

ALLEY CROPPING

Conservation Practice Job Sheet FL-311-JS

Natural Resources Conservation Service, Florida

July 2006



Definition

Trees or shrubs are planted in sets of single or multiple rows with agronomic, horticultural crops or forages produced in the alleys between the sets of woody plants that produce additional products.

Purpose

Alley cropping is used to enhance microclimatic conditions to improve crop or forage quality and quantity. Reduce surface water runoff and erosion. Improve soil quality by increasing utilization and cycling of nutrients. Alter subsurface water quantity or water table depths. Enhance wildlife and beneficial insect habitat. Increase crop diversity. Decrease offsite movement of nutrients or chemicals. Increase carbon storage in plant biomass and soils.

Where Used

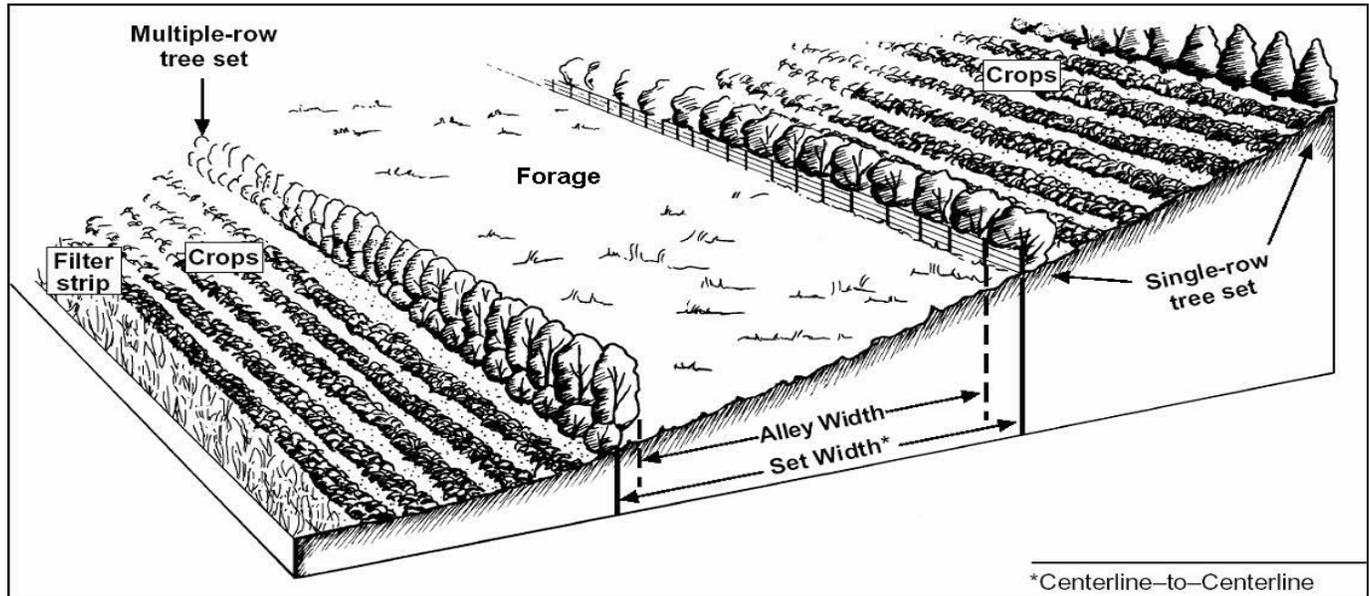
Alley cropping is used where improved economic or environmental conditions are desired over the existing farming practices. Alley cropping, in addition to the tree or shrub products grown, is used with row-crop, small grain, forages, or specialty crop production. The soils and sites selected must be suited to production of both the woody and herbaceous crop species desired.

Resource Management System

Alley cropping is normally established concurrently with conservation crop rotation, nutrient and pest management, residue management, and other practices as part of a resource management system for a conservation management unit. Forage-related practices need to be applied when forage crops are used. When alley cropping is used for soil erosion control, trees or shrubs are planted on the contour in conjunction with herbaceous vegetation. When wildlife habitat enhancement is a concurrent purpose, native or adapted tree or shrub species beneficial to the target wildlife species become part of the site-specific specifications.

When tree/shrub sets are spaced at relatively close intervals (40 feet or less), shade-intolerant crops can be grown for several years until the woody canopy creates significant shading. At that point, several options can be considered: 1) replace shade-intolerant crops with shade-tolerant crops, 2) thin and/or prune the woody vegetation to reduce shading so long as functions or future products are not impaired, or 3) harvest the sets and reestablish woody plants (requires woody species that produce products quickly).

ALLEY CROPPING JOB SHEET



Trees or shrubs are generally planted in single or multiple-row sets or series. The spacing between sets is determined by the primary purpose of the alley cropping and the agronomic, horticultural, or forage crop grown. Woody plants are typically selected for their potential value for wood, nut or fruit crops and/or the benefits they can provide to the crops grown in the alleys. There are many compatible tree or shrub species, depending upon the region of the country, soil type, value, and markets. All traditional agronomic, horticultural, or forage crops can be grown in the alleys between the sets of trees or shrubs. The primary factor for selecting the crops within an alley is their sunlight requirement relative to the canopy density (shade) created by the trees or shrubs in the sets.

Plans and Specifications

Site-specific requirements are listed on the specifications sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See Florida Conservation Practice Standard Alley Cropping, Code 311.

pruning may be necessary along the edges of alleys to maintain adequate growth in adjacent agronomic, horticultural, or forage crops. Protect trees and shrubs from damage by livestock or harmful wildlife.

Wildlife

Alley cropping provides excellent opportunities to improve wildlife habitat for some species by creating travel lanes connecting important habitat areas, providing infield cover, improving vertical structure, and increasing edge effect.

Certification

This practice can be certified by completing Table 2.

Operation and Maintenance

Replace dead and dying woody species in newly established sets. Care must be taken to use chemicals or chemical applications that are compatible with both the tree crop and the alley crop. Monitor in-alley crop growth to determine if shading conditions are being met as sets mature. Root

ALLEY CROPPING SITE SPECIFIC SHEET

Land User:	County:	Date:
Farm #:	Tract #:	Field #(s):
Purpose (check all that apply)		
<input type="checkbox"/> Produce tree and/or shrub products (wood, nuts, berries, fodder, mulch, etc.) along with crops or forages	<input type="checkbox"/> Provide or enhance wildlife habitat	
<input type="checkbox"/> Improve crop or forage quality and quantity by enhancing microclimatic conditions	<input type="checkbox"/> Create habitat for biological pest management	
<input type="checkbox"/> Reduce surface water runoff and soil erosion	<input type="checkbox"/> Improve crop diversity, quantity, quality, and economic returns	
<input type="checkbox"/> Improve utilization and recycling of soil nutrients	<input type="checkbox"/> Reduce movement offsite of nutrients or chemicals	
<input type="checkbox"/> Reduce subsurface water quantity or alter water table depths	<input type="checkbox"/> Enhance the aesthetics of the area	
	<input type="checkbox"/> Increase net carbon storage in the vegetation and soil	
Layout		
Alley width ¹ (ft):		
Spacing between tree/shrub sets ² (ft):		
Supplemental herbaceous cover width – erosive sites (ft):		
Tree/shrub set orientations: ____ Contour; ____ North/South; ____ East/West; ____ Other (specify _____)		

¹ Distance available for herbaceous crops; set equal to multiple agricultural equipment widths. ² Distance from center of one set to center of the next set

Woody Plant Materials Information				
Planting date:				
Species/cultivar by set and row number:	Kind of stock ³	Distance between plants within row (ft):	Total number of plants for row:	Distance (ft) from this row to next row ⁴
Set # 1: 1				
2				
3				
4				---
Set # 2: 1				
2				
3				
4				---

³ BAreroot, Container, Cutting; include size, caliper, height, and age as applicable. ⁴ Adjusted for width of maintenance equipment.

Temporary Storage Instructions
<p><i>Planting stock that is dormant may be stored temporarily in a cooler or protected area. For stock that is expected to begin growth before planting, dig a V-shaped trench (heel-in-bed) sufficiently deep and bury seedlings so that all roots are covered by soil. Pack the soil firmly and water thoroughly. Additional requirements:</i></p>

ALLEY CROPPING SITE SPECIFIC SHEET

Site Preparation

Remove debris and control competing vegetation to allow enough spots or sites for planting and planting equipment. Prepare supplemental moisture materials for installation if required by trees and/or shrubs. Additional requirements:

Planting Methods

For container and bareroot stock, plant stock to a depth even with the root collar in holes deep and wide enough to fully extend the roots. Pack the soil firmly around each plant. Cuttings are inserted in moist soil with at least 2 to 3 buds showing above ground. Additional requirements:

Operation and Maintenance

Inspect alley cropping components periodically and protect from damage so proper function is maintained. Replace dead or dying tree/shrub stock and continue control of competing vegetation to allow proper establishment. Install and begin supplemental irrigation if required. Additional requirements:

Table 2 – Certification of Alley Cropping

Field #	
Plant materials or species to be planted	
Plant spacing and arrangement/width of crop/forage alleys and woody plantings	
Spacing between tree/shrub sets	
Planting date of tree/shrub sets	
Site preparation and planting method	

As applied does this practice meet NRCS specifications? **Yes** **No**

Certified By:	Date:
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