Light quality effect on biomass allocation of *Axonopus catharinensis* Valls.

Cassiano E. Pinto*[1], Murilo Dalla Costa[1], João F.M dos Passos[1], Fábio C. Garagorry[2], Jean C. Bettoni[3], Juliana A. de Souza[4], Newton B. Costa Junior[1], Simone S. Werner[1], Tiago C. Baldissera[1]

[1]EPAGRI, Estação Experimental de Lages, SC; [2]EMBRAPA, Pecuária Sul, Bagé, RS; [3]PhD Student, UDESC, Lages, SC; [4]Graduate student, IFSC, Lages, SC

tiagobaldissera@epagri.sc.gov.br

Light is the major resource driving plant production, plant architecture and vegetation dynamic. Different species can exhibit contrasted strategies to capture and use light. Understanding plant responses for light is helpful to forecast production and management practices for heterogeneous light environments (e.g. forage species under trees canopy). The objective was to evaluate the biomass production and allocation of individual plants of giant missionary grass (*Axonopus catharinensis* Valls.) in function of alterations in light quality in a controlled environment. Three light conditions were simulated in a growth room: low blue light level (B-), low red light level (R-), and neutral (N - control). Sodium vapor (400 w) and fluorescent lamps was used as light source and the light conditions were obtained with a Lee filter HT 015, Lee 117 and Lee 216 for low blue, low red:far red and neutral light respectively. The distance between plants and light sources plus filters was adjusted in order to provide photon flux with the similar photosynthetic efficiency in B- (Photosynthetic Active Radiation = 308 µmol m^2 s^{-1}), R- (PAR = 363 µmol m^2 s^{-1}) and N (PAR = 381 µmol m^2 s^{-1}). Twenty plants (i.e. replicates) from clones was grown individually in pots of 3.6 L in each light treatment at 25 ± 3ºC and 16 h photoperiod. Plants was watered with Hoagland nutrient solution. After 35 days of growth, plants were colected and separeted in the following morphological components: leaves, stems and roots. Statistical analysis was performed using R software. The total biomass production (p-value 0.056) was higher in the neutral (5.54 ± 1.24 g) and R- (4.90 ± 1.77 g) conditions compared to the B- (3.89 ± 1.30 g). There was no significant differences in the leaf and stem mass (p-value>0.2325), either for total shoot mass (p-value 0.2385). The roots biomass was lower in the B- (0.86 ± 0.30 g) compared to N and R- (1.42 ± 0.38 and 1.14 ± 0.47 g respectively). Finally, the shoot:root ratio was higher in the B- (3.71 ± 1.51). The biomass production and allocation on giant missionary grass is more affected by low blue light than changes in the red:far red light. Blue light has a direct impact on stomatal functioning, this could be the main factor affecting biomass accumulation. The investment on biomass allocation to shoot in detriment of roots can be considered a plant strategy to capture more light; this process can be a result of hormonal balance in function of the plant light perception.

Keywords: forage, roots, morphological components, light competition, blue light, red:far red light

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