**Collecting and handling tree seeds**

**What are fruits and seeds?**

The structure sown in a germination tray is not always just the seed. Sometimes the whole fruit is sown e.g., the nuts of oaks or sometimes it is the pyrene. Pyrenes consist of one or several seeds enclosed within the hard inner wall of the fruit (endocarp). The pyrene wall can delay water penetrating the seed embryo.

**When should seeds be collected?**

In all tropical forests, different tree species fruit in every month of the year, so at least one seed collection trip is needed every month. In seasonally dry tropical forests, fruiting peaks at the end of the dry season and at the end of the rainy season, whereas reduced numbers of fruiting tree species in the early rainy season means that fewer seed collection trips are needed then. Collect fruits once they are fully ripe, but just before they are dispersed or consumed by animals. Seeds collected too early will be undeveloped and fail to germinate, whereas those collected too late may have lost viability.

For fleshy fruits, ripeness is usually indicated by a change in the colour of the fruit, usually from green to a brighter colour, to attract seed-dispersing animals. If animals are seen eating the fruits, it is a sure sign that the seeds are ready for collection. For dehiscent fruits such as some legumes, ripeness occurs when they start to split open. It is usually better to cut fruits from the tree branches rather than to pick them up from the ground.

If you have received appropriate training, climb the tree to cut down ripe fruit. Use a safety harness and never do this alone. A more convenient method of seed collection for lower stature trees is to use a cutter mounted on the end of a long pole. Fruits can also be dislodged by shaking smaller tree or some of the lower branches. For very tall trees, collecting fruits from the forest floor may be the only option. If so, make sure the seeds are not rotten, by cutting them open and looking for a well-developed embryo, and/or a solid endosperm (if present). Do not collect any fruits or seeds with signs of fungal infection, teeth marks from animals or small holes made by seed-boring insects.

**Where should seeds be collected and from how many trees?**

**G**enetic variability is essential to enable species to survive in changeable environments. The best way to maintain it is to collect seeds from at least 25 to 50 high quality parent trees locally, and preferably to augment this with seed from more distant trees. If seeds are collected from just a few local trees, genetic diversity will be low, reducing their capacity to adapt to environmental change. Equal numbers of seeds from each seed tree should be mixed together prior to sowing. Once the trees mature in the restored plots, they may inbreed with each other, further reducing genetic variability in subsequent generations. Cross-pollination with unrelated trees can restore genetic diversity, but only where such trees grow near to restoration sites**.**

**How many seeds should be collected?**

The number of seeds collected depends on the number of trees required, seed germination percentage and seedling survival rates. Keep accurate records to determine the numbers required in future collections.

**What precautions should be taken when collecting seeds?**

Sow seeds as soon as possible after collection. Do not leave them in sun, where they may dry out and do not leave them in damp places, where they may rot or germinate prematurely.

**What information should be recorded when collecting seeds?**

Each time you collect seeds from a new species, give that species a unique species number. Nail a numbered, metal tag on to the tree, so that you can find it again. Collect a specimen of leaves and fruits for species identification. Place the specimen in a plant press, dry it and ask a botanist to identify the species. Use a pencil to write the species name (if known), date and species number on a label and place the label inside the bag with the seeds. Record essential details about the seed batches collected and what happens to them from collection time until they are sown in germination trays. This information will help to determine why some seed batches germinate well, whilst others fail and thus improve seed collection methods in the future.

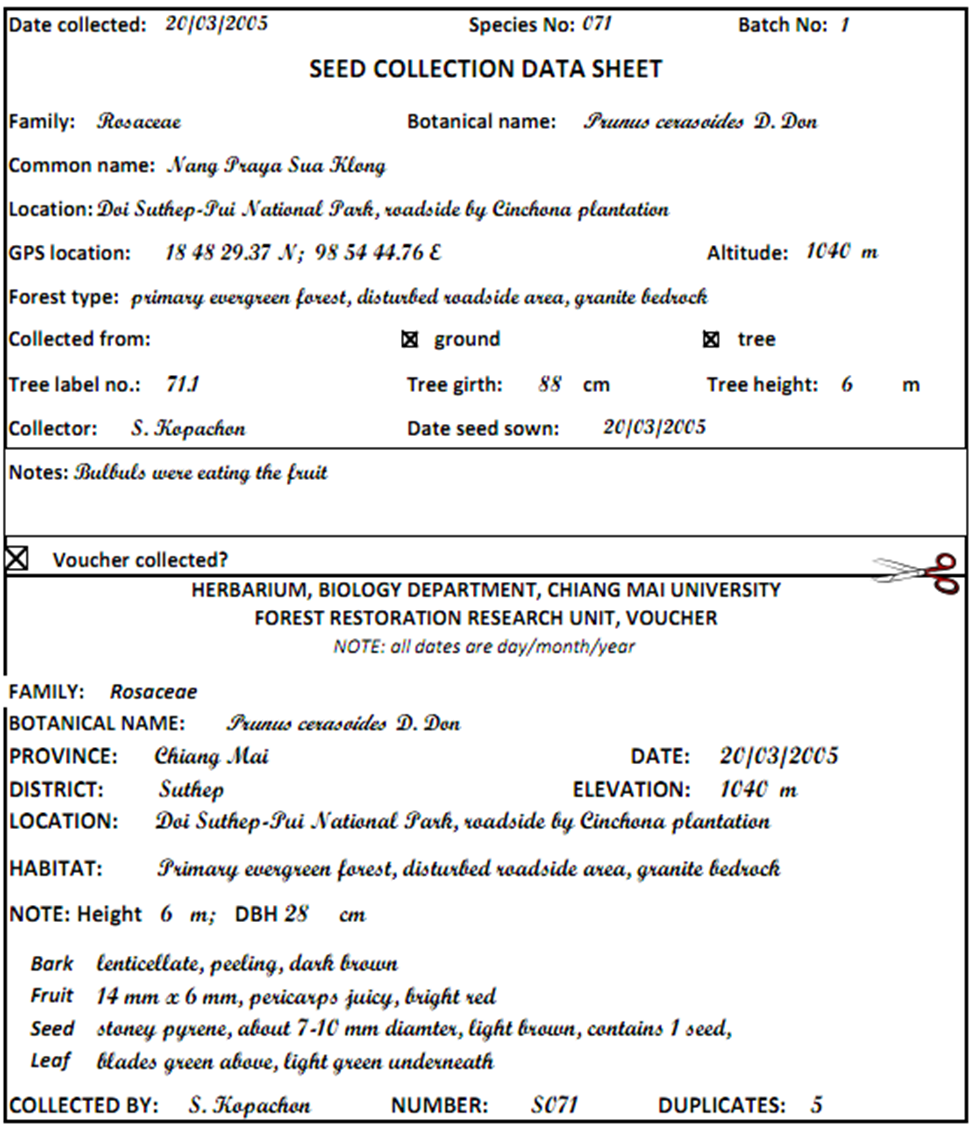
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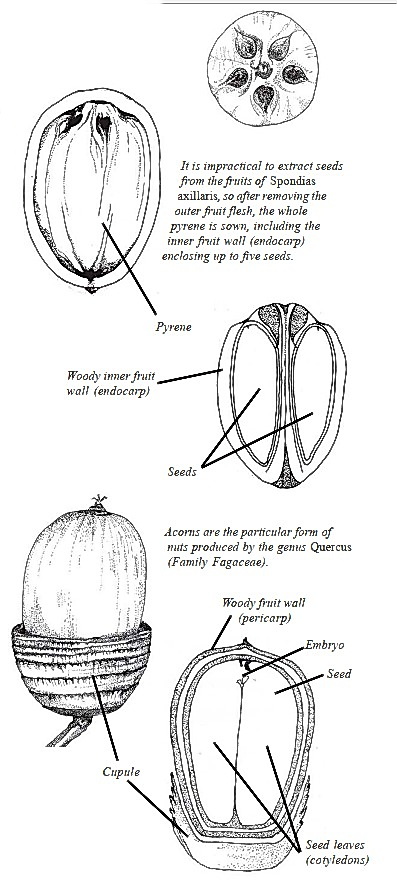
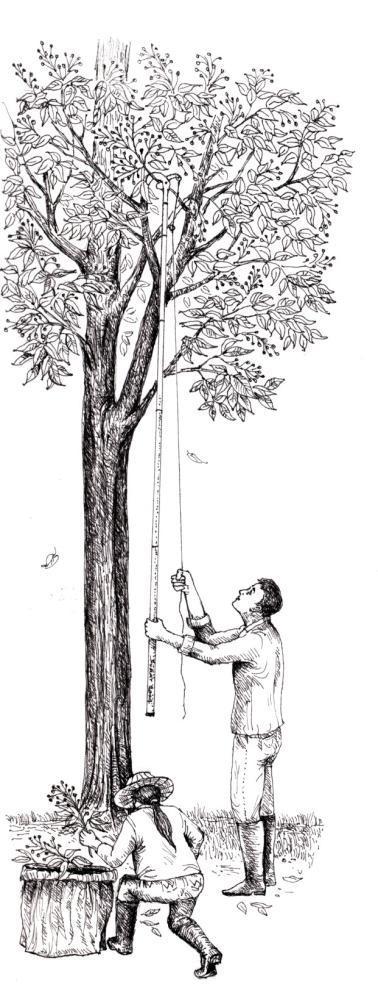
[Schmidt, L., 2000. Guide to Handling of Tropical and Subtropical Forest Seed. The Danida Forest Seed Centre.](https://www.dropbox.com/sh/5ajhd4ncn16quye/AACZ--vzE-Lf7VVDKW0Lw8coa?dl=0)

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Stephen Elliott

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*For growing oaks, such as this Quercus semiserrata, the entire fruit (nut) is sown (after removing the cupule). Nuts are fruits with woody outer walls, which do not split open to release*