

A comparison of the contributions to the 12 goals for worldwide food security by Agroforestry and Monoculture (Industrial Farming).

- ✓ = a positive contribution to the goal by Agroforestry
- ✓/✗ = a positive/negative contribution to the goal by Monoculture

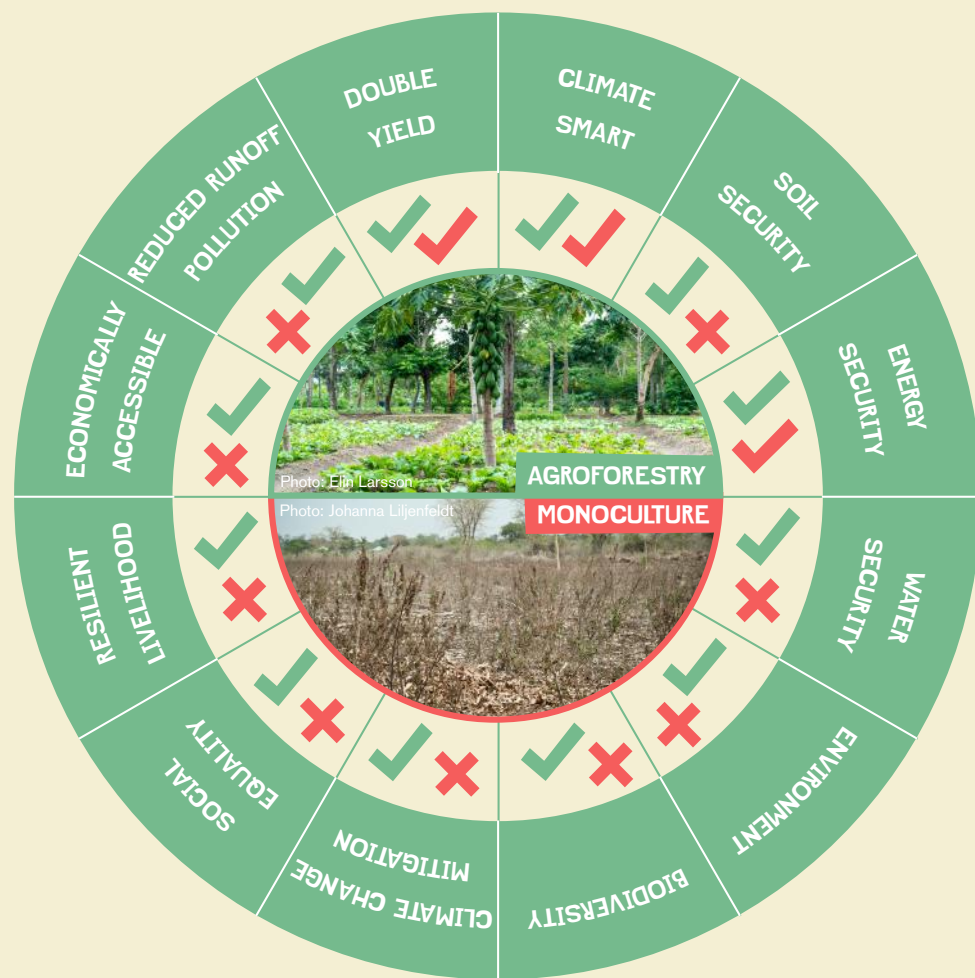


Photo: Elin Larsson

Photo: Johanna Liljenfeldt

AGROFORESTRY
MONOCULTURE

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Where trees grow - people grow

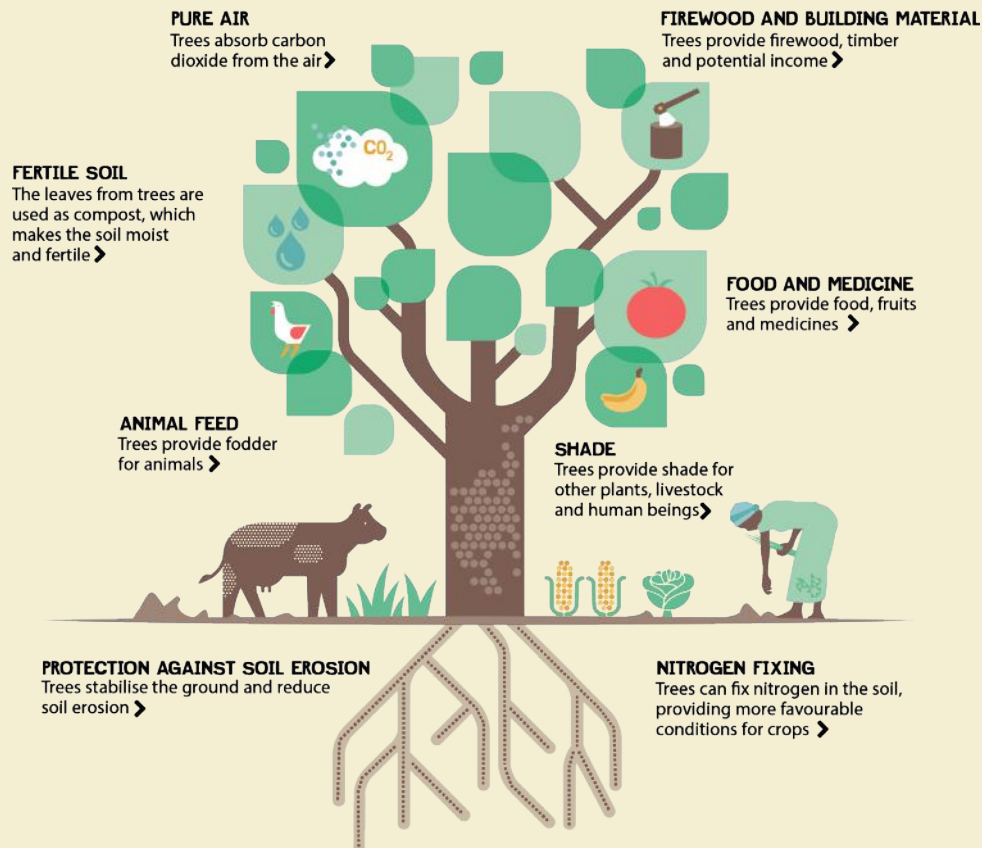


Vi Agroforestry

Benefits of agroforestry over conventional agriculture

AGROFORESTRY

Agroforestry is a system of land use management in which trees or shrubs are grown around or among crops or pasture land. In a broader sense, Agroforestry is a collective name for land-use systems and technologies where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence.



Agroforestry has various benefits that identify it as a food production system of the future:

1. Stabilization of soils (reducing wind erosion) and modifying the microclimate.

Trees planted as windbreaks have the capacity to reduce wind speed by nearly 50 percent and protect agricultural land from wind erosion. Also, trees modify the microclimate (air surrounding them feels cooler on a hot day), and shield their surroundings from rain.

2. Lower input of agrochemicals through nitrogen fixation, recycling of nutrients and suppressing weeds through fallen leaves which act as mulch.

This minimizes the need for synthetic fertilizers and herbicides, which reduces the concentration of chemicals in agriculture runoff and prevents environmental pollution.

3. Improving soil fertility and closed nutrient cycle.

Tree species like Acacia and Leucaena, fix atmospheric nitrogen into soil, making it available to other crops. Tree roots prevent nutrient leaching from fields and reach deeper nutrients in the soil than other plants. These nutrients are then incorporated into their leaves and are later released during the process of decomposition after leaves have fallen on the ground.

4. Prevention of runoff, better water management and cleaner groundwater.

Tree roots and organic debris on the ground slows down runoff and holds back soil particles. This provides time for nutrients to be used by crops or to be transformed by microbes into soil enriching products instead of immediately entering water bodies and impacting the chemistry.

5. Improvement of wildlife and pollinator habitat.

Conventional agriculture with hectares of monoculture fields drives many species of birds, amphibians, insects and mammals

away. Trees often serve as wildlife corridors, connecting different habitats and supporting movement of animals by providing shelter, food and space.

6. Soil salinity control in raised ground water.

Tree roots utilize water from soils around them helping to bring groundwater levels back down to their normal state and reducing salinity concentrated at the surface of the soil. Transpiration from tree leaves that have intercepted rainfall also helps to keep ground water levels stable.

7. Remediation of polluted soils.

Trees are able to absorb pollutants (agricultural pesticides and heavy metals) from deeper soil layers and immobilize them in their woody parts. The roots create a rich network that can reach as low as water table, preventing groundwater pollution and removing soil contaminants.

8. Provision of diverse products and poverty reduction.

This includes timber, firewood, fruits, nuts, medicinal products and complementary fodder for animals, but also less obvious produce like mushrooms, leaves, and bark that can be marketed as a premium mulching material. Providing alternative incomes to vulnerable communities.

9. Prevention of damage to forests.

Through the provision of a wide range of products, agroforestry practices help to prevent deforestation in places where wood is needed for cooking and as a fuel for other activities.

10. Climate change mitigation (carbon sequestration).

Agroforestry combats climate change by sequestering atmospheric carbon, reducing deforestation, restoring degraded lands and biodiversity.