



**AGROFORESTRY IN MINNESOTA
FACTSHEET SERIES #1**

Alley Cropping

WHAT IS ALLEY CROPPING?

Alley cropping is the planting of rows of trees or shrubs wide enough to create alleyways within which agronomic or forage crops are planted or produced.

WHY PRACTICE ALLEY CROPPING?

- Reduces soil erosion when it is established in sloping areas thereby improving water quality.
- Improves crop performance from the increased soil productivity from the added organic matter as well as from the microclimate that is created from the crop and tree shading effect. From the improved shading, water use efficiency by plants is increased.
- Reduces the use of chemical fertilizers and pesticides. Weeds are better controlled as well as the increased nutrient flow improving the soil fertility without the use of fertilizers.
- Minimizes nitrogen leaching hence improving water quality. Nitrogen leached beyond the cropping root zone is often captured by the deeper tree root systems.
- Promotes biodiversity.
- Maximizes use of the land.



DESIGN OF ALLEY CROPPING SYSTEM

Before beginning this endeavor, a landowner must consider a few things:

- Amount of rainfall
- Compatibility of trees and shrubs with crops to make sure competition for water, nutrients, and light is minimized
- Spacing between and within rows
- Sun Direction
- Maintenance requirements & available equipment



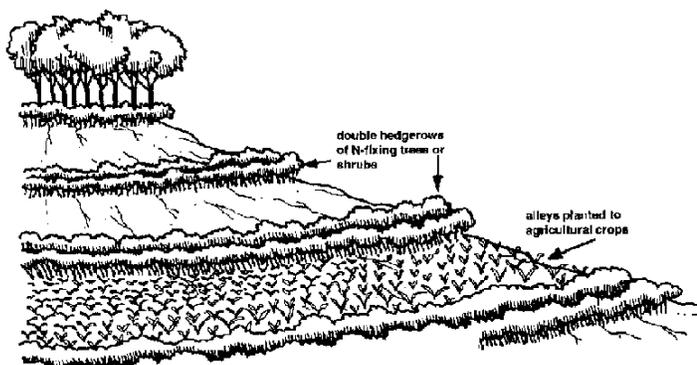
TYPES OF SYSTEMS

Alley cropping systems can be designed and established depending on the landowner objectives. There are several ways of establishing alley cropping systems:

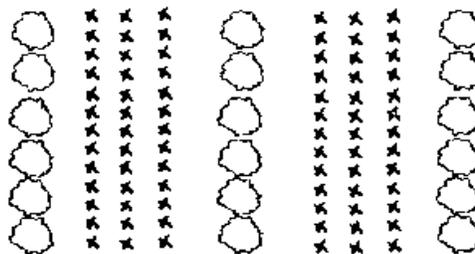
- Convert existing orchard into an alley cropping system by integrating agronomic or forage crops. Thinning of the orchard maybe employed to allow for the establishment of alley cropping systems.
- Cultivate forage crops between rows of trees or shrubs which can be used for cattle and livestock.
- Alternate perennial crops such as medicinal plants, Christmas trees within tall field crops such as corn.



Black Walnut - soybean alley cropping.



Alley cropping in slopes.



Single row alley cropping.

ADDITIONAL RESOURCES

<http://www.extension.umn.edu/environment/agroforestry/>

<http://nac.unl.edu/publications/agroforestrynotes.htm>

<http://www.centerforagroforestry.org/pubs/>

NEED FOR INFORMATION?

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PHOTO SOURCES

Center for Agroforestry – University of Missouri and National Agroforestry Center

University of Minnesota Center for Integrated Natural Resources and Agricultural Management

