I-INTERNATIONAL MEETING OF ANIMAL SCIENCE IN SEMI-ARID REGIONS
Universidade Federal do Agreste de Pernambuco – UFAPE
July 03rd to 05th, 2024, Garanhuns-PE

Area of work: innovation and animal production systems

Mapping the environmental conditions in goat and sheep farming in rural properties of the Caatinga: Preliminary results

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The major changes in the planet's climate are increasing the pressure on environmental conservation in livestock activities. Recently we are facing more extreme events of the climate around the world, and this process has pointed to livestock farming as the responsible for at least 15% of global warming. As a reaction of this, security measures at the origin of animal products have been placed as well as the need for a report of the environmental conditions in the livestock farms. In the semi-arid of Brazil, international markets are on alert after the release of reports that showed an increase of more than 1000% in deforested areas within the Caatinga biome. In these regions, the sheep and goat industries are responsible for moving the economy of rural areas, and the fur market plays a fundamental role in the leather exports. However, a lack of information about the geographical origin, the way of raising and the possible environmental impacts caused by these animals, are limiting the continuity of the international commercialization of leather. Therefore, the objectives of this study were to identify the geographic coordinates where goats and sheep are raised in the Caatinga, using digital tools to produce a diagnosis of local environmental conditions. The study carried out analysis of data from the agricultural census to identify the most productive regions and the largest numbers of herds. Afterword, routes were established for on-site visits and collection of coordinates and images with the help of Drones, and subsequently analysis in software to determine the conditions of vegetation cover and mapping of the properties. The southwest of Piauí State was identified as one of the most important areas of sheep and goat production in Northeast Brazil. For the preliminary results, nine counties belonging to the Itaim valley were mapped based on geographic data from 19 spatially dispersed properties within a radius of 650 km^2. A DJI type drone, model Mini 3, was used. (Unfolded size 9.9*14.3*2.8”, diagonal size of 247mm, weight 249g and two 5200 mAh batteries, 5G Wifi transmission and in real time). Photographic records of the properties were taken at a standard height of 200 meters, with the take-off point always starting at the geographical reference point of the location. With the height established, the drone was advanced to the end of the property, with the aim of covering the entire demarcated area and capturing images with a standardized height and angle. Next, image analysis and processing was carried out using Adophotoshop CS6 (version 13.0), using the photomerge function, photographs of each property were superimposed and merged using masks, creating panoramic images that use more than one photographic record of vegetation cover. The first subject analysis showed an area of 34.7% average of preservation of vegetation in the properties. Although the legislation for the Caatinga requires that only 20% of the area of properties be dedicated to preservation, the images captured show some type of vegetation cover but without distinguishing the original situation of the area. This means that initially, despite presenting a percentage above the legal requirements, these numbers can demonstrate areas already undergoing natural recovery and not that these systems would cause little environmental impact.

Keywords: Semi-arid, Fur Market, Traceability, deforestation, .
Financial support: FACEPE and Núcleo de Inovações Agrárias para o Nordeste - UFAPE