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Environmental State of the College Report
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Landscaping

Introduction

The Macalester College Grounds Department is responsible for the maintenance of the grounds, which includes all flower beds, green areas, and athletic fields. One of the main goals of the department, as stated by Jerry Nelson, head of the department, is to maintain a safe and aesthetically pleasing environment for students, faculty and staff. Carrying out this goal requires an input of time, energy, money, and maintenance materials such as chemicals and water. The Grounds Department attempts to implement “sound management” practices. The department is also, as stated by Jerry Nelson, “conscious of the environment,” yet the department does not strive to be perfect in the environmental stewardship area. The following is a summary and assessment of the practices used by the Grounds Department to meet their stated goals and the costs/benefits of balancing money and the environment.

Chemicals

Jerry and I spoke about the chemicals used by the department for maintaining an aesthetically pleasing campus. Nelson was unsure of amounts and costs for chemicals in past years, yet he believes that the quantity of chemicals currently used and on hand in the department is less than in previous years. As reported in the Fall 2003 landscaping assessment, the department purchased roughly five tons of 18-0-18 fertilizer, roughly one ton of 46-0-0 fertilizer, and roughly fifty to one hundred pounds of 10-10-10 fertilizer. These numbers represent the percentage of each component of the fertilizer in amounts of nitrogen, phosphorous, and

potassium, respectively. It is my suggestion that detailed records be kept including the type, cost, and quantity used of each chemical. This information should be available to members of both the Macalester and outside communities.

Chemicals Used in 2003

- Round-Up
 - Used on an as-needed basis to destroy weeds encroaching on plants and sidewalks.
- 18-0-18 sulfur coated slow release fertilizer
 - Used on grass areas
- Chemlawn Chemicals
 - According to last semester's audit, Trugreen Chemlawn is employed once each year to spray the entire campus with an herbicide.
- Rosepride funginex
- Drive 75 herbicide
- Diazinon
 - There is only one container of Diazinon remaining in the Grounds Department. It will either be used up or sent away for disposal.

The total cost per year for chemicals is between \$500 and \$2500. There is such a wide range of costs due to the fact that larger amounts of chemicals are used in wet years when more fungus is present. In such years the athletic fields require additional applications of a fungicide.

It should be stressed that Macalester uses chemicals on an as-needed basis, thus keeping chemical use to a minimum. Additionally, Macalester attempts to not use restricted-use chemicals. Insecticides are applied when necessary. As Macalester does not have serious

problems with insect pests, Nelson does not implement a complete Integrated Pest Management plan.

Water Use

10.5 acres of Macalester's total 25 acres of "turf and ornamentals" are irrigated, with the remaining areas being watered as needed. The irrigation system is programmed to turn off in the event of rain, which prevents unnecessary water use. Current weather conditions are taken into consideration for irrigation use, such as cloud cover. This practice also helps to control the unnecessary use of water. The athletic fields receive much of the water used in irrigation. It is not possible to account for all of the water used for watering plants and grasses at Macalester. The water use of hoses hooked up to individual buildings is recorded as part of that building's water use.

While Macalester is not excessive in its use of water it is my suggestion that steps be considered to further decrease the water used for landscape maintenance at Macalester. One such method of reducing water used for landscaping is to convert more of the campus green areas and flower beds to native species plantings. This would significantly decrease the amount of water used, as native species are more drought resistant and typically only need watering while becoming established. Another method is to include rain gardens, which are planted with plants that can thrive in soil with high moisture content. Macalester currently has a small rain garden on the north-east side of the library. Macalester is to be applauded for this step forward in water conservation.

Fuel Use

The department spends roughly \$2000 each year for fuel to run landscaping machinery. These machines include both push and driving lawn mowers, weed trimmers, leaf blowers,

chainsaws, and Cushmans, among others. As mowing is done once per week or once every two weeks, it seems as though excessive fuel use is not a major issue. Converting more turf area to plants, specifically native species, would reduce the amount of fuel used by the Grounds Department, which would decrease the overall fuel cost.

Connections with Other Departments

MULCH (Macalester Urban Lands and Community Health), a student organization funded by MCSG (Macalester College Student Government), maintains an organic garden on campus on the west side of the Field House. Aside from providing an opportunity for students to grow organic produce, this area reduces the amount of turf that requires mowing and fertilizing. MULCH maintains an informal relationship with Grounds; the group requests the use of certain equipment, such as tillers, and uses the campus greenhouse. Grounds helps pay for the maintenance of the retaining walls in the MULCH garden.

There are examples of campuses throughout the country that have successfully integrated landscaping projects with academic and other departments. It is my suggestion that similar projects be undertaken by incoming classes to increase campus and student involvement in the landscaping design and care. One such project is The Harvard Green Campus Initiative. This is a program that provides loans for environmentally responsible projects on the Harvard campus. Projects such as computer energy reduction and a greenhouse gas inventory were funded by this program. With the amount of enthusiasm and energy the Macalester community has, such a program could be quite beneficial on the Macalester campus. Projects such as the native plantings, rain gardens, and energy use reduction could be carried out. Students from various fields could access this money, bringing attention to the connection between the environment and various fields of study.

Continuing Education for Employees

Through the Minnesota Nurserymen and Landscaping Association, Grounds department employees are able to receive additional training. Two of the department employees are certified to apply certain pesticides and must be recertified each year. In this process they are able to review problems related to plant diseases, as well as discuss and learn about such applications as integrated pest management (IPM).

Identification of Plants and Trees

There is not a comprehensive list or map of tree species present on campus and their location. The biology department has suggested labeling the trees on campus, but issues of cost and maintenance impede this from happening. The assessment done last semester identified the trees and their native/non-native status. Please see the attached appendix C for this list. It is my suggestion that this or a similar list be made readily available to the Macalester and surrounding communities for education on native Minnesota trees. I would also recommend that a map be produced to aid in the locating of trees, also for educational and maintenance purposes.

Planting native species is not a primary concern of the Grounds department. The department is conscious of the time and resources it requires to maintain different varieties of plants, and so plants those that will not require as many resources. The roses on campus require very little effort to maintain, as they need pruning only once a year and have not needed to be sprayed for pests. It is my hope that future contact with Grounds will encourage native plantings and promote education on the little maintenance native plantings require. Both native and non-native plantings that are clearly labeled, or having maps readily available upon request would be beneficial to the education of members of the Macalester and surrounding communities that are interested in plant species. This could be a good starting point for integrating Macalester

academic departments and landscaping, as ecology and geography classes, for example, could use such identifications in classes.

Benefits of Native Species

The following is a list of the benefits of planting native species in general, and more specifically for the Macalester community, compiled by former Macalester student Thomas Ibsen. Mr. Ibsen is currently working on developing a program for greening college campuses throughout the Twin Cities area. His main interest is native species. This list of benefits covers many of the above mentioned areas in which Macalester can improve in the field of landscaping.

- Increased biodiversity
- Reduced maintenance costs
 - a. no watering needed once established
 - b. no fertilizing
 - c. no regular mowing
- Reduce erosion
- Maintain a connection to natural heritage
- Educational outdoor classroom
- Genetic repository
- Provides habitat for invertebrates such as butterflies
- Provides food for birds in the form of seeds and invertebrates
- Projects can provide education to students, faculty, and neighbors
- Can improve relationship to neighborhood residents by involving in community volunteer events on campus with students and faculty
- Helps bridge the distance between natural areas allowing for animals to migrate more easily.
- Improves soil.
- Reduces run-off from rain or snow-melt events
- Nurtures psychological ‘need’ for humans to be surrounding by nature
- Diverse landscape textures and colors throughout the year
- Flowers and grasses are beautiful
- Can be used as a seed nursery for Katherine Ordway and other sites

I believe that Macalester can benefit from native species in the above ways, and so Macalester should more aggressively pursue converting turf areas into native species plots. Mr. Ibsen is a prime resource for integrating such a conversion and should be utilized.

Following is a partial list of plant species Mr. Ibsen compiled for use on the Macalester campus. One of the main concerns Nelson stated in planting native species is a lack of diversity in native species. The following species are short and would work well to maintain a groomed appearance on campus.

Grasses

1. Prairie Dropseed
2. Sideoats Grama
3. Hairy Grama
4. Blue Grama
5. Little Bluestem
6. Kalm's Brome

Flowering Plants

1. Blazing Star
2. Prairie Smoke
3. Pasque Flower
4. Butterfly Flower
5. Aster species
6. Goldenrod species
7. Rattlesnake Master
8. Beardtongue species
9. Bottle Gentian
10. Prairie Onion
11. Alum Root
12. Culvers Root
13. Purple Prairie Clover
14. Wild Blue Indigo
15. White Indigo
16. Lobelia
17. Fragrant Giant Hyssop
18. Prairie Phlox
19. Prairie Coreopsis
20. Purple Coneflower

At Baldwin-Wallace College near Cleveland, Ohio, the Native Ohio Plant Garden has been established. The goals of this area of campus are to educate the community on the benefits of using native plantings in landscape projects and to educate the community on the native species of the area. There are many areas on the Macalester campus that could be used for such a

project that could help to educate Macalester and visitors. Such education of the natural state of our surroundings can be seen as a vital step in encouraging respect and appreciation of the environment. The steps taken with Mr. Ibsen towards the goal of native plantings on the campus are encouraging.

On a smaller scale, “Prairies in the Planters” is a project that was carried out on the Indiana University campus in Bloomington, Indiana. An environmental group on campus headed the project, provided the labor, created a project web site, and put together a green landscaping pamphlet. This group is comprised of students, faculty, and staff. There are numerous flower pots/planters on campus which are currently planted with annual varieties. Such planters could be a good start in bringing native species to Macalester. They are confined and no current turf or plants would require removal. A committee of students, faculty, and staff could be a beneficial addition to the Macalester community by increasing dialogue among members of the college while providing a useful service, namely maintaining native planting areas.

Conclusion

Macalester is doing a good job of creating a safe and aesthetically pleasing campus for the Macalester community while also maintaining an environmentally responsible landscape. While Macalester landscaping is harmful effect on the environment is small in terms of chemicals and water use, among other areas, steps should be taken to bring Macalester to the forefront of green colleges. Methods such as native plantings and rain-gardens can be implemented to further decrease Macalester landscaping is negative impact on the environment. The college has a useful resource in Mr. Ibsen for guiding the students in native plantings. There are colleges that Macalester can use as models for conservation methods, such as the water conservation garden at Cayacuma College in California. Simply because Macalester is doing a

satisfactory job of maintaining the grounds without large detrimental effects on the environment it should not be accepted that we remain at the present level of conservation.

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