Specifics of Competition: Intra versus Interspecific Competition of Setaria, Wisconsin Fast Plant, and Barley.

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Introduction

Plants in all ecosystems compete for limited resources. Competition is the process of competing for survival and resources. There are two types of competitions, which are interspecific competition and intraspecific competition. Interspecific competition, in ecology, is a form of competition in which individuals of different species compete for the same resource in an ecosystem. Intraspecific competition is the interaction in population ecology, whereby members of the same species compete for limited resources. This can leads to a reduction in fitness for both individuals.

The objective in this study is to see the effects of competition on plants growth. We hypothesize that there will be a significant difference in plant growth between interspecific and interspecific competition. Three species were placed into six unique competitive scenarios .in this study, they were left to grow for three weeks, and measurements were taken for each plant to investigate the impact of competitive scenarios on growth.

Material And Methods

- ·All plants were grown from seed in 50ml pots, and 54 seeds on each of our four flats, totaling to 216 pots and a grand total of 432 plants.
- ·Plants were germinated together in one of six competitive scenarios (Barley & Barley, Barley & Seteria, Barley & Wisconsin, Wisconsin & Seteria, Wisconsin & Wisconsin, Seteria & Seteria)
- ·Plants were placed under constant light, and watered as needed.
- ·After germination, pots were thinned to the desired competitive scenarios, and 3 grains of osmocote complete fertilizer were added to the surface of the soil.
- ·During week 2 and 3, measurements were taking for : Height, Leaf count, Flower count, and shoot Biomass
- ·Harvesting took place on the third)week and biomass was taken.

Results

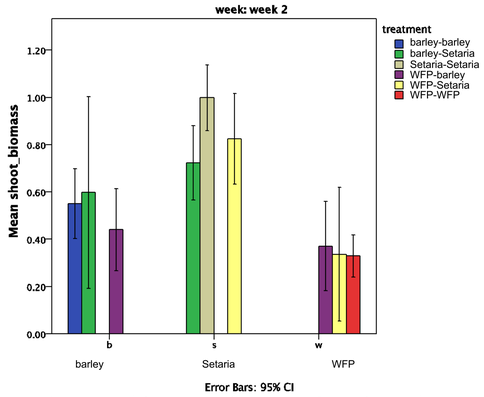

Figure 1: Mean biomass of Barley, Setaria and Wisconsin Fast plants (WFP .

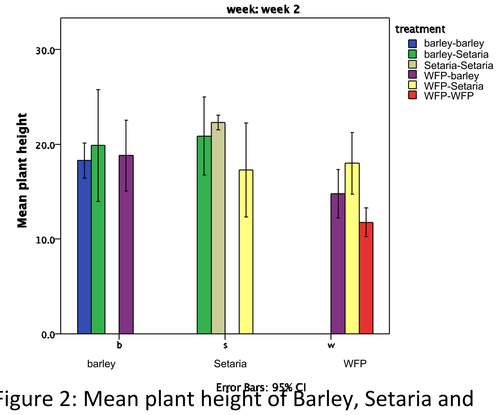

Figure 2: Mean plant height of Barley, Setaria and Wisconsin Fast plants (WFP) .

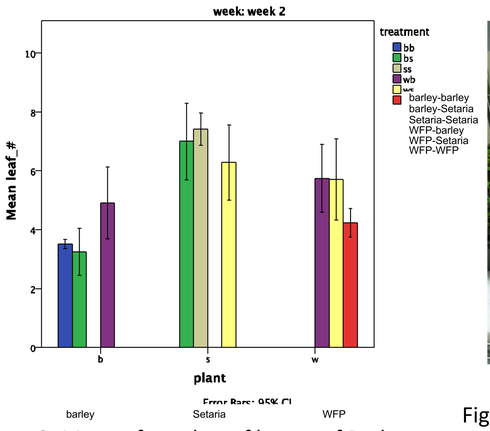

Figure 3: Mean of number of leaves of Barley, Setaria, and Wisconsin Fast plants (WFP) .

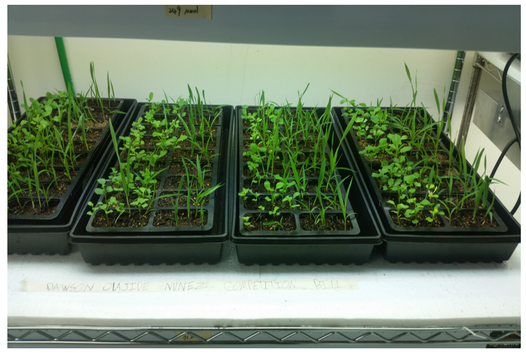

Figure 4: Plants placed under fluorescent light. Small dicot plants are Wisconsin Fast Plants (Brassica), shorter grass is Setaria, and longer leaved grass is barley.

•Setaria grows better in intraspecific competition than interspecific competition due to its higher biomass, higher leaf count and tallest height measured in the Setaria & Setaria group than Setaria & barley group and Setaria & Wisconsin fast plant group. (Fig 1, Fig 2, Fig 3)

•Barley had a higher biomass and higher plant height when paired with Setaria (fig 1, fig 2). Barley did not perform well when paired with the Wisconsin fast plant since it had a lower biomass than that of barley paired with barley. This tells that barley only performs well with certain plant. Barley had a higher leave count when paired with the Wisconsin fast plant (fig 3). This shows that overall barley intraspecific competition will provide you with constant results while interspecific competition will provide varied results.

•(Fig 2,Fig 3) show that Wisconsin fast plants paired with interspecific plants performed better in interspecific competition than in intraspecific competition

Discussion

The results show that barley grows better during intraspecific competition. It can also do well in interspecific competition, depending on the species. Setaria did extremely well during intraspecific competition since it topped the graph in every category it was placed in .When it came to interspecific competition it did well but not as well as being paired with its own species. Wisconsin fast plants performed better in intraspecific competition rather than interspecific competition due to the result showing higher variables in intra verse interspecific. To answer the hypothesis, different species perform differently in intra and interspecific competition, this means there is no direct way to shown that a certain species will perform in a certain way it all varies on their partner. This research was very important because it show that even plants that are within their own species can have a hard time surviving. So the next the next time you plan on planting two different species of plants together in your garden, consider whether it might grow better in an intraspecific or interspecific competition.

References

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