

Orchard Management Plan



Vision and Design
Channeling Species Diversity
Maintenance
Connections



LIMELEDGE
BOTANICAL GARDEN AND ARBORETUM

For every plant a place.



Vision and design

PREPARING THE SITE FOR AN ORCHARD AND PERMACULTURE DEMONSTRATION AREA

The planned orchard site, leased on behalf of Limeledge Botanical Garden and Arboretum, has great potential. As a sandy-silty loam grading towards a wet swale on the west property boundary, the soil pH is more acidic than many of the surrounding areas and the drainage regime varies from well-drained to consistently moist. This variation allows us to grow plants with many different needs in this location.

A former pasture, the soils at this site are rich in organic matter and nutrients. This area has been largely abandoned for many years, except for a small garden area that has been unmaintained since at least 2021. As a result, much of the leased area has been infiltrated to various degrees by woody plants, and large course debris such as rocks, fallen limbs, and garbage from former farmhouse residents needs to be cleaned up and removed. A large mulberry that collapsed during a storm was never cleaned up, and an emergent forest is growing from within its former canopy boundary. The site is also infested with a variety of invasive species.

Initial actions

CLEANING THE LEASED AREA AND REMOVING COURSE DEBRIS IS THE FIRST STEP IN REVITALIZING THIS LOCATION

SITE CLEANUP

The top initial priority is to remove the course debris from the site so that it can be mowed and prepared for plantings. After the initial mowing, no part of the site will be mowed again until the following spring, with the exception of trimming around seedlings and cultivated areas to minimize competition to our anchor plantings.

Space will be retained near the southern portion of the leased area for a spot better-suited to a more conventional home garden. The location will be subject to the needs of the other plantings, and will emphasize perennial crops such as asparagus and rhubarb.

- Holdovers from previous gardening ventures in this area will be moved to more appropriate locations where they will not be shaded by new plantings
- Black raspberry bushes will be retained within a dedicated plot, with regular mowing provided to revitalize floricanes as necessary
- Woody species such as pawpaws, apples, peaches, and kiwis will anchor the plantings

ORCHARD PRIORITIES

- CLEAR THE BRUSH, INVASIVE SPECIES, AND COURSE DEBRIS
- INITIATE AN AVIAN AND POLLINATOR-FRIENDLY MOWING REGIME
- INSTALL WOODY PLANTS AS FUTURE FRUIT AND NUT CROPS
- INSTALL COMPLEMENTARY PERMACULTURE SPECIES
- ESTABLISH AN ORGANIC INTEGRATED PEST MANAGEMENT PLAN
- ADAPT THROUGH SUCCESS AND FAILURES TO PRESENT A DEMONSTRATION PERMACULTURE AREA TO THE PUBLIC
- EVENTUALLY, SALES AND DONATIONS OF ORCHARD PRODUCTS TO SUPPORT LIMELEDGE AND OTHER NONPROFITS

PRACTICAL PRODUCTION

The bread and butter of most local home orchards, gardens, and permaculture plots will be reliable species such as apples, pears, plums, and other species with a long history of successful cultivation in our area.

NOVEL SPECIES COMBINATIONS FOR CNY

We will include species such as cornelian-cherries, goumi, akebias, nut pines, hazelnuts, medlars, grapes, and even native sumacs along with some species dedicated to wildlife and pollinators.

EXPERIMENTATION

Not all of these species and combinations will succeed in our CNY location, but this sort of tinkering is part of the fun! We will relay performance information to the public and other local growers, assess new (and old!) varieties of familiar species, and serve as a demonstration garden.



Channeling species diversity

PRINCIPLES OF PERMACULTURE

Permaculture is an agricultural philosophy of interconnectedness relying on species interactions and biodiversity resulting in a *system* that is robust against the impacts of factors such as drought, pests, and other stressors. The objective is stable yields from multiples species rather than maximizing yields for one or two.

Our plants

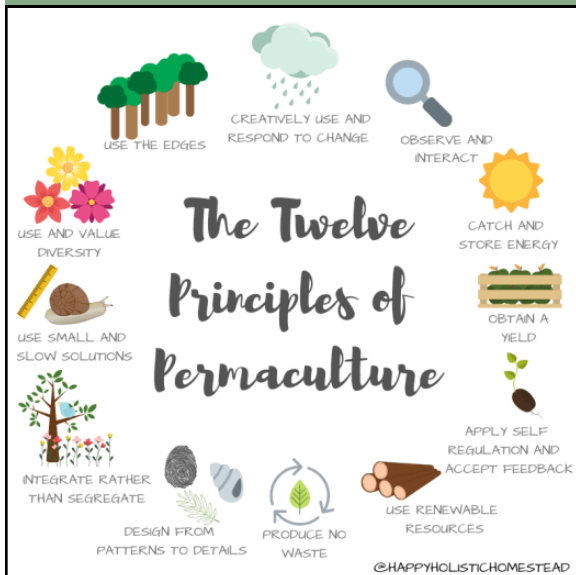
One of the primary anchor species in these plantings will be Northern pawpaw (*Asimina triloba*) which will be at home in all but the wettest and driest parts of the site. Our pawpaws were collected with permission as seeds from the Monongahela River floodplain adjacent to the Core Arboretum at West Virginia University in Morgantown, WV. These are from the population where Neal Peterson, the father of modern pawpaw cultivation, fell in love with the species as a grad student at WVU. These seedlings will contribute not only excellent northern provenance genes for cold-hardiness, but also a connection to a historic figure in horticulture.

Permaculture: Limeledge style

- Flowering species on the slope overlooking the hatchery
- Pawpaws in moist areas
- Shrub willows as habitat and pollinator-friendly species
- Cold-hardy pecans on the northern border to reestablish the tree line following last year's storm damage



For every plant place.



Connecting maintenance and nature

A MINIMALIST APPROACH TO MAINTENANCE CAN PROMOTE A MORE ROBUST SYSTEM: SET IT UP, AND LET IT GROW!

Frequent mowing can be one of the most damaging forms of disturbance to the interconnected processes we are attempting to harness with permaculture. The orchard area will be mowed only once or twice a year to promote the growth of herbaceous pollen sources, keep unwanted woody plants out, and provide nesting birds with as much time as possible to rear their young.

Pathways will be mowed for ease of access and herbaceous species will be trimmed away to reduce competition with our woody crop species; otherwise, mowing will be fairly minimal.

Soil health is a major component of permaculture. Every plant species has a suite of associated soil microbes that can assist with nutrient acquisition, mitigate the effects of potentially harmful soil pathogens, and improve overall plant health, vigor, and productivity. Most plants form symbioses with two major groups of fungi, both with their own strengths and weaknesses. Therefore, increasing the plant diversity also increases soil microbial diversity and improves soil health.

Complementarity in Plantings

UTILIZING THE STRENGTHS AND WEAKNESSES OF DIFFERENT PLANTS, AS WELL AS REDUNDANCY, TO OPTIMIZE FUNCTION

INTERCONNECTEDNESS

An herb layer can provide mycorrhizal support and improve soil organic matter and the structural integrity of soils, while also providing habitat and nutrition to beneficial insects and animals. Shrubs can provide shade and cover for smaller and herbaceous species, as well as a physical framework for vines and scrambling species.

Likewise, a canopy over the shrubs can provide multiple tiers of physical protection from adverse weather events, habitat for beneficial species, and different sun exposures for species with different needs and preferences. Redundancy is also important: multiple species filling the same niche will allow for a robust system that will retain its overall function and productivity if some elements fail.

- Nitrogen fixers: Goumi, bayberry, sea-buckthorn, New-Jersey-tea, lupine
- Tree crops: walnuts, chestnuts, pawpaws, persimmons, plums, apples, peaches
- Shrubby crops: black raspberry (walnut friendly!), hazelnuts, wolfberry, sumac
- Vine and herbaceous crops: ginseng, may-apple, kiwi, grapes, passionfruit, cactus fruit, akebia, schisandra

PERMACULTURE PLANT ROLES

- FOOD FOR POLLINATORS
- HABITAT FOR BENEFICIAL SPECIES
- MIX OF MYCORRHIZAL TYPES FOR A ROBUST SOIL MICROBIAL COMMUNITY AND SOIL HEALTH
- NITROGEN-FIXING PLANTS TO COMPLEMENT RESOURCE-HUNGRY SPECIES
- WILD RELATIVES OF COMMON ORCHARD SPECIES FOR POLLINATION AND HABITAT FOR BENEFICIAL ORGANISMS
- NURSE SPECIES: A MIX OF SHADE AND SUN-TOLERANT ORGANISMS TO COMPLEMENT ONE ANOTHER
- PLANTS WITH A RANGE OF DIFFERENT FLOWERING TIMES TO PROVIDE POLLINATORS WITH A STABLE, REGULAR FOOD SOURCE

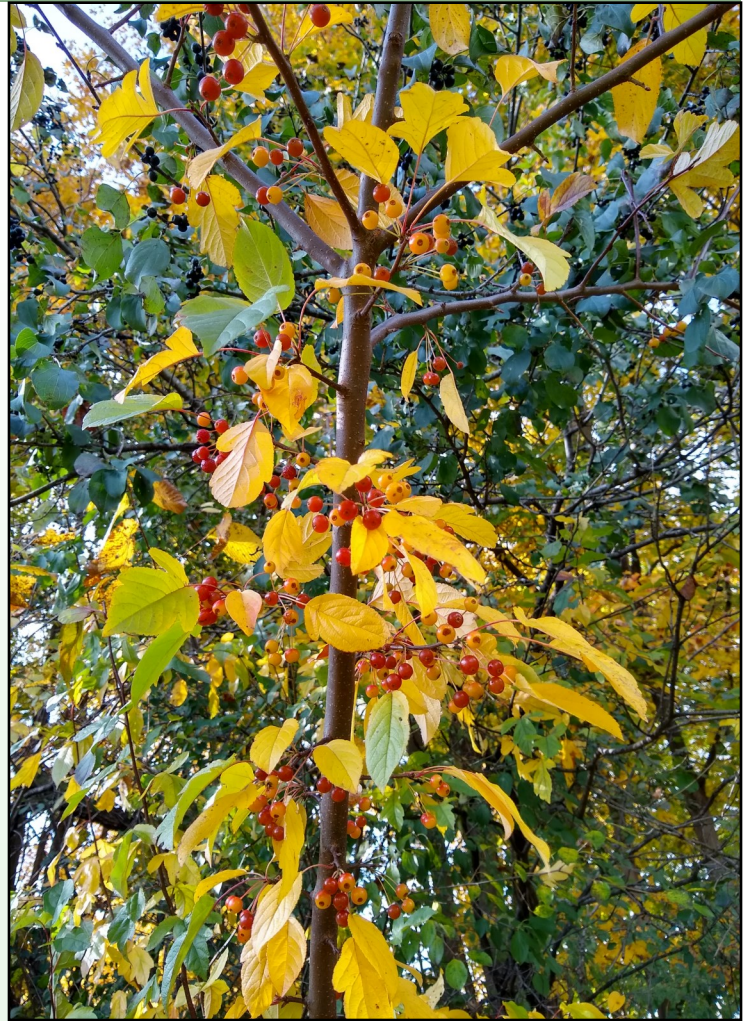
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DIVERSITY: MANY, COMPLEMENTARY SPECIES
NOVELTY: UNUSUAL, LESSER-KNOWN FRUITS
PRACTICALITY: FAMILIAR FRUITS AND VEGETABLES
HARMONY: INTERCONNECTEDNESS WITH NATURE

The orchard area at the former homestead site will utilize a permaculture approach to serve as a demonstration garden for the local community.

While it will be a few years before this area is ready to be open to the general public, introducing local stakeholders and the community to new techniques and crops will complement the overall mission of Limeledge. Eventually, I will find a way to restore the barns and make the larger barn an event space for hosting lectures and workshops. This will make the orchard area a valuable asset for advancing our mission once that work is complete.

Come grow with us!



For every plant a place.

Limeledge Botanical Garden and Arboretum

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