

Dickinson College Grounds and Landscape Management Policies and Practices February 2018

For visitors to Dickinson College, their first impression of the college is through the landscape – design, plant selection, and upkeep. At Dickinson College, we strive to make that first impression one dedicated to sustainable landscapes, practices, and values.

During the past 10 years, the college landscape has been changing to reflect important sustainability goals, which include a campus-wide dedication to hands-on sustainability education and stewardship. To reflect these goals, landscape design and management has focused not only on the health of plants, but on the areas that sustain them – from soil to water management, to insects and other wildlife, and to how the landscape is viewed. The Dickinson College landscape has become a living laboratory, enhancing what is taught in the classroom with a hands-on, real-world experience.

LANDSCAPE AREAS ON CAMPUS:

Total Landscape on the campus proper (including walking paths/hardscape): **Approximately 128 acres**
Within most landscapes are small plantings of vegetables and herbs for use by the community.

- **Traditional (shrubs, lawn, trees): Approx. 24 acres**
- **Native: Approx. 7 acres**
- **Athletic fields: Approx. 67 acres** (approximately 25 acres natural turf, 5 acres synthetic turf, and 37 acres low-maintenance turf)
- **Undeveloped: Approx. 30 acres** (Includes a 1 acre community garden)

TRADITIONAL LANDSCAPE: Our traditional landscape consists of shrubs and trees (not necessarily native) and pleasant open areas of turf, such as the college greens and areas around dorms and academic buildings where people sit, relax, play games, and enjoy the outdoors. Most of these areas are high traffic/high visibility areas, and maintained with particular care. As older trees, shrubs, and perennials die and are removed, first priority is to plant native species to support local wildlife and native plant landscape education.

NATIVE LANDSCAPE: When the Dickinson Sustainability Initiative was implemented in 2008, the landscape of Dickinson College began its transformation. To date, four large areas, approximately seven acres, are planted with native trees, shrubs, perennials, and grasses. A pollinator garden was planted last year to help sustain two beehives on campus. A native landscape can be very different and stands out to our visitors, prompting questions and comments that create numerous educational opportunities. Many students who select Dickinson College have stated that they did so because of the native/vegetable mix landscapes. Professors use the native landscapes as educational opportunities for students to study plants, insects, and wildlife, and the conservation of soil and water. This coming season, we will be incorporating more raingardens into the landscape around campus, and adding another native area when our new dorm is completed in the summer/fall.

ATHLETIC FIELDS: Athletic and sports fields require a different set of maintenance techniques due to the constant pressure put on the turf and its surrounds. However, IPM and sustainable practices are used here as well, including the use of disease resistant turf seed cultivars and monitoring watering needs and pest thresholds.

UNDEVELOPED LAND: Approximately 30 acres on the west side of campus are undeveloped woods, meadow, and swale. A walking/bike path meanders through this area connecting parks, the college, and the community. It is maintained by seasonal mowing. We are presently installing a solar field in one of the meadows, which will be “mowed” by animals. The fields are a mix of native wildflowers, grasses, and exotic introductions. At one edge of the property is the Dickinson College Community Garden, an organic vegetable garden offering 30 gardeners plots from 40 to 100 s/ft.

SUSTAINABLE LAND MANAGEMENT PRACTICES:

As pesticide/herbicide science advances, the Grounds department is continually improving and updating sustainable landscape practices.

IPM:

- 1) Grounds personnel have strictly limited the use of pesticides within the landscape, particularly neonicotinoids because of the possible harm to pollinators. Pest thresholds are set and monitored for infestation. If pesticide use is necessary, personnel will spot treat where possible before applying more broadly.
- 2) For grub control at athletic fields, turf is lifted and grub amounts monitored on a scheduled basis. For a number of years, purple martin birdhouses have been raised at the athletic fields. The birds eat insects that contribute to the turf grub population, particularly after a mowing. This has substantially cut down on pesticide use and turf loss.
- 3) Grounds personnel use the most environmentally friendly pesticides on the market. All personnel are Pennsylvania registered applicators and are continually educated in the most sustainable application techniques available, including no spraying when pollinators are present and limiting drift. If harsher chemicals are used, they are used sparingly. Example: Neonicotinoids are used only on wind-pollinated plants.
- 4) Timing and efficiency are important in the application of pesticides. A properly timed pre-emergent and mulch cut down on weeds and extra weeding time. Hand weeding in perennial beds and direct injection for trees are the preferred choices.
- 5) The use of organic IPM, such as water force for the removal of aphids, and growing specific flowering plants to attract beneficial insects is used, particularly in the vegetable gardens. Planting trees and shrubs for birds, and using water features to attract them are also done around campus.
- 6) When applicable, narrow spectrum pesticides are preferred, as opposed to selecting broad-spectrum pesticides. This allows us to preserve beneficial insects that may be present in the landscape, and truly provides a measure of control to only the detrimental insects.
- 7) New practices for tree pesticide application are available and being utilized. New technology allows us to inject the materials into the vascular system of the trees, which can deliver the materials directly to the tissues where insects are feeding, or diseases are present. By using this technology, there are no drift management issues; it is safer for the applicator, and for the public.

SUSTAINABLE LANDSCAPE MANAGEMENT PLAN:

- 1) **Plant Stewardship:** Although Dickinson College is moving toward native landscapes, it is worth noting that our traditional landscapes of campus “Greens” shaded by tall, old trees highlight an exceptionally beautiful urban campus that reflects the pride of 240 years in existence.
 - a. An inventory of all the trees on campus has been created by the college arborist, not just to record species and maintain health/maintenance records, but also with the goal of possibly becoming an arboretum in the future.
 - b. Sustainable turf management includes keeping clippings on lawns to promote healthier turf and soil, and mowing to a height deemed healthy for turf. Mowing frequency depends on the time of year and done so that about one third of the leaf blade is removed at each mowing, thus reducing stress on the grass, and the chance for disease. Mower blades are sharpened frequently to ensure a clean cut.
 - c. Athletic fields: Turf is monitored to keep thatch at $\frac{1}{4}$ to $\frac{1}{2}$ inches, which ensures adequate water/nutrient infiltration.
 - d. Athletic fields: Due to the stress of compaction, aerification is done on an annual basis to obtain proper air and water infiltration.
 - e. Battery powered blowers are used to cut down on fuel emissions. Larger mowers are fuel-injected, using less fuel than regular mowers with the added benefit of having more power.
 - f. Yearly fertilization is typically done with two or three applications depending on the area and plants involved. Much of the fertilizing is done in the fall using a slow-release fertilizer to cut down on excess nutrients leaking into ground water, and to prepare plants for winter and a healthy spring. Properly timed fertilization in spring and summer promotes healthy growth. Athletic fields use a nitrogen-based fertilizer up to three times a year to keep turf healthy for the rigors of constant use.
 - g. Using seed cultivars that are disease resistant cuts down on fungicide use.
 - h. Using ecotype plants more adapted to our environment prevents excessive plant loss.

- 2) **Soil Stewardship:** Soil tests are taken of all areas that require new plantings or rejuvenation planting. “Right plant, right place” philosophy is adhered to when combined with other growing needs. Rather than trying to fit the soil to the plant, fitting a plant to the soil is preferred.
 - a. For athletic fields, soil tests are performed every two years to ensure optimum nutrient levels for healthy turf.
 - b. Compost and mulch are used throughout campus, not only for aesthetics, but also to promote a healthy soil by attracting microorganisms and worms that in turn attract birds and other wildlife. Mulch also keeps soil temperature and moisture even.
 - c. Grass clippings are left on all turf areas to return organic matter to the soil. In the fall, leaves are also mulched and returned to turf and perennial beds.
 - d. The use of Insecticides on turf areas of main campus and athletic fields is applied sparingly to maintain soil health for microorganisms.

- 3) **Use of environmentally preferable materials:** The College is committed to the LEED program in its buildings and adheres to similar sustainability values in its landscape. Plants and seed from local nurseries that maintain a PA eco-type are used throughout the landscape when possible, and a variety of permeable surface materials are used to control water run-off. A current focus on all new landscapes is the use of native plants where appropriate, and locally sourced topsoil when needed.

4) **Hydrology and water use:**

- a. Rain gardens filled with native plants have been installed around campus to help control rainwater run-off into the Chesapeake Bay Watershed. More rain gardens will be installed this year.
- b. Curbside retention basins were installed around the Kline Center to control and direct storm water into a submerged holding tank for ground water control.
- c. The irrigation systems at the athletic fields are checked on a weekly basis to ensure proper operation and to maintain optimum moisture levels for turf. Systems are controlled to prevent water use at night or on rainy/cloudy days.
- d. Drought-tolerant native plants are used to cut down on water use.

5) **Materials management and waste minimization:** Composting is done on a large scale at the Dickinson College organic farm. Food debris is picked up at various locations around campus and transported to the farm. Completed compost is then used on the farm, at the community garden, and at other areas around campus. Material from the college's debris lot is also used as mulch or top-dressing for the community garden and flowerbeds.

6) **Snow and ice management:**

For snow and ice removal, mechanical means such as plows and shovels are used first (depending on the amount of snow), followed by the monitoring of sunlight and temperature to melt what is left on sidewalks and parking lots. The use of ice-melting compounds are used only when necessary for the safety of the Dickinson College community.