



Growth of Naiad in Substrates with Varying Percentages of Sand and Controlled-release Fertilizer

Heather Hasandras, Dr. Kimberly Moore, Dr. Lyn Gettys

University of Florida, Ft. Lauderdale Research and Education Center, 3205 College Ave, Davie, FL 33314

Introduction

Florida waterways and wetlands are used often for recreation and fishing. Aquatic plants in these waters produce food for fish and a habitat for aquatic organisms. Non-native plants alter the natural interactions in an aquatic habitat. Non-native plants are often responsible for reduction in oxygen exchange, increases in water temperatures, and internal nutrient loading. Southern Naiad is a desirable native plant that will not change the natural ecosystem in the waterways that may have been damaged previously from invasives. Little is known about the fertility requirements of Southern Naiad in different substrates.

Objective: Compare growth of Southern Naiad among different percentages of sand in a controlled environment with 0g, 2.6g, 5.2g, and 10.4g of Osmocote fertilizer.

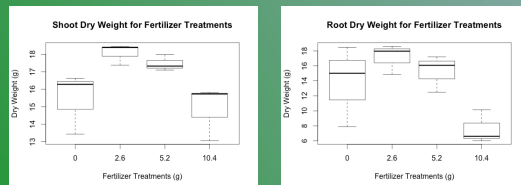
Materials & Methods

Ten apical cuttings per container, approximately 4-6 inches long, of naiad were obtained from the aquatic tanks located at the University of Florida FLREC. 60 azalea containers were separated into 5 substrate groups (100% sand, 75% sand 25% peat, 50% sand 50% peat, 25% sand 75% peat, 100% peat 0% sand). There were 3 reps of each substrate/fertilizer combination. Prior to transplanting the cuttings, a controlled release fertilizer (Osmocote 15N-4.05P- 9.96K, Scotts, Marysville, OH) was top layered into the sand at 0, 2.6, 5.2 or 10.4g of fertilizer per container. 5 matching fertilizer rate containers were then submerged into each 18g mesocosm plastic tub filled with pond water. The experiment ran for 8 weeks in fall 2014 and was repeated in spring 2015. After 8 weeks, shoots and roots were harvested, cleaned of debris, and dried in a forced air oven set at 90 degrees Celsius until a constant weight was achieved for analysis.

Native Naiad

Naiad (*Najas guadalupensis*) is a desirable Florida native aquatic plant that is fondly referred to as "southern naiad". In Florida, naiad is often mistaken for the invasive weed hydrilla. Naiad is a submersed perennial aquatic plant with dark green leaves and shoots that grow long and thin like a ribbon. It reproduces by seeds and fragmentation. It provides a habitat for invertebrates, food for fish and wildlife and helps to remove nutrients from the water (UF IFAS CAIP, 2015)

Results



	100% Sand	75% Sand	50% Sand	25% Sand	0% Sand
0g	16.34	16.54	17.28	16.4	10.69
2.6g	18.22	19.95	18.42	17.68	16.07
5.2g	17.83	17.873	17.60	17.20	16.82
10.4g	15.97	16.143	16.11	15.71	10.43

Shoot Dry Weight (g) vs. Substrate & Fertilizer Treatment (g)

	100% Sand	75% Sand	50% Sand	25% Sand	0% Sand
0g	16.78	20.15	19.85	12.24	0.00
2.6g	18.87	24.71	19.57	11.59	10.95
5.2g	19.71	23.64	14.29	5.38	13.27
10.4g	11.25	10.13	11.17	5.44	0.00

Root Dry Weight (g) vs. Substrate & Fertilizer rate (g)

Conclusions

Result: Naiad grew optimum at 2.6g fertilizer rate in 75% sand 25% peat substrate.

Conclusion: Naiad will grow well in sandy loam soil with low fertilizer input



Aquatic Plant Communities in Waneta Lake and Lemoka Lake, New York
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 Naiad Description: aquaplant.tamu.edu Texas A & M Agrilife extension.
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