UNIVERSITY OF COPENHAGEN

Københavns Universitet

Seed sources - what are poor and good seed sources

Schmidt, Lars Holger

Published in:
Development Briefs. Technical

Publication date:
2021

Citation for published version (APA):
Schmidt, L. H. (2021). Seed sources - what are poor and good seed sources. *Development Briefs. Technical*, (9).

Download date: 13. Nov. 2026

DEVELOPMENT
BRIEFS
TECHNICAL
No. 9 - August 2021

Seed sources – What are poor and good seed sources

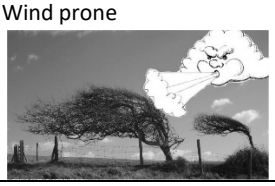
What is a seed source?

A seed source is the stand of trees where we collect seeds. Seed sources differ in their population structure, genes and adaptability. Generally, seed sources should produce an adequate quantity of high quality seed. Quality refers to high germination rate and good genetic properties. For each species in a planting programme, we need several seed sources, because trees may have different adaptations to local conditions. For the most used species, seed sources can be upgraded by removing poor trees and through breeding for special attractive characters

Adapted to the planting site

Trees of the same species show difference in environmental adaptation. Seeds collected from a seed source will produce seedlings that are adapted to the environment where the parents grow. Well performing trees in a seed source show that the trees are adapted to their environment. Generally, the closer match between the environment of the seed source and the environment at the planting site, the higher is the chance that tree new tree will perform well. Growth environment may relate to climate, altitude, soil, drought tolerance and water-logging conditions.

Seed source	Planting site
Highland	Highland
Clay soil	Clay soil

Drought prone area	Drought prone area
Water logged	Water logged
Wind prone	Wind prone 

Genetic quality of seed sources

Genetics means that some characters are inherited from one generation to the next. Some characters are especially attractive to our planting, and we want these characters to be inherited in our new plantation. Natural forest may represent an average quality. If poor trees have been removed and better trees left, the average increases. Opposite, if the good trees have been cut down and the poor left behind, the seed source is degraded. Therefore, natural forest should not bear evidence of cutting if it should be used as seed source.

Average minus poor => better

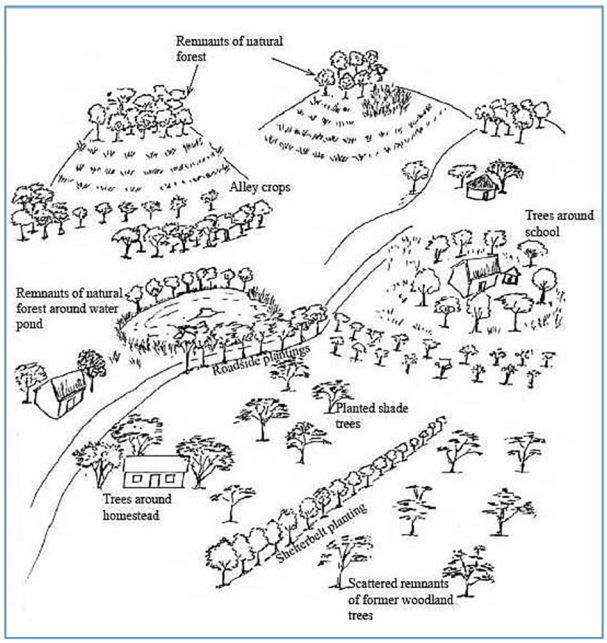
Types of common seed sources

Natural forests are forest consisting of indigenous species that has not been subject to major disturbance. As seed sources, they form a unique source of local adaptation, and the same forest can be seed source for

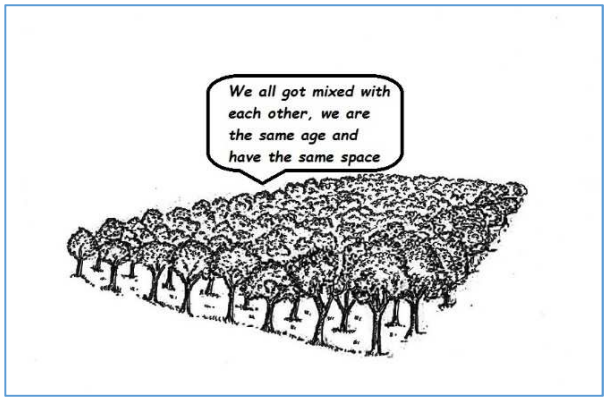
UNIVERSITY OF COPENHAGEN

several local species. One shortage is that it is difficult to select superior seed trees because of age and environment variation.

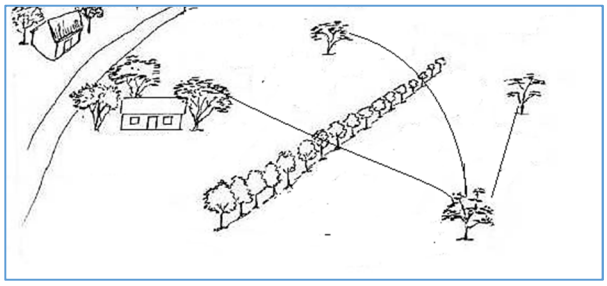
Remnant forest patches and trees in farmland have similarities to natural forest, but most of the land under and between the trees have been cultivated. Individual trees may thus be more widely dispersed with implicit pollination difficulties. Trees are often producing more seed because they have been relieved from canopy competition.



Plantations have the advantage that trees are usually even-aged, planted at same spacing and superior seed trees can often be selected. Neighbouring trees are generally not related since both seeds and plants were mixed before planting. However, narrow spacing often limit the seed production from individual trees.

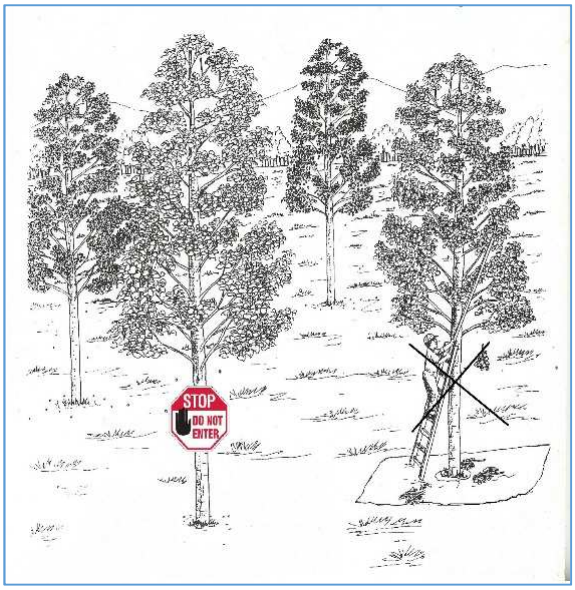


Planted trees in farmland are often introduced i.e. not native. Spacing between individual trees may limit cross pollination. The effect depends on type of pollination. Bees and pollinating birds usually fly much farther than smaller insects. Rows of trees can be a barrier for pollination between trees on either side of the rows. Single, isolated trees are thus often poor seed sources because of a higher risk of inbreeding



Access to seed collection

Many natural forests are conservation areas, and there can be strict regulations on collection, especially climbing with potential damage to trees. Damage to trees is also a concern in most private seed sources, unless seeds are collected in connection with felling of trees. Collection from farmland trees can be impossible if it coincides with the time there are crops under the trees, because the activity will inevitably damage the crops. Access and collection methods must be settled in advance with seed source owners.



Summary, do's and don'ts

Do's:

- Identify the best stand where you can collect adequate seed from ideally 30 spaced seed trees.
- Obtain permission from owners to collect seed.
- In small seed sources it is better to collect from several trees even if the distance between them is less than the ideal 25 meters

Don'ts's:

- Don't collect seed from small populations of degraded forest.
- Don't collect from isolated trees (trees that cannot cross-pollinated with others).
- Don't collect from neighbouring trees or trees growing very close.

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

Barner H, Olesen K, Wellendorf H. 1988. Classification and selection of seed sources. University of Copenhagen /DFSC, LN-B1. Classification and selection of seed sources.

Willan R. 1993. Matching seed source to planting site. University of Copenhagen /DFSC, LN-B3. Matching seed source to planting site

Author: Lars Schmidt

This Development Brief was written as an extension note for training at PATSPO project in Ethiopia