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Seed trees I - Seed trees in seed sources

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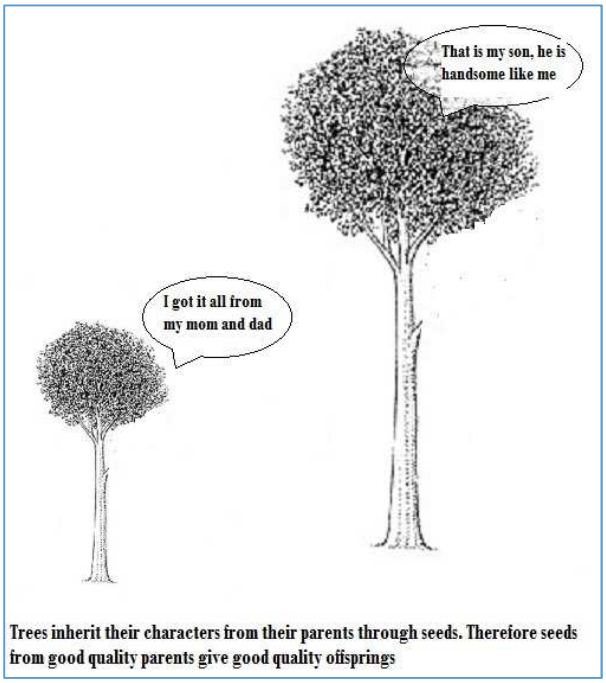
Seed trees I – Seed trees in seed sources

Seed mother trees

Seed (mother) trees are the individual trees in the stand from where we collect seed. They are thus trees in the seed source, which are selected because they are better looking than trees around them.



Trees inherit their characters from their parents through seeds. Therefore seeds from good quality parents give good quality offsprings

Selection of seed trees

Preference for seed trees may depend on the use of the tree product. For single use trees, we look at specific characters for that particular purpose. For example, if the use is mainly timber, we look for good wood characters (straightness, cylindrical bole, branchless). Multipurpose tree species, MPTS, are more difficult because it is rare to find trees that are good for all purposes. Usually we would select also MPTS seed trees for a main purpose (e.g. fruits or leaf production), but often we would disqualify trees that are particularly poor in some of the other uses. Generally, trees attacked by pest and diseases are de-selected as seed trees. In some seed sources, that are used every year, it can be sensible to mark / label individual seed trees to avoid looking for the best trees each time.

End use	Priority characters
Timber	Straightness, few side branches
Fruits	Heavy fruit load, good taste
Fodder	Large leaf and pod production, coppicing ability

Inheritance and environment interaction

Their genes and the environment they grow in form the trees as we see them. They are also products of their age. Therefore, in a natural forest where trees are different age and have different competition, it is difficult to see, what is the effect of the genes and what

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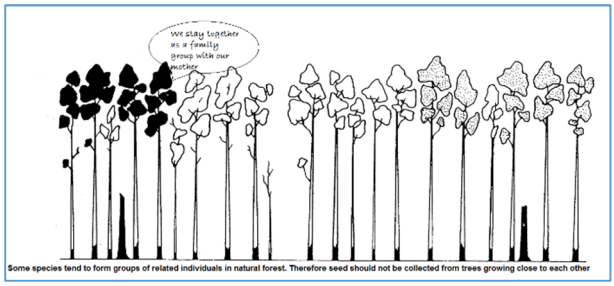
is effect of age difference and environment. Therefore, it usually makes no sense to select seed trees based on their look in natural forests. Opposite, in plantations of the same age and with even space between tree, difference is stronger influenced by the environment.

Distance between seed trees

The longer the distance between seed trees, the less is the likelihood that they are related, and the less is the likelihood that flowers have been pollinated by the same father tree. Therefore, distant trees will catch more genetic diversity. In natural forest, the recommended distance is 30-50 meters. In small seed sources it can be difficult to find enough trees, if the distance is that far, and then it is better to have many seed trees than fulfilling the distance recommendation. However, the distance should not be closer than 10-15 meters. In plantations, seeds and plants from different mother trees have been mixed in the seed lots and nursery. Therefore, neighbouring trees are unlikely to be related, and distance is not to rigid. However, close neighbouring trees should not used as seed trees because flowers may be pollinated by the same neighbouring father, and the seeds can thus be half-siblings. That reduces the genetic diversity for the next generation.



Number of seed trees

We should usually collect seeds from at least 25 un-related trees. That may be reduced for small seed lots, but generally we should have at least 10 trees represented in any seed lot.

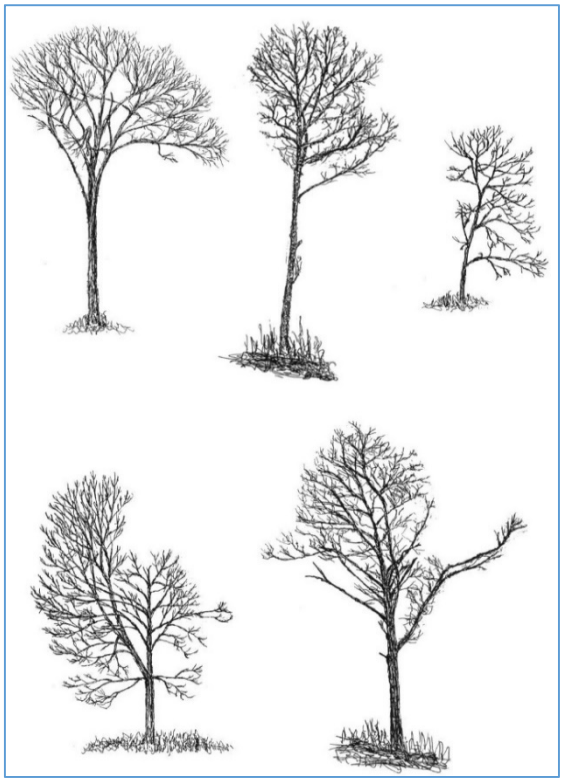
Summary, do's and don'ts

Do:

- Select the best single trees for seed collection according to prescribed criteria for the end use.
- Collect from several mother trees which do not grow close to each other

Don'ts:

- Don't collect from crumpled, diseased or pest attacked trees.
- Don't collect from trees with very little seed (which may have been produced during off-season)
- Don't collect from trees with long distance to others of the same species (isolated), as they may have poor or few seed because of self-pollination.
- Poor tree shapes that should not be selected as seed trees



Selected readings

Mbora A et al. 2009. Tree Seed Source Re-classification Manual. World Agroforestry Centre. https://www.worldagroforestry.org/sites/default/files/Tree_Seed_source_classification_manual.pdf

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This DB was written as an extension to for training at PARSPO project, Ethiopia

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