

WASHINGTON TURFGRASS SEED COMMISSION TERMINATION REPORT FOR 2021 PROJECTS

Project No.:

Title: Stormwater suitability factors of turf and native grasses in urban and rural landscapes

Personnel: Katherine Kraszewski

Reporting Period: Fiscal Year 2021

Accomplishments:

In this work, we investigated the Salt tolerance and Total N and P removal efficiencies of three grass species and blends by tracking their year-round field performance in five plots along a drainage swale at the Grass Breeding and Ecology farm located at the WSU campus in eastern Washington State. By flooding the swales with diluted water and 33/33/33 dilution of Salt for ice melt, Nitrogen, Phosphorus and Potassium soluble fertilizer across three different occurrences, we simulated stormwater runoff conditions. To assess possible Nitrogen, phosphorus uptake from each grass species, we measured changes in Total N and P levels. Using this knowledge, we examine the potential of each grass species' and blends' infiltration ability N and P remediation capabilities as a means of reducing runoff levels, as well as identify areas that require additional research.

In the case of urban and rural landscape design planners, these results are relevant in that they indicate blended grass species are preferable to monoculture applications for reducing salt levels. Further research is necessary to broaden the understanding of how various grass species reduce saline and TDS levels to improve water quality.

Results:

According to the results of this study, blended grass species had the highest success rate at improving our simulated stormwater runoff water quality by reducing our Saline and TDS levels but had little effect on Ph levels.

Key Findings suggest:

- The reduction of total dissolved solids is higher in grass blends
- The overall health of grass plots and water quality rates is higher in blended plots
- blended grass species had the highest success rate at improving stormwater runoff outcomes by having the best overall turf quality. The change in P and N levels was not significant over a 24 hour period, however, site and environmental conditions may have impacted the plants ability to interact with the pollutants.

**Request for Proposal
Washington Turfgrass Seed Commission**

Publications:

Conference Presentation And Proceedings:

Kraszewski, K. Austin, S. 2022. Landscape unArchitecture for the Crisis Century. Washington American Society of Landscape Architects Annual Conference. Seattle, WA.

Kraszewski, K. 2022. Stormwater Suitability Factors of Turf and Native Grasses. Twelfth International Conference on The Constructed Environment.

Invited Lectures:

Kraszewski, K. 2020 Waterscape: the dynamic moving whole northwest faculty exchange program. University of British Columbia Vancouver BC. Dec 1st.

Publications (under review)

*Kraszewski, K., Schnore, J. 2022. Nitrogen And Phosphorus Remediation Factors Of Turf And Native Grasses. Water air and soil pollution journal. *Under review

*Kraszewski, K., Schnore, J. 2022. Stormwater Salt Remediation And Tolerance Of Turf And Native Grasses. Rhizosphere Journal. *Under review

Name (List PI#1 first)	Supporting Agency and Project #	Total \$ Amount	Effective and Expiration Dates	% of Time Committed	Title of Project
Katherine Kraszewski	Current: Washington Turfgrass and Seed Commission & Washington State University	\$29,565	Start March 2021 End March 2022	40%	Stormwater suitability factors of turf and native grasses in urban and rural landscapes