The Acacia Project

World Vision

Factsheet: Australian acacia, the ideal multipurpose agroforestry tree

Australian acacias are the ideal multi-purpose agroforestry tree for arid and semi-arid regions, as they are fast growing, can increase crop yields by increasing soil fertility and fixing nitrogen in the soil, reduce erosion and provide wind-breaks and mulch for crops, increase farm income by producing timber and firewood, and in the dry season, provide fodder for sheep and cattle and pollen to produce honey.

The trees provide shade and habitat for beneficial animal species and attract insects and birds. In addition, acacia seeds have been a source of storable, nutritious food for Australian aboriginal people over thousands of years.

Getting Started

1. **Select an acacia species.** Over 50 species of desert Australian Acacia have been identified as beneficial agroforestry trees. To date, the most valuable and well proven in the Sahel region are *A. colei* and *A. torulosa*. See 'Acacia Species' below.

2. **Select a plantation method**. Acacia trees can be planted as a crop or as part of an agroforestry farming system, which is called 'Acacia Agroforestry'. This involves planting acacia around the boundaries of traditional food crops and inside crop borders. Acacia Agroforestry that includes Farmer Managed Natural Regeneration (FMNR), which regenerates indigenous trees, results in better windbreaks and soil improvement plus increased wood production. See 'Factsheet: How to do Acacia Agroforestry' for more information.

   Alternatively, acacia can be planted on wastelands where farming is not practiced. Nearby acacia plantations can be useful to reduce the distances required for collecting wood and fodder for animals.

3. **Start a village or individual nursery to grow seedlings.** Australian acacia trees are most successfully introduced by planting seedlings that have been grown in village or individual tree nurseries. See 'Propagation' below.

4. **Plant and manage the trees.** Planting methods and spacing are important to optimise tree growth. Prune acacia trees every second year. See 'Planting and Management' below.

Acacia Species

Many of the 1,000 Australian acacia tree species evolved in a desert climate and are well adapted to dry conditions with as little as 300 mm annual rainfall and grow well in a range of soil types, especially poor sandy soils.

A.colei (left) and A.torulosa (right) in Niger at 3 years

A.colei and *A.torulosa* are both valuable species that have undergone an extensive selection and trial process in Niger. These species are easily raised and established, recover rapidly after pruning and produce good quantities of wood. Side branches of both species can be pruned to produce building poles.

A.colei is the most valued and widely used acacia species in Niger, producing between 1-10 kilograms of seed in its second year.

A. torulosa has also been developed to compliment and improve on *A. colei*. This species is longer lived, creates less competition for food crops and produces larger seeds that are more easily harvested.

In Ethiopia, *A Saligna* is commonplace and provides benefits to farmer families, particularly in wood production and fodder collection.

See 'Fact Sheet: Australian Acacia Agroforestry Species' for more information.

Propagation

To commence germination, pour boiling water over the acacia seeds and leave overnight. Place each swollen seed in a small container (like a black plastic bag, punnet, small pot or tube) filled with material for a seed bed, such as around 80% moist sand and 20% manure or other available compost.

Acacia bush nursery, Niger

For fine seed sprinkle over the surface and press down firmly. When germination occurs cultivate the strongest seedlings. For large seed, space well or use individual containers. Cover to a depth of about double the seed diameter. After sowing, keep the seed bed moist and sheltered from drying winds and rain. Allow exposure to some sunlight.

Planting can take place when good roots have developed. Check by carefully tapping a sample plant out of its pot. Ensure the roots can easily spread into the surrounding soil. If the seeding becomes 'pot bound' with tightly packed roots the roots may need pruning. Plant out after around 8-12 weeks.

Tree nursery and farming systems training courses for villages in tree propagation, planting and care are important to develop successful tree nurseries and give trees a good chance of survival.

Planting and managment

Correct tree spacing, pruning and weeding help to extend the life span of the trees beyond 5-10 years, reduce susceptibility to wind damage and seedless years as well as competition with annual food crops. Plant acacia trees in a row about 5-10 m apart. When planted along borders of food crops, plant acacia rows about 25-50m apart to minimise competition with crops. Also, ensure food crops are planted at least 1 m away from the acacia trees.

Pits designed to catch water with added compost or dry manure can be used to start growing trees and crops. Some examples of these are contour ditches, 'zai holes' (which are about 30cm diameter and 30 cm deep) or half moon shapes.

Allow *A. colei* and *A. torulosa* trees to establish for two to three years to 2-3m in height before pruning. Prune the acacia trees to 1-1.5m above ground every second year. Prune about one month before the rainy season. Saws or sharp axes can be used in an upward motion to give a clean angled cut. Consider pruning the side branches after 4 years to produce building poles for use in house construction or to make farm tool handles and ladders. Acacia has dense, strong heart wood.

The site

Acacias thrive in semi arid conditions. The trees fix nitrogen, produce firewood and light construction timber and if planted in rows can form effective windbreaks. They thrive on wasteland, even on hard pans, where crops cannot be grown. In dry areas they do best planted along flow lines where run off water passes.

Factors to consider

According to your objectives, determine the density and layout of tree plantings, the types and numbers of indigenous trees you want to regenerate and which annual crops you will plant.

The leaves of some Australian acacia species can be used as fodder for farm animals. The leaves of *A. Saligna*, prevalent in Ethiopia, can be picked and dried in the shade to increase their nutritive value and fed to animals. Livestock do not typically eat Acacia foliage before drying. This enhances tree establishment and survival and enhances the production of wood, mulch and windbreaks.

Some Australian acacia species in wetter environments have the potential to become environmental weeds. Therefore, consultation with authorities and controlled testing before release is recommended.

Acacia seeds as food

Some acacia species, such as *A.Colei*, are a traditional food of Australian aboriginal people. These species produce a nutritious seed, high in protein, carbohydrates and fats. Seeds may be stored for many years without deteriorating.

The seeds ripen in March (in Niger) when no other non-irrigated crops are growing and can be harvested and processed into flour. Acacia seed is tasty and can be used in most local dishes. Note that safety trials of acacia seeds for human consumption are still underway.