



**RIO18**  
21st World Congress  
of Soil Science

**21 WORLD CONGRESS OF SOIL SCIENCE**

Sunday 12 – Friday 17 August 2018

Rio de Janeiro, Brazil

Rio de Janeiro August | 12 - 17

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## **Soil salinization in Patagonian meadows with different grassland condition**

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Patagonian meadows (locally named “mallines”) are wetlands that develop in the lower parts of the landscape, where runoff water accumulates, and organic and humid soils appear, contrasting with the surrounding steppe. An internal soil moisture gradient generates different types of vegetation, dominated by *Juncus sp* in the lower/wetter areas and by *Festuca sp.* in higher/mesic ones. As meadows have a high primary productivity of forage value, they were heavily grazed mainly by sheep during the last century. Overgrazing causes a reduction of plant cover and an alteration of water dynamics with consequences on salt movement. We conducted this research to evaluate the effect of historical grazing on soil chemical properties of meadows of north Patagonia. We selected three meadows with similar characteristics within the “Sierras y Mesetas” area, where we identified zones with different vegetation conditions (good-G and regular-R) due to effects of historical grazing, in two types of vegetation (wet-W and mesic-M). Mean annual precipitation is 300 mm, concentrated in winter. As we expected that water table variations could influence salt dynamics, we took soil samples at 5 depth intervals (0-5, 5-15; 15-30, 30-60 and 60-90 cm) on three different dates (September and December 2016 and February 2017). In the laboratory, soil pH and electrical conductivity-EC (soil suspension, 1:2.5) were determined. To analyze data, we performed an ANOVA with a factorial design for each vegetation type and depth interval, with vegetation condition and sample date as factors. No significant differences were found among sample dates in both pH and EC. Comparing R with G areas, W-meadows significantly increase soil pH up to 90 cm depth (on average  $7.5 \pm 0.7$  vs  $8.5 \pm 0.5$ ), and a significant decrease EC at 0-5 cm and 30-60cm ( $0.7 \pm 0.1$  vs  $0.4 \pm 0.1$  and  $0.6 \pm 0.1$  vs  $0.35 \pm 0.3$ , respectively); in M-meadows, pH showed a slightly significant increase only at intermediate depths (5-60 cm,  $8.8 \pm 0.2$  vs  $8.4 \pm 0.1$  on average) and no differences in EC, although variability among data was very high. These data show a more significant effect of the vegetation condition on soil salinity in wet meadows than on mesic ones, where a process of sodification seems to be developing. Contradicting the expected, no differences in responses during the growing season were observed. Wet meadows, where water table fluctuations are higher, seem to be sensible areas to monitor degradation processes due to overgrazing.

**Keywords:** wet meadows, water dynamic, degradation, salinization

**Financial Support:** INTA PNAgua 1133023



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