

Environmental drivers of buffelgrass productivity in Chaco Árido of La Rioja (Argentina)

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Summary

The Arid Chaco is characterized by extensive production of livestock, with inadequate management practices that increased degradation. Due to this, the surface of exotic pastures, mainly buffelgrass, increased considerably. The objective of this work was to evaluate the environmental drivers of the buffelgrass ANPP (temperatures, precipitation and real evapotranspiration -ETr-), during two station of growth: 2015-2016 and 2016-2017. Both periods presented similar thermal characteristics, however, there was a strong contrast in rainfall: the 2015-2016 period had extraordinary values (~ 670 mm) and it was called "wet year". This period was associated with an intense "El Niño" event. The 2016-2017 period had accumulated rainfall (PPac) less than normal (~ 380 mm) and it was called "dry year". The accumulated ETr (ETRac) was 342 and 251 mm, while the ANPP was 4046 and 3036 kg ha⁻¹ for the wet and dry year respectively. The efficiency index comparison between wet and dry year was: 1) ANPP / PPac: 7.97 vs. 6.01 kg ha⁻¹ of forage per mm of rain 2) ANPP / ETrac: 11.83 vs. 12.09 kg ha⁻¹ of forage per mm of evapotranspiration and 3) ETrac / PPac: 51% vs 66% of precipitation used in evapotranspiration for wet and dry year, respectively.</P

Key words: real evapotranspiration; eddy covariance; El Niño