

How to improve biodiversity in agroforestry livestock systems



How does agroforestry support biodiversity?

Agroforestry increases habitat diversity, offering various **nesting sites** and **feeding opportunities** for birds. Therefore, it will attract both species linked to **farmland** and **woodland**.

Furthermore, when including livestock, faeces desposits will attract flies which will attract some bird species.

Authors:

Line Dinesen Jensen*, Jørgen Aagaard Axelsen
Aarhus Universitet, Denmark

*line.dinesen@agro.au.dk

Combining wide hedgerows with pasture-based livestock rearing in agroforestry makes more diverse systems. The true biodiversity of such system will not only be the species sown and planted on the area, but the sum of species supported in the habitats provided by the system.



Credits: Marianne Fløe Hestbjerg, Hestbjerg Økologi (left) & Cecilie Kobek-Kjeldager, Aarhus University (right).

Agroforestry will in general improve biodiversity compared to monoculture farmland practices. However, the type and management of agroforestry will have a great impact on the true effect, as tall monoculture forests with nonnative tree species will support relatively few species. A biodiversity high impact hedgerow should contain a variety of native tree species.

If trees of the same species are planted in clusters, they will support each other and limit the management of nearby faster growing trees. Furthermore, clustering the trees will make a larger habitat for species specific insects and birds. The recommended size of clusters will depend on the chosen species, e.g. smaller and/or slow-growing trees and bushes should have bigger clusters, were as fast-growing trees have less demand for clustering. Biodiversity high impact hedgerows can still contain some fast-growing nonnative species for the sake of fast implementation, nurse trees, and providing high value habitat for the livestock.

Ongoing observational studies of bird species on a Danish organic pig farm with agroforestry show that trees do increase the diversity and number of breeding birds in the area. The observations found bird species which are associated with trees, and still also bird species associated with open areas. Providing wide hedgerows does not only benefit the livestock with shade, skin care and enhanced exploration opportunities. The natural biodiversity also benefits from the heterogeneous environment supporting more insects and bird species.

TIPS TO IMPROVE BIODIVERSITY

- **Implement native tree species**
- **Use a variety of different tree species**
- **Cluster trees of the same species in groups**
- **Implement multispecies grassland in the farmland**
- **Increase the vegetation recovery time without livestock**
- **Provide relevant nest boxes in the trees**

What kind of birds will I see?

Don't expect highly endangered species, but instead enjoy the songs and sights of a wide variety of common migratory and/or songbirds.

European goldfinch, iceterine warbler and blackcap are just some of the birds observed in the Danish agroforestry, which are not present in open farmlands.



Credit: Isiwal/Wikimedia Commons/
CC BY-SA 4.0, via Wikimedia
Commons



Credit: Derek Keats from
Johannesburg, South Africa, CC BY
2.0, via Wikimedia Commons



Credit: Ron Knight from Seaford, East
Sussex, United Kingdom, CC BY 2.0,
via Wikimedia Commons

With contribution from the project 4F - Supporting biodiversity and animal welfare in organic pig production, funded by Organic RDD9.

