

ANTIOCH COLLEGE LANDSCAPE MASTER PLAN

MISSION

Create a sustainable landscape plan that serves as a living, learning laboratory and emphasizes native and local ecological systems and connects our campus to a broader ecology.

VISION

Develop an intentional campus landscape balanced between well maintained and natural areas, sustainably managed and scaled to the college's resources.

GOALS

Bio-retention

Bio-retention basins are landscaped depressions or shallow basins used to slow and treat on-site storm water runoff. Storm water is directed to the basin and then percolates through the system where it is treated by a number of physical, chemical and biological processes. The slowed, cleaned water is allowed to infiltrate native soils or directed to nearby storm water drains or receiving waters. Antioch College will use bio-retention methods (rain gardens, prairie swales, etc) in areas where surface water runoff is problematic or flooding occurs.

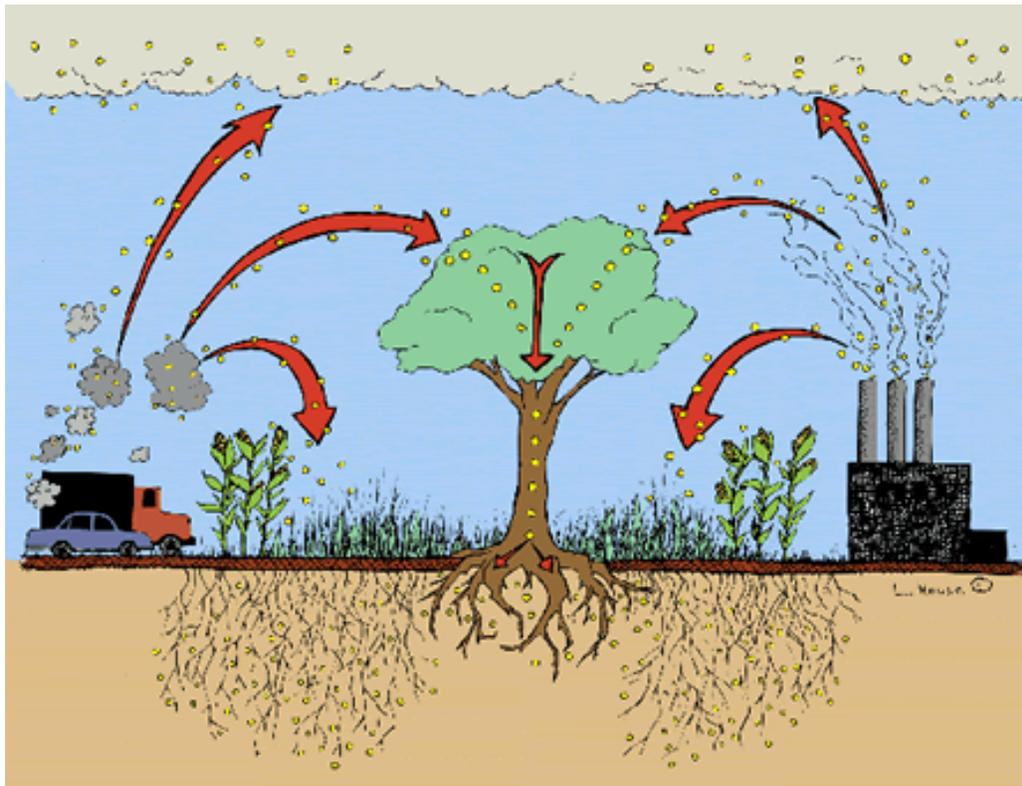




ANTIOCH
COLLEGE

Carbon Sequestration

The carbon cycle is the sequence of transformations whereby carbon dioxide from the atmosphere is converted to organic forms through photosynthesis or chemosynthesis, recycled through the biosphere (with partial incorporation into soils), and ultimately returned to its original state through respiration or combustion. On earth the primary process of fixing atmospheric carbon dioxide is through photosynthesis. By increasing plant diversity and density throughout our college campus environments, and avoiding the use of fossil fuels in their production, people can sequester atmospheric carbon via the plants.



Source: ERS/USDA

Aesthetics

A goal of the college is to create good first impressions for visitors and prospective students. Therefore a neat and orderly appearance to the landscape that maintains a seasonal interest is a priority in areas frequently visited by our guests.



Overwhelmingly Native Plantings

As a rule of thumb, the college will develop a landscape that will have primarily native plantings. Natives will, in most cases, form self-sustaining plant communities that do not require much maintenance. Because they are adapted to a local region, they tend to resist damage from freezing, drought, common diseases, and herbivores if planted in that same local region.



Advantages of native plants:

- add beauty to the landscape and preserve our natural heritage
- provide food and habitat for native wildlife
- serve as an important genetic resource for future food crops or other plant-derived products
- help slow down the spread of fire by staying greener longer
- decrease the amount of water needed for landscape maintenance
- require very little long-term maintenance if they are properly planted and established
- produce long root systems to hold soil in place
- protect water quality by controlling soil erosion and moderating floods and droughts

Remove Invasives (OIPC)

The college will develop a systematic plan to remove invasive plant species from our campus using guidelines from the Ohio Invasive Plant Council. Invasive species are defined by the National Invasive Species Council as species that are “both non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm, or harm to human health.” About 5,000 species of plants, animals, and microbes are recognized in the United States as invasive.

Approximately one-fourth of the plant species known to occur in Ohio originate from other parts of the continent or the world, meaning they are not native to the state. Most non-native plant species are not invasive in natural areas. Of the more than 700 non-native plants in Ohio, fewer than 100 are known to be problems in natural areas. But, those that are invasive can cause extensive economic damage and do immeasurable harm to our natural resources and the natural heritage of our state.

Invasive Plants can:

- Displace or crowd native plant species,
- Impact wildlife which rely on native plant communities for food, shelter and breeding habitat, and
- Form monoculture plant communities which reduces biological diversity.





ANTIOCH
COLLEGE

Perennials (Flowers & Herbs)

The planting of perennials will be an important component to our landscaping plan. Perennial plants are wonderful additions to the landscape. While trees and shrubs may act as the bones of a garden, perennials provide muscle. Because they last for more than one season, they are perfect for designing a permanent garden display, unlike annuals that usually provide only a single season of color. Perennials can be less work because they do not require replanting every year. Perennial varieties are available to provide interest for any season of the year, including the winter.

Perennial plants provide pollen, nectar, seeds and nesting material for birds and butterflies. Perennial groundcovers can reduce soil erosion and create interest in pathways, on slopes, along roadsides and ditches.

- Naturally, the greatest advantage that perennials have is that they come back year-after-year.
- Perennials are typically much more hardy than annuals and require less care.
- Most perennials have a deep root system and can tolerate dry spells.
- The extensive root system on most perennials also make them effective at preventing erosion.



Interpretive Signage

The use of interpretive signage will be installed to explain landscape sustainability on campus. The signage will provide information and insight to our campus community on the intentionality of our plantings.



Recreational Areas/Green Space

Open space provides places for recreation, activity and engagement, for peace and enjoyment, and for freedom and relief from the built world. They provide an opportunity for our students, staff and visitors to exercise, give access to sunshine, nature and fresh air, and even encourage people to walk or bike from place to place. They also can have a significant impact on people's stress levels and overall mental health and can be proven to be actual preventative measures that impact positively on health care and health care costs.

Open space promotes environmental sustainability as well. Natural habitat provides sanctuary for wildlife species ranging from mammals, birds and insects to plants; trees and other types of vegetation provided in open space networks can reduce air pollution; and wetlands can filter contaminants. The walkways and paths of an open space network can also aid in reducing greenhouse gases, by providing alternative transportation routes and promoting bicycling and walking.



POLICIES/STRATEGIES TO ACHIEVE GOALS

IPM Program

Antioch College will institute Integrated Pest Management program. (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment.



Tree Policy

Antioch College has an approved list of Ohio native trees for planting on campus. All new plantings and placements must be approved by the Physical Plant Department. The following guidelines should be followed:

- A tree's mature size and shape must be of the proper scale to fit the site and surrounding buildings.
- Plant an appropriate sized tree under overhead wires. Avoid planting over under-ground utilities.
- Do not plant trees near building foundations or walls.
- Do not plant trees where canopies will reach over roofs or gutters.
- Determine the necessary root growth space for the species you select.
- Plant deciduous trees on the south side of buildings to shade the building in summer but allow the sun's warmth to come through its bare branches in winter.
- Trees planted in campus zone 4 (Farm) can be non-native, but must have approval of Farm manager and Physical plant director prior to planting.
- Planting trees in groupings/communities rather than single plantings
- No dedication/donor plaques
- Look at providence of trees, purchase trees within a 25-50 mile radius, unless in zone 4 (Farm)



Protection of Trees/landscaping during Construction or Renovation Work

- Inform contractors of policy.
- Ensure that protection zones are established around landscaping and trees drip lines.
- Restoration of site if damaged.
- Replacement of trees if destroyed during construction activity.



ANTIOCH
COLLEGE

DEVELOP SITE PLAN AND ESTABLISH ZONES FOR TYPES OF PLANTINGS

Antioch College wants to have intentionality about what and where we plant. The following zones will be established to help inform our decisions when creating bio-retention areas, landscape beds or planting trees:

Zone 1

- Intentional
- Public visitation
- Aesthetics
- Interpretive signage
- Formal/manicured
- Informed by sustainability
- Maintain seasonal interest
- Cared for
- We want to control the image

Zone 2

- Low Mow
- Lower intensity
- Native preferred

Zone 3

- No mow
- Naturalistic management
- Natives
- Biodiversity
- Educational and construction priority

Zone 4

- Farm

Zone 5

- Lawn
- Open space

Zone 6 (Glen)

- Naturalistic management



ANTIOCH
COLLEGE

- Natives
- Biodiversity
- Educational priority
- Lawn only as necessary to protect building envelopes and provide instructional spaces
- Permit required for research
- Trail use required, except as allowed by permit
- Active removal of target invasive species
- Under conservation easement

Policy On The Use Of Neonicotinoid Pesticides

Recognizing that neonicotinoid pesticides, including imidacloprid, clothianidin, thiamethoxam, dinotefuran, acetamiprid, are neurotoxins associated with the collapse of populations of honeybees and other pollinators, Antioch College will not procure or use neonicotinoid products, products containing neonicotinoid active ingredients, or plants treated with neonicotinoid pesticides.

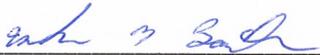
Further, Antioch College will ensure that any commercial landscaping or pest service providers operating on campus comply with this policy.

Antioch College recognizes the importance of pollinators and their services, and will support efforts to educate the broader community about the action it has taken and encourage other entities and households to adopt a similar policy.

Antioch College will endorse efforts to suspend the neonicotinoids clothianidin and thiamethoxam until a proper scientific and regulatory review of the impacts to honeybees and other pollinators is completed to our satisfaction.

Effective this 12th of April, 2016.

On behalf of the Antioch College Sustainability Committee



Name

Chair, Antioch College Sustainability Committee
Executive Director, Glen Helen Ecology Institute

Title

About the Antioch College Farm



Mission

The Antioch College Farm utilizes ecological agriculture to provide an integrated context for liberal arts learning. The Farm allows students to experience, explore, and develop methods of sustainability, through its interwoven functions as an outdoor laboratory for curricular study and a living forum where student labor connects to campus dining and recycling.

Mission Connection

The design of farm is directly responsive to the Antioch College mission: “The mission of Antioch College is to provide a rigorous liberal arts education on the belief that scholarship and life experience are strengthened when linked, that diversity in all its manifestations is a fundamental component of excellence in education, and that authentic social and community engagement is vital for those who strive to win victories for humanity.”

Thus, the farm supports the College’s mission by providing the real life experience, authentic social and community engagement for our students. It provides students real world examples of positive solutions as well as nuanced exploration for classroom and global seminar discussions. Food and farming directly relate to local and global crises including health, nutrition, poverty, social justice, and ecology. Through learning about the practice of sustainable agriculture, students gain tools and perspectives for better understanding and impacting these broader issues.

Guiding Principles

Experiential learning – The farm will be an outdoor classroom, integrated into the curriculum, providing a living laboratory for experimentation and an interactive learning space. The farm is designed to facilitate curricular connectivity not just with science courses, but also with arts and humanities.

Student work opportunities – The farm will operate through the labor of student workers, who build skill and experience in preparation for future work, including co-op positions in food and farming.

Community participation – The farm will involve community volunteers to share in the joy and learning that surrounds growing food.

Campus connectivity– In addition to student classroom and work opportunities, the farm will be designed to provide cross-departmental connectivity, including facilities and grounds (adaptive reuse of building materials and landscaping waste) and campus dining (food supply).

Ecological sustainability:

Maximize biodiversity: As a mimic to nature, the farm will grow a variety of perennial and annual plants, including crops that attract beneficial insects. As in a healthy ecosystem, a diversity of animals will contribute to on-site nutrient cycling and improve soil fertility. Each animal has a varied manure nutrient content and grazing pattern that serves an important function within an ecological farm.

In contrast to farms with crop monocultures or confined animal feeding operations of high-density animal populations, which can deplete the soil of nutrients, use harmful chemicals to control pests, and produce destructive waste products, a biodiverse farm can serve to model solutions for many current agricultural problems.

Foster healthy, living soil: The farm will use campus leaves, vegetable dining scraps, animal manure and other local “waste” products to create a nutrient-rich soil, high in organic matter, and teaming with microbial life. Special attention will be paid to soil conservation and soil ecology.

Maintain water quality: No synthetic chemicals or fertilizers, which can leach into the local watershed, will be used. Water conservation practices will be employed.

Organic growing: Farming methods will meet the USDA organic standards, and are also informed by ecological, biodynamic, and permaculture practices.

Conservation orientation: Structures and designs will reflect our commitment to environmental sustainability, conserving natural resources, and minimizing campus waste.

Economic sustainability – Fresh food grown on the farm will go entirely to enhance student dining. The farm will not compete with other local growers through selling our meat and produce directly to consumers.

Quote from Marianthe Bickett '15

“Personally, working to develop the farm as part of my college experience is a dream come true, especially in getting to learn what it takes to grow from the ground up. Working out in the dirt is such a valuable compliment to intellectual work in the classroom, and having a venue for community interaction and shared visioning is very fulfilling for me. Growing food is a thrilling and important process, even when it just means weeding or moving around piles of rocks.

The environmental, physical and spiritual health implications of our current total detachment from where our food comes from are huge and of great importance to me. As a community, we need to relearn skills to produce and connect to nourishing food, and having a source of experiential learning on campus is essential to teaching this. And on a global scale, the more resources we can direct into supporting sustainable options for the future instead of the current broken systems, the better. By creating a farm on campus with the goal of helping to feed the student population, I feel like Antioch is walking the walk of sustainability.”

Implementing the Antioch Farm

Annual crops: Introduced 2011, expansion pending

Surrounded by a rustic, locust-post fence, the annual agricultural area provides the bulk of the farm food harvested for student dining. Annual crops grown in this area include heirloom tomatoes, pole beans, colorful potatoes, mixed salad greens, and much more.

Ecological and organic growing methods are utilized to grow the freshest, tastiest, and healthiest food on the Antioch Farm. In addition to using no synthetic fertilizers, chemical pesticides, or genetically modified seeds, we actively employ a variety of methods to build the soil including microbial inoculants, cover cropping, and on site composting. A student-driven project also allowed for the addition of biochar as natural fertilizer.

Food forest: Introduced 2011, expansion pending

Unlike monocultures, or plantings of just one type of crop, a food forest takes advantage of the ecological growing patterns of plants in nature. Like natural forests, a food forest is planted in layers, each layer containing different plants.

Animals are used to keep understory plants under control and fertilize the area. For example, in 2011, goats from a local farmer were loaned to control invasive plants within the current food forest. Sheep and goats are good candidates for managing future food forest areas without the use of fossil fuels or extensive human labor. Food forests provide a healthy, diverse diet and free-choice medicinal plants to grazing animals.

The food forest includes edible trees, shrubs, berries, mushrooms and herbs in a natural forest-like environment. Some plants are also selected for medicinal properties or other uses such as beauty or building material. The following are examples of plants growing in each our layers:

Canopy Trees: Walnut, Mulberry, Locust

Understory Trees: Paw Paw, Redbud, Apple, Pear, Plum

Shrubs: Hazelnut, Bush Cherry, Serviceberry, Figs

Berries: Black Berries, Currents, Jostaberries

Herbs: Spearmint, Comfrey, Asparagus, Nettle, Oregano, Wild Chives

Poultry: Introduced 2011

A variety of chicken and duck breeds live on the farm. We raise poultry for meat and eggs for students to enjoy in the dining hall.

Our poultry have access to pasture daily, live in mobile coops and are fed primarily local, organic feed. An electrified, mobile fence, charged by a solar panel, contains the birds and keeps them safe from predators. The fence allows us to regularly provide fresh grass to the animals as well as distribute their fertilizer around the farm.

Students, as farm staff or volunteers, participate in all aspects of care for the birds from chicks to adults. In addition, students can take soil samples of manure-enriched areas as a part of their environmental science class. Students and visitors also enjoy walking the farm to watch the ducks immerse themselves in the baby pool.

Hoop house: In use since 2012

Completed in December 2011, the passive solar hoop house allows year-round fresh vegetable production. In winter, we grow cold-hardy crops like collards, spinach, salad greens, and radishes without electricity. In summer, openers respond to the change in temperature to open vents if the greenhouse gets too warm. The sides also manually roll up to provide ventilation and temperature control.

Boards from milled oak scraps from Glen Helen make up the edges of the raised beds within the greenhouse. These were built by students and community volunteers.

Bees: Introduced 2012

One beehive, located in the food forest, adds pollinators and honey to the farm. A community volunteer and students tend to the hive and provide bee education during farm tours.

Livestock: Introduced 2013, expansion pending

Using rotational grazing techniques, livestock are moved to new pasture every two weeks and eat a diet primarily of fresh grass and forbs. In addition to student learning opportunities, grazing animals provide benefits to the farm including improving soil fertility, fossil-fuel-free mowing and fresh pastured meat for the dining hall.

Plans call for livestock to be phased in gradually, with each new species (sheep, goat, pig, cow) introduced in small numbers as a pilot project before additional numbers are incorporated in the farm. Each animal species complements the other, improving diversity on the farm, and introducing different manners of grazing/rooting, and different nutrient profiles of their fertile manure. In 2013, seven lambs were raised on the farm. Students participated in daily care of the lambs, shearing and herbal wellness care.

Barn: Planned. Pending funding and approval.

The addition of a barn would create the capacity for animals to overwinter on campus, and would allow the college to provide student opportunities manage and protect endangered heritage breeds of animal. So long as we are not breeding our own animals, we will need to purchase them at the start of the season and are limited in our breed choices.

Construction of the barn would be a collaborative project with Antioch sculpture students, who would learn what is involved in the craft of timber frame construction.

Food rinsing facility: Planned. Pending completion of geothermal utility building

A dedicated indoor area for rinsing produce from the farm will be part of the geothermal utility building. Currently under construction, we expect to rinse produce here during the 2014 growing season.

Central Kitchen Facility: Contemplated.

A centralized location on campus for the preparation for the campus meals, as well as the potential to collaborate with local schools and the senior center to provide healthy, locally sourced meals to the greater community. Buying power and storage capacity are key considerations here.

Updated January 14, 2014