Alley Cropping

The cultivation of crops in the alleys between regularly spaced rows of trees or shrubs.

**挑战**

**INCREASED COMPLEXITY** of management interventions and required farmer skill set.

**CHANGING ALLEY CROP OVER TIME** as tree-crop competition increases.

**HIGH CAPITAL INVESTMENT** in initial tree and shrub establishment.

**LONG-TERM LAND TENURE** required to realize the full profitability/benefits of trees.

**利益**

**ECONOMIC**

**INCOME STABILITY** through diversified revenue streams from trees and crops.

**HIGHER LAND-USE EFFICIENCY:** Tree roots capture nutrients that crops cannot access, thereby increasing the productive potential of the land.

**CROP YIELD STABILITY:** Trees reduce wind stress on crops, stabilize crop temperatures, and reduce evaporation of water from soil.

**ECOLOGICAL**

**CARBON SEQUESTRATION** in woody perennials and soil organic matter.

**SOIL HEALTH AND FERTILITY:** Trees reduce soil erosion, nutrient leaching, soil compaction, and water runoff.

**PEST AND DISEASE SUPPRESSION:** Perennial crop structural diversity provides habitat for natural enemies.

**POLLINATOR AND WILDLIFE HABITAT** via structural diversity and uncropped area within tree rows.
Frequently Asked Questions

**WHAT TREES/SHRUBS TO PLANT?**
Timber trees require low capital investment and minimal ongoing maintenance. Fruit and nut trees require higher investment and maintenance, but can provide higher, earlier, and annual returns.

Additional shrubs/other perennial crops can be planted within the tree rows between the primary trees. Since mechanical harvest is difficult between trees, this area should focus on hand-harvestable species (e.g. elderberry, red currants, decorative stems/flowers).

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**WHAT CROPS TO GROW?**
The alley crop will change over time to optimize productivity during different phases of tree maturity. For example:

YEARS 1-10: Sun-loving summer annuals (corn, soybean, vegetables)
YEARS 11-20: Winter annuals with a growing season complementary to the trees (wheat, barley, oats)
YEARS 20+: Crops with deep roots and shade tolerance (forages, shrub fruits), with possible transition to a silvopasture system.

**MECHANICAL HARVEST?**
Systems dimensions are designed to allow standard mechanical crop management. Mechanical harvest of trees (nuts, fruits, timber) can be completed after crop harvest.

**ALLEY WIDTH**
Between tree rows is typically a multiple of the width of the alley crop farmer’s widest implement.

**WITHIN-ROW TREE SPACING**
Depending on the mature canopy size of trees.

**UNCROPPED AREA**
Within tree rows is kept as narrow as possible while still permitting access for periodic maintenance.

**FUNDING AND PLANNING ASSISTANCE?**
Connect with the local conservation district and extension offices to learn about federal and state cost-share programs such EQIP, CRP, and CSP. These offices can also provide connections with regional consultants and technical service providers.

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