



CULTIVATING GREEN FUTURES





**SUSTAINABLE
REFORESTATION
PROGRAM**

Why Reforestation?

Soil Health & Water Quality

Reforestation Strategies

Conservation with Activity

Student & Professor Involvement

Soil Health & Tree Selection

Community Awareness

Monitoring & Data Collection

Curriculum Integration

Recognition & Impact



WHY REFORESTATION?

Currently, in the USA, urban expansion is developing turfgrass landscapes surrounding commercial sites, homes, and recreational areas on soils that have been agriculturally managed for decades. Often, golf courses are at the forefront of conversations concerning anthropogenic environmental impacts as they account for some of the most intensively managed soils in the world. Golf courses provide an ideal location to evaluate whether golf course management is affecting the quality of soils at depth. Our studies will evaluate how soil properties relating to soil health and resiliency vary with depth at golf courses and relationships of this property to current disc golf course management, previous land use, and inherent soil properties.

A group of people, including a woman in a straw hat, are looking at seedlings in a tray. The background is a blurred outdoor setting with a wooden structure.

WHY REFORESTATION?

National testing shows systematic variation in soil properties including sand content, NO₃, and soil organic matter (SOM) were observed with depth at six golf courses among three landform regions. Variability in sand content was identified between the 20 and 50 cm depth classes at all courses, where sand content decreased by as much as 37 %. Highest concentrations of SOM and NO₃ were found in the shallowest soils, whereas total C and P variability was not related to golf course management. Sand content and NO₃ were found to be directly related to golf course management, particularly at shallow depths.



WHY REFORESTATION?

The effects of golf course management dissipated with depth and deeper soil variations is primarily due to natural geologic conditions. Soil properties are very noticeably altered by golf course management and may directly impact crop productivity, soil health, and water quality, and while NO₃ may be altered relatively quickly in soil through natural processes, particle size of the soil may not be altered without extensive mitigation.

A young man and woman are looking at a tablet together in a field of tall grass. The woman is on the left, holding the tablet, and the man is on the right, looking at it. The background is a soft-focus field of tall grass under a bright sky.

WHY REFORESTATION?

Golf courses continue to be developed in areas of land use change from historically native prairies and more recently agriculture to urban landscapes. As soils are continually altered by human impacts, it is imperative that we monitor the changes, both physical and chemical, in order to establish management practices that maintain environmental sustainability and productivity.



WHY REFORESTATION?

The Colonial Disc Golf Course in Lanexa, VA provides an exciting opportunity to combine our love for disc golf with environmental stewardship. By strategically reforesting areas within the course, we can positively impact soil health, water quality, and overall player experience.



SOIL HEALTH & WATER QUALITY

Scientific Insights:

1. Optimizing Fertilizer Use:
 - Superintendents have meticulously recorded annual fertilizer application rates for different areas of the course.
 - Notably, roughs received minimal fertilizer, while tee boxes received the most.
 - Our proposal aims to complement these efforts by strategically planting trees and native vegetation to enhance soil nutrient cycling and reduce reliance on synthetic fertilizers.
2. Nitrogen (N) and Potassium (K) Application:
 - All courses applied N and K fertilizers, which are essential for turf health.
 - We can leverage this knowledge to select tree species that efficiently capture nutrients from the soil, benefiting both the course and the environment.
3. Historical Land Use:
 - Aerial photography dating back to the 1930s reveals the course's evolution.
 - Understanding prior land use helps us identify optimal reforestation areas and tailor our approach.

REFORESTATION STRATEGIES

Proposal:

1. Strategic Tree Planting:
 - Identify areas where reforestation can enhance soil stability, reduce erosion, and improve water infiltration.
 - Consider native species like oaks, pines, and dogwoods that thrive in the local ecosystem.
2. Buffer Zones Along Water Bodies:
 - Reforesting along the Chickahominy River and Mill Creek can create natural buffer zones.
 - Benefits:
 - Soil stabilization.
 - Nutrient retention.
 - Enhanced wildlife habitat.
3. Educational Signage and Community Engagement:
 - Install educational signs highlighting the ecological importance of reforestation.
 - Engage players, visitors, and local schools in tree-planting events.
 - Foster a sense of ownership and pride in maintaining a sustainable course.



CONSERVATION WITH ACTIVITY

Sustainable Disc Golf Experience:

1. Strategic Tree Placement:
 - Avoid obstructing fairways or critical disc flight paths.
 - Plant trees strategically to enhance aesthetics without compromising playability.
2. Long-Term Vision:
 - Reforestation is an investment in the course's future.
 - Over time, mature trees will provide shade, reduce maintenance costs, and enhance the overall disc golf experience.



STUDENT & PROFESSOR INVOLVEMENT

Hands-On Education:

1. Orientation Workshop:
 - Host an introductory session for interested students and professors.
 - Explain the project's goals, ecological impact, and community involvement.
2. Field Visits:
 - Organize site visits to the Colonial Disc Golf Course.
 - Observe existing conditions, assess reforestation areas, and discuss strategies.
3. Research Teams:
 - Form interdisciplinary teams comprising students and professors.
 - Assign roles: soil analysis, tree selection, community engagement, etc.
4. Business Partnerships:
 - Team up with O'Aces and its partners to discover how land is found, researched, purchased, and developed by Davey Resource Group, Innova Discs, Colonial Disc Golf and Level Artscapes.



SOIL & TREE SELECTION

Scientific Exploration:

1. Soil Sampling:
 - Students collect soil samples from various course sections.
 - Analyze nutrient levels, pH, and organic matter content.
2. Tree Species Research:
 - Professors guide students in researching native tree species.
 - Consider factors like adaptability, growth rate, and ecosystem services.

A man and a young girl are planting a tree in a park. The man is on the left, wearing a light blue long-sleeved shirt and jeans, holding a shovel. The girl is on the right, wearing a light blue long-sleeved shirt and jeans, kneeling and working with the soil. A small tree sapling is in the center. The background shows a grassy area and trees.

COMMUNITY OUTREACH

Spreading Awareness:

1. Workshops and Webinars:
 - Professors lead workshops on reforestation benefits.
 - Students create educational materials for local schools and golfers.
2. Public Events:
 - Organize tree-planting days open to the community.
 - Invite disc golfers, families, and nearby residents to participate.



MONITORING & DATA COLLECTION

Sustainability Tracking:

1. Monitoring Teams:
 - Students establish regular monitoring schedules.
 - Track tree growth, soil health, and wildlife presence.
2. Data Repository:
 - Professors oversee data collection and analysis.
 - Create a repository for long-term research.

A photograph of three young women sitting on the grass in a field, engaged in a study session. The woman on the left is smiling and holding a pencil. The woman in the middle is looking at a notebook. The woman on the right is wearing sunglasses and writing in a notebook. The background shows a rural landscape with a barn and trees under a cloudy sky.

CURRICULUM INTEGRATION

Academic Benefits:

1. Course Projects:
 - Professors incorporate reforestation topics into relevant courses.
 - Students work on real-world projects related to the venture.
2. Capstone Opportunities:
 - Seniors collaborate on capstone projects tied to the course.
 - Present findings at symposia or conferences.



RECOGNITION & IMPACT

Accolades and Awards:

1. Annual Reports:
 - Compile yearly reports on reforestation progress.
 - Highlight student contributions and ecological gains.
2. Recognition Events:
 - Host an annual appreciation event.
 - Acknowledge outstanding student efforts and community partnerships.

OTHER BENEFITS & PERKS

Student & Faculty Bonus:

1. Free Disc Golf Memberships:
 - Standard Yearly Membership FREE with College/Student ID
 - Discounts on Premium Disc Golf Memberships
2. Free Event Access:
 - Access local events Standard Admission FREE with College/Student ID
3. Discounted Campsites and Facility Discounts.





SUMMARY

By involving students and professors from day one, we create a dynamic synergy between academia, environmental stewardship, and community engagement. Let's nurture a greener future together!





SUSTAINABLE REFORESTATION PROGRAM

Drewry Family
Cemetery

OACES
ADVENTURE PARK



O'ACES ADVENTURE PARK

757-955-6500

OACESVA@GMAIL.COM

WWW.OACESDG.COM