

# Alley Cropping at Many Streams Farm: Revitalizing a Hay Field

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*Alley cropping is a type of agroforestry practice where farmers grow annual or perennial crops in “alleys” between rows of trees selected for their environmental and income-producing benefits. This case study highlights a farm that worked with Pasa Sustainable Agriculture to design an alley cropping site plan that would accommodate its unique goals.*

Many Streams Farm is a 35-acre farm on rolling hills in York County, Pennsylvania near the Maryland state line. The farm is operated by a multi-partner group—the Chesapeake Education, Arts, and Research Society (CHEARS). The farm is bordered by two streams, Ebaugh’s Creek and Shaw Stream, which join and then enter Deer Creek at Stewartstown and eventually drain into the Susquehanna. The group’s partners, led by farm co-owner Maggie Cahalan, sought to develop an alley crop site on an erodible hay field that had not been actively growing crops other than hay for 20 years. The goals for the project included: demonstrating a polyculture tree and shrub alley cropping system; creating a source of heritage seeds; promoting citizen science; protecting natural resources; and responding to food and health insecurity in their area.



Newly planted trees form alleys into which cover crops are planted to build soil.

## Challenges

Because the land had only been cultivated for hay for decades, it had pronounced natural resource concerns. With eight percent slopes, erosion was an especially serious issue. And while water is plentiful on the property, it wasn’t clear whether the existing water pumps could adequately supply water to the planned alley cropping field so a drip irrigation system needed to be installed.

Beyond its environmental challenges, planning a project through a large multi-partner committee is inherently complicated, especially when partners have a variety of objectives and are mostly located offsite. The CHEARS team spent many hours and many meetings sorting through their objectives to arrive at a plan that worked for all. While CHEARS, as a nonprofit, is responsible for the educational and citizen science work of the project, Many Streams Farm’s co-owners, Maggie and Bob Cahalan and Eugenia Kalnay, have assumed financial responsibility for grading the field, installing deer fencing, and planting new trees and shrubs. The group is exploring ways to advance and maintain the alley cropping project democratically. Considerations include potentially structuring the project as a cooperative, obtaining organic certification, and protecting the site from development with a conservation easement.



Many Streams Farm's alley cropping site is on an erosion-prone sloped field. The site design included creating swales and berms to help direct the flow of water.

### Alley cropping site design

The CHEARS team developed a plan for Many Streams Farm that would utilize nearly three acres for alley cropping. Considering their lack of reliable access to a water source, they would plant on the site's contours to maximize water flow to the new trees and crops. They would also build swales to improve the flow of water in the field.

Their layout alternates between three 40-foot-wide rows of trees and shrubs, and two 60-foot-wide field crop areas—an arrangement that divides the field evenly between the trees/shrubs and field crops.

Additionally, the team incorporated a 100-foot buffer between the alley cropping area and the farm boundary where there is corn growing each year. The buffer consists of evergreen and food-bearing trees for wildlife and bird species.

Crop beds will grow 14 foods for a complete human diet using heritage seeds, some of which will be saved for the Ujamaa Seeds Project—one of CHEARS's partners in the project. Volunteers will be measuring the health of the two boundary streams using a citizen-science protocol known as First Investigation of Stream Health (FISH), which monitors changes to streams and their habitats. A deer fence is also included in the base design.

### PLANT LIST

#### Trees/shrubs:

Blueberries, semi-dwarf cherries, Chinese chestnuts, grape vines, dwarf peaches, large pears, persimmons, and many more

#### Annuals/perennials:

Sorghum, pumpkins, soybeans, sunflowers, variety of herbs and vegetables grown as seed crops

### Insights

Never underestimate the power of a committed group of volunteers with a vision. Despite some stops and starts with the design process, the CHEARS partners worked through many design options and developed a plan that addressed their diverse objectives in one site.

While the implementation is likely to be expensive, given its large number of trees and plant varieties, it can proceed over a number of years. Securing partner commitments for the long haul will be vital to the success of this project.

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