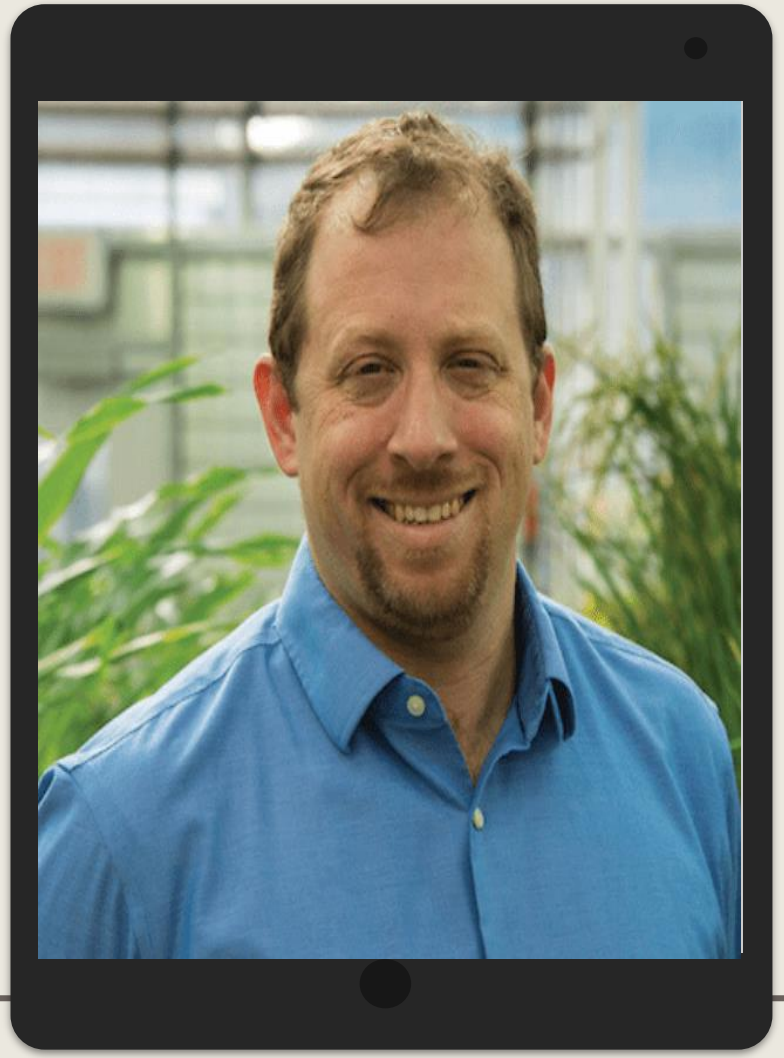
Seashore Paspalum

Paspalum vaginata



Lead Scientist

- Dr. Ivan Baxter
- Read an article about genetically modified trees cleaning up toxins from the environment and was inspired
- Areas of Research:
  - Elemental Accumulation
  - Bioinformatics
  - Quantitative Genetics
  - High-Throughput Phenotyping
  - Ionomics

Researcher

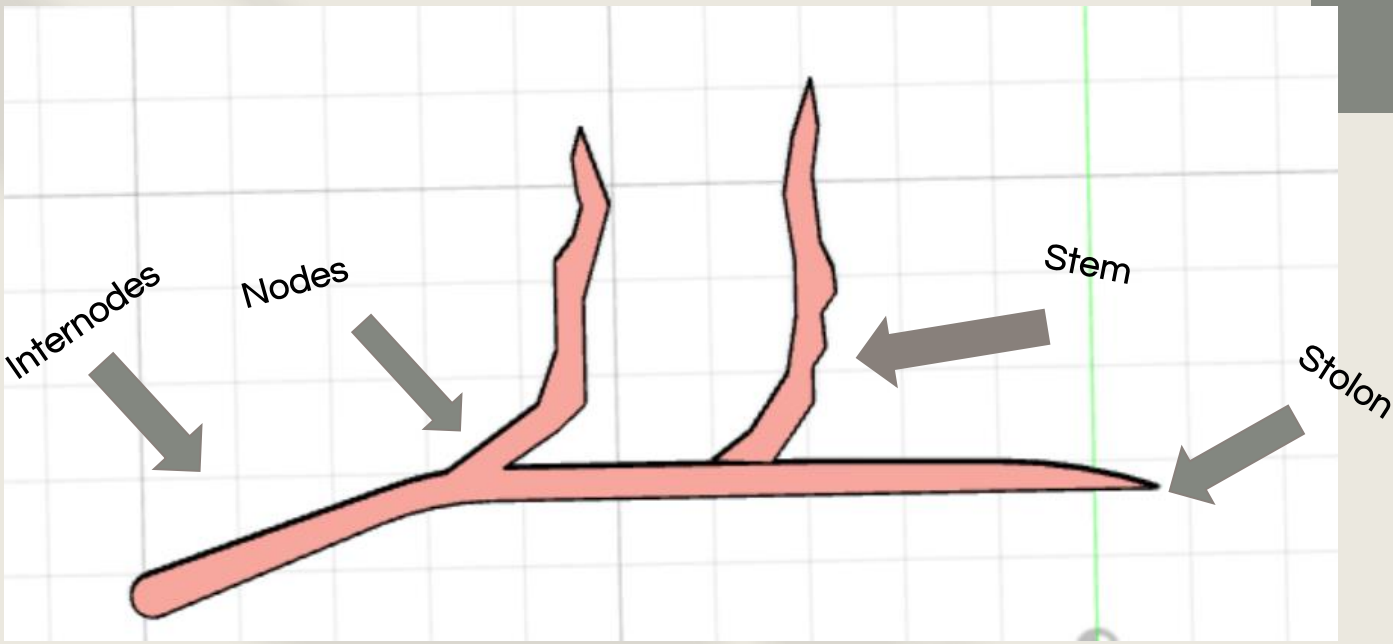
- Mr. Collin Luebbert
- Part of the research team
- Computational scientist
- Has been working at Danforth for 6.5 years

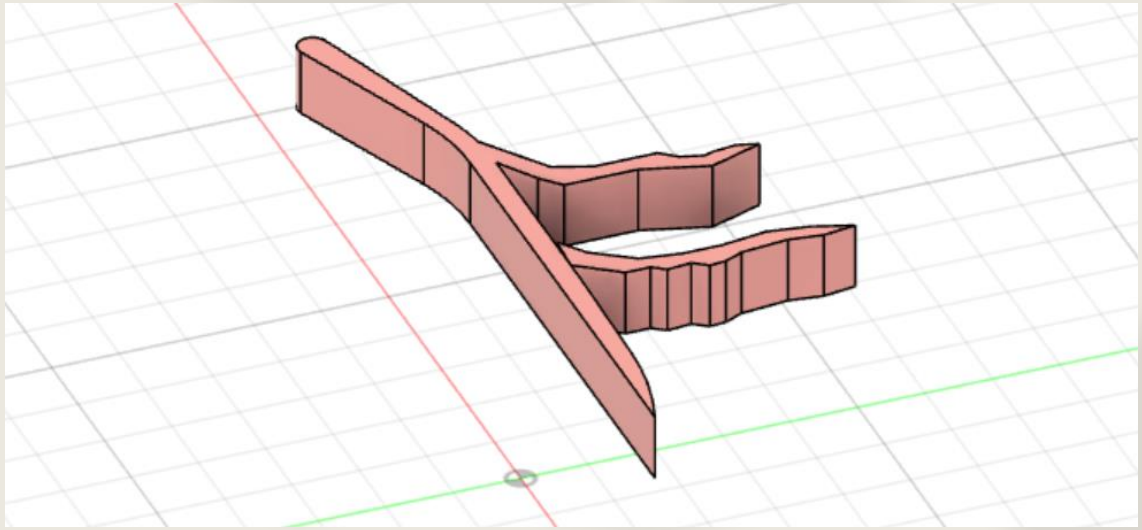
What is it?

- *Paspalum vaginata*
- Warm season, perennial grass
- Can grow to 20 inches
- Native to Americas, invasive in tropical areas
    - Sonoran Desert and south coast ranges of California, native to southeastern NA, other parts of tropical Central and South America and Africa
- Commonly used as turf in golf courses

Seashore Paspalum

Seashore Paspalum (3D Model)





Environment

- Evolved on sand dunes and relied on ocean water and rainfall for nutrients
  - These conditions made Paspalum highly efficient in nutrient uptake
- Performs better in waterlogged soil with pH of 3.6-10.2 and few nitrogen fertilizers
- Tolerates soil salinity levels up to 54 dSm-1
  - Most horticultural crops would die

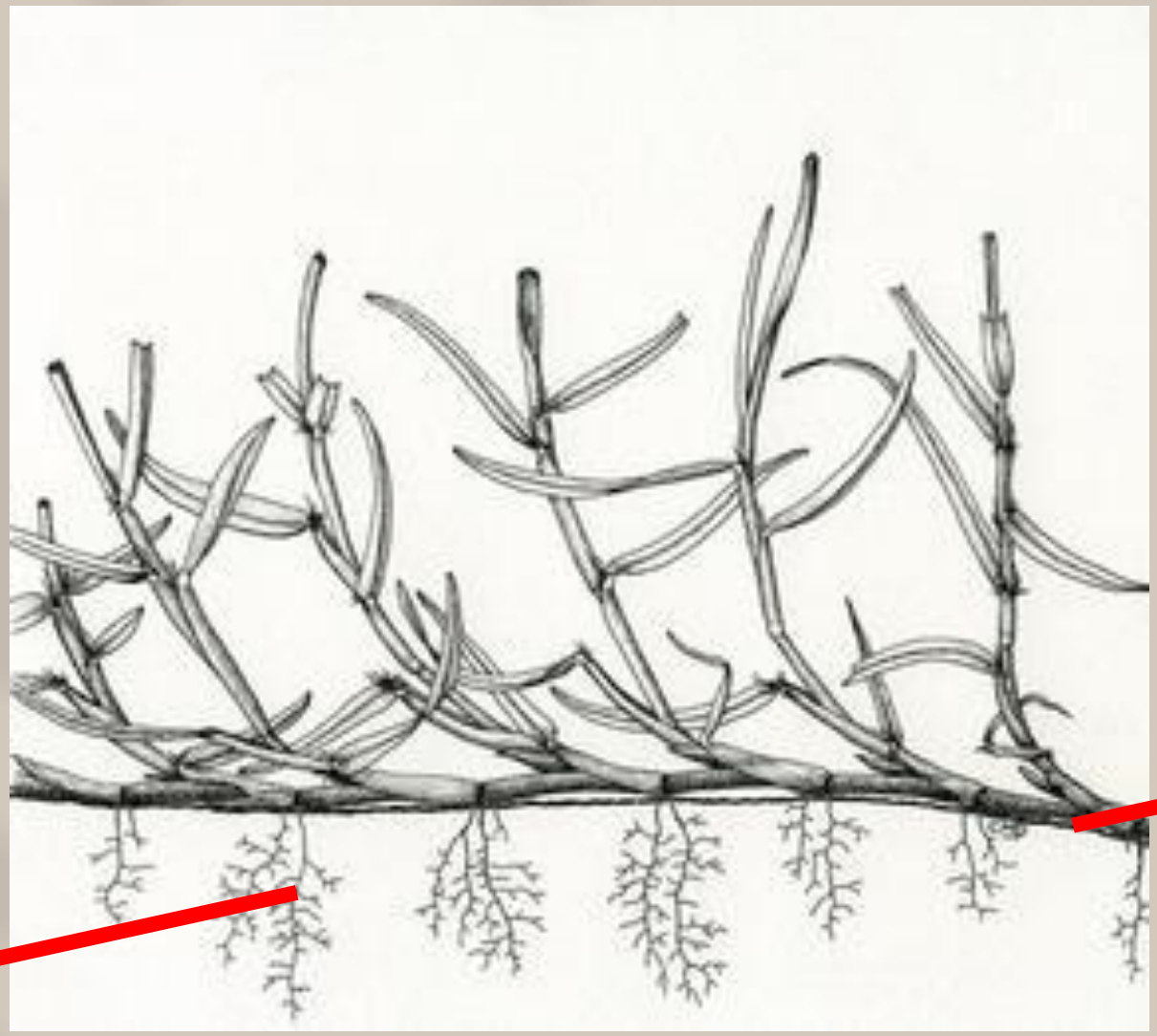
Reproduction

Primarily Rhizomes

Creates new root systems

Secondarily Stolon

Creates a clone of the original plant



Stolon

Rhizomes

Strengths

- Forms high quality turf in reduced light conditions
- High toleration of soil salinity
- Efficient nutrient uptake
- Low requirements for macronutrients (nitrogen, phosphorus, potassium) and micronutrients (sodium, manganese, zinc, copper, iron)
- Rapid root development

Weaknesses

- Insect damage is prevalent
- New to the industry, few people have extensive experience
- Invasive species

Why Did We Choose This?

Our group wanted the opportunity to work with multiple scientists, and we also think that the purpose of the stolon (cloning the plant) is extremely interesting on a genetic level

Why Should We Care?

By studying Paspalum, we can see how plants adapt to certain environments and how they absorb different elements, like zinc, iron, magnesium, calcium. We could figure out how to genetically modify plants to clean more toxins from the environment and make them more resilient

Sources

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