

SEED COLLECTION; WHY, WHERE, WHEN AND HOW

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WHY

There are some advantages as well as some disadvantages in collecting one's own seeds. Among the advantages are:

Origin. With care, truly native sources of seed, better adapted to local conditions can be obtained.

Freshness. Seed can be collected at time of maximum quality giving better yields than can be obtained from bought-in seed.

Earliness. Early collections can sometimes shorten the period required for seed treatment and so save on time required to produce plants from seed.

Low Cost. On occasions—where distance is small, seed set is good, and conditions are perfect, collecting one's own seed can be very economical.

The major disadvantages are:

High cost. Unless properly organised, collecting one's own seed can be quite significantly more expensive than bought-in seed. This is particularly true where large distances are involved and where expensive collecting equipment is needed.

Conflict of interest. Because of other pressures in the nursery, seed may not always be collected at the proper moment.

Inadequate storage and extraction equipment. Poor storage facilities and poor equipment can result in dead and damaged seed, poor yields, and relatively expensive seed. Home seed collections should therefore not be undertaken without careful planning, or estimation of the costs involved, and a clear appraisal made of the advantages to be gained.

WHERE

Where to collect seed is determined by many factors:

Legal. Seed collection of some species is covered by government regulations that restrict the use to which the plants may be put.

It is important not to trespass or to collect without the owner's permission. Often owners expect some financial reward for granting permission. Where enforced it is usually between 10 and 15% of the retail value of the seed.

Origin. Is the source truly native or is it recently planted and therefore likely to be from non-native sources? Both types of seed may be of interest but should be kept separate.

Plant population. Is the source isolated and therefore likely to show inbreeding and reduced seed viability? Are there adequate

individuals present to ensure good mixing of the existing gene pool? This is particularly important when collecting from trees under stress, which often produce above-average flowering and fruiting. Collection from such trees should be avoided, however tempting it may be!

Plant form. Where a seed crop is plentiful it is sensible to collect seed from plants of good form. However collections should not be restricted to such trees, unless intended for forestry use. (Seed for use for forestry may normally only be collected from specially Registered Stands of superior physical form). In a population of trees, tree form and growth can be shown to be affected by many factors including seed origin (by up to at least 25%), by planting density, by predation, by fertilisation, by thinning, by location. Restricting seed collections only to stands of superior form may therefore unnecessarily restrict the amount of seed available.

In a good crop year collections should be concentrated on Registered Seed Sources of forestry species or from other stands of good quality but probably the best chance of obtaining seed of truly improved genetic character is to look for superior individuals in native or semi-natural woodland and to collect seed from them.

Projected yield. Flowering is the first hint of a potential seed crop; there is no seed without flowers. However, although flowering may occur widely in a crop it does not necessarily mean that there will be a good yield of seed. Many factors influence the set of seed and the potential harvest. The weather at pollination, after pollination, during ripening and at time of harvest significantly influence the yield of seed. Frost, rain and wind influence the seed set; newly-formed fruits may be killed by frost.

The persistence of the crop is affected by wind during mid-summer and, finally, the rate of loss of the seed from the tree is also determined by frost, wind, and rain. Before planning a collection it is advisable, therefore, to make an estimate of the potential yield. Failure to carry out estimates of the yield can result in much waste of time and effort.

Homogeneity of crop. Some species have been shown to hybridise, so the proximity of two closely-related species may render collections unwise. *Tilia platyphyllos* and *Tilia cordata* hybridise freely. Another group of species that cause difficulty is *Sorbus* spp. which hybridise freely as anyone trying to grow pure *Sorbus aria* knows only too well. Perhaps the most notorious species for hybridisation problems are *Quercus* spp. *Quercus robur* and *Quercus petraea* hybridise freely and have been planted so widely that it is questionable whether any truly pure stands now exist.

WHEN

Proper planning of collections is important if seed is to be collected at the optimal stage for whatever purpose. Sometimes collections are made very early in order to bypass the natural dormancy of the seeds. *Acer campestre* is a good example of what can be achieved by early collections although the smaller size of seedlings that are obtained from early collections may not always be acceptable.

Provided satisfactory handling facilities are available it is possible to collect some species while they are slightly immature, e.g. *Acers* and many conifers, in order that the period of collection may be extended. This is done when few collectors are available or when very large quantities of seed or cones are required and time may be limiting.

The facilities required involve areas where the seeds can be subjected to good drying conditions, possibly involving moving air over or through the seeds or cones and turning them frequently to prevent spontaneous heating or the development of mould.

Collections are normally made when seed is fully mature. For some species the period of maturity lasts a long time, e.g. *Pinus* spp.; for other species the period can be very short because of the influence of weather (wind *Acer* spp.; rain *Quercus* spp.;, frost, some species of *Quercus*), or animals. Squirrels eat seed of hazel and many conifers, birds are a pest on berried fruits such as *Berberis darwinii* and *Sorbus* spp.

There is a group of species where the timing of collections is more in the hands of the plant than those of the humans making the collections. These are the nutty fruits that are shed by trees and shrubs as they ripen, e.g., acorns, chestnut, beechnuts, and walnuts. Some weather conditions, such as wind or frost, aid the nut-drop but are not an absolute requirement for nuts to drop. Empty seeds of beech are regularly shed before the full seed and the heaviest drop of acorns usually follows a very severe frost and wind.

Where collections are to be made some distance from base it is invaluable to have someone nearby who can be relied upon to advise on the ripening of the crop. They can save much wasted time and effort.

HOW

There are many ways to collect seed and fruits. The methods obviously depend upon the type of seed or fruit produced.

Collection of seeds on the ground. For these, site preparation is a key factor. Clearing away the undergrowth around heavy fruiting trees helps in the speed of collection and is usually justified. It is desirable to try to do it on a regular yearly basis even in non-crop years as this lessens the task in subsequent years. For beech, removal

of cupules from previous year's crops, or stones or chalk of similar size, can help to reduce the bulk of material to be processed and certainly helps in the final cleaning of the seed.

Traditionally tarpaulins are recommended for laying on the ground under heavy fruiting trees. However, tarpaulins are very costly, do not allow rain to run off and can aggravate the sprouting of acorns in wet years. A cheaper and more effective tool is heavy-duty netting as used in nurseries for frost protection. They are widely used on the European continent for beech nuts but should only be used after due consideration of the risk of vandalism. The nets allow only seed and newly fallen leaves to be collected and make seed cleaning much easier.

Collection from shrubs at ground level. This is the most comfortable method of collecting seed and fruit. The object is to maximise the amount collected by making both hands available. The collection receptacle should be strapped on by a harness. To catch seeds that fall outside the receptacle, hessian or netting should be spread under the bushes.

Collection from ladders. Step ladders or orchard ladders can be used but at the top they are not very stable. Some point of anchorage aids stability and allows two hands to be used. Extendable ladders can also be used but they are heavier, more cumbersome and are not good for collecting from the lower branches due to the angle they make with the trunk. Hard hats are also advisable.

Collection by climbing. This is still one of the commonly used methods in many countries. In the long-run, properly-trained climbers are arguably as economical to use as trying to use one's own labour. All health and safety procedures and employees liability insurance must be strictly complied with.

Collection from felled trees. Theoretically, this is the most economical way to collect seeds of many species, particularly conifers except the true firs. However, if timber removal is proceeding at the same time as seed collection, operations must be properly coordinated. Heavy forest machinery can bury the fruit-bearing parts of trees and make seed collection very difficult.