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Leaf-eating grazing as a Strategy for Vegetation Cover Recovery in Degraded Areas of the Caatinga

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In semi-arid of Brazil, international markets are on alert after the release of reports that showed an increase of deforested areas within the Caatinga biome. In these regions, sheep and goat industries are responsible for moving the economy of rural areas, however, goat farming is done inappropriately, as animals are raised loose in large numbers, reason that can worsen plant manipulation and cause environmental damage. Likewise, environmental conditions of farms located in Caatinga biome, could be degrading due to a combination of factors, including cattle husbandry and agriculture. The leaf-eating style of goats could enhance environmental recovery if applied with the correct management. Therefore, the objectives of this study were to evaluate vegetation recovery of degraded areas of the Caatinga after using of rotational grazing by goats over five years. Grazing parameters were determined so that the animal load in each area was between 16 and 25 animals throughout the study period. The animals were subjected to pasture rotation management throughout the year. The average location's rainfall (Latitude: -8.35966, Longitude: -36.6949) from 2018 to 2023 was 768mm/year, with 2022 being the wettest with 1,173mm. Grazing was carried out in four areas with different sizes (area 1: 0.87ha; area 2: 0.55ha; area 3: 1.27ha and area 4: 0.66ha), totaling 3.35ha of grazing. During the dry seasons, animals were supplemented with 2kg of *Opuntia stricta* Haw, 60g of corn bran, and 15g of cottonseed meal animal/day. All animals were vaccinated against rabies and clostridiosis and sanitary management was carried out by selective treatment against endoparasitosis. In 2018, the structural characteristics of the plant community in the areas selected for pasture were composed mainly of 85% frequency of evergreen grass (*Megathyrsus maximus*), with a total density of 60%. There was no relevant population of tree extracts of native species at the site. After five years of grazing and without the need to plant any native tree species, we can observe a gigantic impact on the structural characteristics of the plant community. The areas showed a recovery in total coverage and arboreal extract of 95% of the grazing area and reestablishing a diverse plant community of native species such as Aroeira (*Schinus terebinthifolia*), Mororó (*Bauhinia forficata*), Pau-ferro (*Caesalpinia leiostachya*), Angico Manjola (*Anadenanthera colubrina*) Angico de Carço (*Anadenanthera peregrina*) and Jurema Preta (*mimosa tenuiflora*). It was possible to conclude that the use of goats in degraded areas with low forage potential resulted in a progressive induced secondary succession process in the regeneration of vegetation cover diversity. Branching especially stimulated the growth of the arboreal layer, resulting in complete plant regeneration in the areas. This is due to an effect that mimics the action of natural pruning of vegetation by goats, meaning that when removing leaves from growing tree species, there was a hormonal stimulation in the release of phytohormones such as auxins and gibberellins, which enhanced plant growth. The fact that grazing was rotated meant that after it, plants could recover from the action of animals and benefit from the endogenous release of hormones that stimulate plant growth. Therefore, goats can contribute to plant growth of the Caatinga through their leaf-eating habits, stimulating the release of vegetal hormones when managed in controlled rotational grazing systems.

Keywords: deforestation, semiarid, environment preservation, regenerative livestock.