Leaf morphogenesis and anatomical regulation of *Axonopus catharinensis* Valls. growing in altered light quality condition

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Axonopus catharinesnis Valls. (gianty missionary grass) is a native forage species from Santa Catarina State. This species is considered a good option to use in systems with tress because its good tolerance to shade. When plants are growing under trees canopy, shade environment causes changes in the quantity and quality of light, which can affect plants growth and development. The aim was to evaluate the leaf morphogenesis and anatomical regulation of giant missionary grass 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:far 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, 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 at 25 ± 3ºC and 16 h photoperiod. Plants was watered with Hoagland plant nutrient solution. Every 3 days, during 20 days, plant measurements was done to calculate the following parameters: phyllochron (Phyl – ºCd); leaf elongation rate (LER – cm $tiller^{-1}$ $ºCd^{-1}$); duration of leaf elongation (DLE - ºCd); leaf lifespan (LLS - ºCd); leaf blade senescence rate (LSR – cm $tiller^{-1}$ $ºCd^{-1}$). At the end of these measurements, tillers were collected to measure the specific leaf area (SLA). Statistical analysis was performed using R software. There was no significant impact of light quality on the parameters that affect leaf appearance and growth as Phyl, LER, DLE (p.value>0.06). The R- reduced the LLS compared with the other light conditions (p. value 0.01), while LSR was not affected (p-value 0.43). There was an increase of the SLA (p-value 0.001) for B- (364.6 ± 28.5), R- (327.1 ± 18.7) while for N was 304.41 ± 40.4. These results demonstrates that light quality has litlle effect on the leaf morphogenical parameters of giant missionary grass, however there is an anatomical adjustment of the leaf due to the light quality alteration. This process can interfere on the leaf forage quality, with a possible better quality of shaded leaves.

Keywords: forage, plant development, plant growth

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