first week in May and should be completed by the end of June.

Container Facility

Late last fall construction was started on a container growing complex, consisting of a header house, two greenhouses, a shade area and a gravel area.

The header house of cement block construction contains all the controls for the greenhouses, shade house and gravel area. In the main work area we have a complete paperpot filling and seeding line manufactured by Lannen Tehtaat Oy of Finland. The paper pots, which come folded down like an accordion, are stretched out into a tray, put through the conveyor line, where they are filled with peat moss, seeded, and covered with a thin layer of granite grit. After gritting, they are placed on a pallet and moved into the greenhouse with a skid steer loader, placed directly on the gravel floor for growing.

The greenhouse is a Blue Ribbon model B.49 truss frame, glass house, manufactured by Lord and Burnham. Each house measures 49'6"x 124'6", and contains over 6,100 square feet. In both houses we expect to grow two million trees per year in two crops. The first crop will be started about the first of April and grown for 12 weeks in the greenhouse, then moved out into the shade area. A

second crop will be started about mid-June, and then moved out about the end of August. To date, we have been using the F.11.408 paper pot.

The shade house is a pole type building built out of square tubular steel and covered with snow fence.

The gravel area has a gravel base without any covering, and will be used after the seedlings have been under the shade area a few weeks.

Heating and cooling in the greenhouses are controlled by Wadsworth Step 400 automatic control panels with manual override. There are seven cooling stages and three heating stages.

Irrigation is controlled in both greenhouses, shade house and gravel area by three Hydro Rain Model 1130, 11 station control clocks. One clock controls the greenhouses and one each for the shade house and gravel area.

Fertilizer and fungicides will be injected by two Smith Model R-6 Measuremix injector pumps. Sprinkler heads are Browning B-400C with each arm equipped with a 401-4R nozzle that discharges .88 G.P.M. at 20 P.S.I. Sprinkler heads in the shade house and gravel area are Rainbird No. 25 F.P. and No. 20 full circle with 9/64 nozzles.

We hope that with the new greenhouse complex and more mechanical equipment for our field operations, we can continue to produce seedlings that are acceptable to planting crews at a cost acceptable to the nurseryman.