Curb-Cut Rain Garden Research
Patrick Jonker and Dr. David Warners, Calvin College, Grand Rapids, Michigan

Introduction

Project Description
In 2015 several curb-cut rain gardens were installed in the Alger Heights neighborhood. These gardens receive stormwater runoff from the street gutters through a cut in the curb (Fig 1). We assessed the success of 11 of these gardens, as well as the success of individual species planted within them after 1 year of growth.

Methods

Evaluate performance of native species
Evaluate survivorship of native species
Lew, Joel
Prairie dropseed
runoff enters into a
Identify variables that influence garden success
Prairie dropseed
Hairy Beardtongue
p=.01
Species Results
the trapped rainwater.
Results
Composted
Average survivorship (composted)
Average height (composted)
Hairy beardtongue
p<.01
631
Figure 3. Examples of low and high performance values. Echinacea (left) has no flowering stalks, no buds, and has not spread received a performance value of 1; Liatris (right) has grown wider and taller, is flowering profusely and received a performance value of 10.

Garden Assessment

Between June 7 and 13 we evaluated the gardens by recording growth variables for each species (height, number of leaves, number of stalks, number of buds, clump width). We also scored each species with a ‘performance’ rating from 1-10, 10 being a species that had filled in well and was seeding in new plants, 1 being a plant that had survived but had grown very little (Figure 3). Garden performance values were generated by taking the mean performance value for each species within a garden.

Species Assessment

To quantify the relative success of species, we measured a random sample of 5 individuals of each species in every garden. We averaged data across all gardens and compared mean values using a Chi-squared test of significance. This allowed for an evaluation of the relative success of each native species that was planted in these urban, curb-cut rain gardens.

Results

Garden Results

Average Performance of Gardens
Average Survivorship of Gardens
Figure 5: Comparison of average performance and survivorship of Composted (dark orange) and non composted (lighter orange) gardens.

Average Survivorship of Common Species
Average Height of Common Species

Figure 6: Comparison of survivorship (top) and performance (bottom) of three species found across all gardens (n=6 for non-composted gardens, n=3 for composted gardens). Error bars represent one standard error about the mean.

Species Results

Figure 8: Pennsylvania sedge (p=.05), Wild bergamot (p=.04) and Ohio spiderwort (p=.05) had significantly higher survivorship than the overall average (Chi square test). Nodding wild onion, Butterfly weed, and Wild lupine (all p<.01) had significantly lower survivorship than the overall average.

Conclusions

Garden-by-Garden
Garden success was strongly influenced by the addition of compost. Composted gardens had higher performance ratings and survivorship than non-composted rain gardens. Other variables, including amount of care provided by homeowners, volume of water entering the curb-cut, amount of shade or sun, etc., are also likely contributors and should be assessed in future studies.

Species
The best species to use in these urban curb-cut rain gardens are Wild bergamot, Ohio spiderwort, and Pennsylvania sedge, although several others did well too. The species that struggled the most were Butterfly weed and Wild Lupine. Given the popularity of these two species in particular, popularity of these two species in particular, popularity of these two species in particular, popularity of these two species in particular, learning how best to improve their performance should be a priority.

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