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## Is alley cropping right for your situation?

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This agroforestry technique has been widely promoted in agriculture development programs throughout the tropics. Alley cropping (AC) is the practice of growing food crops in alleys between hedgerows of trees or shrubs, which are regularly coppiced (severely pruned). Prunings are placed on the soil as mulch around the food crops, or they are used to feed livestock and to provide firewood.

Typically an AC system consists of trees planted 20 to 50 cm (8-20 in) apart in straight or contoured (if on a slope) rows with 4 to 6 m (13-20 ft) between rows. Alley width and in-row tree spacing can be adjusted depending on factors such as average rainfall and crop selection. The SALT technique described earlier in this issue is a special adaptation of AC.

An AC system can improve soil health and fertility as: 1) mulched prunings decompose; 2) manure from any animals that ate the prunings is brought back into the field; 3) trees with roots extending below crop root systems bring nutrients up from the subsoil to where they can be accessed by the crop; and 4) nitrogen-fixing trees add nitrogen to the soil. In dry climates, AC may give no net benefit or may actually decrease yields. This is due to too much competition for water between tree roots that grow into the alleys and the crops being grown in them.

In timing the pruning of hedgerows, whether for use as forage or mulch, a general guideline is to cut the trees by the time they are 3 m (9.8 ft) tall or the stem diameter is more than 1 cm (0.4 in). Prune the trees back to a height of 1 m (3.3 ft) or less. Delays in pruning may result in "woody" mulch that does not decompose well. Obviously, AC is a labor-intensive venture not suited to farms with a labor shortage.

Suitable trees for AC are those that are: 1) fast growing, producing much biomass; 2) able to coppice well (resprout after repeated prunings); 3) a source of useful byproducts (e.g. firewood, fodder, stakes); 4) high in leaf protein (nitrogen); 5) compact in terms of growth habit, minimizing shade to the crop; and 6) deep-rooted with few shallow, lateral roots that tend to compete with the crop for nutrients and water. Seedgrown trees are more likely to develop a taproot than are trees started by cuttings, which tend to develop extensive lateral root systems.

Some commonly recommended tree species are *Leucaena* spp., *Calliandra calothyrsus*, *Gliricidia sepium*, *Senna siamea*, *Sesbania sesban*, and *Acacia* spp. Often one may find that a native species is best-adapted to local conditions and pests. EDN 82 and 84; Agroforestry TN.