TREE SEED HANDLING IN NEW YORK

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The Bureau of Nurseries of the New York State Conservation Department is obligated to produce from 36 to 60 million seedlings per year for planting within the State. To produce this many trees annually requires a total for all species of 4,000 to 7,000 pounds of seed.

Tree seed is not a common commodity on the market, at least of the species and source desirable, so that procurement presents several problems. In New York State tree seed is 'obtained through direct purchase of seed from seed dealers and the collection or purchase of cones within the State. The cones are purchased directly from cone pickers at a bushel rate, or labor is hired to pick cones on an hourly basis.

Seed source is important. A seed source that will adversely affect the survival of the trees in the nursery and growth of the trees in the plantations can cause a serious economic loss. Every effort is used to obtain information on the seed source, and this information is carried by means of lot numbers in the nursery and planting records.

Specifications should be set up for the purchase of tree seed, just as they are for the purchase of other, commodities. The source specification must be in keeping with the possible supply available from a given species, and often some previous knowledge is useful in seeing that specifications are not written for seed which is not available. The specifications generally limit the area from which the seed is to be collected, by naming the region, State, or county or by reference to latitude and longitude. Also specifications may be made on elevation where this is important. The collection year is usually required and while it is important in relation to seed quality, it may also be of value in relation to other possible information. Since forest seed is very expensive, specifications on germination percent and purity percent are especially needed. Tree seed which germinates normally at 90 percent or better is at least twice as valuable as seed which germinates 50 to 60 percent. And when seed cost ranges from 12 to 20 percent of the cost of growing seedlings it is important. In the case of seed purchases, provisions should be made in the specifications for adjustments where the seed fails to meet the requirements.

Cone purchases in the Adirondacks starting with 1929, and principally in the years of 1929, 1932, 1938, and 1947, have totaled more than 46, 000 bushels.

These were purchased on the spot from local independent cone pickers. Hired labor in the various districts of the State has picked some 15, 000 bushels of cones; this is a more recent development and the cones are mostly obtained from State-owned plantations. This plan has proved very successful with white spruce which produces an ample crop one small trees. Where labor is hired to pick such species as red and Scotch pine, the cost per bushel is about double that from the independent pickers. However, there are other factors, such as control of collectors on certain plantations, that often make it more desirable to hire men to pick cones.

The collected cones are transported to the Saratoga Nursery where they are stored until the seed can be extracted. The extraction process is well known and needs little description here. The cones are oven dried and when sufficiently open release their seed. The seed is then cleaned. In the cleaning seed of some species must be dampened so that the wings can be removed completely. Such seed is then dried to 5 to 8 percent moisture and sealed into to large glass carboys which are stored in a refrigerated vault.

The weekly production capacity of the seed plant, and especially the time necessary in the oven, depends upon the species. For red pine production is about 100 pounds a week, and with white pine, white spruce, and norway spruce from 300 to 500 pounds a week. A Holland grain dryer is now being modified to dry the cones at the Saratoga nursery.

Seed storage capacity is about 20, 000 pounds. Seed that is properly dried, sealed, and kept at 36^0 F. the year around will not lose viability in the first 10 years. Therefore, the policy is to purchase cones and seed when funds are available, and actually stockpile for the future, since 10 years is adequate for a practical operation

Samples of seed are dried in an electric oven and the moisture percentage calculated. Also, an electronic seed moisture tester is being calibrated for more rapid determinations.

The carboys of seed in storage are labeled, with all the known information on a special tag. Complete inventories of the seed are made twice each year and tabulated by container number, species, source, and pounds in each container.

Tree seed testing has been a regular practice since 1931 in the nursery laboratory at Saratoga. Tests are made in connection with extraction processes, and especially for checking seed in storage and for sowing in the seedbeds. Complete records are on file on a "Seed Record" form. A special "Seed Test Report" form carries the essential information obtained from a test; this can be used in calculating the amount of seed to sow.

Preparation for seed sowing follows a more or less set procedure. First is to determine the planting stock demands by species. If adequate seed is available to meet these demands, the number of seedbeds to sow at each nursery is determined, based upon the available space and nearness to likely planting sites. Germination percentage for each lot is used to determine for each nursery the amount of seed to sow. The most recent experience with the same lot of seed is perhaps the best guide. Also useful are the results in general with the species over a period of years as indicated by an experience table. Finally the rate and pounds to be used at each nursery is arrived at.

An important item to consider is the seen lot number which identifies the lot throughout the whole process from extraction through seed sowing, lifting the trees for planting, and packing to the plantation. When and how is this lot number determined and how handled throughout the seed and tree handling.

It is impractical to try to work with too many seed lot numbers for a given species. In fact, there is no use having lot numbers at all, if all the numbers cannot be separate in all the operations. In practice the number is kept to a minimum and handled so as to reduce the possibility of mixing the lots of a single species.

When cones of a single species are received from a forest district a number is assigned. Also when a lot of seed is received from a dealer it is given a seed lot number. This number is used during extraction and storage. However, where the seed of certain species all come from a mixture of plantations and different districts and the source data are not important enough to keep separate by districts, certain numbers are combined so that there is only one seed lot number at sowing time. This is done especially with many of the smaller lots.

At sowing time seed lots of a single species are as far as possible kept separate by nurseries or by sowing seasons. If two or more are sown at a given time at one nursery, they are sown in separate blocks. A nurseryman's nightmare is to have two or more lots in the same block at lifting time, looking alike. When possible, one lot is lifted at a time and completely cleared before the next one is lifted. Trees going to the packing shed carry on a tag the seed lot number, species, and age. The packers report the seed lot number used and a record is made at that time on the shipping record form. This seed lot number eventually appears on the tree order form, which is made a permanent record. The meaning of each number is filed on a separate record. Form 186 SL "Seed Lot Record" (fig. 1) provides a ready reference for those who wish to know the source data on the planting stock, as well as an index to other records on seed tests, extraction and storage, sowing and stock disposition.

Where there are several special seed sources, which produce small amounts, yet are important to keep separate, they are sown in separate seedbeds and given special handling during all the lifting and shipping procedures.

Forestry Form 186-SL

SEED LOT RECORD

Seed Lot No. _____ Species _____ Pounds in Lot _____

Seed Received from _____ Date Received _____

Received as: Cones _____ Seed _____ Fruit _____ Other _____

Senders Marks: Lot No., Order No., etc. _____

Source: Data as stated by Dealer or Collector _____

_____

Collected by _____ Date Coll. _____

Place Collected: _____

GERMINATION TESTS: DATES TEST NOS. GERM. ENERGY %

_____

_____

_____

EXTRACTION AND STORAGE

Cone Storage _____ Place Extracted _____ Date Ext. _____

Date Seed Stored _____ Place Stored _____ Container _____

Temp. in Storage _____ F Remarks _____

SOWING RECORD

	Nursery	Date & Season Sown	No. of Beds 4 X 12	Ozs. per Bed	Lbs Sown	Inventory (M) 1-0	2-0	3-0	Lifting Count
1.									
2.									
3.									
4.									
5.									
6.									
	Totals								

DISPOSITION OF STOCK: Sowing No. (above), Age, Year & Season, Private Orders or State Land. Any Details on State Areas.

Figure 1.-Seed lot record form