Alley Cropping

Conservation Practice Job Sheet ***311***

Natural Resources Conservation Service (NRCS) ***April 1997***

Landowner_____

Definition

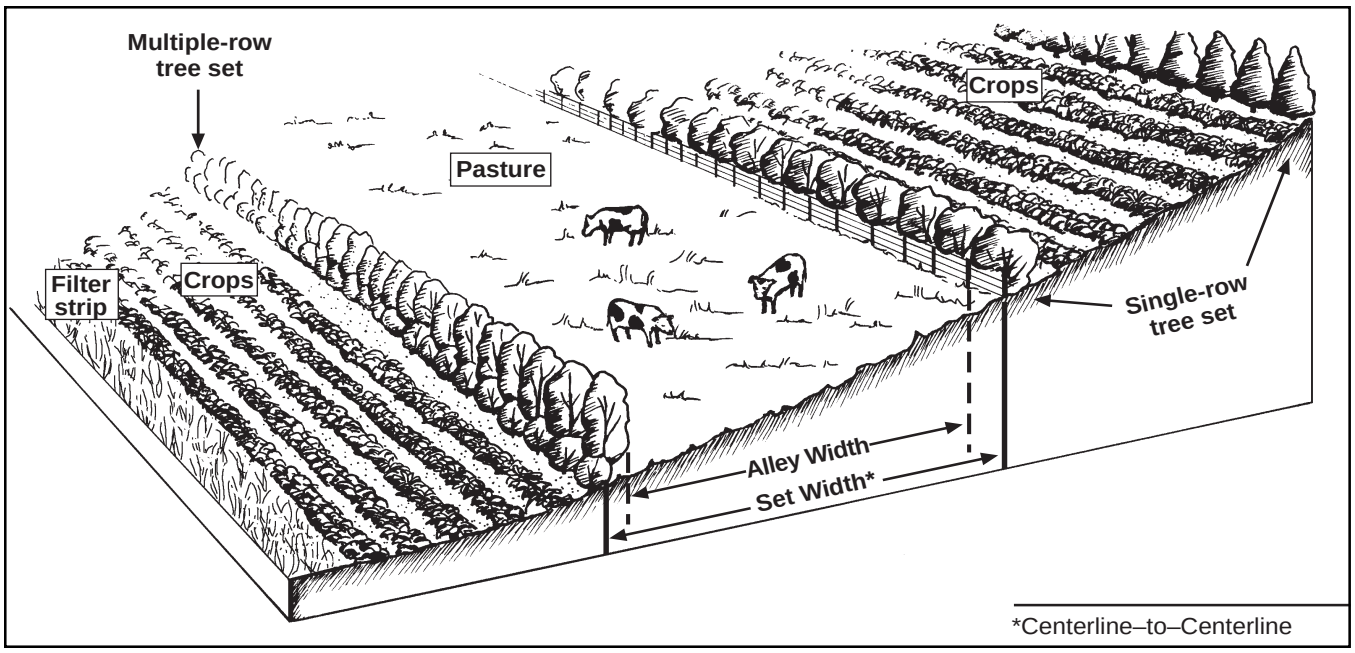
Alley cropping is the planting of trees or shrubs in two or more sets of single or multiple rows with agronomic, horticultural, or forage crops cultivated in the alleys between the rows of woody plants.

Purpose

Alley cropping is used to enhance or diversify farm products, reduce surface water runoff and erosion, improve utilization of nutrients, reduce wind erosion, modify the microclimate for improved crop production, improve wildlife habitat, and enhance the aesthetics of the area.

Trees

Trees or shrubs are generally planted in a single- or multiple-row set 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 for the benefits they can provide to the crops grown in the alleys. Common tree species are black walnut, pecan, green ash, and northern red oak. There are many other compatible species, depending upon region of the country, value, and markets.



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

Crops

All traditional crops can be grown with alley cropping. The primary factors determining which crops can be grown are the canopy density and sunlight requirement for the agronomic, horticultural, or forage crop.

Management

When row sets are spaced at relatively close intervals (40 feet or less), row crops can be grown for several years until the tree canopy begins to compete for sunlight. Management options include:

- Change the crop grown in the alleys from row crop to small grain to forage and potentially to tree plantation as the trees mature and the canopy shades the alley crop.
- Plan for a specific crop rotation and manage the trees to keep the canopy (competition for light) within the requirements of the crops grown.

Where used

Alley cropping is used where improved economics 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, small grain, or specialty crop production. The sites selected must be suited to produce both the woody and herbaceous crop species desired.

Conservation management system

Alley cropping is normally established as part of a conservation management system to address the soil, water, air, plant, and animal needs and the owner's objectives. When agronomic and horticultural crops are grown, it is important to plan the conservation crop rotation, nutrient and pest management, crop residue management, and other cropland practices. Proper grazing use and other forage practices for pasture and hayland need to be applied when forage crops are used. When alley cropping is used for erosion control, trees are planted on the contour in conjunction with a contour buffer strip.

Wildlife

Alley cropping provides excellent opportunities to improve wildlife habitat for some species by creating travel lanes connecting important habitat areas or infield cover. Practices, such as wildlife upland habitat management, provide guidance for applying alley cropping to meet wildlife objectives.

Operation and maintenance

Trees must be periodically inspected and protected from damage so proper functioning is maintained. Care must be taken to utilize chemicals or chemical applications that are compatible both with the tree crop and the alley crop.

Specifications

Site-specific requirements are listed on the specifications sheet. Additional provisions are entered on the job sketch sheet. Specifications are prepared in accordance with the NRCS Field Office Technical Guide. See practice standard Alley Cropping code 311.

Alley Cropping – Specifications Sheet

Landowner_____ Field number_____

Purpose (check all that apply)	
☐ Diversify farm products to improve or optimize economics	☐ Regulate excess subsurface water
☐ Protect growing plants (crops, forage, other)	☐ Provide wildlife habitat
☐ Reduce water runoff and erosion	☐ Improve aesthetics
☐ Reduce wind erosion	☐ Other (specify):
☐ Decrease nutrient/chemical loss	☐

Location and Layout
Alley width (ft)[1]:
Spacing between tree sets[2]:
Tree set orientations: (See diagram job sketch) ☐ Contour ☐ East/West ☐ North/South ☐ Other (specify) _____

[1]Distance available for herbaceous crop production. [2]Distance from the center of one tree/shrub set to the center of the next tree/shrub set.

Woody Plant Materials Information				
Planting dates:				
Species/cultivar by row number *Set number 1/*	Kind of stock[2]	Plant-to-plant distance(ft) within row	Total number of plants for row	Distance (ft) between this row and next row[3]
1				
2				
3				
4				
Set number 1/				
1				
2				
3				
4				

[1] Indicate set number as shown on sketch.
[2] BAreroot, COntainer, CUtting; include size, caliper, height, and age as applicable.
[3] Adjusted for width of maintenance equipment.

Site Preparation

Remove debris and control competing vegetation to allow enough spots or sites for planting equipment. For plantings requiring supplemental moisture, prepare and ready applicable materials for installation. Additional requirements:

Temporary Storage Instructions

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 (heeling-in bed) sufficiently deep and bury seedlings so that all roots are covered by soil. Pack the soil firmly and water thoroughly.

Planting Method(s)

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:

Alley Cropping Maintenance

Tree planting must be inspected periodically and protected from damage so proper function is maintained. Replace dead or dying tree and shrub stock and continue control of competing vegetation to allow proper establishment. For plantings used for water erosion, grass needs to be maintained in the single row sets. See standard maintenance requirements.

Alley Cropping – Job Sketch

If needed, an aerial view or a side view of the alley cropping can be shown below. Other relevant information, such as complementary practices, adjacent field or tract conditions, and the positioning of multiple or single row sets across a field or tract, and additional specifications may be included.

Scale 1"=_____ ft. (NA indicates sketch not to scale: grid size=1/2" by 1/2")

Additional Specifications and Notes: