Effects of UV Radiation on Rosette-Dwarf and Wild Wisconsin Fast Plants

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Introduction

- It has been suggested that a thinner ozone layer will lead to more UV radiation which will have negative effects on plants (McKenzie 1999, Kotilainen et al. 2009, Sullivan, 1997, WHO 2016)
- We set out to test this theory by subjecting two genotypes of the Wisconsin Fast Plant (*Brassica rapa*) to UV light radiation
- Our hypothesis was that the wild versions would grow taller under regular light and both would have stunted growth under the UV radiation

Methods

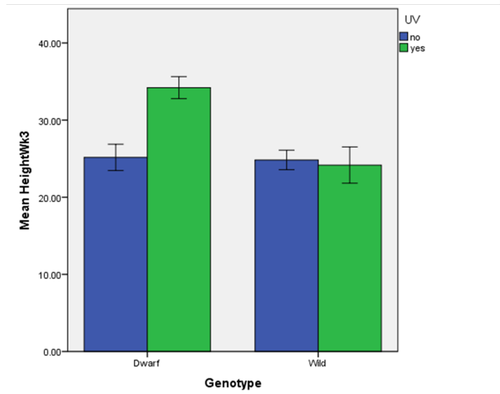
- We put two trays with both genotypes under continuous regular light and two under continuous UV light
- Plants were measured for three weeks after germination until fully grown at the end of the third week
- After fully grown the plants were weighed to measure their biomass
- The leaves were then removed to measure leaf area with the FIJI program (https://fiji.sc/)
- The leaf areas were also analyzed using the IBM SPSS program
- The pictures below show the growth of both genotypes during the second week

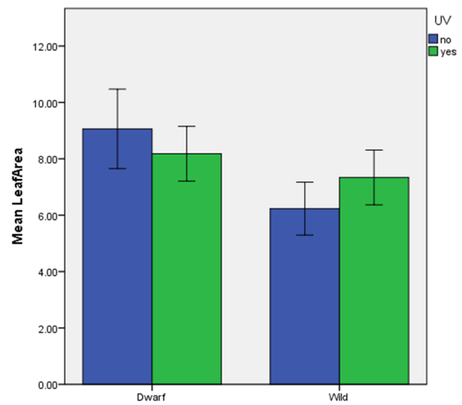
Figure 1. Dwarf genotype

Figure 2. Regular genotype

Results

- The average height of the Rosette-Dwarf and wild Wisconsin Fast Plant were taller under UV light than the plants under regular light
- The Rosette-Dwarf leaf areas were larger than the wild plants
- The Rosette-Dwarf also grew taller than the wild plants under both types of light





Discussion

- After conducting this experiment and seeing our results we decided to go back and do a light spectrometer test on the UV lights we used. After doing the light spectrometer test we found that it had more blue light than any of the other colors in the spectrum and we believe this had a significant effect on the growths of the plants under this light.
- We also found during our measurements that the Rosette-dwarf plants grew taller than the wild versions of the same plant in both regular light and UV light radiation.
- We believe that with more careful tuning and continued replications of this experiment we would be able to test our hypothesis in more depth.

References:

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