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The XXI International Grassland Congress / VIII International Rangeland Congress took place in Hohhot, China from June 29 through July 5, 2008.

Proceedings edited by Organizing Committee of 2008 IGC/IRC Conference

Published by Guangdong People's Publishing House

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Defoliation effect of *Poa ligularis* Nees Ap Steudel on aerial biomass production and its components in northwestern Argentinian patagonia

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Key words: defoliation, *poa ligularis*, aerial biomass, steppe, patagonia

Introduction *Poa ligularis* is a native perennial grass that has become a key species for sward management in many local grassland in the Sierras and Mesetas region. Occupies about 35% (>20 million ha) of the Rio Negro and Neuquen provinces in the semiarid region with 300 mm annual rainfall. This species is considered a good herbage but it is tending to disappear under continuous grazing. Ecophysiological factors that determine its recovery ability after various defoliation frequencies have not yet been studied.

Materials and methods During three years we evaluated this species about the effect of different defoliation frequencies on the production of aerial biomass and its components. The study was carried out in Pilcaniyeu Experimental Ranch (S 41° 02' 10.8", W 70° 31' 27.4", 1070 m o.s.l.) Patagonia Argentina, in a grass-shrub steppe of *P. ligularis*, *Stipa speciosa*, *A. desmia campestris* and *Mulinum spinosum*. In the field, different defoliation treatments were assigned to 25 plants of *P. ligularis*, which included from 1 (T1) to 5 (T5) clippings along each growing season and 5 Control plants that were not clipped. We determined the aerial biomass and reproductive effort (as the ratio between the biomass of reproductive structures and the total aerial biomass). In 3 tillers from the center of each plant and 3 from the periphery we estimated the number of green leaves, height and the production of new tillers per parental tiller.

Results and discussions The results showed that during the second and third defoliations years, the mean accumulated aerial biomass was 40 and 41%, respectively, lower than the first year ($p < 0.05$). This can be attributed to the lower height of tillers ($p < 0.05$) 27 and 28%, and the higher proportion of dead tillers ($p < 0.05$), principally in the center, 40 y 35%. The lower biomass production in the second year was partially compensated by a higher number of new tillers per parental tiller (22%) and a higher number of green leaves per tiller (15%). This was not observed in the third year. During the third year the reproductive effort decreased more than 60% in all clipping treatments in relation to the first year ($p < 0.05$).

Conclusions The decrease in aerial biomass production related to the increase in tiller mortality under intense and continuous grazing could compromise the resprouting potential in *P. ligularis*. Besides, the lower investment in reproduction structures could affect the recruitment of new plants that naturally is very low in these grasslands.

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