

Restoration of primary production of overgrazed natural grasslands by deferment

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The use of animal stocking rate above the carrying capacity of natural grasslands is considered the main challenge to the sustainability of pastoral ecosystems. This characteristic has led to the productive and ecological degradation of many pastures worldwide and little is known about the recovery potential of these areas in the absence of intensive management techniques (ie, irrigation, fertilization, exotic species overseeding) or monocrops systems (i.e. arboreal or grain-crops). In this context, the objective of this work was to study the effectiveness of deferment as a strategy to recovery degraded natural pastures by a long period of overgrazing. Thus, three treatments based on seasonal grazing exclusions (Spring Deferment, Autumn Deferment and Continuous Stocking) with three replications were applied simultaneously in two paddocks of natural grasslands from Pampa's Biome managed during long time with contrasting grazing intensities: severe grazing intensity (degraded area by overgrazing) and moderate grazing intensity (well managed area used as reference system). Were evaluated during two years (2011-2013): 1) Photosynthetically Active Radiation Intercepted by the canopy measured with a ceptometer (PARint), 2) Forage Mass measured by double sampling method (FM); and 3) Sward Height measured by a sward stick graduated in cm (SH). There were observed significant increases in all parameters evaluated in response to deferment in the overgrazed area. Spring Deferment applied in this grazing intensity provided more than 1,500 kg ha^{-1} of FM, light interception reaching 60% and 10 cm of SH. Alternatively, Continuous Stocking under severe grazing intensity showed only 500 kg ha^{-1} of FM, light interception of 20% and 4 cm of sward height, and Autumn Deferment remained in intermediate classes in these three variables. The area used as reference (managed with moderate grazing) showed higher values for the three parameters evaluated (MF, RFAint and Alt) than the overgrazed pasture, but it didn't show significant differences due to grazing exclusions, regardless of the time of year. The deferment was considered an important tool for the recovery of primary production of pastures degraded by overgrazing for a long period. The Spring Deferment showed faster and consistent results in natural grassland recovery process degraded by overgrazing, probably due to the predominance of species of C4 metabolic pathway, which have better development this season.

Keywords: degraded area, herbage mass, grazing intensity, light interception, native grass, sward height