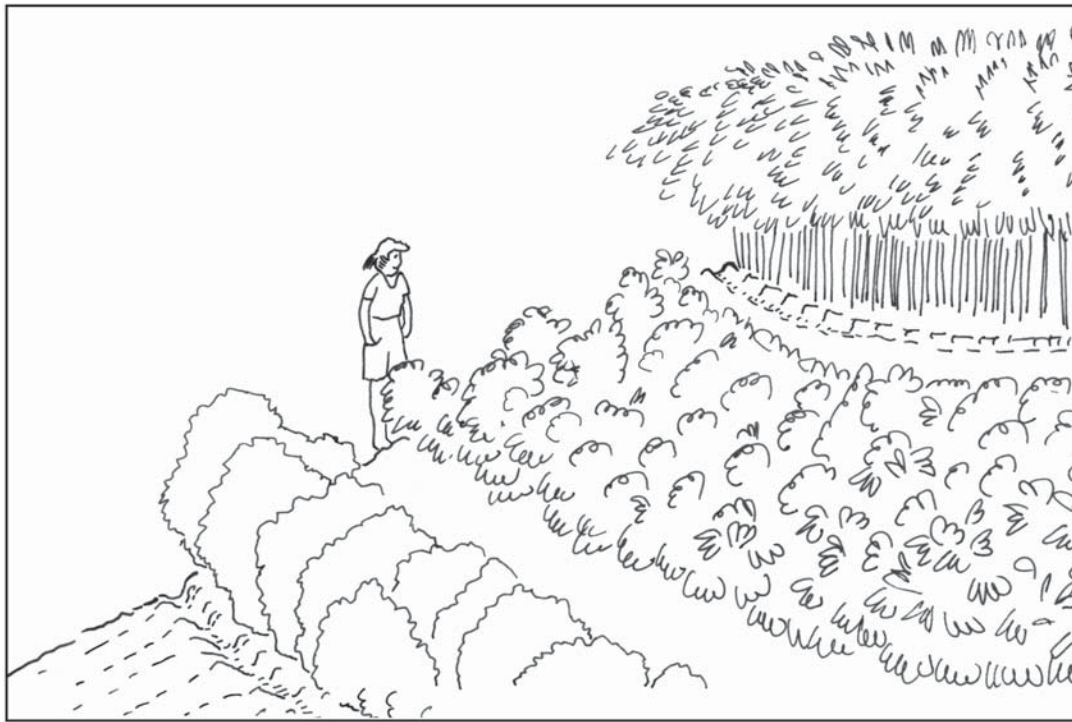

Alley Cropping on Pacific Island Farms

USDA NRCS Practice (311)



Use alley cropping on your farm to produce many valuable products while protecting soil and conserving water.

What is alley cropping?

When trees or shrubs are planted in a series of rows across the slope (on the contour) and crops are planted between them, it is called **alley cropping**. The shrub/tree rows are called **hedgerows** and the space between where the crops are grown are called **alleys**.

Alley cropping allows Pacific Island farmers to harvest products from their shrubs and trees (such as wood, nuts, cultural and medicinal products) as well as from their main crops (grains, vegetables, fruits, forages, etc.). When nitrogen-fixing shrubs and trees are grown, leaves and shoots from hedgerows can be used as green manure for fertilizing crops and orchards, and as fodder for livestock.

Why use alley cropping?

Pacific Island farmers can benefit from planting trees and shrubs across the slope on their farm. Using this practice can:

- produce a variety of different products (mushrooms, medicinal herbs, nuts, wood, etc.)
 - provide nutrient rich green manure and mulch to fertilize crops and orchards.
 - produce forage and fodder for farm animals.
 - provide in-field protection from wind.
 - protect and improve topsoil. Hedgerows slow down rainwater, filter out soil particles, add
-

organic matter, and let more water soak into the ground.

- reduce erosion.
- provide shade, food and cover for wildlife.

To learn more about protecting your sloping farmland from water damage, read ***Protecting Soil on Pacific Island Farms***.

Where is alley cropping used?

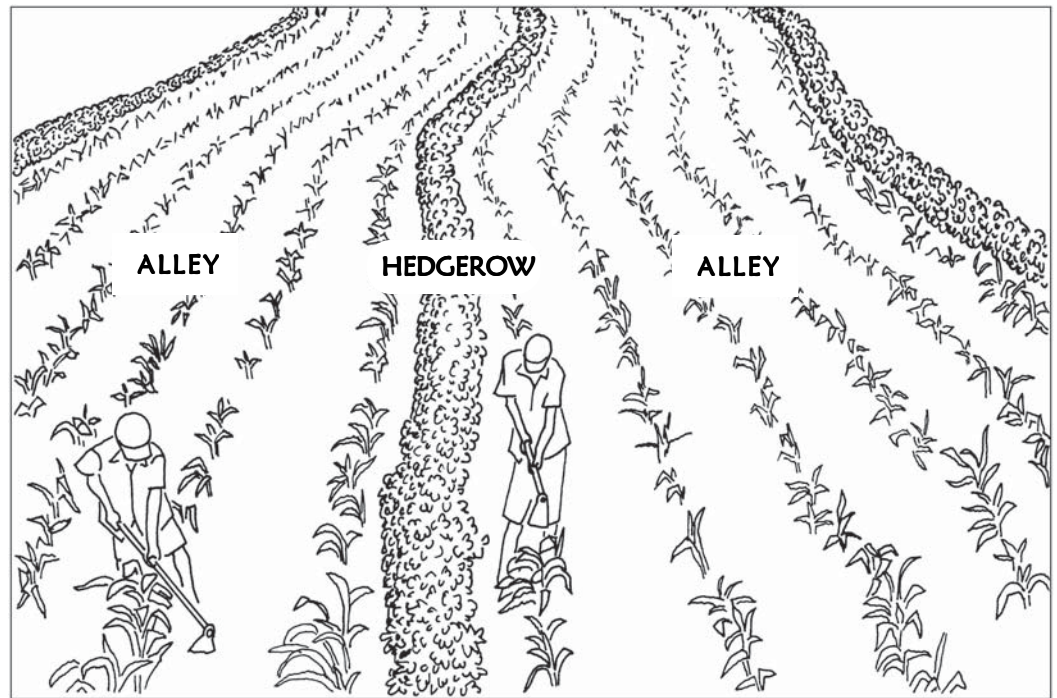
- On sloping fields where crops are grown (includes orchard, row crops, etc.)

Plan your Alley Cropping Hedgerows

Plant Selection

For alley cropping, grow a mix of multipurpose trees and woody bushes that will provide many benefits for your farm. *Gliricidia* (*Gliricidia sepium*) is often used in Pacific hedgerows because it can be pruned to provide fodder, green manure, and fuel. Some hedgerow trees, such as da'ok or fetau (*Calophyllum inophyllum*), can be grown to serve as windbreaks. Fruit trees and medicinal plants are also grown in hedgerows. Choose a combination of trees and shrubs based on your needs.

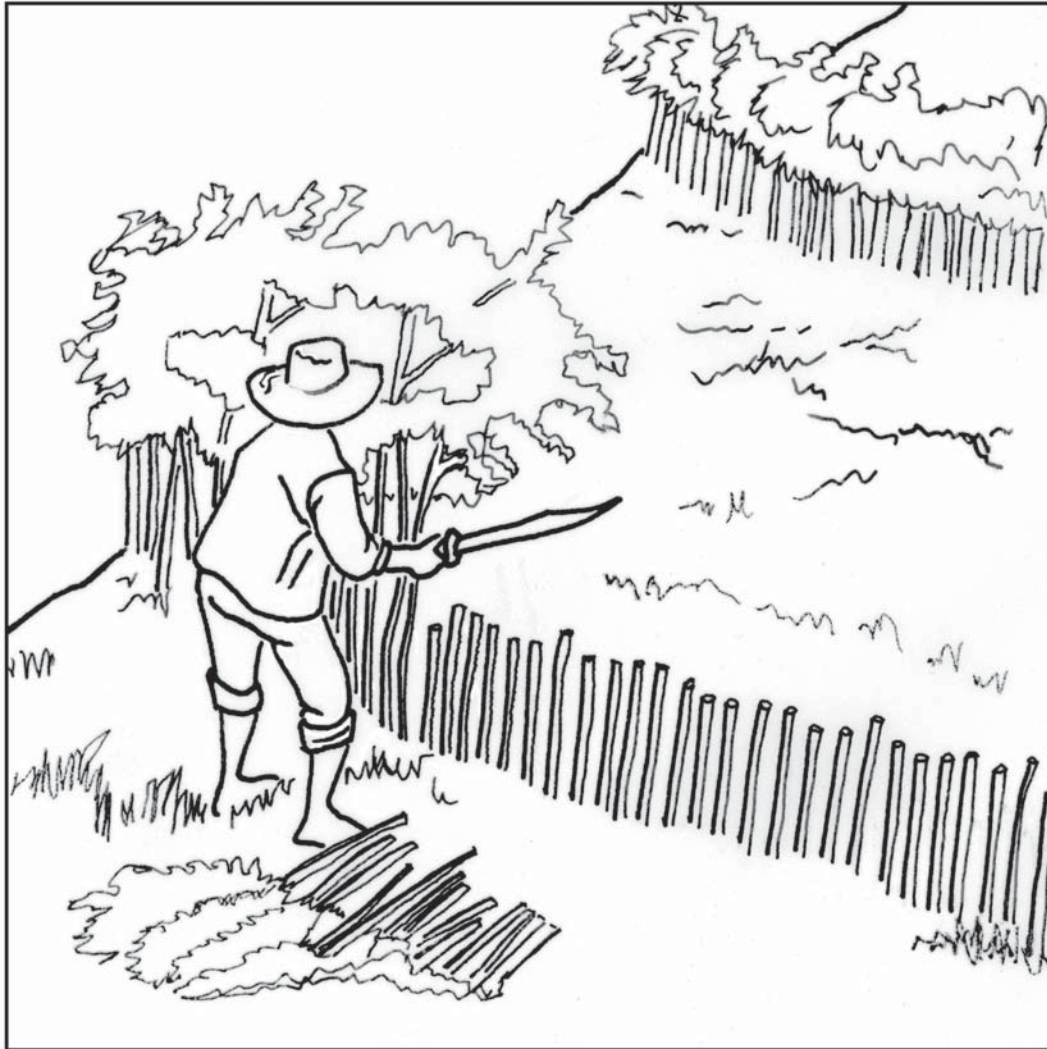
For current lists of suggested alley cropping hedgerow plants suitable for your farm, contact the local office of the Cooperative Extension Service or the local USDA NRCS field office. They can



The shrub and tree rows are called hedgerows. The area between them where crops are grown are called alleys.

Suggested Spacing for Alley Cropping Hedgerows (USDA NRCS Vegetative Barriers)

% Slope of Field	Spacing
10	60 feet (18.3 meters)
20	30 feet (9.1 meters)
30	20 feet (6.1 meters)
40	15 feet (4.6 meters)
50	12 feet (3.7 meters)



Hedgerows can provide nutrient rich green manure and mulch to fertilize crops or to feed the farm animals.

provide you with ideas for plant species, planting rates, planting methods, fertilizer and liming rates.

To get good growth for both your crop and your alley cropping hedgerow:

- pick hedgerow plants that will not compete too much with your crops for water and fertilizer.
- let your hedgerow trees or shrubs grow for at least 12 months before pruning them back to the desired height.
- manage your hedgerow plants so they won't shade your crops.
- don't use hedgerow plants that will attract insects and diseases to your crops.
- don't use hedgerow plants that can escape from the farm and become problem weeds in natural areas or forests.

Plant on the contour

Plant level and across the slope, without any low spots where water can channel and break through. Alley cropping hedgerows should be flat across the slope, no steeper than 1-2% grade. It is important to take time to lay out contour lines to guide you in the field. This is done with simple instruments such as a level or a homemade A-frame. Your local office of the USDA NRCS or the Cooperative Extension Service can help show you how to lay out contour lines.

Hedgerow Tree and Shrub Spacing

The spacing between the trees or shrubs in the hedgerows will be determined by:

- the amount of light needed by the main crops in the alley
- the growth period of the main crops in the alley
- the width and turning areas needed for your machinery
- the importance of protecting your farm's topsoil and controlling erosion.

The steeper the slope of the land, the closer together the hedgerows should be. On very steep slopes, plant hedgerows with at least two rows of trees spaced closely together. Hedgerows should be about six vertical feet apart to protect fields from water damage and reduce soil erosion (see box for suggested spacing).

In a related conservation practice, **hedgerow planting** (422), rows of trees, woody shrubs, or perennial bunch grasses are planted on the land. These rows of plants can be used as a living fence to protect crops, to control animal movement, and to mark field and property borders. Hedgerow plantings can screen out wind, noise and dust. They also provide shade, food and cover for wildlife.

For Pacific Island farms with strong winds, consider planting a **windbreak/shelterbelt** (380). For this conservation practice, rows of trees or shrubs are planted in a special pattern to protect crops from wind damage. The farmer must take many things into account such as wind direction, tree height, row length, and planting density. For technical assistance to design and build a windbreak/shelterbelt, contact your local office of the USDA NRCS.

For the best results, combine **alley cropping** with other conservation practices:

- **Contour Farming for Cropland** (330): carrying out farm operations across the slope
- **Contour Farming for Orchards** (331): carrying out farm operations across the slope
- **Hillside Ditch** (423): digging a small ditch across the slope to divert rainwater
- **Cover Crops** (340): growing crops to plow down and fertilize cash crops
- **Conservation Cover** (327): growing permanent plant cover to protect topsoil and smother weeds

Additional information is available from your local USDA Service Center or at www.pb.nrcs.usda.gov and www.hi.nrcs.usda.gov.



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