

Alley Cropping

**An Introduction to
incorporating long-term
tree crops and short-term
farm crops**

Presentation Objectives

- Define alley cropping
- Describe the general benefits and how an alley cropping system produces these benefits
- Discuss the limitations of alley cropping
- Explain the basic alley cropping design considerations

Alley Cropping

Alley cropping is broadly defined as the planting of trees or shrubs in two or more sets of single or multiple rows at wide spacings, creating alleyways within which agricultural, horticultural, or forage crops are cultivated.

Water Erosion



Alley Cropping - Benefits



- Diversify farm enterprise

Alley Cropping - Benefits



- Diversify farm enterprise



Floriculture



Forest mushrooms



Medicinal plants

Alley Cropping - Benefits



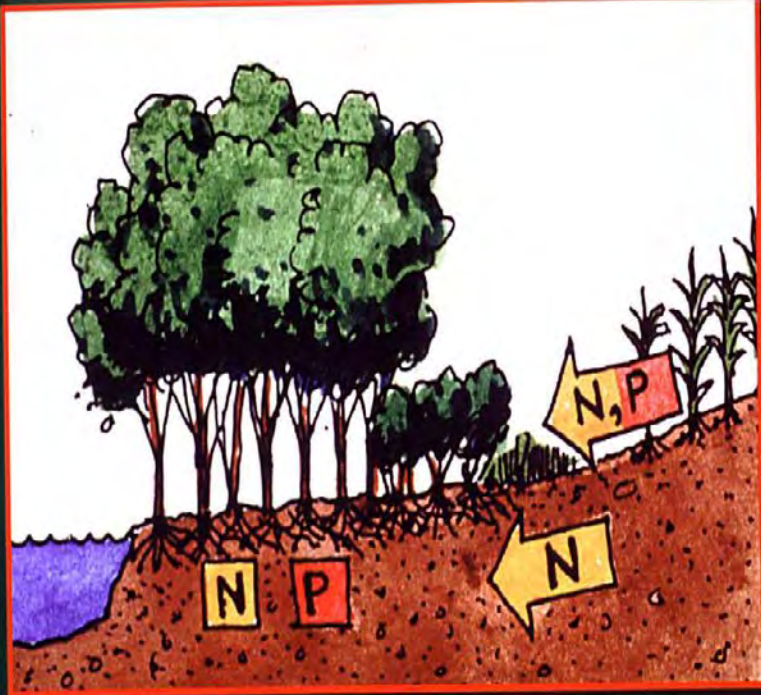
**Reduce water &
wind erosion**



**Improve crop
production**

- Diversify farm enterprise
- Reduce erosion

Alley Cropping - Benefits



Riparian Filter Strips

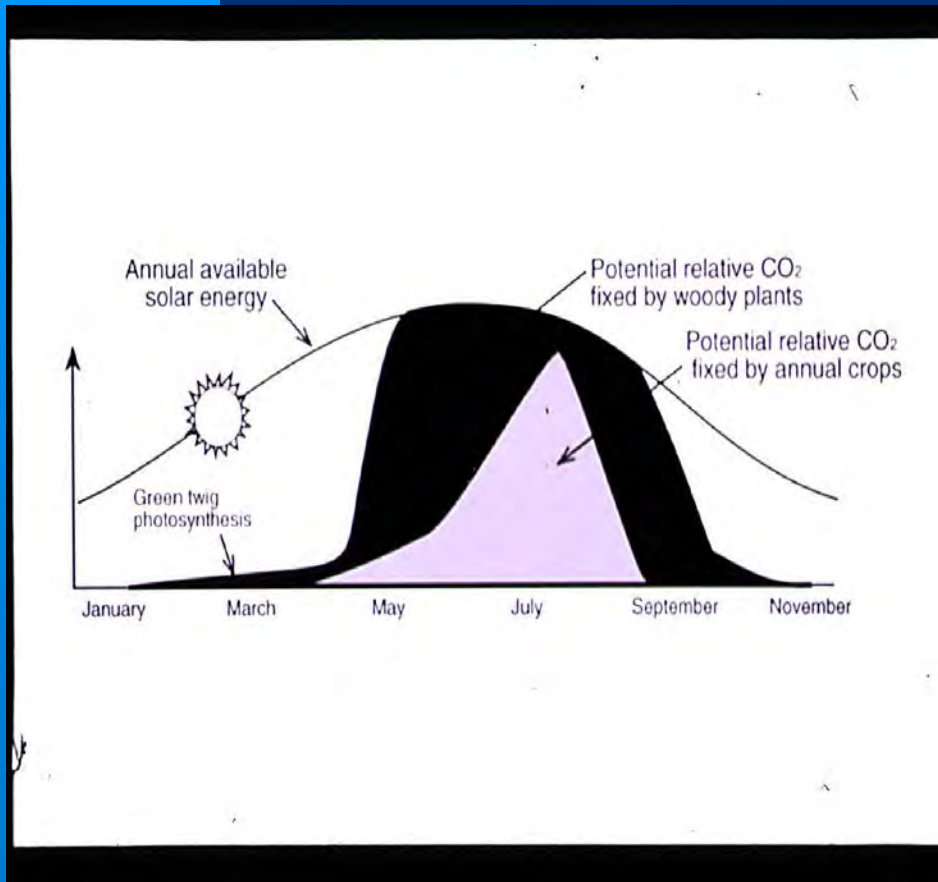
- Diversify farm enterprise
- Reduce erosion
- Improve water quality

Alley Cropping - Benefits



- Diversify farm enterprise
- Reduce erosion
- Improve water quality
- Protect crops

Alley Cropping - Benefits



- Diversify farm enterprise
- Reduce erosion
- Improve water quality
- Protect crops
- Improve utilization of nutrients

Alley Cropping - Benefits



Wildlife considerations

- Diversify farm enterprise
- Reduce erosion
- Improve water quality
- Protect crops
- Improve utilization of nutrients
- Enhance wildlife habitat

Alley Cropping - Benefits



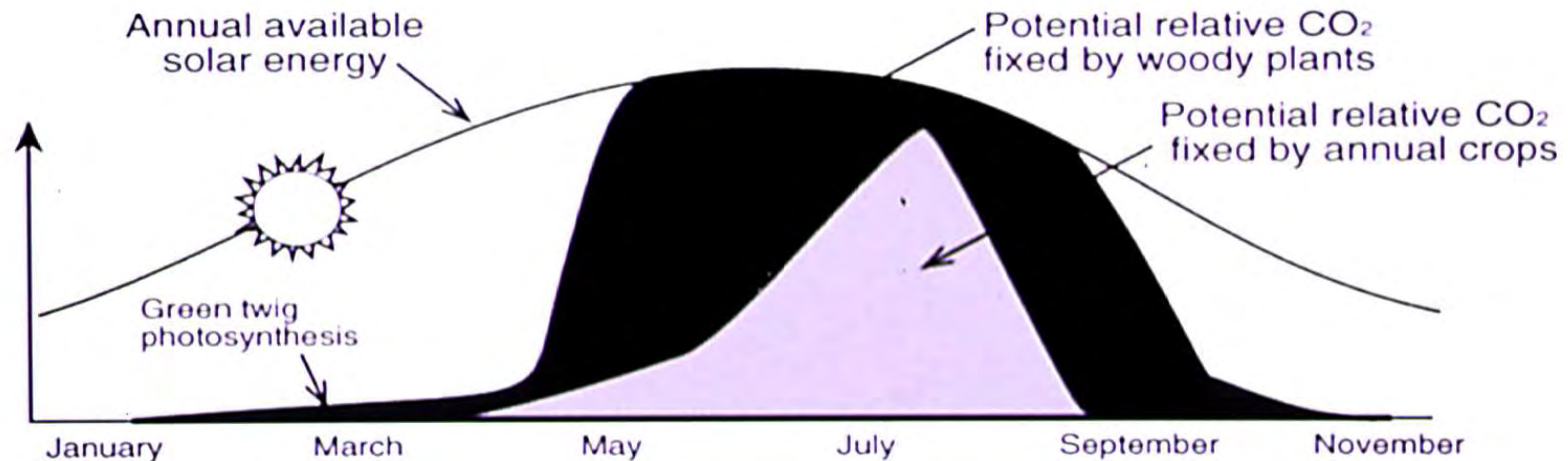
- Diversify farm enterprise
- Reduce erosion
- Improve water quality
- Protect crops
- Improve utilization of nutrients
- Enhance wildlife habitat
- Improve aesthetics

Alley Cropping - Benefits



- Diversify farm enterprise
- Reduce erosion
- Improve water quality
- Protect crops
- Improve utilization of nutrients
- Enhance wildlife habitat
- Improve aesthetics
- Store carbon

Alley Cropping – Carbon



Alley Cropping - Limitations



- Intensive management

Alley Cropping - Limitations



- Intensive management
- Requires specialized equipment

Alley Cropping - Limitations



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Alley Cropping - Limitations

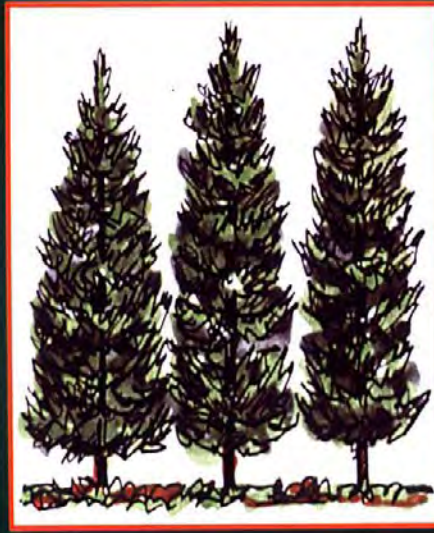


- Intensive management
- Requires specialized equipment
- Removes land from annual crops

Alley Cropping - Limitations



Walnuts, pecans,
hazelnuts & almonds



Christmas trees

- Intensive management
- Requires specialized equipment
- Removes land from annual crops
- Requires marketing infrastructure for tree products

Alley Cropping - Design



Location:

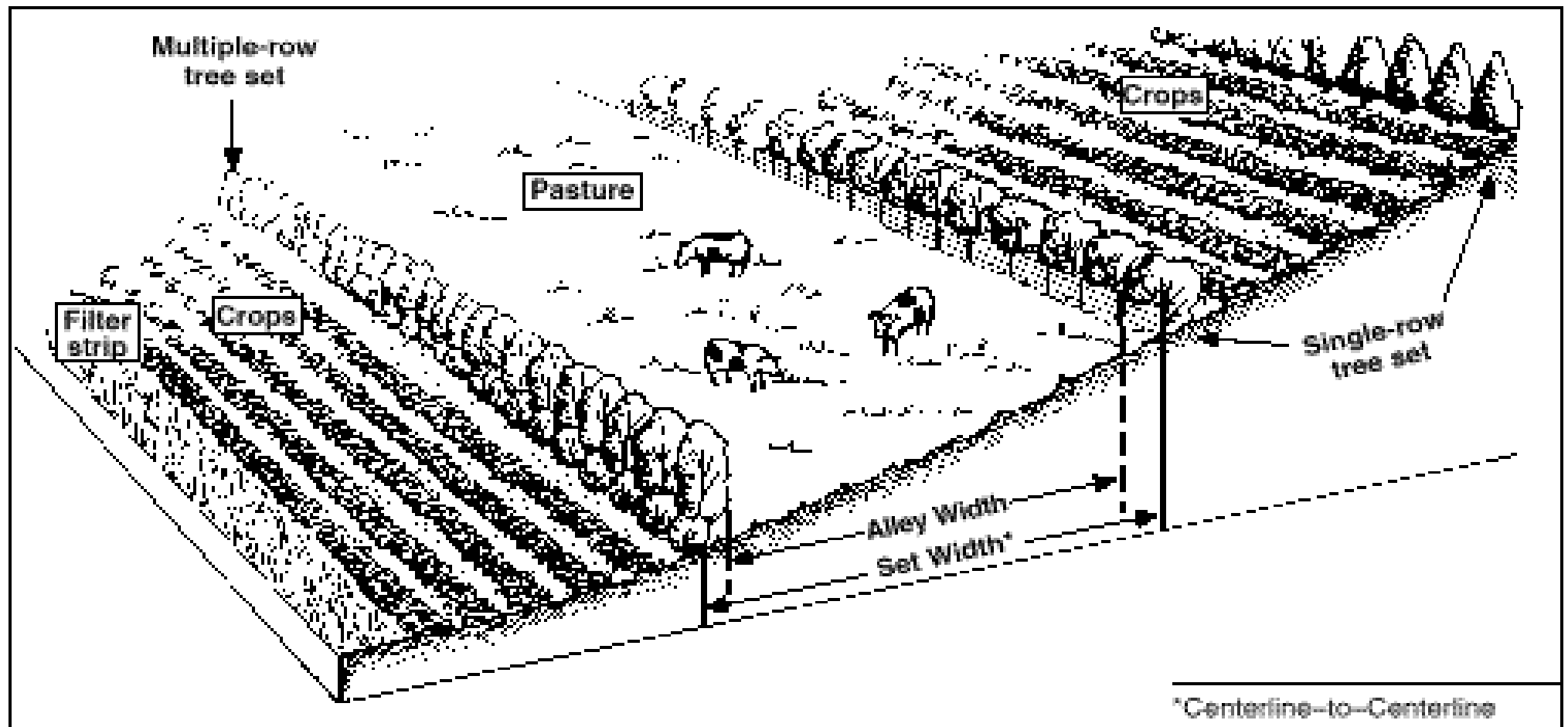
Any land where
crops or forages will
grow and adapted
trees or shrubs are
available

Alley Cropping - Design

- Layout

- Slope length needed to reduce water erosion
- Alley width to reduce wind erosion

Alley Cropping - Design

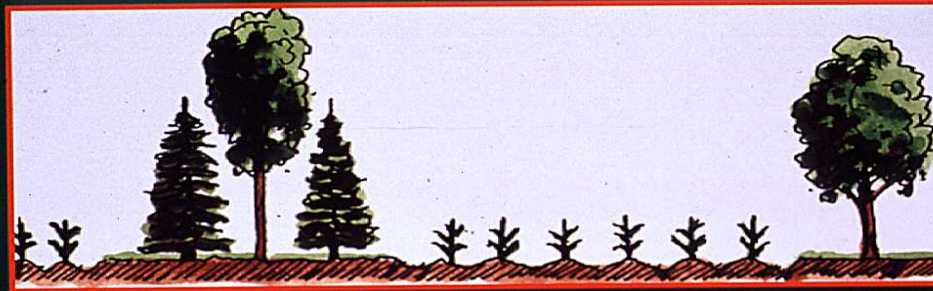


Alley width depends on purpose, tree canopy, crop sensitivity, crop rotation, crop or forage grown.

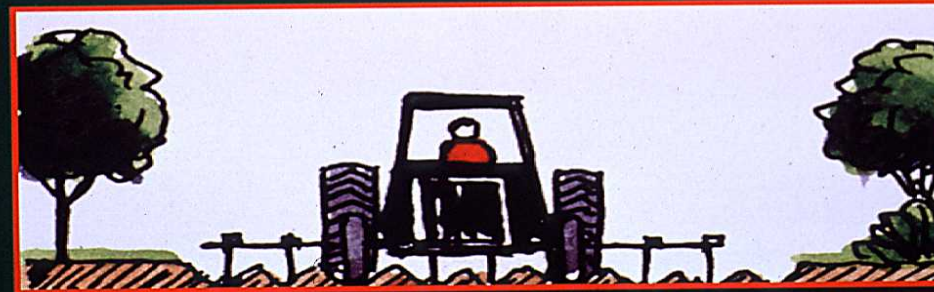
Alley Cropping - Design

■ Layout

- Multiples of the widest field equipment width



Width of tree strips



Space between strips

Alley Cropping - Design

Layout - Tree Arrangement

- Single or mixed species
- Number of tree rows - single vs. multiple

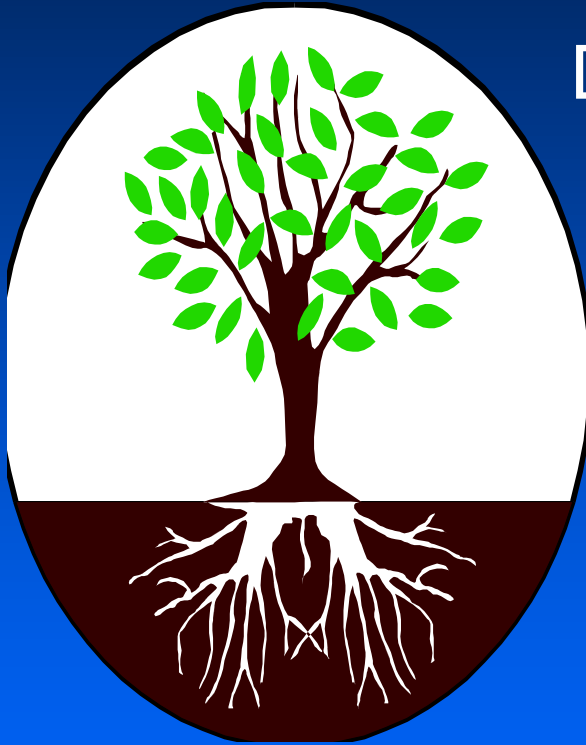


Plant multiple rows



Create travel lanes

Plant Materials - Trees



Desirable Characteristics:

- Produce high-value product(s)
- Yields annual or periodic commercial product
- Relatively fast growing
- Appropriate shade for companion crop
- Adapted to site and soils
- Minimal roots at soil surface
- Provides additional wildlife habitat to the site

Plant Materials - Trees



Plant Materials - Trees



Plant Materials - Trees



Plant Materials - Trees



Plant Materials - Trees



Plant Materials - Trees



Plant Materials

Companion Crops



Potential Companions:

- Row / cereal crops

Plant Materials

Companion Crops



Potential Companions:

- Row / cereal crops
- Forage crops

Plant Materials

Companion Crops



Potential Companions:

- Row / cereal crops
- Forage crops
- Specialty crops

Plant Materials

Companion Crops



Potential Companions:

- Row / cereal crops
- Forage crops
- Specialty crops
- Biomass crops

Operation and Maintenance

- Proper site preparation and establishment of trees and shrubs
- Pest Management
- Nutrient Management
- Specific to trees:
 - Replanting
 - Pruning (branch and/or roots)
 - Thinning
 - Protection

Buffers as a System

Alley cropping is not a stand alone technology, it needs to be part of an overall management system including:

- crop rotation
- crop residue management
- combinations of buffer practices
- pest management
- nutrient management

SUMMARY

Alley Cropping can help diversify farm enterprises, protect soil, improve air and water quality, enhance fish and wildlife habitat, improve biodiversity, and beautify the landscape. Conservation buffers allow farmers and ranchers to express their commitment to conservation.

Alley Cropping

